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A Preschool Outdoor Curriculum and Playground Design, Teacher Education

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A PRESCHOOL OUTDOOR CURRICULUM
AND PLAYGROUND DESIGN

A Thesis
Presented to
the Faculty of the Department
of Teacher Education
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
of the Requirements for the Degree
Elementary Education Specialist
in Curriculum and Instruction

by
Connie Jo Smith
July 12, 1985
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A PRESCHOOL OUTDOOR CURRICULUM
AND PLAYGROUND DESIGN

Recommended 7-11-85

Donald E. Ritter
Director of Thesis

Sarah S. Taylor

C.R. Watt

Approved August 2, 1985

Calmer Gray
Dean of the Graduate College
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The writer proposes the utilization of a developmentally based outdoor curriculum and playground designed for young children. The curriculum consists of an overview, objectives, curriculum methodology, playground designs and evaluation. Cognitive, affective and psychomotor domains are each included in the objectives. A curriculum methodology focusing upon approaches for individualization and development of the total child is presented. The playground designs are based upon current research. Play value, development appropriateness and safety were considered in developing the playground designs and curriculum. Evaluation of the curriculum and playground will be measured through assessments of the individual child, the class, and the staff. Numerous approaches to evaluation are described.

This project is intended to assist preschool teachers in establishing and maintaining a program based on current research and literature. Ideas to assist other preschools in adaptation are presented. Included in the ideas are
steps in developing a curriculum and playground design as well as a suggested approach to training parents and staff in the rationale and appropriate use of the curriculum.
Chapter 1
PROJECT OVERVIEW

Introduction

In recent years, American playgrounds have undergone numerous changes. Traditional playgrounds are being challenged regarding their play value, developmental appropriateness, and safety. Playgrounds categorized as contemporary, adventure, and creative are slowly replacing the traditional playground. The design attempt of contemporary, adventure, and creative play spaces is to create environments which are safe yet allow for risk taking, open ended thus encouraging multiple use, and flexible enough to meet numerous developmental levels.

Outdoor education is becoming an integral part of learning programs designed for young children, as it is commonly recognized that the teacher of young children is responsible for facilitating total development. In recent years much literature has been focused on extending the indoor curriculum to the outside. The integration of outside and inside learning is similar to the overlap of the cognitive, affective, and psychomotor domains.

Statement of the Problem

The purpose of this project is to develop a Piagetian based preschool outdoor curriculum and playground design. The information presented is based upon research concerning the total development of young children. This project
includes an outdoor learning program that will facilitate the development of skills through materials, equipment, and activities. The physical and emotional environment is designed to encourage an approach which is primarily child centered and focuses upon active learning. The curriculum is structured to include a progression of developmental activities in the cognitive, affective, and psychomotor domains. The curriculum is also designed to be flexible regarding the rate of progression, thus stressing individualization. Since this proposed program is multidimensional with various levels of complexity, there is the opportunity for children to be challenged as well as feel secure.

The curriculum and playground design could be used as a model for other preschools to adapt. Along with the preschool outdoor curriculum and design this project also includes ideas to assist other preschools in adaptation. Included in the ideas are steps in developing a curriculum and design as well as a suggested approach to training parents and staff in the rationale and appropriate use of the curriculum.

Delimitation

This curriculum and design is being developed for specific use by the Western Kentucky University Campus Child Care program, located in Bowling Green, Kentucky. Western Kentucky University Campus Child Care (WKUCCC)
operates a combination Head Start and day care program that provides child care for children between the ages of three and six. Head Start is a federally funded program which provides comprehensive services for low income children and their families through four component areas: education, health, social services, and parent involvement. Ninety percent of the children must be financially below the federal poverty income guidelines and at least 10 percent must be diagnosed as having a handicapping condition. The WKU Head Start operates a part day child care program, Monday through Thursday. Day care is available for a fee to Head Start families needing additional hours of day care and to families who do not qualify for Head Start.

Significance of the Problem

The significance of appropriate outdoor learning environments for young children is reflected through the attention currently being given to the topic through an increase in the literature. The literature focuses on two primary areas: safety and creativity. The current literature concerning the safety of outdoor equipment may be, in part, a result of the National Electronic Injury Surveillance System (NEISS) estimating that in one year over 167,000 playground equipment related injuries received hospital emergency room treatment (U.S. Consumer Product Safety Commission, 1979). The literature concerning creative outdoor playspaces is leading to exciting
environments to replace the traditional playgrounds known to Americans. In such creative environments cognitive and psychomotor development is facilitated through interaction of the child and environmental elements. According to Piaget (Charles, 1974), intellectual growth is affected by concrete experience and physical maturation, thus cognitive and psychomotor domains develop simultaneously through active learning. The two factors discussed, safety and effectiveness, are both explored currently in this study and are significant issues regarding preschool education.

It is important that the current research be presented in a form which can illustrate the key issues such as safety, creativity, and active learning to early childhood educators. It is hoped that through this project Head Start and day care teachers, many of whom are paraprofessional early childhood educators, can see research presented through a concrete approach.

**Organization of Project**

This project is divided into five chapters. Chapter One is the introduction, which gives an overview and direction to the preschool outdoor learning curriculum and playground design. Chapter Two is a review of the literature related to the project. The review of literature is taken from resource books, professional journals, magazines, and reports. The review includes playground history, types, value, designs, safety and
learning implications based on child development principles. Chapter Three consists of the actual curriculum, playground design plans, and evaluation. Information gathered through the literature review was utilized in the development of the curriculum and design plans. An adaptation strategy is presented in Chapter Four of this project. Chapter Five addresses the project summary, conclusions, and recommendations. Following Chapter Five are the appendices which contain blueprints for the playground design, a construction cost analysis, planting and animal care guides, and worksheets.
Chapter 2
REVIEW OF RELATED LITERATURE

During the 1960's major concerns regarding children's play spaces began to emerge and appear in Great Britain literature (Brown and Burger, 1984). It was not until a few years after concern was shown in Great Britain that children's outdoor play environments began to receive attention in the United States.

American interest in playgrounds has resulted in a transitional period with child oriented and creative environments beginning to replace the traditional asphalt playgrounds which have standardized equipment. Frost (1978) called this recent change the "American Playground Movement."

Although this movement is underway there are many obstacles such as safety questions, aesthetics, and expense. In order for the creative environments to be more successful than the traditional ones, the following must be considered: types and value of play, developmental appropriateness, safety, guidelines/regulations, and supervision.

History

British.

Lady Allen of Hurtwood (1968) outlined the progression of playground development through six stages. Stage one is the prison period. These playgrounds look like prison exercise yards. They are barren with an asphalt surface
and a high fence. Stage two is the ironmongery stage. Large metal climbing structures, slides and other metal equipment sit atop the asphalt, completing the scene for this stage. Stage three is the concrete pipe period. Many concrete sewer pipes of various sizes and dimensions were added for children to crawl over and through. Stage four is the novelty period. This stage includes play sculptures that are too elaborate to be functional for the children. Stage five is the maze period. Stage six is the "do it yourself" one, where children test themselves against new challenges in complete freedom. According to Lady Allen, many playgrounds are still of the asphalt kind with fixed equipment and no grass, trees, flowers, animals, or beauty.

American.

Frost and Klein (1979) described the brief history of American adult-prepared playgrounds. They stated that these playgrounds began to appear following World War II. Prior to this time playgrounds were not seen as a need because children and adults shared heavy work responsibilities thus contrived exercise was not needed.

As economic growth allowed, children were sent to school, where they were expected to take part in recess. The first manufactured equipment used for school recess was primarily exercise equipment (Frost & Klein, 1979). American playgrounds soon took on characteristics of the mechanical age, and began to reflect shiny metal and mechanical play equipment.
Types of Playgrounds

Traditional.

Frost and Klein described traditional playgrounds as follows:

By the end of the 1950's most American playgrounds had become standardized, an area enclosed by a chain-link fence, paved with asphalt, containing a slide, swing, seesaw, jungle gym, and merry-go-round. (p. 54)

Hayward, Rothenberg and Beasley (1974) described traditional playgrounds in a similar way. They stated that playgrounds usually consisted of some form of swings, slides, seesaws, and climbing bars.

Frost and Klein (1979) also described traditional playgrounds as lacking creative play materials such as water, sand, play houses, and wood for construction. Another concern regarding traditional playgrounds expressed by Frost and Klein was:

It is our opinion that with relatively few exceptions (5 to 10 percent), American playgrounds for children under eight years of age are hazardous, inadequately equipped, and inappropriate to the developmental play needs of the children they serve. (p. 54)

Even though traditional playgrounds have been found to be dangerous, used in a highly limited fashion, and vacant at least 88 percent of the peak time, Hayward et al. (1974) noted that they appear to have community support and continue to be built.

On the other hand, numerous educational researchers (such as Frost, 1978; Miller, 1972; and Passatino, 1975;
all expressed dissatisfaction with traditional playgrounds. Brown and Burger (1984) stated that the dissatisfaction with traditional playgrounds has led to the design of contemporary playgrounds as an alternative.

**Contemporary.**

Hayward et al. (1974) stated that the contemporary playgrounds are not as easily described as the traditional ones, nor are they as numerous. Contemporary playgrounds have been designed to include novelty, textures, and aesthetically pleasing forms. Hayward et al. (1974) described the contemporary playground as follows:

Generally, these playgrounds are somewhat sculptured, frequently based on sand or concrete forms, and may include cobblestone mounds to which slides are attached, tunnels under walls or mounds, and a tree house or platforms above the ground. They may also contain some conventional playground equipment. (p. 134)

Rohane (1981) described the change to contemporary playgrounds as follows: "Well-composed, sculptural play elements of concrete, fiberglass, and later wood contrasted the harshness and monotony of galvanized metal" (p. 252).

Reactions to the contemporary playgrounds have been mixed. They are generally pleasing to the adult eye but some question the difference they make in the play behavior and safety of children (Brown & Burger, 1984; Frost & Klein, 1979; and Hayward et al., 1974).

**Adventure.**

Another type of playground which created a mixture of reactions was the adventure or junk playgrounds originally
developed through European experimentation with materials for play.

In 1930, as a result of observations of children's preference toward scrap materials over finished playgrounds, C. Th. Sorensen, a Danish landscape architect and professor, began writing about junk playgrounds. In 1943 Sorensen and the Workers' Co-operative Housing Association planned the first adventure playground and started it in Endrup, outside Copenhagen. John Bertelsen, the first play leader, gave the playground its philosophy of freedom and worked to keep it in operation long enough to attract attention. His notes regarding the project were the primary source of information concerning the first adventure playground.

In 1962, the London Adventure Playground Association (LAPA) was established to promote an understanding of the educational, social, and welfare values of adventure playgrounds and to assist in the development of new ones. The adventure playground concept was adopted by several countries, however, the name does not always remain the same (Frost & Klein, 1979). The Swedish version is called play environments. The Danish prefer to call them building playgrounds.

Regardless of the name given, all adventure playgrounds had the common purpose of encouraging creativity through freedom. There is, however, a wide range of individuality exhibited in each playground. The
site may vary in size, appearance, and, to some degree, function. Common elements include a fence to enclose the entire area, a main building for storage and indoor activities, a construction area, a garden area, a fire and cooking space, an animal area, and an open space. The specific materials available daily vary depending upon availability of junk and the interests of the players.

Since adventure playgrounds are designed to eliminate standardization and encourage creativity, a complete description of the adventure playground would be contradictory. The LAPA (Jago, 1971) provided a general description of common elements in adventure playgrounds. The description said that an adventure playground can best be described as a place where children are free to do many things that they cannot easily do elsewhere. Jago continued the description by saying that in an adventure playground, which can be any size from one third of an acre to two and a half acres, children can build houses, dens, and climbing structures with waste materials, have bonfires, cook in the open, dig holes, garden, or just play with sand, water and clay. The atmosphere according to Jago, is permissive and free, which is especially attractive to children whose lives are otherwise much limited and restricted by lack of space and opportunity. An important element in all adventure playgrounds is that each have two full-time leaders in charge who are friends to the children and help them with what they are trying to
do. Each playground has a large hut which is well equipped with materials for painting, dressing up and acting, modeling, and other forms of indoor play. There is also a record player, table tennis and other items so that in inclement weather the adventure playground hut becomes a social center for many children who would have nowhere to play except the street.

According to a collection of articles edited by Bengtsson (1972) many adventure playgrounds either had a time of the day or a designated area of the ground designed especially for children under five years of age. The adventure playgrounds had always welcomed everyone but were originally designed, according to the LAPA, for children 5 to 15 years of age.

Frost and Klein (1979) said that the key to success of an adventure playground is the play leader, who should facilitate but interfere as little as possible. Having skills as a teacher, gardner, administrator, social worker, carpenter, best friend, and parent are important. Humanistic qualities such as liking children and accepting differences are also important. Frost and Klein contend that individual adventure playground sites may need play leaders with other specific skills depending upon the local situation. Lambert (1974) agreed with Frost and Klein that the key to a successful adventure playground is the leader. Furthermore, Lambert said that there are no official qualifications, but the person must be a friend to the
children—warm, understanding, patient, and non-judgmental. People with various backgrounds become leaders but the following types seem to be more successful: actors, carpenters, plumbers, night-watchmen, and those who have worked with handicapped children. Rarely do trained youth leaders or school teachers feel at home on the adventure playground.

John Bertelsen (1972), the first adventure playground play leader, was a seaman and preschool teacher. He saw his work as "that of an instructor trying to foster a child's ability to use the creative elements in play" (p. 18). Throughout his notes he referred to himself as a part of the total group. He used the word "we" many times.

One problem which was encountered by the first adventure playground and continues to be a concern to some today is the fear of danger. This fear was evidenced at Endrup, outside of Copenhagen, through neighborhood pressure to remove a tower thought to be dangerous. The play leader, however, saw it as a symbol of the children's dreams and creativity.

The fear persists, although the safety record for adventure playgrounds is excellent. Frost and Klein (1979) reported that very few serious injuries have been reported on British or Scandinavian adventure playgrounds. The Milpitas adventure playground located in California in 1970 also has an excellent safety record.
Another problem which concerned the first adventure play leader was the adult's misunderstanding of the purpose of the playground. Complaints that children got dirty and that the grounds were untidy reflected a lack of understanding of process. Children's play is not what adult's see but rather what the child experiences (Bertelsen, 1972). The same misunderstanding seems to exist today.

Still another problem with the adventure playground is the cost. Initially setting up an adventure playground is financially less costly than a traditional playground. However, the ongoing expense of the adventure playground is more costly than traditional playground upkeep. The high cost of maintaining an adventure playground is in part due to the salary of the play leaders.

Even though there are problems with adventure playgrounds, they seem to be continually growing. In 1976 the American Adventure Playground Association (AAPA) was formed in Southern California by educators, commissioners, and park and recreation professionals. Their purpose was to promote the adventure playground concept in the United States through information services.

Creative.

Another type of playground which emerged was the creative playground. According to Frost and Henniger (1979):

This type of play space is constructed creatively from existing commercial equipment, a few purchased
materials, and a wide variety of donated junk materials such as old tires, utility poles, railroad ties and cable spools. (p.23)

Frost and Henniger also state that creative playgrounds are often planned and constructed by parents, teachers, and children with the assistance of a playground specialist.

Creative playgrounds may include playhouses, wheel vehicle areas, sand, and water. They may also include storage for moveable materials and a variety of handmade climbing and swinging structures (Frost & Klein, 1979). These playgrounds seem to be a combination of the traditional, contemporary, and adventure playgrounds.

Comparison of Playground Value

Although all playgrounds in America do not fit neatly into the category of traditional, contemporary, adventure, or creative, the influence of each was widespread. Many researchers have made comparisons regarding children's preference and types of play behavior on each of these kinds of playgrounds.

**Traditional.**

Hayward et al. (1974) found that the traditional playground was occupied by the fewest number of school age children. Of those who selected the traditional playground, adults were predominant. When children did select the traditional playground they stayed a shorter amount of time than they did on the contemporary, adventure or creative playgrounds. Hayward et al. (1974) found that children's attention to any one activity was shorter on the
traditional playground than on the others. The short attention span may be related to Fjeldsted's (1980) finding that equipment on traditional playgrounds was used only one way and often involved only gross motor activity. In a comparison study, Strickland (1979) also found that children selected the traditional playground less than a creative one.

This finding was consistent with Frost and Campbell's (1977) finding that on a traditional playground children engaged in gross motor play over 77 percent of the time and in dramatic play less than three percent of the time. Frost and Campbell (1977) also reported that children spent over 35 percent of their time in solitary and parallel play. Fjeldsted (1980) found that most of the children's time was spent in solitary, parallel, and associative play on traditional playgrounds. For example, Hayward et al. (1974) found that the school age children did not converse very much, and when they did the topic related directly to the equipment or activity. Both Strickland (1979) and Hayward et al. (1974) found that less desirable behaviors regarding social and cognitive activities were demonstrated on the traditional playground.

At traditional playgrounds Hayward et al. (1974) found that the swings were the primary feature used by school age children, the wading pool was used second most. Slides, which were of the traditional kind, were rarely used by school or preschool age children.
Frost and Strickland (1978) found that on traditional playgrounds, young children selected a massive unit consisting of interior and exterior space for climbing, dramatic play areas, two horizontal swings, a slide, and a fireman's pole and ladder 23 percent of the time. One-fifth of that time was spent playing in the sand surrounding the structure. They also found that only 13 percent of the time children selected linked structures. The linked structures consisted of balance beams, chinning bars, obstacle climbers, suspension bridge, slide, jungle gym, and other related equipment.

**Contemporary.**

Hayward et al. (1974) found that the contemporary playground had the highest number of users when compared to traditional and adventure playgrounds. Adults were the most predominant age group on the contemporary playground. Although young children were found more often playing on the contemporary playground than on any other play space, they stayed a longer period of time when on the adventure playground. They stayed for the shortest play period when using the traditional playgrounds. Preschool age children were found more often at the contemporary playground than at any other playground. Children stayed at the contemporary playground longer than the traditional one, but shorter than on the adventure playground.

At the contemporary playground, used in the study by Hayward et al. (1974), sand areas were used the most by
school age children. There were three sand areas, the largest of which included an arts and crafts table and a water trough. Mounds and slides were used the second most as compared to slides which were rarely selected on the traditional playground. One slide was novel in that it was attached to a mound resembling a mountain which had tunnels running through it. The slides had a variety of ways for children to reach the top. One slide had bumps incorporated into it. There was sand and water available to apply to the slide surface. The slides were wide enough for two children to slide together.

Talking occurred more on the contemporary than traditional playground, but still was not identified as a popular activity. When talking did occur it was limited to the equipment being used and mutual play activities (Hayward, et al., 1974).

Brown and Burger (1984) reflected that playgrounds of the contemporary design did not promote educationally desirable social, language, or motor behaviors of preschoolers to any greater extent than playgrounds with less contemporary designs. Three possible reasons were given for this finding. One reason was that the contemporary playground may be only cosmetically different. The appearance was aesthetically pleasing to adults, but may not offer any more play potential for the child. The second reason given was that the potential remained underdeveloped. For example, one site had a variety of
platforms which could be changed by adults to provide a variety of climbing patterns for the children, but they were not altered. The third reason given to explain the findings was that the design did not provide properly zoned play areas. For example sand play, a usually favored activity for children, was hardly ever used when placed between two highly active areas.

**Adventure.**

Hayward et al. (1974) found that the adventure playground had the lowest number of users overall as well as the lowest median attendance during each of the fifteen times of the day being observed. However, children ages 6 to 13 years were found most often at the adventure playground. Children were observed staying longer at this playground than at any other. The amount of time engaged in an activity was also longer at the adventure playground.

The clubhouses were the most used by school age children. The second most used area by the school age group was the open area. Talking was the third most popular activity on the adventure playground. Conversations often extended beyond the immediate environment (Hayward, et al., 1974).

A survey by Harvey (1972), who observed preschoolers on an adventure playground, reflected that playing with sand and water was the most popular choice of activities. The second choice was use of raw materials and climbing constructions. Experimenting with bricks, stones, logs,
and various containers occupied a great deal of the preschoolers' time. Painting, which is usually popular with young children, was selected sporadically. Conventional toys were nearly the last choice.

The adventure type playground equipment which was manipulated and had versatile use seemed to stimulate self-directed, associative, and cooperative-imaginative play (Fjeldsted, 1980).

**Creative.**

Strickland (1979) compared third graders on traditional and creative playgrounds. His findings indicated that the children selected the creative playground more often. In the creative environment, Frost and Strickland (1978) found that children, kindergarten through second grade, preferred activities in the following order: wheeled vehicles, organized games, house and housekeeping materials, play without equipment, complex slide, loose parts, old car and boat, sand, climbing structures, and moveable see-saw. They also found that loose parts were the only materials tested that had equal appeal to all age groups.

Frost and Campbell (1977) found that on a creative playground children engaged in dramatic play 40 percent of the time and gross motor play 43 percent of the time. The finding that solitary and parallel play occupied less than 25 percent of the children's time (Frost & Campbell, 1977) was consistent with Strickland's (1979) finding that while
playing on the creative playground children demonstrated more desirable behaviors such as complex social contact. Strickland also found that cognitive behaviors increased on the creative playground.

**Conclusions.**

The comparison of children in each playground setting illustrates that the placement and kind of equipment makes a significant difference in the type of play engaged in by children. It seems that a wide range of materials and equipment allows for various types of play. Novelty and complexity appear to influence the amount of interest children have. Children prefer equipment and materials that are manipulative and that can be adapted to their play needs.

Not only does the type of equipment influence behavior but the amount of equipment also has an impact. Johnson (1935) found that as the amount of equipment increased the amount of motor play and play with materials increased. Undesirable behaviors as well as social play decreased with an increase of equipment and materials. Although it might appear ideal to decrease undesirable behavior, decreasing social play eliminates the opportunity to help children learn appropriate techniques for resolving problems. The type and amount of equipment in the outdoor environment must be balanced to encourage various levels of play. The manipulative materials must also be balanced.
Designer Suggestions

Some designers are beginning to recognize the importance of play and are attempting to base outdoor construction on what is found in the educational literature. Pollowy (1977) stressed the importance of children's play by stating "The designs of our environments have not yet accepted children's activities and their play as the most necessary function of early life" (p. 320).

The work of Moore and Cohen (1978), Hill (1978), and Rohane (1981) demonstrated the interaction between the fields of education and architecture. Moore and Cohen (1978) established "design principles" for the construction of outdoor play environments. One of the design principles is that there should be obvious choices or options to children completing each activity through the use of multiple branches and alternatives at crossroads. Another principle is that there should be a range of both defined and ambiguous play materials. Moore and Cohen also suggested a wide range of materials and space to encourage both alone and together activities. Further suggestions included spaces for emotional release, privacy, and accomplishment. Inclusion of loose parts or numerous natural or manufactured items to be manipulated was also a design suggestion by Moore and Cohen. Other design principles suggested included having places for animals and plants, alternatives and numerous spatial experiences.
Design suggestions presented by Hill (1978) included a recommended amount of space, one to three thousand square feet. Hill also suggested that protection from the wind and sun be arranged. Like Moore and Cohen (1978), Hill advocated the use of loose parts, especially raw and natural materials. Private space was another of Hill's suggestions. The organization of the play space and the positioning of the materials and activities was crucial (Hill, 1978). Physical, social, creative, and quiet play must all be considered and planned for according to the characteristics of each. Finding the location that protects each from the other without disturbing the free flow of play is difficult but tremendously important according to Hill.

Rohane (1981) proposed taxonomy of playground activity settings that are divided into four interrelated areas. He suggested that child/people interactions should be offered. Examples of these activities would be role playing, dramatic play, wheeled vehicles, obstacle courses, and construction play. The second opportunity recommended by Rohane is child/biotic settings, to include interaction with living things. The third area recommended should be conducive to child/ambient interaction. In this setting the child would have the opportunity to relate to the environment (weather, gravity and other physical forces).
Rohane's fourth setting included child/spatial, which is the child in relation to the physical environment. Examples would include climbers, hills, tunnels, boundary lines, and pathways.

Still another suggestion regarding the design of play environments came from Paul Davidoff (1980). Davidoff suggested that urban planners include children in the planning and decision making about their environments. He continued to say that involvement will create greater user responsibility and satisfaction as well as teach children by experience the democratic process. He stated that in the United States children have very little opportunity to learn democracy first hand. They learn about American heroes and historical events but have little involvement in making decisions regarding play and other events that affect their lives. The community and neighborhood involvement in urban planning provides a vehicle for children to develop skills and enjoy an end product they were instrumental in designing.

**Learning Implications Based on Child Growth and Development Principles**

Encouraging children to participate in the process rather than just focusing on the product is an integral part of Jean Piaget's cognitive developmental theory. Piaget, a Swiss psychologist, offered a theory of development based on a relationship between physical maturation and the environment. Piaget's cognitive
development theory was divided into a stage independent and stage dependent theory (Charles, 1974).

**Piaget's Stage Independent Theory.**

The stage independent theory addressed the process by which an individual comes to understand the world, and the general factors which affect intellectual growth. Experience, maturation, social transmission, and equilibration were all influencing factors. Experience involved handling, moving and thinking about concrete objects as well as thinking through processes involving them. Maturation is the physical maturing, especially of the central nervous system. Social transmission or interaction includes talking, playing and working with others, especially other children. Equilibration is the process of bringing experience, maturation and socialization together. However, none of these factors alone explain the process of logical thought (Charles, 1974).

Learning involves the interaction of the person and the environmental elements, thus learning is an active process. The learner must both assimilate and accommodate new experiences and information. The learning process is gradual and is based on previous experience (Charles, 1974).
Piaget presented a wide range of concepts regarding active learning that are not limited to one stage. One concept which overlaps stages is egocentrism, difficulty realizing the views and attitudes of other people. Both spatial and social egocentrism have to be considered when planning a playground. Spatial egocentrism is a limited ability to understand how different vantage points in space render various things visible or invisible. Social egocentrism is divided into affective and cognitive. Affective social egocentrism is a limit on the child's ability to judge how others react emotionally to different situations. Cognitive social egocentrism is the limit on the child's awareness of others' processes. Other examples of stage free concepts include dynamism, animism, naturalism, primary adualism, and realism. Dynamism means no explanations are called for. Animism is the idea that objects act under their own power. Naturalism is invoking the principles of science. Primary adualism is the experienced primitive mixing of self and surroundings. Realism is the inability of children to distinguish different sorts of realities (Stone, Church & Church, 1984).

Piaget's stage dependent theory.

Piaget's stage-dependent theory addresses the progression of intellectual behavior from birth through
adolescence. Piaget divided this time span into three major periods with stages and substages. The three major periods are the sensory motor period, the concrete operational period and the formal operational period. The concrete operational period includes two stages: preoperational (2-7 years) and concrete operational (7-11 years). The preoperational period of the concrete operational stage generally includes the preschool age child. Each stage includes an approximate age range, however, children progress through the stages at individual rates. According to Piaget, the sequence is the same for all children although the rates may vary. The mental development of children occurs as a result of the change in their intellectual structure, which is different from an adult's structure. These mental structures provide a different world view for children than adults (Charles, 1974).

Teaching implications.

Children cannot be taught knowledge (Charles, 1974). Knowledge must be discovered through actions and concrete experiences. Through activity children find out about their world and remake their mental structures that permit dealing with even more complex information. Adults cannot teach children how to change their mental structures, however, they can facilitate the development by providing opportunities and appropriate environments.
Considering Piaget's cognitive development theory, implications for educators are as follows:

Teachers should provide a wealth of concrete experiences for the children.

Teachers should provide a climate which encourages free and spontaneous actions.

Teachers should watch and listen and serve as a facilitator of learning by asking questions, posing problems, and nurturing curiosity.

Teachers should offer an approach to learning that encourages individualization.

Teachers should encourage socialization by providing opportunity for the children to talk, discuss, and even argue to some degree.

Teachers should stress total development (cognitive, social, emotional, and physical).

According to Songquist and Kamii (1967), two Piagetian areas that should be incorporated into the preschool curriculum for the disadvantaged child are symbolization and mastery of elementary types of relationships. Symbolization includes three levels: index, symbol, and sign. Index level is the point at which a child learns to construct an image in his or her mind. Helping children become thoroughly familiar with objects aids in the mastery of the index level. The symbol level includes five types of non verbal representation, all of which aid in the construction of mental images. The five types are the use of the body to represent objects (imitation), the use of objects to represent other objects (make-believe), the use of utterances which characterize objects (onomatopoeia),
the recognition of objects in pictures (pictures), and the making of representations in two and three dimensions (models and drawings). The sign level involves words as symbols.

Elementary types of relationships are divided into two types. The first type, logico-mathematical, includes grouping and ordering. The second type, spatio-temporal, includes spatial reasoning and temporal reasoning.

Songquist and Kamii suggested that an integration of symbolization and elementary types of relationships be included in the preschool curriculum. They continued to say that there were three ways to incorporate the cognitive content. First, the environment must be manipulated to induce the child to "discover" the desired learning. Second, the environment must be manipulated in such a way to make the "discovery" inevitable. The third approach included direct teaching. However, they stated that free exploration and manipulation appeared to be best before direct teachings was attempted with preschoolers.

**Play and exploration.**

Piaget (1962) described play and games in three stages that roughly approximate the stages of cognitive development. Stage one is practice or functional games beginning in the sensorimotor period. Stage two is symbolic play which first occurs in preoperational years (2-7). Games with rules begin during the third stage of
concrete operational subperiod and continue through the formal operational period. Although functional play emerges during the sensorimotor period it does not end when new types of play appear. It becomes more complex and is integrated into other types of play.

Symbolic play involves representations of absent objects. Children use language and actions to resolve conflict through symbolic play. The most highly developed form of symbolic play is called sociodramatic play, or role play carried out with another child. Games with rules require that children accept rules and adjust to them. Children must learn to control their behavior to participate in games with rules. Playing games with rules represents a high level of play development. Construction play, according to Piaget (1962), is not a separate stage but rather transcends all three stages of play. Construction is somewhere between play and work according to Piaget.

Frost and Klein (1979) stated that Piaget offered the most comprehensive and best body of theory available to the practitioner concerned with designing and using play environments that use all types of play. The following Piagetian principles are given (p. 16):

Play is a critically important avenue for social, cultural, affective, physical and mental development
- Healthy children in all cultures play.
- There are universal types of play engaged in by children everywhere.
The content of children's play differs markedly across cultures. Play generally develops in a cumulative hierarchy fashion, with each successive stage integrating the preceding stage(s). There are marked individual differences among children in rate and timing of play development. Children need props (materials and equipment) for their play. Elders and television are important models for the content of children's play.

The strong support of play suggests that many educators agree that the discovery method is a preferred learning approach for young children. Almy (1971) compared play to Piaget's cognitive theory by stating:

Now for Piaget, imitation is seen as accommodation, play is seen as assimilation, and it is play, then, in which the child repeats and repeats and repeats until he has made the new or modified response completely his own. (p. 56)

Berlyne's (1960) theory of exploration and play took a similar viewpoint to Almy. Berlyne's theory is based on the assumption that exploration and play are directed toward the processing of information. Berlyne suggested that one becomes knowledgeable about the environment through exploration and play.

Many educators have found that learning through play or discovery encouraged an integrated learning experience. Miller (1972) stated that play is a natural urge of children from infancy to adulthood, through which they gain significantly in the cognitive, affective, and psychomotor domains. Miller continued to state that play is
simultaneously a cognitive, affective, and psychomotor experience. According to Miller:

Play is essential to the development of (1) basic motor skills including perceptual-motor development, and physical fitness and growth; (2) mental skills; (3) social skills; and (4) emotional maturity. (p. 5)

Smilansky's (1971) findings agreed with Miller's concept of integrated learning. According to Smilansky, sociodramatic play develops three main aspects in a child: creativity, intellectual growth, and social skills. Smilansky continued to say that these three aspects are essential parts of play but also of school and life:

Play is the chief vehicle for the development of imagination and intelligence, language, sex role behavior and perceptual-motor development in infants and young children. Development occurs naturally when healthy children are allowed freedom to explore rich environments. (Frost & Klein, 1978, p. 50)

The definition of play seems to vary tremendously even though many agree to its value. Perhaps the definition is difficult because of the various types and degrees of play. Stone et al. (1984) discussed the following two dimensions of play. One dimension concerned the social aspect or with whom the child plays. The stages often identified in social play are solitary, parallel, associative, cooperative and competitive play. Another dimension involving play related to the content of play. The infant involves him or herself in social-affective play, taking pleasure in relationships. Sense-pleasure play occurs
later and is followed by skill play. Following the skill play is dramatic play which is often called symbolic or pretend play. Ritual games follow dramatic play.

Anderson (1972) referred to play as taking one of two forms: ritual or experimental. Play on the traditional playgrounds is classified as ritual because the ending is already known. Play on the adventure playground is in the experimental category.

Setting up an environment to allow for each type and stage of play is important. Although the stages are sequential, each variety of play extends into adulthood. Once children develop skills for a higher level of play, they do not abandon the prior level. Each type of play has been identified as significant. For example, Suomi and Harlow (1971) found that social play was very important for adult social functions. Sylva, Bruner, and Genova (1976) suggested that children 3-5 years old encourage solitary play, with intrinsic motivation.

According to Anderson (1972) the best preparation for the future that we can offer a child is to keep his or her mind open to experiment. Hutt (1966) found that novel objects created interest and exploration. However, the exploration decreased when exposure to the object was repeated. This finding illustrates the need for numerous loose parts and open-ended materials which can be rotated for playground experiences. Earl's (1957) findings showed
that human exploration is highly systematic and that children tend to select slightly more complex activities as they progress. A study by May (1963) revealed similar findings.

In White's (1959) theory of competence, it was stressed that curiosity and exploratory behavior are not related to primary drives such as hunger. White suggested that the tendency to explore is based on the motive to understand the environment. As the individual recognizes that they can affect the environment, they experience feelings of efficacy, which are rewarding. The motive to continue exploration may subside when the situation no longer offers new possibilities, or when the individual is anxious. Therefore, White suggested that repetition and fear are enemies of exploration. Thomas, Chess, and Birch (1979) found that children with relatively stable temperaments are more receptive to new experiences and more likely to explore. Children less receptive come to respond to new experiences to explore once they feel secure in their environment.

Erikson, who proposed a series of eight psychosocial stages, classified the positive resolution of a 3-6 year old child as ability to learn, to initiate activities and enjoy mastery and achievement. On the other hand, Erikson related the negative outcomes to inability to control newly felt power and realization of possible failure which leads
to guilt and fear of punishment (Stone, et al. 1984).

Psychologist Abraham Maslow compiled a basic needs hierarchy which included five general categories. The first category included basic physiological needs which must be met before one can seek to fill higher needs. The second category involved safety and security needs. Like the physiological needs, safety needs must be met prior to movement to the other levels. Category three is the need for love, belonging, and affection. Self-esteem is the fourth category, and self-actualization is the fifth and final category (Stone, et al., 1984).

The findings and theories concerning the fear of exploration points out the need for the teacher to plan the environment to ensure a feeling of security and safety for each child. If the safety need is not met, then moving on to higher levels of learning through play and exploration is unlikely.

Safety

Providing an environment which encourages children to feel safe and secure is important, however, this is only one aspect of safety. Since nearly every child in America is exposed at some time to public playgrounds, the concern for safety is widespread. Many children are exposed to playgrounds daily and many are injured. Due to the high rate of injuries the Consumer Product Safety Commission (CPSC) has been studying public playground equipment for a
number of years in an attempt to reduce injuries.

Reports of accidents.

According to Frost and Klein (1979) prior to 1971 data on playground injuries and deaths were available largely from independent small sample surveys and case studies. In 1971 the National Electronic Injury Surveillance System (NEISS) was initiated. NEISS is a national system for data collection concerning product safety problems. The nature and scope of a problem is determined by NEISS through reports from statistically selected hospital emergency rooms. From the reports there are national estimates made regarding serious injuries and deaths. Complete records on all deaths and serious accidents are not available. Many minor accidents go unreported to hospitals, therefore, they are not included in the NEISS data. NEISS estimated that in 1977, 167,000 injuries related to public playgrounds were treated in U.S. hospital emergency rooms (U.S. CPSC, 1979). NEISS continues to record accidents, however, the data have not resulted in published analysis reports since 1979. During 1984 there were approximately 780 Kentucky injuries regarding playgrounds (Kentucky CPSC, personal communication, April, 1985).

Numbers and percentages impersonalize the effects of the injuries. In computer printouts from NEISS (1985), actual case situations are noted as the hospital reports them to NEISS. From the file regarding swing accidents
which were investigated between 1983 and April 17, 1985 two examples of situations are

Accident number 45 850118WE54115

A 10 year old male died of internal injuries as the result of being struck by the horizontal part of a swing.

Accident number 46 841102CCC3023

A three (3) year old boy died 3 days after his neck became entrapped in a loop of nylon rope attached to a swing set.

From the Reported Accidents file 1983 to April 17, 1985 some examples are

Incident number A2A0085A2

Two pre-school girls accidently hanged themselves while playing with a rope on a playground swingset.

Incident X310583A1

Decedent's hooded jacket caught on a protecting bolt on side and child was suspended with zippered jacket pulled tight around his neck.

Incident number G360002A1

Victim was at a playground when got hit in head by a swing causing death.

Incident number H440104A1

Consumer was on a ladder helping her daughter accross monkey bar. When she attempted to get down, her wedding band got hitched onto the exposed bolt thread. As she jumped, the force pulled finger off.

Although some of the reported accidents are not fatal or serious, it must be remembered that the numbers represent people. Many of the accidents may have been
prevented; therefore, a close examination of the NEISS reports and the CPSC recommendations is of great importance. Although the CPSC recognized that all playgrounds are not traditional, the data kept primarily reflected accidents on traditional equipment. The data do not differentiate between types of slides, swings, climbers, seesaws or merry-go-rounds. Any equipment which does not fit into these categories is put into an "other" category. According to CPSC (1979) 78 percent of children injured on playgrounds were under 10 years of age. The high number of young children involved in accidents could be attributed to various factors. Examples may include the inability to judge the safety of the equipment, the level of motor development, or the inability to judge space and speed accurately. Young children may also be more frequent users of playground equipment.

The exact estimate of injuries or the most at risk age range may have changed slightly through the years; however, there are some general conclusions that appear to remain constant. Throughout the years falls have been the most common factor contributing to injury. The head, face, and neck have been the body parts most frequently injured, and lacerations and contusions/abrasions are the most frequent type of injury among younger children.

The 1978 NEISS data reflected that of all injuries studied, three-fourths resulted from falls to the ground or
onto other equipment. In 1972-73, three-fifths of the injuries occurred on the surface beneath the equipment, 43 percent on bare ground or gravel, 12 percent on concrete or asphalt, and 2.5 percent each occurred on sand and safety surfaces.

**Surface.**

Since many injuries result from falls onto the ground, the surface under the children's equipment is of significant importance. According to Vernon, 1976; Wilkinson and Lockhart, 1976; National Recreation and Park Association, 1975; McConnel, Parks and Knapp, 1973; and the Bureau of Product Safety, 1972, the most serious hazard is the surface under the children's play equipment. While protective surfaces may not reduce the number of injuries from falls, they may reduce the severity of those injuries. The Consumer of Product Safety Commission sponsored research by the National Bureau of Standards to develop a method for assessing the energy absorbing characteristics of playground surfaces and to test surfaces commonly used under equipment.

The test results indicated that hard surface materials such as asphalt and concrete do not provide injury protection and are, therefore, unsuitable for use under public playground equipment. More resilient surface materials such as bark, woodchips, or shredded tires, for example, seem to provide greater protection in the event of
a fall. These materials require continuous maintenance to retain their optimum cushioning effectiveness.

The local environmental conditions will affect, to some degree, which resilient surface is best. For example, loose organic materials such as pine bark nuggets, pine bark mulch, and shredded hardwood bark tend to lose their cushion in rainy and humid weather. Inorganic loose materials, such as sand and pea gravel, may also lose their cushion in damp weather. Compact materials such as outdoor mats, and synthetic turf need to be used only on level, uniform surfaces. Another consideration regarding the purchase of mats is that they are very costly. Soil seems to provide more protection than hard surfaces but less than loose surfaces. Grass may add some cushion but is very difficult to maintain (U.S. CPSC, 1981).

The Proposed Safety Standards for Public Playground Equipment do not require specific ground cover but include test results categorizing material as extremely hazardous, conditionally acceptable, or acceptable. Concrete, asphalt, and packed earth are categorized as extremely hazardous. Into the conditionally acceptable category falls two inch gym mats, double thick gym mats, rubber mats that are one and one-eighth inches thick, double thick rubber mats, pea gravel, and wood chips. Sand, 8-10 inches thick, was the only acceptable surface.
Frost and Klein (1979) recommend grass for the ground cover where organized games are to be played but sand 8-12 inches deep in the fall areas. They recommend sand because it is highly resilient and inexpensive. They recommend that a third area remain soil for gardening, water play and digging in the soil.

**Equipment.**

Recommendations concerning specific equipment safety can also be followed to prevent falls. Frost and Klein (1979) recommended high quality wood climbing equipment because it is softer and not as hot in warm weather. They encouraged matching the child size to the equipment. Exposed, protruding bolts should also be watched for, according to Frost and Klein. One other suggestion offered is to build alternating wood platforms from bottom to top so that a child cannot fall over three feet from any one point.

U.S. CPSC (1981) advice regarding climbing equipment included making the climbing bars spaced appropriately for the child. The rungs designed for gripping should be cylindrical and approximately one and five-eighth inches in diameter for an average five year old. There should be several exits to help children complete the activity in a way that they feel safe. It is also recommended that bright, contrasting colors be used on steps or rungs to help children perceive distances.
Frost and Klein (1979) noted the following problems concerning slides: height, width, and no safety platform for young children to move from the ladder to the slide. Frost and Klein also noted no alternate way down for the child who becomes fearful.

U.S. CPSC (1981) provided the following guidance concerning slides: the average incline should not exceed 30 degrees; the sides should be two and one-half inches for the entire length of the slide; a horizontal platform at least 10 inches in length and the width of the slide should help with the transition from climbing to sliding; the exit surfaces should be at least 16 inches long and parallel to the ground with the height between 9 and 15 inches above the ground and out of the congestion of other play; steps should be evenly spaced with 7 and 11 inches between each; steps should be at least 15 inches wide and corrugated or grooved to be permanently slip resistant; stairs should have continuous handrails; ladders with rungs should slope between 75 and 90 degrees; ladders with steps should slope between 50 and 75 degrees, and stairways should slope 35 degrees; and metal slides should be installed to face north to avoid burns.

Most sources agree that the swing seat is of primary importance in swing safety. The seat can weigh 2 to 56 pounds and may be made of wood, rubber, canvas, polyethylene, aluminum, plastic, or other materials (Frost
& Klein, 1979). A light weight model is preferred.
Another hazard is the lack of clearance between each swing
and between swing sets and other equipment. At least 18
inches between each individual swing is recommended by U.S.
CPSC (1981). The hardware for swings, like many other
pieces of equipment, is most important. Open-ended hooks
such a "S" hooks can catch skin or clothing and should be
avoided. Exposed screws and bolts should also be avoided.
Protective caps to cover the screws and bolts should be
added. Sharp edges and/or points where parts fit together
are other hazards. Tape should be applied to these areas.
Improper anchoring is also a danger with swings.
Seesaws, merry-go-rounds and other related traditional
equipment have been found to be extremely limited in play
value as well as in physical development. For this reason,
safety precautions regarding this type of equipment will
not be addressed.

Guidelines and regulations.
In 1969, The Committee on Accident Prevention of the
American Academy of Pediatrics attempted to develop
playground equipment design standards for voluntary
adoption by industry. The brief standards which dealt with
children's outdoor home playground equipment were abandoned
in 1971 with the first draft. The Playground Equipment
Manufacturers' Association, a section of the National
School Supply and Equipment Association, developed a set of
proposed standards with the National Recreation and Park Association. These standards, which proposed technical requirements for heavy duty playground equipment regulations, were criticized by one of the members of the task force. In 1974, the Consumer Product Safety Commission received a consumer petition to develop mandatory safety standards for public playground equipment. The National Recreation and Park Association was selected to develop a draft standard. In 1976, when the Proposed Safety Standard for Public Playground Equipment was complete, CPSC contracted with the National Bureau of Standards (NBS) for additional technical work needed to revise the recommended standards. The NBS was also asked to develop a method for testing various surfaces commonly used under playground equipment.

Although the U.S. CPSC intended to have a mandatory set of safety standards for equipment, the Commission decided not to issue such a standard. Throughout the years, the evaluation of playground safety led the Commission to conclude that a mandatory rule alone would not adequately address the problem of playground injuries. Various factors such as the diverse ways equipment are used, the varying quality of supervision, equipment placement and maintenance all are involved in playground injuries (U.S. CPSC, 1981).
The Kentucky Day Care Regulations (1983) state that a protected outdoor area is required. The outdoor area must have sun and shade and be out of the traffic pattern of older children. The regulations also state (p. 11):

There shall be a fenced outdoor play area free from litter, glass rubbish, and inflammable materials and adequate in size to accommodate the number of children using the area at a particular time unless the Cabinet determines that fencing is not necessary for the protection of the children. The outdoor area shall be safe and drained.

The regulations continue to say that

There shall be safe play equipment in good repair, both indoors and outdoors to meet the physical and other developmental needs and interests of children of different age groups.

The Head Start Performance Standards (1975) state that one objective of the education component is to (p. 4)

Provide children with a learning environment and the varied experiences which will help them develop socially, intellectually, physically, and emotionally in a manner appropriate to their age and stage of development toward the overall goal of social competence.

The Head Start Performance Standards, like the Day Care regulations, require that (p. 11)

Where outdoor space borders on unsafe areas (traffic, streets, ponds, swimming areas) adults should always be positioned to supervise the children. If possible such areas should be enclosed.

A minimum of 75 square feet per child is required for the outside area. Both Head Start and Day Care regulations stress the maintenance of the outdoor area by stating that
it should be kept clean and inspected regularly for hazards.

Educating the parents, children and teachers.

The preparation of the grounds and equipment is one move toward a safer playground. Another step toward safety is the preparation of the people involved. The parents, children, and teachers should all participate in an educational program regarding playground safety.

The Head Start Performance Standards (1984) require that there be a comprehensive training program for parents. Including playground safety in this program should help them better understand the program's goals and actions, as well as provide for more safety measures when supervising their own child at home or on community playgrounds. Training can occur through printed materials, workshops and/or by utilizing other educational approaches.

The children who use a playground need to be taught safety rules. There are various curriculum resources such as "Play Happy, Play Safely Little Big Kids" and "Play Happy, Play Safely Playground Curriculum Approach," both from U.S. CPSC. Finding the degree of safety training that helps prevent accidents but does not stifle play and exploration requires skilled teachers.
Teachers need regular first aid and safety training because of the rate of changes in the medical field. Playground training for teachers involves safety but it should also include many other elements as well.

Conclusions.

Accidents reported on traditional play equipment are numerous and often serious. Preventative measures include, but are not limited to, improving the surface beneath equipment, improving the equipment itself, considering the best placement of each piece of equipment, using caution when installing equipment, regularly checking for safety, and adequately maintaining the playground. Educating the children, parents, and teachers regarding playground safety is another measure that should be taken.

Extension of Indoors

Even the playground designed to be developmentally appropriate and safe is of limited use unless the teachers are committed to the concept of outdoor learning. Dickerson (1977) said that (p. 14):

Children need teachers who are attuned to the value of outdoor play. They need teachers who are willing to make the effort that it takes to provide for good play. Most of all, they need teachers who have the skills to supervise, enhance and extend the play so that the greatest possible learning accrues from it.

According to Frost and Klein (1979) the adult supervising a playground must possess qualities that are more biological or intuitive instead of solely a result of
training. Characteristics such as warmth, love, and friendliness combined with a wide experiential base in areas such as gardening, nature, and carpentry are ideal for a free play outdoor supervisor. In addition, Frost and Klein say that the supervisor should get involved through talking, listening and questioning, yet not be obtrusive. A good supervisor should also share and plan with the children to make the environment and experienced their own. Frost and Klein also said that an effective supervisor is not one who stresses competition, sits under a tree and ignores them or restricts the children to keep them from getting dirty.

Brown and Burger (1984) addressed the recess syndrome that seems to be present in many outdoor playgrounds in educational settings. The time spent on the playgrounds seems to be viewed as a break period. It was observed that many teachers used it as a break away from children and interacted with them only when there were major disruptions such as children crying. It did not appear that teachers perceived the outdoor time as educational or an extension of indoors. The potential of outdoor educational environments could be developed much the same way that indoor environments are developed. It seems possible that introduction of materials and teacher involvement could enhance playground behaviors.
Frost and Henniger (1979) expressed a similar concern when they stated (p. 28): "The time spent outdoors cannot be considered a break time for teachers, but rather a new and exciting setting for stimulating children's learning and development." Frost and Henniger continued to state that the kinds of direction and guidance traditionally given indoors is also appropriate outside. Informal comments and modeling are two excellent ways to supervise outside play.

Another issue addressed by Frost and Henniger was that the finest play environment is of no consequence unless children are allowed time to utilize it. Children playing on European adventure playgrounds have more extensive experiences with climbing, jumping, swinging, balancing, judging, perceiving, and risk taking than the American children. The American children typically have 20 to 30 minutes of playground activity daily as compared to European children who have up to four hours. Time is not the only variant between the two settings as the type of equipment and activities also varies.

Henniger (1977) used a time sampling method and studied preschoolers outdoors and indoors. His conclusion was that both environments are valuable in stimulating various types of play. One environment should not be favored over another because the settings compliment one another by stimulating different important play types.
Perhaps realizing that there is significant value to outdoor time will help teachers overcome their recess syndrome. Overcoming this attitude may result in extended, more beneficial outdoor time periods.

Hymes (1981) recommended that teachers of young children follow the curriculum approach offered by colleges rather than elementary schools. "Colleges try to provide experiences in each of the four broad areas of knowledge: the humanities, mathematics and the sciences, the social sciences, health and physical education" (p. 98). Hymes continued to state that educators of young children should attempt to provide a balance between these areas but that many factors such as the school location and teacher's background are influencing factors, therefore, a perfect balance may not be possible or even desirable. The college has the advantage of having many specialist, but the teacher of young children is responsible for every subject. According to Hymes, every subject should be taught to young children, but the approach should be one that keeps the labels in the teacher's head and encourages children to cross subject lines while involved in active learning.

Focusing on an across subject line approach may help preschool teachers to overcome the idea that physical education teachers are the only ones to teach gross motor skills. It may also help them to identify areas other than gross motor skills that can be developed outdoors.
Summary

The traditional American playground has been found to be lacking in play value, developmentally inappropriate, and hazardous. The movement is away from the traditional and toward more child oriented environments. Although the development of gross motor skills remains important, the outdoor spaces can and should also contribute to children's cognitive development, communication skills, socialization, independence, and self-esteem. The new environments include playgrounds entitled contemporary, adventure, and creative. Many playgrounds are not pure forms of any of these but rather show a mixture of influences.

Play value can be influenced significantly by the type, placement and amount of equipment. Materials are also very important in stimulating various types of play. A balance seems to be the key in providing the optimal play experience. The type of equipment aids in the play value but also plays a crucial role in the safety issue. One primary concern is the surface underneath the equipment. Sand is the only acceptable surface. The types of hardware are also a main consideration for safety. Quality wood seems to be preferred over metal for most equipment. The weight of moveable items such as swings is also a primary factor in safety. Educating the parents, children, and teachers is also important to improving safety.
A safe and developmentally appropriate playground is useless unless the value is understood and time is allotted for its use. Committed teachers see the outdoor environment as an important learning experience and look for ways to extend the indoor classroom activities to the playground.

Numerous educators have compiled checklists to guide beginners in planning the comprehensive playground. These checklists include items regarding play value as well as safety (Esbensen, 1985; Frost & Klein, 1979; Lewis, 1985; and Lovell & Harms, 1985).
Overview

Included in this project are the playground curriculum and design based upon concerns for cognitive, social, and psychomotor development principles which is proposed for the Western Kentucky University Campus Child Care (WKUCCC) program. WKUCCC is licensed by the state of Kentucky to accommodate 48 child slots. Head Start is funded to serve 40 children with the additional eight slots for day care. A variety of child care schedules are available to meet the needs of the children and parents. Children may be registered for mornings only, afternoons only, or full day. In some instances, children are also allowed to attend Monday, Wednesday and every other Friday or Tuesday, Thursday and alternating Fridays.

Ninety percent of the children participating in the Head Start program must be below the federal poverty income guidelines. At least 10 percent of the Head Start population must have diagnosed handicapping conditions. Enrollment policies do not discriminate against children and their families due to race, sex, creed, national origin, or handicapping condition (Head Start Performance Standards, 1984).
The number of paid teaching staff at any particular point is dependent upon child enrollment. A minimum of one teacher for each 10 children is required and will be adhered to (Kentucky Day Care Regulations, 1983). Formal education is not a prerequisite for being employed by a Head Start or day care center.

Due to the goals and philosophy of WKUCCC, the classroom staff is composed of a multidisciplinary team. Although staff members are hired for a specific area of expertise, they will also be expected to serve as generalists in the classroom. The majority of the classroom staff are graduate or undergraduate students working with lead teachers. In addition to the paid classroom staff, numerous parent, student and community volunteers assist in the classroom and on the playground.

Objectives

Individual.

Each child enrolled in WKUCCC is administered a formal developmental assessment, a behavioral assessment, and a complete health examination. Observation notes are also recorded for each child. Parents have the opportunity to provide input regarding the educational needs for their child. Assessment data from agencies serving any child prior to WKUCCC enrollment is also requested. After a careful review of all data, individual objectives are written for each child.

In addition to the individual written objectives the staff is instructed to focus on sequenced skill levels. To
provide a comprehensive set of objectives, the WKUCCC will use the levels of Piaget's symbolization and mastery of elementary types of relationship principles. Symbolization is helping the child move from concrete to abstract. The three levels of symbolization are: index, symbol, and sign. Elementary types of relationships include logico-mathematical and spatio-temporal relations (Songquist and Kamii, 1967).

Class.

Since each child moves through the same stages only at different rates, it is possible to project the individual objectives (Charles, 1974). Although all children will not be working on an objective at the same time, the WKUCCC will utilize the objectives presented by Gallahue (1975) as a general guide for class objectives. Gallahue lists psychomotor, cognitive, and affective objectives as follows (pp. 2, 3, 4):

PSYCHOMOTOR OBJECTIVES

Opportunities for the development of movement patterns, movement skills, and physical fitness through participation in a variety of gross and fine motor activities should be provided.

Stimulate the development and refinement of locomotor movement abilities involving:
- crawling
- running
- jumping
- skipping
- hopping
- climbing
- sliding
- leaping

Stimulate the development and refinement of manipulative movement abilities involving:
- throwing
- catching
- kicking
- trapping
- striking
- volleying
- bouncing
- rolling
Stimulate the development and refinement of stability abilities involving:
  - static balancing
  - dynamic balancing
  - bending-stretching
  - twisting-turning
  - pushing-pulling
  - swinging-swaying
  - inverted supports

Stimulate the development and refinement of fine motor abilities through movement experiences involving various forms of small object manipulation involving:
  - grasping
  - squeezing
  - holding
  - lifting
  - placing
  - touching
  - turning
  - twisting

Stimulate development and maintenance of an enhanced level of fitness involving the elements of:
  - muscular strength
  - muscular endurance
  - circulatory-respiratory endurance
  - flexibility
  - power
  - speed
  - agility
  - balance

COGNITIVE OBJECTIVES

A setting conducive to the stimulation of cognitive abilities should be established and maintained.

Encourage the development of spatial awareness through movement activities that involve relationships between:
  - self and objects
  - self and others
  - objects and objects
  - others and others

Encourage the development of directional awareness through activities stressing:
  - left and right
  - up and down
  - in and out
  - top and bottom
  - front and back

Encourage the development of a time structure within children involving the elements of synchrony, rhythm, sequence

Enhance the development and refinement of perceptual abilities through a variety of
perceptual-motor experiences utilizing:
visual cues
auditory cues
tactual cues
kinesthetic cues
Stimulate the child's imagination through role playing in a variety of adventure situations such as:
airplane pilot
boat captain
space ship commander
submarine captain
Encourage problem solving through the use of a variety of equipment that requires an element of decision making for proper performance.

Provide opportunities for the reinforcement of a variety of academic concepts and their integration with concepts dealt with during the rest of the school day in the area of:
number concepts
language arts concepts
science concepts
social studies concepts

AFFECTIVE DEVELOPMENT

Opportunities for the development of acceptable forms of social and emotional behavior should be provided.

Provide opportunities for the release of excess energy and emotions in an acceptable manner:
striking activities
running area
jumping activities
climbing activities
Provide opportunities for the expression of emotions through:
dramatic play
adventure play
Provide activities that encourage the development of acceptable forms of peer relations involving:
taking turns
sharing
working together
Encourage enhancement of self esteem through:
pseudo-dangerous activities
challenging activities
self-reinforcing activities
According to Hurlock (1972), the development of motor skills and body control is necessary for total development of each child. Hurlock states that there is a significant relationship between motor development and the social and intellectual progress of children. Cratty's (1972) research indicates that skills such as running and jumping are helpful to children in learning number and science concepts. The psychomotor, cognitive, and affective domains often overlap (Gallahue, 1975).

The British primary school movement beginning during World War II utilized an interdisciplinary approach. In the United States, this movement is often labeled "open education." The British primary schools seem to combine organizational patterns and philosophies of instruction. The British primary schools are characterized by a strong commitment in philosophy and practice to the combined influences of John Dewey and Jean Piaget. This is characterized by classrooms providing interactions with the environment. The British primary schools perceive subject matter as an avenue for facilitating interaction and providing experiences (Ragan and Shepherd, 1977).

Advisory committee.

Gallahue's (1975) objectives will be used as a general class guideline. However, they will also be used to guide the advisory committee in designing the initial playground equipment. In addition to Gallahue's objectives, Rohane's (1981) taxonomy of playground settings can be useful to the
advisory committee. Rohane's taxonomy, which is similar to the psychomotor, cognitive, and affective domain objectives provided by Gallahue, focuses on interaction with the environment. Rohane's settings include opportunities for child/people interactions, child/biotic activities, child/ambient experiences and child/spatial relations.

The following goals were established by the WKUCCC staff for use by the WKUCCC playground advisory committee in designing equipment:

1. Consider all areas of the child's development, as we are a comprehensive child development center.
2. Include a balance of equipment types in order to encourage all categories of play.
3. Provide a variety of loose parts and materials for the children to manipulate.
4. Include a balance between too much and too little equipment in order to encourage play with materials and social interaction. It is our purpose to help children learn appropriate techniques for resolving problems, not avoid all conflicts.
5. Incorporate storage units into all available pieces of equipment.
6. Provide a safe environment but also allow for challenge.
7. Utilize all available donated manpower and materials.
Summary.

Goals and objectives are part of an overall cycle. After assessments, goals or objectives are identified. The environment and activities are then designed and prepared to meet identified needs as they pertain to the goals and objectives of the program.

Curriculum Methodology

Introduction.

The objectives and methodology are of particular importance to the WKUCCC playground curriculum and design. The focus of the curriculum is on the framework rather than specific activities. One disadvantage of utilizing such a curriculum is that it cannot be learned quickly and teachers must be in long term continuous training (Hohmann, Banet & Weikart, 1979). The primary advantage of using this approach is that the focus is on child development and process rather than child products or teacher presentations. Another advantage is that it allows the teaching staff members to utilize their creativity, interest, and skills to incorporate topics and activities of their choice without altering the established goals and objectives.

The framework consists of teaching strategies used with the children as well as the strategies teachers utilize in preparing the environment for the children. Strategies regarding activities and the environment are based on developmental theory to construct an educational framework especially for children functioning in Piaget's
preoperational period.

The curriculum strategies for working with children include the primary teaching approach, grouping, scheduling, subject matter, teaching units, team teaching, safety, and supervision. Each of these areas relate to one another and together provide an overall approach for working with children.

Inquiry.

The primary teaching approach proposed for use by the WKU Campus Child Care program is one of inquiry. Inquiry includes the processes of exploration, invention, and discovery. Exploration involves the potential learner in sorting, identifying, and labeling that which is familiar. Invention occurs as a result of exploration. The invention process includes describing, explaining, classifying, and hypothesizing. The discovery process is the testing of the inventions (Ragan & Shepherd, 1977).

Piaget's cognitive development theory has been chosen to provide guidance for the teachers in facilitating inquiry. In planning for exploration, the environment will be equipped with objects familiar to the children. Demonstrations and discussions emphasizing what things are and how they work will occur. During the invention process the teachers will emphasize the learners choosing and displaying inventions. The teachers will encourage the children to test their inventions in the discovery phase. The facilitator must stress appropriate developmental
behaviors. The inquiry method is most successful when the cycle is repeated several times. Cycling is similar to Piaget's disequilibrium (Ragan & Shepherd, 1977).

The role of the teacher in the inquiry method is to provide an appropriate physical and emotional environment. Providing materials, encouragement, demonstrations, stimulating ideas, and questions is the teacher's role as the facilitator of learning. Open-ended questions, which have a number of possible answers, facilitate learning. Helping children to extend their experiences, solve problems, and see new possibilities through open-ended questions is an important part of the teacher's role as facilitator. Open-ended questions can solicit a wide range of thoughts and feelings.

Open-ended questions can be asked to address each of the cognitive domain categories; but according to Whittmer and Myrick (1974), over 90 percent of the questions that teachers ask deal only with the recall of cognitive knowledge. In addition to knowledge, questions regarding comprehension, application, analysis, synthesis, and evaluation will be asked in the WKUCCC program.

Piaget's clinical approach to researching children's cognitive development involved questioning (Stone, Church & Church, 1984). Children's reasoning and thoughts regarding concepts were more important than the "right" or "wrong" answers. Since the word "why" connotes disapproval children will often become defensive when questions begin
with the word "why." Open-ended questions could begin in the following ways: How do you feel about...? What made this happen? How do you think this happened? What can you tell me about...? What are some different ways you could...? When did you decide to...? or How did you decide to...?

Some of these questions may provide information regarding the children's levels of thought. The tone used by the teachers, as well as the words, will create comfort or defensiveness, therefore, care will be given to support the comfort level of the children. Through skilled questioning techniques the inquiry learning approach of exploration, invention, and discovery will be enhanced.

The teachers may on occasion utilize approaches other than inquiry, however, those times should be limited. Special needs children who would benefit more from a structured and direct approach will have less inquiry time scheduled.

Grouping.

Children will work individually, in small groups, and with the entire class. The grouping may be determined by the teacher or the children. A variety of criteria such as skill, age, gender, and interest will be used when the teacher groups the children.

Grouping by skill will include placing children together who are working on the same or similar skills. If children are working on an identical skill they can
participate in a group activity where all children are doing the same task. This approach does not meet learning style preferences and, therefore, will not be used often. If children are working on similar skills, such as fine motor, they can work with the same materials but use them in different ways. For example, clay might be squeezed and pounded by one child who is still exploring properties. The clay may be rolled and cut into cookies by another child who is learning about the functional uses of materials. The clay may be made into cookies and served by a child learning about imagination. This multilevel approach to skill grouping will be utilized regularly.

Behavioral grouping may include placing students together to combine appropriate and inappropriate behaviors. For example, an active child who does not appear to pay attention to teacher directions, will be grouped with a child who has a high level of attending skills and can serve as a model. This approach will be used to some degree. The grouping by behavior approach, which will be used to a greater degree, is to place all children having similar difficulties together and plan an activity appropriate for their level.

Age grouping will occur to help children identify their age and to give them the opportunity to work in different groups. Since the WKUCCC program has a developmental focus, age will not determine the complexity level of group activities. It will not be assumed that all
three year olds are functioning lower than four year olds. Age grouping will include the opportunity for children to work with those of the same age sometimes and of different ages at other times.

Gender grouping will be implemented in a similar manner as age grouping. It will not be assumed that boys can build better block structures and that girls can be better caretakers of the dolls. At times children will be arranged in a group with those of the same gender and other times children will be in mixed groups.

Interest grouping will be planned based on teacher observations. Children who have shown an interest in a specific topic or material will sometimes be placed together so that they can share their interests. Children will also be asked to work with children who have different interests in order to encourage new interests.

Planning the schedule to include various grouping techniques provides a wide range of experiences for children. The children will have the opportunity to select the groups in which they want to work a majority of the time. By varying the criteria for grouping, and the responsibility of it, children will be allowed to experience elementary types of relationships.

Scheduling.

It is the policy of WKUCCC that every child participate in the scheduled playground time unless written documentation from a medical doctor states that the child
should not. Outdoor time is considered an important part of our day, and generally children who are too sick to participate are too sick to be away from home. Since the policy is to go outside daily unless weather is severe, appropriate dress is necessary. Teachers will refer children in need of appropriate clothing to the family services coordinator. The family service coordinator will then obtain clothing for the child.

The amount of time children will have to participate will depend upon the schedule for which that child is registered. It is recommended that a minimum of one hour is scheduled for each morning, and another hour is scheduled for each afternoon (Leeper, Dales, Skipper & Witherspoon, 1968). The teaching staff has the option of extending the hour as the need to do so is determined. The exact hour will be determined by the teaching team at the beginning of each year and modified as the need arises. The playground may be used by an individual child, a small group, or the total class.

**Subject Matter.**

The subject matter for the WKUCCC program will be interdisciplinary as recommended by Hymes (1981). Skills that overlap many subject areas will be given greater consideration than the isolated categories. One example of a curriculum which focuses more on the concepts than the subject labels is High/Scope's Cognitively Oriented Curriculum (Hohmann, Banet & Weikart, 1979).
The High/Scope Foundation has derived approximately 50 "key experiences" to serve as guideposts for planning and evaluating developmentally valid programs for young children. The categories of key experiences include active learning, using language, representing experiences and ideas, developing logical reasoning, and time and space understanding. These key experiences form the basis for the High/Scope Cognitively Oriented Curriculum. Key experiences are interrelated and should be integrated into any active learning experience. One example of a spatial relations key experience activity, which integrates learning, would be providing children with string, glue, and paper to make roads of their choice. Active learning experiences can be extended through Piaget's index and symbolic modes of representation. An example of extending the spatial relations activity described above could include providing a small toy animal at one end of the paper and a house for the animal at the other end. The concrete objects would provide an index level extension. Another method of extension includes providing the same or similar materials for children to use during their free choice, scheduled at a different time. The key experiences are not goals to be achieved and then forgotten, but rather an ongoing effort that is repeated in different forms (Hohmann, Banet & Weikart, 1979).
Unit approach.

A unit approach will be utilized to some degree for introducing topics. The unit will not be correlated throughout the day because that would limit child choices and discourage spontaneity. Using the unit to introduce concepts should help unify the teaching teams' general focus and provide a foundation of knowledge that can be built on throughout the year. Many of the units, such as Safety, will extend throughout the year.

Units related to the psychomotor, cognitive and affective domains will be considered. Units regarding child/people interactions, child/biotic activities, child/ambient experiences, and child/spatial relations will also be considered. Possible units include:

<table>
<thead>
<tr>
<th>August</th>
<th>September</th>
<th>October</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>Self</td>
<td>Autumn</td>
</tr>
<tr>
<td></td>
<td>Plants</td>
<td>Machines and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tools</td>
</tr>
<tr>
<td>November</td>
<td>December</td>
<td>January</td>
</tr>
<tr>
<td>Food</td>
<td>Winter</td>
<td>Snow</td>
</tr>
<tr>
<td>Animals</td>
<td></td>
<td>Day and Night</td>
</tr>
<tr>
<td>February</td>
<td>March</td>
<td>April</td>
</tr>
<tr>
<td>Others</td>
<td>Wind</td>
<td>Rain</td>
</tr>
<tr>
<td></td>
<td>Spring</td>
<td>Insects</td>
</tr>
<tr>
<td>May</td>
<td>June</td>
<td>July</td>
</tr>
<tr>
<td>The Sky</td>
<td>Summer</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Camping</td>
</tr>
</tbody>
</table>

The above units are only suggestions. The specific topics and timeframes will be determined by the teaching team at the beginning of each school term. A variety of resources
can be used to determine the units and select specific activities.

Team teaching.

The teaching team as a unit will be responsible for the outdoor time scheduled and the upkeep of the physical environment. Each teacher will be responsible for interacting with children and being an active participant in the experiences, thus, a comprehensive understanding of Piagetian principles is required. In addition to reactive involvement, teachers will, on a rotational basis, be responsible for having prepared activities to share with children who are interested. The preparation and upkeep of each outside learning area will be shared on a rotational basis. General supervision of the playground will also be shared. Assignment sheets will be filled out at the beginning of each biterm by the classroom coordinator, who is the team leader, with input from every team member. The assignment sheets will be copied and distributed to each teacher and posted in the classroom. Teachers will discuss the goals, plans, problems, and accomplishments of the outdoor time at each weekly staff meeting. The monitoring of the progress of individual children will also occur during the staff meetings. The time allotted will be determined based upon need.

Safety.

The physical environment will be briefly checked daily for safety hazards. Any potential hazard which can
be eliminated immediately will be by the team member discovering the problem. It will then be documented on the form provided. Any problem which needs attention, but cannot immediately be solved, will be reported on the form provided and given to the classroom coordinator who will immediately take appropriate action. A thorough inspection of the playground area will be conducted monthly by the classroom coordinator or other designated team member.

**Supervision.**

Safety hazards can be kept to a minimum with regular inspections of the physical environment and appropriate supervision techniques. The number of children being supervised by one adult will be equalized, unless the danger of one activity exceeds another. Teachers and volunteers supervising the playground will keep eye contact with the children. The adults' backs should be against the fence whenever possible. Observing areas other than the designated one will allow adults to see signals from other teachers. Adults will be positioned throughout the playground and near areas where safety is a greater concern. Children will be reminded regularly about safety but allowed to take healthy risks and use materials creatively (Flemming, Hamilton & Hicks, 1977).

**Summary.**

The success of the inquiry method is dependent upon numerous factors. The child grouping, schedule, approach
to subject matter and unit teaching all have an influence. The teaching team is crucial in implementing the curriculum approach. In addition, safety and supervision are considered basic to the playground curriculum.

Design

Introduction.

The arrangement of space is important for encouraging children to explore, invent, and discover. The outdoor space arrangement for WKUCCC will include the following areas: sand and water, a tire swing, a bridge, a tunnel, a vehicle path, an A-frame climber, a climbing structure, a playhouse, a platform, storage units, an open space for children to gather, mounds, balance steps and beams, a living space, and loose parts (see Appendix A for detailed plans). All equipment will be located within a four foot high, green vinyl covered, nine gauge chain linked fence. The space allotted is 50' x 100'.

The environment will be arranged to encourage activities sequenced for the class as well as individual children, from concrete to abstract, simple to complex, and present to remote in time and space as suggested by Hohmann, Banet & Weikart (1979). Safety considerations will also be a high priority in the arrangement of the equipment.

The actual cost for materials will vary greatly depending upon the amount of donated materials and services received. It is estimated that the materials for
the proposed equipment will be under $1,000.00. Table 1 reflects a playground cost analysis.

Sand and water.

Sand and water play will be available indoors as well as outside. Inquiry will be encouraged through the questions asked and loose parts provided, such as funnels, sifters, and pans. The actual objects provided will slowly become more open-ended to encourage the use of symbols. Labeling the objects and children's inventions will help move children toward the sign stage. The manipulation of the medium will provide experiences to assist children in grasping elementary types of relationships. They will be able to group and order loose parts in their play and when they return them to their labeled place at cleanup time.

The sand box will be a five-sided wooden container with each side being six feet in length. The container will be approximately 18 inches deep with 12 inches of sand. The six inch clearance should prevent sand loss. The sand will be replenished as needed and as funds or donations allow. The box will be placed in a shaded area to prevent the sand from becoming too hot. The shade will be provided by a deciduous tree rather than an evergreen tree since an evergreen tree would limit the winter sun.

Water play will be provided in a variety of ways. There will be tubs of water varying in size added from time to time. During warm months, a child size portable
## Table 1

**Playground Equipment Cost Analysis**

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Projected Construction Materials Cost</th>
<th>Cost of Similar Preconstructed Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand Area</td>
<td>$75.00</td>
<td>$300.00</td>
</tr>
<tr>
<td>Tire Swing</td>
<td>$2.00</td>
<td>$435.00</td>
</tr>
<tr>
<td>Tunnel</td>
<td>No cost</td>
<td>$200.00</td>
</tr>
<tr>
<td>Bridge</td>
<td>$169.00</td>
<td>$2,500.00</td>
</tr>
<tr>
<td>Vehicle Path</td>
<td>No cost</td>
<td>$298.00</td>
</tr>
<tr>
<td>A Frame Climber</td>
<td>$60.00</td>
<td>$400.00</td>
</tr>
<tr>
<td>Climbing Structure</td>
<td>$383.00</td>
<td>$3,000.00</td>
</tr>
<tr>
<td>Platform and Storage Unit</td>
<td>$163.00</td>
<td>$350.00</td>
</tr>
<tr>
<td>Earth Mound</td>
<td>No cost</td>
<td>$60.00</td>
</tr>
<tr>
<td>Balance Steps and Beams</td>
<td>$50.00 each</td>
<td>$100.00 each</td>
</tr>
</tbody>
</table>

**TOTAL**                    | $902.00                                | $7,643.00                           |

**Note.** Installation fees are not included in either cost estimate. Ground cover is also omitted from each estimate. Volunteer building labor influences the construction cost. Items which were donated were listed as no cost.
swimming pool will be included on the playground. Water jugs will also be used for watering the plants and animals.

Sand and water allow for open-ended use. Therefore, each of Piaget's stages of play—functional, symbolic, and games with rules—could be represented. See the following list for sample activities. These are only ideas and play should not be limited to them. Teachers as well as children will be able to generate others.

**SAND**

- Place a small box or pan of sand out for the children to write numerals or letters, and to draw shapes and pictures (symbolization: symbol level—making representations).

- Provide books and magazines for the children to search through for pictures of sand in deserts (symbolization: symbol level—recognition of objects in pictures).

- Encourage the children to make various musical instruments with sand. They may try gluing it to blocks for sand blocks or putting it into containers and shaking (symbolization: symbol level—use of objects to represent other objects).

- Place sand, measuring spoons and cups out for the children to explore. Count how many spoonfuls equal one cup (elementary types of relationships: logico-mathematical—ordering).
- Use sand instead of dirt to sprout plants such as beans or potatoes (symbolization: index level).

- With the children, make an hourglass and watch the sand slip from top to bottom. Talk about the concepts of top and bottom (symbolization: index level, symbol level--use of objects to represent other objects, and sign level).

- Place an old flour sifter near the sand and encourage the children to experiment with it (symbolization: index level).

- Make small sandbags that can be used for playing toss games (elementary types of relationships: spatio-temporal--spatial reasoning).

- Place large toys in the sandbox for the children to use during free play. Vary the toys from time to time (symbolization: index level).

- After playing in the sand, use a little time to clean up, talking with the children about good habits of personal hygiene (symbolization: sign level).

- Put some sand in a large container (sand table or wash tub) for children to experiment with. Hide different play materials in the sand every day and let the children find them. Some examples of hidden play materials are spoons, paper cups, trucks, and magnifying glasses (symbolization: index level).

- Prepare cards for children to work with by gluing sand in the shape of letters, numerals, and shapes onto
poster board. Parents who cannot volunteer classroom time could prepare these at home if the teacher supplies the materials and directions (symbolization: symbol level--recognition of pictures).

- Use tempera paint to color the sand different shades. Let the children mix the sand and then discuss the changes that occur (symbolization: sign level; and elementary types of relationships: logico-mathematical and spatio-temporal).

- Visit places where sand is found or where it is used, a concrete company, for instance. Invite parents to go with you (symbolization: index level).

- Provide various substances such as water, salt, flour and sugar to mix with the sand for discovery experiments. Discuss the changes (symbolization: sign level; and elementary types of relationships: spatio-temporal).

- Encourage the children to make sandcastles. Encourage them to make small, medium-sized and large ones. (elementary types of relationships: logico-mathematical).

- Ask questions about the sandcastles that facilitate verbalization (symbolization: sign level).

- Make sand pies. Talk about foods that feel like the sand. Make both thick and thin pies, as well as large and small ones (symbolization: sign level; and elementary types of relationships: logico-mathematical--ordering).
- Provide sandstone rocks and encourage the children to fill up a sand box by beating them together (symbolization: index level).

- Ask the children how many uses of sand they can think of. Provide pictures of sand as a play material, as a building material, and as the stuff that beaches and deserts are made of (symbolization: symbol level—recognition of pictures, and sign level).

WATER

- Have the child draw a card from a prepared stack with numerals on them. Then using an eyedropper, have the child drop the same number of drips into a container (elementary types of relationships: logico-mathematical—ordering).

- Ask the children if they can tell you about what lives in water. Expand the activity by examining water, talking to people about what lives in water, and looking in books to learn about water and water-dwellers (symbolization: sign level).

- Fill one balloon with water and another with air. Talk about the differences in the two—in weight, in shape, and in the way they feel (elementary types of relationships: logico-mathematical—grouping).

- Measure and explore the difference in one cup and one-half cup of water. Measure to see how many cups of water it takes to fill a gallon container, or a half-gallon container. Ask the children which container holds more and
less using water as a focal point. Ask parents to save throw away containers to use for measuring and dipping water (elementary types of relationships: logico-mathematical--grouping).

- Taste cold water, then warm and hot water. Taste water with sugar, salt, vinegar, and vanilla (symbolization: index level).

- Put different amounts of water into sealed containers and shake for a musical sound, or fill glasses to various degrees and strike their rim lightly with pencils to create music (symbolization: symbol level--representation of objects with other objects).

- Use the eyedropper and drop water onto different kinds of surfaces to see if it is soaked up or repelled. Try surfaces like rubber, plastic, sponge, wood, clay, feathers, wax paper, and cloth (symbolization: index level).

- Follow a stream of water to find out where it began. Ask the children how they think the stream began (symbolization: sign level).

- Discuss the many uses of water. For instance, we use water to bathe, to drink, to clean clothes and the house, and to water plants and animals (symbolization: sign level).

- Put out many objects for the children to experiment with to determine what will sink and what will float, for instance, wood, cork, metal sinkers, a penny, and a rubber
eraser (symbolization: index level).

- Each day, provide different substances for the children to mix with water and experiment with results. You may choose to use flour, sugar, oil, soap, sand, dirt, paint, and food coloring (symbolization: index level; and elementary types of relationships: logico-mathematical--grouping).

- Place some ice in a tray and watch it melt then put it back in the freezer and re-freeze it (symbolization: index level).

- Freeze water tinted with food coloring to make ice cubes of different colors. Taste the ice to see if there is a difference with regular ice (symbolization: index level).

- Wet construction paper and then write or draw on it with chalk (symbolization: symbol level--making of representations).

- Paint colored construction paper with water and watch it fade as it dries (symbolization: index level).

- Visit as many different places as you can to see different uses and sources of water. Ask parents to go with you. Some parents may know places to visit -- farm ponds, creeks, streams, springs, and rivers (symbolization: index level).

- Boil a potful of water. Watch and feel, from a safe distance, the changes that occur (symbolization: index level).
- Provide various objects for the children to wash (symbolization: index level).

- Provide a variety of containers for children to pour water into and out of (elementary types of relationships: logico-mathematical--ordering).

- Provide water, measuring spoons, and cups for the children to experiment with (elementary types of relationships: logico-mathematical--ordering).

- Talk about snow, where it comes from, and where it goes (symbolization: sign level; and elementary types of relationships: spatio-temporal).

- Use a bucket of water and provide small objects such as beans, and let the children put a handful in and pick out one at a time, or add one at a time (elementary types of relationships: logico-mathematical--ordering).

- Let the children use a sponge to dip into water and squeeze into a glass or cup. Count how many squeezes it takes to fill the container (elementary types of relationships: logico-mathematical--ordering).

Many of the sand and water experiences involve the index level because of the manipulation element included. The index level can be extended through open-ended questioning and demonstrations.

**Swing.**

A tire swing will be available on the playground. The swing will require climbing skills and will allow for socialization. The movement on the swing will allow the
child to experience left, right, forward, backward and other motions. This experience is on the index level. The child may also use the swing to symbolize other modes of transportation. Labeling the swing and writing experience stories will contribute to the sign stage. As various children choose to play on the swing together they will experience grouping, one of the first types of elementary relationships. All three of Piaget's stages of play may be experienced on the tire swing. However, it probably lends itself more toward functional and symbolic than games with rules.

A minimum clearance of 18 inches between the swing and nearby components will be provided (U.S. CPSC, 1981). The swing will be placed away from other equipment and out of the primary traffic flow path. The tire swing will be hung using one-half inch nylon rope, which will hold up to 3,000 pounds (Frost & Klein, 1979). The lowest part of the swing will be 12 inches from the ground. Holes will be drilled in each tire to allow for water drainage.

**Tunnel.**

A tunnel on the play space will allow children to physically experience over, under, through and other places in their environment. It can be used for functional play by individual children or symbolic play by an individual or small group of children. On occasion it will also become a part of an obstacle course for the total group to move through, over or beside. The actual experience will
provide index level activities and will allow for symbol level events. Labeling the tunnel will provide a sign stage experience. In addition to labeling the tunnel, the sign stage will be addressed through stressing verbalization concepts.

The tunnel will consist of 10 truck tires bolted together and buried up to the white walls (Frost & Klein, 1979). Tires are being used due to the safety hazards of concrete and metal tunnels.

**Bridge.**

A suspension bridge will be incorporated into the playground. The bridge will aid in the children's development of elementary relationships of spatial and temporal relations. When the bridge is being used as a part of an obstacle course, it will serve to provide the opportunity for a game with rules, Piaget's third level of play. During free choice time children will use the bridge in Piaget's first and second levels of play: functional and symbolic. Children using the bridge in functional play are still becoming comfortable with their skills. They will probably go over it repeatedly. After children are confident of their bridge crossing skills, they are likely to invent imaginative games that include crossing the bridge. They may make-believe they are one of the three billy goats gruff or another character they have heard about.
A tire climber on one end of the bridge will provide an entrance way. A ramp on the other end of the bridge will provide an alternate route. The bridge will be approximately four feet off the ground to provide the opportunity for children to go under the bridge as well as over it. This encourages children to see different perspectives which will aid them in moving away from egocentrism. The space under the bridge entrance may be used as a playhouse if the children choose. For safety reasons, side rails will be placed on each side of the bridge.

**Vehicle path.**

A campus sidewalk located beside the playground will be used as a vehicle path. It is triangular shaped and 108 feet in circumference. There is a place off the sidewalk and in the center of the triangle to park vehicles temporarily. The triangle is located fairly close to a temporary parking space, therefore close supervision is required. A physical barrier, such as a sawhorse or tire, will be placed at the point closest to the parking place as a barrier reminder to the children. In addition to the triangular sidewalk, other close-by walks will be used on occasion. The building where the classroom is located has a porch that circles half of the building. Some of the porch is covered and may be used for vehicle riding in rainy weather. The porch flooring is tile and concrete with pebbles, which will offer various riding experiences.
This activity will provide an index level experience. The teachers will extend the experience by facilitating verbalization through questions regarding the textures. There is a ramp from the building for easy access to and from the sidewalks.

A space within the fenced playground will not be paved for a vehicle path at this time. On occasion, children will be allowed to ride inside the fence in designated areas. Consideration has been given to where a path might be added in the future. The addition will be based upon need and funds available.

The vehicles will include two heavy duty tricycles, one irish mail, one rickshaw, a scooter, and a wagon. This range of vehicles provides the opportunity for children to ride alone or with a friend. The vehicles also vary in difficulty level. Other vehicles will be added as the budget permits. A variety of dramatic play props will also be available to the children.

Symbolic play will be encouraged through the props provided. Teachers will observe and listen to children in an effort to assess the props selected for use. Children will be encouraged, through questions, to use language with their symbolic play. An introduction to games with rules will be made by the traffic flow directions and other vehicle regulations. Some props will be concrete objects for functional use on the index level, while others will be open-ended allowing for symbolic play. Road signs will aid
in the sign stage of symbolization. The spatial relations should also be enhanced through experiences with vehicles.

**A-frame climber.**

An A-frame climbing structure approximately five feet high will be provided. The A-frame will be a wooden structure which will encourage use of legs and arms to climb to the top. The section underneath can be used as a playhouse if the children choose. Both functional and symbolic play can occur on this piece of equipment. When it becomes a part of the obstacle course it will provide an opportunity to play a game with rules.

**Climbing structure and playhouse.**

A combination climbing structure and playhouse will be included on the playground. The structure will provide the opportunity for climbing and role playing. The climbing will be primarily functional play and safety rules will be an important factor in play. The playhouse will encourage symbolic play. The playhouse will also assist in the development of grouping and ordering. The climbing will encourage development in spatial and temporal relations.

The climbing structure, predominantly wooden, will be located on a sand surface for cushioning falls. The sand will be at least eight inches deep and will be contained by railroad ties. There will be several ways to climb to the top: a ladder, a cargo net, and platform steps. To exit, the children will be able to use the ladder, cargo net, and platform steps, as well as other avenues. Temporary exits
such as ropes, slides, and other loose parts will be added from time to time. A playhouse will be incorporated into the bottom of the climbing structure. Various housekeeping props such as pots, pans, dolls, and dress up clothing, will be provided to encourage sociodramatic play.

**Platform and storage unit.**

A platform will serve as a stage and storage unit for playground loose parts and vehicles. The platform may also be used as a playhouse area. The stage will be accessible by stairs. Each end will open, and a pull out cart will house numerous items available to the children. The back section of the platform will open for purposes of parking vehicles. The stage floor will be four feet high. Rails around three sides will help prevent accidents.

The stage will encourage dramatization and symbolic play. Writing the scripts that children develop or the names of their plays will aid in the sign stage development. Being on stage should also help children gain an awareness of spatial relations. Putting vehicles and loose parts under the stage will continue the development of spatial relations as well as help in temporal reasoning, grouping, and ordering.

**Open space.**

The stage will face an open space used for the children to meet during group times. This space will be in the central part of the playground and will comfortably accommodate all children at once. The open space will be
without any stationary equipment and will be used for a variety of purposes. The purposes will include, but will not be limited to: gross motor independent play, teacher directed music and movement activities, story time, and a meeting place.

The open space will be available for children to independently participate in stability, locomotion, and manipulative psychomotor activities. These child initiated activities will encourage functional and symbolic stages of play. Adults will be available to lead children in games with rules if the children are interested.

On a limited basis there will be teacher directed activities for small groups or the total class. Small group and total class activities will provide the opportunity for children to use their bodies to represent objects, and noises to represent those objects' sounds. The teacher directed activities will lean toward the play level of games with rules, however, individual abilities and creativity will be considered. For example, children may be asked to move like a rocking chair, bird, worm, tree in the wind, a cloud floating, blade of grass growing, and so on. There will be some rules but some freedom as well. On occasion, all children may be asked to participate in this type of teacher directed activity, but the majority of the time will be spent in free choice activity.
During story time, which is also teacher directed but allows for children's participation, the symbol and index stages of symbolization will be represented. The open space will also be used for small groups and the total class to meet for discussion and planning times. The open space will have a surface of grass. It will have some sunny and some shady spots.

**Mounds.**

Across from the platform will be a grassy earth mound. When funds allow, the single mound will be joined by mounds of varying sizes and shapes circling the open space. The mound boundary will keep balls and similar loose parts confined. They will also provide natural climbing opportunities for the children. The mound(s) will be used as a natural stage for children as well as adult performers. The boundaries will also clearly define the meeting space.

**Balance steps and beams.**

The balance steps will be made from tree stumps, cut railroad ties, and utility poles. The various materials will be accompanied by various sized steps. In some spaces the steps will be ordered lowest to highest, but some areas will include an up and down pattern. The steps will be a stationary part of the playground. However, loose parts will be used to construct temporary balance beams and steps. The balance area will become a part of an obstacle course on occasion. The group obstacle course would
require following rules but there will also be time for functional and symbolic play. Children will be able to develop index and symbol levels of symbolization. With each step measured and labeled according to height, the sign level will also be incorporated into the area.

Living space.

The playground currently has two deciduous trees within the fenced area. There are several trees, both deciduous and evergreens, located close by but outside the fence. A hedge, located just outside the fence, runs the length of one side. The living space will be expanded to include areas for a garden and animals. The digging and garden area will be introduced by allowing exploration first. When seeds and bulbs are planted, pictures will be used to mark the expected product. This should be helpful in developing skills at the symbol level. When it is possible, a real flower, plant, vegetable, or fruit will also be shown with the picture. Adding words to the picture will help children ready to work at the sign level.

The growth of the plant will also assist children in their development of elementary types of relationships: logico-mathematical and spatio-temporal relations. The spatial reasoning of the seed being under the ground and the plant being on top of the ground will be demonstrated through plant growth. The time that it takes to see the sprout will be charted so the children can see the temporal
reasoning of before and after or first and second. As the plants continue to grow, concepts of grouping and ordering will occur with the plants and their blooms and/or produce. See Table 2 for a list of recommended Kentucky crops.

The flower garden will continue to expand each year. The initial planting will include various perennial plants in order to develop a foundation on which to build. As much of a variety as possible is planned in order to provide a broader learning experience for the children. The flower garden will include lily of the valley for its fragrance. Flowers such as tulips will be included for cutting. Snapdragons will be planted to attract humming birds. Dahlias will be included to attract monarch butterflies. Yuca will be planted as a succulent sample (York, 1981).

Hardy bulbs will be planted and left in the ground for the children to be surprised by. Tender bulbs will be planted and after they bloom, children will dig them up and store them for the next year. Some flowers will be grown from seed while others will begin as bedding plants. The exact number and specific plants will depend upon the budget and donations received. See Table 3 for a list of flower planting and blooming times.

Care will be given to avoid all poisonous plants. Lists have been obtained from the Red Cross and the Kentucky Poison Center. These lists are kept on file for reference. Each year the classroom coordinator will check
<table>
<thead>
<tr>
<th>Crops</th>
<th>Early Planting Date</th>
<th>Late Planting Date</th>
<th>Days To Maturity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asparagus (crowns)</td>
<td>Mar 15</td>
<td>Nov 15</td>
<td>second season</td>
</tr>
<tr>
<td>Beans (snap)</td>
<td>Apr 25</td>
<td>July 25</td>
<td>60-65</td>
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<tr>
<td>Beans (lima)</td>
<td>May 1</td>
<td>June 20</td>
<td>65-90</td>
</tr>
<tr>
<td>Beets</td>
<td>Mar 15</td>
<td>July 20</td>
<td>70-75</td>
</tr>
<tr>
<td>Broccoli (plants)</td>
<td>Mar 20</td>
<td>Aug 1</td>
<td>60-70</td>
</tr>
<tr>
<td>Cabbage</td>
<td>Mar 10</td>
<td>July 15</td>
<td>60-70</td>
</tr>
<tr>
<td>Carrots</td>
<td>Mar 20</td>
<td>July 15</td>
<td>80-90</td>
</tr>
<tr>
<td>Cauliflower (plants)</td>
<td>Mar 10</td>
<td>July 1</td>
<td>70-80</td>
</tr>
<tr>
<td>Celery</td>
<td>Apr 5</td>
<td>July 1</td>
<td>100-130</td>
</tr>
<tr>
<td>Chard</td>
<td>Mar 20</td>
<td>July 14</td>
<td>55-60</td>
</tr>
<tr>
<td>Collards</td>
<td>Mar 10</td>
<td>Aug 1</td>
<td>80-90</td>
</tr>
<tr>
<td>Sweet Corn</td>
<td>Apr 20</td>
<td>July 10</td>
<td>70-80</td>
</tr>
<tr>
<td>Cucumbers</td>
<td>May 1</td>
<td>July 1</td>
<td>50-65</td>
</tr>
<tr>
<td>Eggplants (plants)</td>
<td>May 10</td>
<td>June 15</td>
<td>60-75</td>
</tr>
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<td>Mar 20</td>
<td>Aug 1</td>
<td>70-80</td>
</tr>
<tr>
<td>Kohlrabi</td>
<td>Mar 20</td>
<td>Aug 1</td>
<td>60-70</td>
</tr>
<tr>
<td>Lettuce (leaf)</td>
<td>Mar 25</td>
<td>Aug 15</td>
<td>50-60</td>
</tr>
<tr>
<td>Lettuce (bobb plants)</td>
<td>Mar 25</td>
<td>Aug 1</td>
<td>50-60</td>
</tr>
<tr>
<td>Muskemels</td>
<td>May 10</td>
<td>July 1</td>
<td>75-90</td>
</tr>
<tr>
<td>Okra</td>
<td>May 10</td>
<td>July 15</td>
<td>60-70</td>
</tr>
<tr>
<td>Onions (sets)</td>
<td>Mar 10</td>
<td>(Spring only)</td>
<td>40-120</td>
</tr>
<tr>
<td>Onions (plants)</td>
<td>Mar 10</td>
<td>July 1</td>
<td>40-120</td>
</tr>
<tr>
<td>Parsley</td>
<td>Mar 20</td>
<td>Aug 1</td>
<td>70-90</td>
</tr>
<tr>
<td>Parsnips</td>
<td>Mar 20</td>
<td>June 15</td>
<td>90-100</td>
</tr>
<tr>
<td>Peas</td>
<td>Mar 1</td>
<td>(Spring only)</td>
<td>60-80</td>
</tr>
<tr>
<td>Peppers (plants)</td>
<td>May 10</td>
<td>July 1</td>
<td>65-75</td>
</tr>
<tr>
<td>Irish Potatoes</td>
<td>Mar 15</td>
<td>July 1</td>
<td>90-140</td>
</tr>
<tr>
<td>Sweet Potatoes</td>
<td>May 10</td>
<td>June 10</td>
<td>120-140</td>
</tr>
<tr>
<td>Pumpkins</td>
<td>May 5</td>
<td>June 15</td>
<td>100-120</td>
</tr>
<tr>
<td>Radishes</td>
<td>Mar 10</td>
<td>Sept 15</td>
<td>30-40</td>
</tr>
<tr>
<td>Rhubarb (crowns)</td>
<td>Mar 10</td>
<td>Nov 15</td>
<td>second season</td>
</tr>
<tr>
<td>Rutabaga</td>
<td>Mar 10</td>
<td>July 10</td>
<td>80-90</td>
</tr>
<tr>
<td>Southern Peas</td>
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<td>July 1</td>
<td>60-70</td>
</tr>
<tr>
<td>Spinach</td>
<td>Mar 1</td>
<td>Sept 1</td>
<td>50-60</td>
</tr>
<tr>
<td>Summer Squash</td>
<td>May 10</td>
<td>Aug 1</td>
<td>50-55</td>
</tr>
<tr>
<td>Tomatoes (plants)</td>
<td>May 5</td>
<td>June 15</td>
<td>60-90</td>
</tr>
<tr>
<td>Turnips</td>
<td>Mar 10</td>
<td>Aug 1</td>
<td>50-60</td>
</tr>
<tr>
<td>Watermelons</td>
<td>May 5</td>
<td>July 1</td>
<td>70-90</td>
</tr>
<tr>
<td>Winter Squash</td>
<td>May 10</td>
<td>July 1</td>
<td>80-120</td>
</tr>
</tbody>
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Note. Information from Home Vegetable Gardening in Kentucky by Cooperative Extension Service, No Date, Lexington: University of Kentucky, College of Agriculture.
Table 3
Flower Planting and Blooming Guide

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Planting Time</th>
<th>Blooming Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>hyacinths</td>
<td>hardy bulbs</td>
<td>early autumn</td>
<td>winter</td>
</tr>
<tr>
<td>daffodils</td>
<td>hardy bulbs</td>
<td>early autumn</td>
<td>winter</td>
</tr>
<tr>
<td>tulips</td>
<td>hardy bulbs</td>
<td>early autumn</td>
<td>winter</td>
</tr>
<tr>
<td>crocus</td>
<td>hardy bulbs</td>
<td>early autumn</td>
<td>winter</td>
</tr>
<tr>
<td>golden winter aconite</td>
<td>hardy bulbs</td>
<td>early autumn</td>
<td>winter</td>
</tr>
<tr>
<td>blue scilla</td>
<td>hardy bulbs</td>
<td>early autumn</td>
<td>winter</td>
</tr>
<tr>
<td>snowflake</td>
<td>hardy bulbs</td>
<td>early autumn</td>
<td>winter</td>
</tr>
<tr>
<td>danfordia</td>
<td>hardy bulbs</td>
<td>early autumn</td>
<td>winter</td>
</tr>
<tr>
<td>snowdrop</td>
<td>hardy bulbs</td>
<td>early autumn</td>
<td>winter</td>
</tr>
<tr>
<td>lilies</td>
<td>hardy bulbs</td>
<td>late autumn/early spring</td>
<td>summer and autumn</td>
</tr>
<tr>
<td>lycoris</td>
<td>hardy bulbs</td>
<td>summer</td>
<td>Aug-Sept</td>
</tr>
<tr>
<td>colchicums</td>
<td>hardy bulbs</td>
<td>summer</td>
<td>Aug-Sept</td>
</tr>
<tr>
<td>sternbergias</td>
<td>hardy bulbs</td>
<td>summer</td>
<td>Aug-Sept</td>
</tr>
<tr>
<td>dahlia</td>
<td>tender bulbs</td>
<td>spring</td>
<td>summer</td>
</tr>
<tr>
<td>gladiolus</td>
<td>tender bulbs</td>
<td>spring</td>
<td>summer</td>
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<td>tuberous begonia</td>
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<td>summer</td>
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<td>spring</td>
<td>summer</td>
</tr>
<tr>
<td>cannas</td>
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<td>summer</td>
</tr>
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<tr>
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<tr>
<td>sparaxis</td>
<td>tender bulbs</td>
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<td>summer</td>
</tr>
<tr>
<td>ixia</td>
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<td>Dutch iris</td>
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<td>summer</td>
</tr>
<tr>
<td>watsonia</td>
<td>tender bulbs</td>
<td>spring</td>
<td>summer</td>
</tr>
<tr>
<td>summer hyacinth</td>
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<td>spring</td>
<td>summer</td>
</tr>
<tr>
<td>poppies</td>
<td>hardy annals</td>
<td>late fall/wint.</td>
<td>late spring</td>
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<tr>
<td>larkspur</td>
<td>annuals</td>
<td>late fall/wint.</td>
<td>late spring</td>
</tr>
<tr>
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<td>annuals</td>
<td>late fall/wint.</td>
<td>late spring</td>
</tr>
<tr>
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<td>spring</td>
<td>summer</td>
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<tr>
<td>petunias</td>
<td>annuals</td>
<td>spring</td>
<td>summer</td>
</tr>
<tr>
<td>chinaaster/ callistephus</td>
<td>annuals</td>
<td>spring</td>
<td>summer</td>
</tr>
<tr>
<td>impatiens</td>
<td>annuals</td>
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</tr>
<tr>
<td>coleus</td>
<td>annuals</td>
<td>spring</td>
<td>summer</td>
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(Table continues)
<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Planting Time</th>
<th>Blooming Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>flowering tobacco</td>
<td>annuals</td>
<td>spring</td>
<td>summer</td>
</tr>
<tr>
<td>Wax begonias</td>
<td>tender perennials</td>
<td>spring</td>
<td>summer</td>
</tr>
<tr>
<td>dusty miller</td>
<td>tender perennials</td>
<td>spring</td>
<td>summer</td>
</tr>
<tr>
<td>snapdragons</td>
<td>tender perennials</td>
<td>spring</td>
<td>summer</td>
</tr>
<tr>
<td>geraniums</td>
<td>tender perennials</td>
<td>spring</td>
<td>summer</td>
</tr>
<tr>
<td>peony</td>
<td>perennial</td>
<td>late summer</td>
<td>early spring</td>
</tr>
<tr>
<td>aurinia saxatilis</td>
<td>perennial</td>
<td>late summer</td>
<td>early spring</td>
</tr>
<tr>
<td>alyssum</td>
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<td>late summer</td>
<td>early spring</td>
</tr>
<tr>
<td>trilliums</td>
<td>perennial</td>
<td>late summer</td>
<td>early spring</td>
</tr>
<tr>
<td>primrose</td>
<td>perennial</td>
<td>spring or fall</td>
<td>early spring</td>
</tr>
<tr>
<td>lily of valley</td>
<td>perennial</td>
<td>spring or fall</td>
<td>spring</td>
</tr>
<tr>
<td>anemone</td>
<td>perennial</td>
<td>spring or fall</td>
<td>spring</td>
</tr>
<tr>
<td>iris</td>
<td>perennial</td>
<td>spring or fall</td>
<td>late spring/early summer</td>
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<tr>
<td>daylily</td>
<td>perennial</td>
<td>spring or fall</td>
<td>fall</td>
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<tr>
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<td>spring or fall</td>
<td>fall</td>
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<tr>
<td>pyrethrum</td>
<td>perennial</td>
<td>spring or fall</td>
<td>fall</td>
</tr>
<tr>
<td>bleeding heart</td>
<td>perennial</td>
<td>spring or fall</td>
<td>fall</td>
</tr>
<tr>
<td>phlox</td>
<td>perennial</td>
<td>spring or fall</td>
<td>fall</td>
</tr>
<tr>
<td>blanket flower</td>
<td>perennial</td>
<td>spring or fall</td>
<td>fall</td>
</tr>
<tr>
<td>bee balm</td>
<td>perennial</td>
<td>spring or fall</td>
<td>fall</td>
</tr>
<tr>
<td>liatris or Kansas gayfeather</td>
<td>perennial</td>
<td>spring or fall</td>
<td>late summer</td>
</tr>
<tr>
<td>Echinops or globe thistle</td>
<td>perennial</td>
<td>spring or fall</td>
<td>late summer</td>
</tr>
<tr>
<td>goldenglow</td>
<td>perennial</td>
<td>spring or fall</td>
<td>late summer</td>
</tr>
<tr>
<td>helium</td>
<td>perennial</td>
<td>spring or fall</td>
<td>late summer</td>
</tr>
<tr>
<td>chrysanthemums</td>
<td>perennial</td>
<td>spring or fall</td>
<td>fall</td>
</tr>
<tr>
<td>asters</td>
<td>perennial</td>
<td>spring or fall</td>
<td>fall</td>
</tr>
</tbody>
</table>

to see if updated lists are available.

The animal area will allow the children the opportunity to observe and care for a wide variety of animals. Some animals will be visitors for a short while and others may stay with the class. Some animals will provide the opportunity for children to pet and handle them while others, such as fish, will not. The actual experience for the children will be at the index level. Preparing for the animal by reading about him or her will provide sign level activities. Pictures of the animal will help to include the symbol level.

Since a variety of animals will be used, children will see different animal groups, numerous sizes, various methods animals use to move and their growth pattern. These experiences all contribute to the elementary types of relationships: logico-mathematical and spatio-temporal relationships.

The animal area will include a cage 3 x 3 x 3 which will remain outdoors. A cage 1 x 1 x 1 will be kept for smaller animals and will be placed outside when appropriate. Insect containers and jars will also be used. When larger animals visit, a designated area will be arranged to confine the animal. See Table 4 for a list of possible animals and care instructions.
### Table 4

**Animals and Care Instructions**

<table>
<thead>
<tr>
<th>Name</th>
<th>Home</th>
<th>Care</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>fish</strong> <em>(gold or guppies, crayfish/crawdads)</em></td>
<td><strong>Aquarium tank with one gallon 55 - 70 degrees Fahrenheit of water per inch of fish, excluding tail. Bottom of tank can be lined with clean sand and plants.</strong></td>
<td><strong>feed commercial fish food</strong></td>
</tr>
<tr>
<td><strong>tadpoles</strong></td>
<td><strong>Aquarium tank or jar filled with pond water and one inch of mud. Algae rocks should be added to the water.</strong></td>
<td><strong>Do not change water. Let feed on the algae and small plants attached to the rocks or feed them beef, liver and chopped worms.</strong></td>
</tr>
<tr>
<td><strong>land snail</strong></td>
<td><strong>Round glass bowl with one inch of sand and several inches of soil with plants. Add a small dish of water to the bowl.</strong></td>
<td><strong>Feed starter mash and water.</strong></td>
</tr>
<tr>
<td><strong>chicks</strong></td>
<td><strong>A brooder or carton with a warm light bulb overhead. Temperature should be 90-95 degrees fahrenheit the first week and gradually lowered and maintained at 70 degrees. Provide gravel for scratching and sawdust or paper flooring.</strong></td>
<td></td>
</tr>
</tbody>
</table>

(Table continues)
<table>
<thead>
<tr>
<th>Name</th>
<th>Home</th>
<th>Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>ducks</td>
<td>Container which includes a smaller container of 3-4 inches of water.</td>
<td>Feed commerical duck food and water.</td>
</tr>
<tr>
<td>shell parakeets</td>
<td>Bird cage which allows climbing and flying. Provide perches.</td>
<td>Feed apple, toast or greens with seeds and water.</td>
</tr>
<tr>
<td>wild birds</td>
<td>Provide bits of yarn, hemp or feathers for birds to gather and make nests.</td>
<td>Grain and suet feeder, water in a container.</td>
</tr>
<tr>
<td>ants</td>
<td>Commercial ant farm or an open jar with paper around it and placed in a pan of water. Keep at room temperature and away from sunlight, after a few days remove paper to see tunnels.</td>
<td>Feed crumbs, apple pieces, caterpillars and freshly killed insects. Provide water.</td>
</tr>
<tr>
<td>insects</td>
<td>Screen container with moist soil and grass.</td>
<td>Feed honey, bread, peanut butter, lettuce, dead insects, grass and leaves.</td>
</tr>
<tr>
<td>earthworm</td>
<td>Jar with moist soil and covered with lid that has holes punched in it.</td>
<td>Keep some of the grass or leaves they were found on.</td>
</tr>
<tr>
<td>caterpillar</td>
<td>Jar or bug container.</td>
<td>Feed hay, grain or commercial pellets, lettuce, carrot tops and other greens and water.</td>
</tr>
<tr>
<td>guinea pig</td>
<td>Terrarium or small cage.</td>
<td>Feed animal food pellets, oatmeal, clover, grass, carrots, lettuce or cabbage and water. See veterinarian for worming and shots.</td>
</tr>
<tr>
<td>rabbit</td>
<td>Small cage or leave free to roam the room or outside fenced area.</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Home</td>
<td>Care</td>
</tr>
<tr>
<td>----------</td>
<td>----------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>cats</td>
<td>Leave free to share the area with the children.</td>
<td>Feed commercial cat food.</td>
</tr>
<tr>
<td>dogs</td>
<td>Leave free to share the area with the children.</td>
<td>Feed commercial dog food.</td>
</tr>
<tr>
<td>goats</td>
<td>Pens with ramps and low platforms.</td>
<td>Bottle feed 3 times times a day. Feed leafy hay and grain.</td>
</tr>
<tr>
<td>lambs</td>
<td>Pens with ramps and low platforms.</td>
<td>Quart of milk over the span of one day. Feed leafy hay or grain.</td>
</tr>
<tr>
<td>gerbil</td>
<td>Aquarium covered with wire and kept at 70-75 degrees. Cover floor with torn white paper towels, and pine shavings or chlorophyll chips.</td>
<td>Feed water, lettuce, carrot, apple, sunflower seeds or commercial food.</td>
</tr>
<tr>
<td>white mice</td>
<td>A two story cage with stairs or a ladder connecting them. Include a swing trapeze and exercise bar. Keep temperature about 70 degrees.</td>
<td>Feed rice, corn, sunflower seeds, carrots and water.</td>
</tr>
<tr>
<td>turtles</td>
<td>Container with high straight sides filled with water. Provide a rock or pebbles piled above the water. Include tiny plants. Keep 70 degrees constantly.</td>
<td>Feed lean raw beef, liver, fish or chicken, lettuce, tomato and carrots, worms, insects and slugs.</td>
</tr>
</tbody>
</table>

Loose parts.

A variety of loose parts will be available to the children. Prost and Klein (1979) refer to loose parts when they state (p. 85):

The children can move them, build with them, stack, arrange, tear down, rearrange, use them as props for imaginative play, create their own structures for gross motor activity, and even incorporate them into games with rules.

Since cognitive development is influenced by the experience of handling, moving and thinking about concrete objects, many real items will be provided. An attempt will be made to keep a balance between items the children are familiar with and ones they are not. Children have schemata, mental structures representing some aspect of reality for items with which they are familiar. When a new item is added to the loose parts collection, children who are unfamiliar with it will be likely to react to it as a new example of something already known. This process is called assimilation. Children assimilate the object to what is familiar, distorting their perception of the object if necessary to make it fit. As teachers ask questions and demonstrate uses of the object which are in conflict with the assimilation, children will reevaluate their identification and modify their mental structure (schema) to accommodate the new object. Children accommodate by modifying or reorganizing their ideas and, when necessary, forming a new idea (Charles, 1974).
Loose parts such as tires, wood chips, boards, and other open-ended materials will provide the opportunity for children working on the symbol level to use objects to represent other objects. Encouragement to discuss their work will help move children from motion to verbal responses, thus aiding in the sign stage. A few examples of objects used as parts are:

- boards
- assorted tires
- cardboard boxes
- carpet pieces
- ropes
- stones
- nuts
- bowls
- pans
- shovels
- scoops
- plants
- seeds
- cans
- water hose pieces
- strainer
- dressup clothes
- balls
- wood scraps
- old cloth

- buckets
- cartons
- crates
- baskets
- funnels
- tubing
- bottles
- innertubes
- hoops
- wood
- tools
- paint
- cable spools
- pine cones
- shells
- measuring cups
- hoops
- spoons
- old sheets
- whisk broom

- magnifying glass
- binoculars
- balloons
- kites
- windmill
- color scopes
- pinwheel
- water hose
- compass
- magnet
- thermometer
- water gauge
- snow gauge
- hay
- eggbeater
- colander
- transportation toys
- sieves
- string
- sifters

Some of the loose parts will be stored outside in the platform storage unit. Other loose parts will be stored indoors and brought out on a regular basis. Each teacher will be responsible on a rotational basis for bringing items from their learning center to the playground. This will extend typically inside activities, such as drawing, to the outside. Children will on occasion have paper and drawing utensils available to draw plans or complete projects which would give children the opportunity to make
representations in two or three dimensions. The inside learning centers -- art, blocks, language and books, housekeeping, table toys, discovery, and woodworking -- will regularly be extended to the outdoors.

**Summary**

The value of each piece of equipment or outside learning area is important to the contribution of the total outdoor playground. In addition to the individual part being valuable, the combination as a whole will compliment the curriculum approach selected and aid in meeting the determined goals.

The children will develop index skills through manipulation of actual loose parts alone, in the sand, water and in the playhouse. Loose parts related to gardening and animal care will also contribute to the index level development. The swing, bridge, tunnel, stage, mound, climbing structures, and balance equipment will provide index level experience as children learn the functions of each.

Index skills will be the foundation for symbolic development. All loose parts and equipment can be used by individuals and small groups of children for symbolic representation. Teachers will encourage language in all activities to help children move from nonverbal to verbal responses.

Sign stage development will occur through labeling, signs, and experience stories. Use of words with and then
without objects, models, and pictures will aid in the children's transition to sign stage. All loose parts and each piece of equipment will be useful for stimulating the mental images of children.

The elementary types of relationships will be enhanced by all parts of the playground design. The grouping concepts of same, similar, and go together can be experienced through playing with the loose parts. The ordering of sizes, quantities, and qualities will be experienced through playing as well as putting loose parts away at cleanup time. The spatial reasoning such as here and there, on, and under, will be developed through use of all pieces of equipment. Children learn about space by placing their bodies on, over, under, in, through, beside, behind, and in front of the equipment. Children also learn about space by using objects to place on, over, under, in, through, beside, behind, and in front of equipment. Temporal reasoning, such as before and after, first, and second, can be experienced through their body in relation to other children. Temporal reasoning can also be developed through the use of loose parts in combination with the equipment.

Opportunities for each of Piaget's stages of play will all be available through the loose parts and equipment. Functional play will occur as children are operating at the index level. Symbolic play and the symbolic stage will exist together. The ability to play
games with rules will occur as children develop the sign stage. The play levels will occur in a sequence. The children will not discard a level of play once they develop the higher level.

Throughout the playground new experiences and objects, combined with the well known, will create the process of assimilation. Further experience will result in accommodation and possibly new ideas. Through this process children will experience cognitive development.

It is recognized that the playground would be more ideal if it included a water fountain, a covered area and toileting facilities. Due to lack of funds and space these will not be incorporated into the playground plan. The playground is located close to the classroom building which has a covered porch, water fountains and restrooms. Children will be taken to the restroom immediately prior to outdoor time and upon reentry to the classroom. The water fountain is next to the restroom and will be available at the same time. During extremely hot periods water jugs and cups will be taken outside for drinking purposes. During rainy weather children will be taken on the porch for fresh air, and gross motor and nature activities will be offered indoors.

The outside learning environment will not be limited to the playground. The nearby porch, surrounding sidewalks, and all of the campus will be used to enhance the children's experiences. Nature walks will be
incorporated into the outdoor learning time.

Evaluation

Introduction.

Evaluation of the curriculum and playground design has many uses. The evaluation results will be used to set new goals, modify the curriculum methodology and playground design, and train personnel. Evaluation strategies for determining the effectiveness of the playground will be varied. Each individual child, the class as a whole, the teaching staff, the program, and the development project will be evaluated.

Individual.

Each individual child will receive a formal developmental assessment, a behavioral screening, a health examination, and other evaluation as the need indicates. Informal assessments such as observation checklists and anecdotal notes will also be recorded for each child.

A pre- and post-developmental assessment will be administered to children each year they attend the program. The developmental assessment, to be determined by the classroom coordinator, will include the following areas: cognitive, language, gross motor, fine motor, and self-help. In addition to the assessment given to every child, referrals will be made for more comprehensive testing when appropriate.

A behavioral assessment will be conducted on each child. The assessment instrument will be determined by
the mental health coordinator. Referrals will be made when children have unusual scores.

The health component of the program will provide physical examinations and regular informal health checks. Height and weight will be checked at the beginning and ending of each school year. Teachers will regularly be alert to potential health problems and make referrals to the health coordinator as needed.

Throughout the year anecdotal notes will be kept regarding each child. Anecdotal notes will reflect observations regarding the child's attitude, improvement in skills, lack of improvement in skills, family, health, and behavior. Other informal surveys and checklists will be used as the teachers determine the need.

The formal and informal assessment data will provide information for preparing individual objectives. The objectives will be considered in planning the activities and materials for the environment. The objectives will be tracked on a regular basis. As children accomplish new tasks, informal reevaluation occurs and new objectives are developed. The cycle will then repeat itself.

Class.

The developmental assessment and health data will be compiled into a class composite. This information will serve to guide the classroom staff in future planning. Class-wide anecdotal records will also be kept as part of informal assessment.
Teaching staff.

The teaching staff evaluation will not be based upon the individual or class development. The evaluation will address the opportunities made available to the children for facilitating development. Evaluation will be both formal and informal.

For the purpose of stressing that evaluation is a step toward improvement all staff evaluation will be ongoing. The informal assessment will include regular classroom and teaching observations by the classroom coordinator, lead teachers, and program directors. Feedback regarding the observation will be shared as soon as possible and documented as a classroom visit.

The formal evaluation of the staff will occur within the context of goal setting. At the beginning of the year, individual staff members and their supervisor work together to establish mutually-agreeable goals for the employee. In semi-annual conferences, progress on goals is reviewed, new goals are set, or goals may be renegotiated.

A combination of the following techniques will be used in developing goals.

Strengths-weaknesses: both employee and supervisor list strengths and weaknesses seen in employee performance and discuss agreement and/or differences in perceptions.

Critical incidents: both employee and supervisor keep records of specific incidents or behaviors, both
positive and negative, that the employee engages in during
the evaluation period; during the evaluation conference,
each incident is discussed as an indication of the
employee's performance.

Management by objectives (MBO): both employee and
supervisor determine the parts of the MBO which he/she is
responsible; these items are incorporated in a series of
activities to address each milestone with specific
completion dates in MBO format. These are reviewed at the
evaluation conference.

The informal and formal teacher assessment will be
comprehensive. The teacher's outdoor teaching strategies
will be included. Appropriate implementation of the
outdoor curriculum will be a part of the evaluation.

Program.

Since the program is both a Head Start and a day care
center, regulations of each organization must be followed.
The Day Care Licensing Office will visit regularly to
inspect the center. Some of the visits will be scheduled,
however, others will be unannounced. Any guideline which
is not being met will be recorded by the assessor and a
timeframe will be given for improvements to be made.

The Head Start guidelines strongly recommend that a
Self-Assessment Validation Instrument (SAVI) be used
annually. The SAVI team will consist of staff members,
parents of the children being served, and community
representatives. The team will assess all program areas
and record the findings. The findings will be shared with all staff members and, when needed, an improvement plan will be developed.

In addition to the SAVI, the Head Start funding source will schedule regular validation visits where the program will be assessed. Areas found to be in need of improvement will be noted in a follow-up letter to the program. The program will then respond to the letter and develop an improvement plan as needed.

The Day Care Licensing Office, Head Start funding source, local staff, parents, and community representatives provide a broad base for program evaluation. Although the evaluations are comprehensive and are not limited to the playground, they will include the outdoor learning experiences.

Project.

The project of planning the curriculum and the playground design to be used by WKU Campus Child Care program will include both formative and summative evaluation strategies. Formative evaluation provides for ongoing feedback and continued planning. Summative evaluation addresses the overall completed project.

The advisory committee will be invited to review each stage of the project prior to implementation. The advisory committee will also be invited to participate in an evaluation upon completion of the project.
Once the curriculum and the design are being implemented they will be monitored closely by the program directors, the classroom coordinator, and the day care lead teacher. As needs are identified through the input from teachers, volunteers, and advisory committee members, modifications will be made.

**Summary.**

Just as the developmental and growth process is a never ending cycle for people, a playground should continue to expand and change. The objectives follow assessment of individuals, the class, the staff, the program and the project. The implementation of activities is based on objectives. After the activities are reevaluations. The cycle then repeats itself over and over for continued growth.
Chapter 4
ADAPTATION OF PROJECT

Adaptation Overview

Various child development related programs which are developing an outdoor curriculum and playground design may be interested in utilizing the process or product developed for this project. Whether the intent is to replicate this curriculum and design or to use only the process for developing a completely different curriculum, the steps are similar. The basic steps in building a curriculum and designing a playground plan include preparation, development, implementation, and evaluation. Each step involves numerous tasks. Worksheets are provided in Appendices B-J to provide guidance in the adaptation of each step.

Preparation

Introduction.

The major tasks involved in preparation of a curriculum and design plan are

1. Conduct a needs assessment to identify the environment of children served and existing opportunities for expanding development.

2. Consider the amount of money available for development of the curriculum.

3. Develop a file of available resources that can provide assistance and/or materials in developing and implementing the curriculum.
4. Establish a committee to advise and assist in the development of the curriculum and design.

5. Study sample outdoor curricula and playground designs through reading materials, interviews, workshops and other means.


7. Consider the many possible approaches to an outdoor emphasis in the curriculum.

8. Identify types and levels of activities/materials to be included in the curriculum considering identified needs, goals, curriculum resources, and developmental level of children.

9. Consider the format of the curriculum: items to be included in a kit, basic areas to be included in a manual.

10. Consider the distribution of the curriculum to each classroom: a complete set for each room, circulating manuals or kits, centrally located manuals or kits.

Needs assessment.

Conducting a needs assessment may be accomplished in several ways. A few examples include: informal interviews, observations, surveys, formal interviews, examination of records, and assessment committees. The informal interview can be used to determine needs over a cup of coffee, during lunch, or in any casual conversation. Observation involves watching teachers and volunteers to determine their needs as well as watching children to see...
what their needs are. When using a survey method, a questionnaire is distributed asking for the information needed. A formal interview is calling staff, volunteers, parents or children in to obtain information. Examination of records such as teacher evaluations and child assessments may reflect needs. A committee representing various groups could be formed for the purpose of determining the needs.

Needs assessment data for this project were gathered through informal interviews, observations, formal interviews, record examination, and a committee. Informal interviews occurred with staff members, parents, professionals, and children. Observations of the teaching staff, volunteers, and children were made. Formal phone interviews were conducted with several agencies such as the Consumer Product Safety Commission. Both child assessments and teacher evaluations were reviewed to obtain local information for this project. The playground committee developed for this project was invited to participate in the needs assessment phase. In addition, a comprehensive review of the literature provided a broad base of needs assessment information.

Available funds.

Although the need for money is a reality, programs should not sacrifice a quality curriculum and playground design due to a low budget. Funds may be available through volunteer services, donations, grants, fund raising, or
collaboration.

Community groups across the nation are joining together to assist in the design and construction of playscapes that are more imaginative, economical, and safe than the standard playgrounds (Frost & Klein, 1979). The community built playground is a unique expression of the ideas and needs of those who contribute, indicating that involving the parents of the children served is important. Utilizing the skills volunteered by community members and parents for the design and construction of a playground saves a significant amount of money. The excitement and ownership felt by the volunteers may encourage hours of service after the initial playground is built. Those service hours could be spent in adapting equipment after a field test and in preventive maintenance. Preventive maintenance is crucial to the playground safety. Community built playgrounds have been found to be safer than traditional ones (Frost & Klein, 1979). Frost and Strickland (1978) have found that inexpensive play environments can be superior to expensive ones.

Child care programs are often fortunate enough to obtain donated materials or services from individuals and agencies. The donation helps the child care program but may also help the individual or agency. Benefits to those donating include a tax deduction if the child care program is nonprofit, satisfaction of helping, advertisement for the business, agency or person, and
perhaps meeting goals or requirements of the agency or business making the donation. A sample form which can be used for documentation of donations and a donation worksheet is shown in Appendix B.

Agencies or businesses may be more likely to donate materials which are generally discarded. Materials such as tires, utility poles, railroad ties, cable spools, scrap lumber, and pipe are possibilities. A few sources for free playground materials are utility companies, service stations, factories, nurseries, parks and recreation departments, tree service companies, building contractors, and lumber yards. Businesses which do not donate materials may be willing to sell items at a reduced price.

Grant money is available from numerous sources. Some grants are advertised and proposals are requested. Other grant money is given when unsolicited proposals are considered to be worthy and funds are available. Being active in professional organizations is one way to become aware of possible grants. See the grant worksheet in Appendix C.

Fund raising events may be one day activities or ongoing projects. Staff, parents, or community agencies could be responsible for the activities. Some projects such as bake sales or raffles involve an investment of money or a donation of goods prior to sales. Many fund raising businesses work with organizations by allowing orders to be taken before the sale items are delivered.
Child care programs located near or affiliated with other agencies needing playground equipment and an outdoor curriculum may want to consider collaboration. Sharing the cost and work may allow both groups to have higher quality than could be afforded independently. A collaboration worksheet is provided in Appendix D.

A core amount for the playground has been budgeted. In addition, donations and grant funds are being requested from local businesses and agencies as well as national organizations. The center parent committee sponsored a fundraising project for the purpose of contributing money for the playground. The playground design is planned in a way that additions can be easily added if enough funds are not available initially. It is hoped that by planning a long range design all money will be well spent and lead us closer to a quality playground. Appendix E contains a sample budget worksheet.

Available resources.

Available resources could include printed and audio visual materials. Some of the materials may be ones developed within the agency or by others. Individuals, agencies, or organizations may also serve as available resources. The people who can provide assistance may be staff members, someone who works across town or across the nation. Keeping a file with the name, address and a brief description of the material or expertise the individual has may be useful.
Many resources were utilized in developing this project. Assistance was requested from authors, university faculty, parents, staff, city landscapers, nurses, and others.

**Committee.**

A committee can provide a wide range of services to the program developing a playground curriculum and design. Prior to establishing a committee, the following should be decided: the purpose, goals, responsibilities, skills needed, and timeframes. The purpose of the committee could be to advise, approve, or actually develop the curriculum and design. The program regulations and guidelines should help determine the purpose of the committee. The goals, responsibilities, and timeframe may be information the prospective members need to know when deciding whether to serve or not. The skills needed should help in the decision regarding the composition of the committee.

An advisory committee assisted this project. The members represented the fields of physical education, recreation, art, early childhood, safety and first aid, and landscaping. Two parents also served on the committee. Two meetings were held and ongoing contact was made individually. During the first meeting members were given handouts reflecting playground research findings, committee goals, responsibilities of the committee members, and the timeframe. All members who could not attend were sent copies of the handouts and minutes of the meeting. The
second meeting was to review final plans and the
collection status. See Appendix F for a suggested
committee worksheet.

Study.

Through studying various outdoor curricula and
playground designs a knowledgeable decision can be made
regarding the best approach and equipment for the program.
It is suggested that the study include the following:
attending conferences and workshops, visiting different
playgrounds and child care programs, discussing the
approaches and equipment with professionals, and reviewing
numerous curricula and designs.

Each of the above approaches were used in the study
for this project. See Appendix G for a sample study
worksheet.

Approaches.

A variety of approaches can be used for the outdoor
curriculum. A few possibilities are listed below.

1. Outdoor activities incorporated into existing
curriculum or units.

2. Complete teaching units focusing on the outdoor
environment taught at various times in the year at random
or in a sequential order.

3. Complete outdoor teaching units taught at one time
of the year, at random or in a sequential order.

4. Outdoor ideas and activities incorporated into
existing daily schedule or lesson plans.
5. Outdoor activities and materials introduced in response to a specific event or child initiated interest.

The curriculum developed through this project involves more than one approach. Outdoor activities will be incorporated into the existing curriculum. Outdoor activities will also be introduced in response to a specific event or child initiated interest.

Activities and materials.

Prior to determining the activities and materials, a decision must be made regarding program objectives. The objectives should be based on the program philosophy, identified needs, available resources, and the developmental levels of the children served. Any guidelines and regulations imposed on the child care program must also be considered.

The purpose of the goals and objectives is to define the direction of accomplishment. The goals and objectives can also be used in measuring the accomplishment. Behavioral objectives may be written for individual children. An accomplishment is described in a way that is observable and measurable in a behavioral objective (Ragan & Shepherd, 1977). Behavioral objectives should answer the following questions: who will perform the task; what will be measured; under what conditions, if any, will the task be performed; and what is the minimum level of performance. Although behavioral objectives may be needed for individual children the curriculum also needs goals which are more
general. Multilevel activities may have a general goal but may also fulfill several different behavioral objectives. See Appendix H for an objective and goal worksheet. An activities worksheet is also included in Appendix H.

**Format.**

The curriculum format will be based upon the approach as well as the goals and objectives of the curriculum. A few examples of curriculum format are a kit, one manual, several manuals, or activity cards. The format may include detailed activities and approaches or it may allow for individuality.

The format selected for this project is one that provides the framework and encourages input from each teacher. The written information is contained in one manual. The forms to be used are all contained in a master filing system and the materials for use by the children are limitless. Curriculum materials for use with children are kept in designated storage units.

The equipment design format will also be based upon the curriculum approach, goals, and objectives. The equipment could be portable, permanent, or some combination of each. The layout could include numerous patterns.

A circular pattern is selected for this project. Equipment is being placed around all edges of the playground with the center as a meeting space for the total group. Many of the pieces will be permanent ones. However, portable equipment along with many open-ended
materials will also be provided.

**Distribution.**

The format may influence the distribution method used. Large programs with several sites may decide to: rotate the manual(s) or kit, provide each classroom or each teacher with one, or have one available for teachers to check out.

This project will make a copy of the manual available to each teacher. In addition a copy will be in the resource library for volunteers, parents and other child care programs to borrow. Portions of the curriculum and design plans will be disseminated to all Head Start programs in Kentucky, Tennessee, and North Carolina.

**Summary.**

The preparation stage of curriculum development requires that consideration be given regarding the development, implementation, and evaluation. After the overall foundation has been built, the curriculum is underway.

**Development**

**Introduction.**

The major tasks involved in the development of a curriculum and design plan are:

1. Review commercial ideas, activities, and materials available.

2. Request ideas, activities, and/or materials from: staff members; parents and families of the children; and
individuals, businesses, and organizations within the community.

3. Make decisions regarding the compiled ideas, activities, and materials.

4. Purchase and/or make other needed materials/equipment.

Review.
An indepth review of commercial curricula and playground plans should extend the study which began during the preparation stage. The review should be based upon established goals. The goals for this project are identified in Chapter 3.

Request input.
Input should be requested from staff members, parents, children, committee members, professionals, and organizations. Specific curricula ideas and equipment designs should be discussed. Input was requested for this project through staff meetings, committee meetings, and individual conferences.

Make decisions.
Considering the review and input, decisions must be made regarding the curriculum and playground design. The decisions will also be influenced by many other factors such as funds, space, regulations, identified needs, and available resources as covered during the preparation stage. The final decisions for this project were made jointly by the Head Start and day care directors.
Purchase and make.

Once the decision has been made regarding the curriculum to be used, the copies need to be made or purchased according to the distribution plan. After the playground design has been decided upon, the equipment needs to be purchased or equipment blueprints need to be drawn. In the event that the program is purchasing curriculum, materials or equipment, note the agency purchasing procedures. If plans are to build the equipment, arrangements for labor need to be planned. Local procedures for contracting with individuals or companies need to be considered.

The curriculum for this project is contained in Chapter 3. The equipment blueprints are in Appendix A. Labor for the copying of the curriculum and installation of the equipment will be provided through a combination of paid and volunteer help. The materials for the equipment will be both purchased and donated.

Summary.

The development stage will smoothly flow into the implementation provided the staff has had input and help in the decision making. See Appendix I for a development worksheet. The preparation and development stages are of little use without the implementation stage.
Implementation

Introduction.
The implementation stage includes the following steps:
1. Inform and train staff, parents, and volunteers concerning the curriculum.
2. Distribute curriculum to teachers according to plan.
3. Through staff meetings and individual assistance, guide classroom staff and volunteers in implementing the curriculum.

Training.
Training includes many of the same steps that developing a curriculum does. The trainee's needs and interests should be considered. Objectives should be developed based upon the needs identified. The curriculum for the training must then be decided. The training curriculum is the knowledge and skills needed to reach the objectives. Deciding upon the training approach to be utilized is outlined in the following steps: (1) Preparation includes determining the needs, goals, curriculum, and techniques as well as preparing the teaching aids and scheduling each activity; (2) After preparation, the session is conducted and evaluated; and (3) To ensure effectiveness, follow up to the session is important.

The same approaches discussed earlier for needs assessment and objective development can be applied to
training. The training curriculum will depend upon the specific outdoor curriculum selected or developed, as well as the needs assessment results and goals of the training.

The training techniques will be influenced by the goals. Some techniques to consider are lecture, small group discussion, role play, case study, brainstorming, demonstration, and on the job experience. Table 5 reflects some of the advantages and disadvantages of each technique.

Audio visual aids are important because they increase the participants' retention as well as prompt the trainer. Criteria for selecting audio visual aids are

- Objectives
- Group Size
- Size and Shape of Room
- Your Preferences
- Content
- Availability of Equipment
- Costs
- Portability

Visual aids to consider include chalkboard, overhead projector, flip chart, slide projector, movie projector, filmstrip, opaque projector, and flannel board. Table 6 reflects advantages and disadvantages of visual aids.
<table>
<thead>
<tr>
<th>Training Technique</th>
<th>Advantage</th>
<th>Disadvantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>lecture</td>
<td>time-saving, control of topic, repetition, economy, flexible group size</td>
<td>one-way communication, boredom, attention span, lower retention rate, canned talk, no feedback</td>
</tr>
<tr>
<td>small group discussion</td>
<td>involvement of everyone, reduced peer pressure, variety of experience, exchange of ideas</td>
<td>uncomfortable, voluntary participation, lack of leadership, lack of organization</td>
</tr>
<tr>
<td>role-play</td>
<td>participation, increased self-confidence, empathy, variety of solution</td>
<td>artificiality of situation, discomfort of participants, lack of productivity, time consuming</td>
</tr>
<tr>
<td>case-study</td>
<td>participation, applicability</td>
<td>artificiality, time consuming cost, lack of information</td>
</tr>
<tr>
<td>brainstorming</td>
<td>all ideas are brought out, judicial judgment ruled out, quantity is obtained</td>
<td>no evaluation of all ideas</td>
</tr>
<tr>
<td>demonstration</td>
<td>gives hands on experiences, visually seen</td>
<td>cost, time consuming</td>
</tr>
<tr>
<td>on-the-job</td>
<td>hands on experience, real job setting</td>
<td>time, cost, price paid for mistakes</td>
</tr>
</tbody>
</table>
### Table 6

**Visual Aid Advantages and Disadvantages**

<table>
<thead>
<tr>
<th>TYPE OF VISUAL</th>
<th>ADVANTAGES</th>
<th>DISADVANTAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>chalk board</td>
<td>low cost, simplicity</td>
<td>visibility, legibility, eye contact</td>
</tr>
<tr>
<td></td>
<td>erasability</td>
<td></td>
</tr>
<tr>
<td>overhead</td>
<td>fact-to-face contact, note-taking, color, good visibility, reproduction, focus of attention, easy, reference, reusability, methodical</td>
<td>legibility, cost</td>
</tr>
<tr>
<td>flip chart</td>
<td>prepared material, ease of use, low cost, ease of reference, reusability, accessibility, portability</td>
<td>lack of visibility, legibility</td>
</tr>
<tr>
<td>slide projector</td>
<td>portability, professional presentation, ease of operation, visibility, flexibility</td>
<td>unable to take notes, some rooms hard to darken</td>
</tr>
<tr>
<td>movie projector</td>
<td>ease of operation, authority, slow motion, audience participation</td>
<td>sometimes filler, fashions change, dark room causes drowsiness</td>
</tr>
<tr>
<td>filmstrip</td>
<td>packaged programs, authority</td>
<td>sometimes unavailable, difficult to change or reverse</td>
</tr>
<tr>
<td>opaque projector</td>
<td>use book or printed materials</td>
<td>bulkiness, note taking is difficult</td>
</tr>
<tr>
<td>flannel board</td>
<td>good for building a presentation, low cost</td>
<td>preparation Cumbersome</td>
</tr>
</tbody>
</table>
The arrangement of the room influences the effective use of visual aids. The room arrangement may be theater style with chairs only, classroom style with tables and chairs, chairs in a U-shape, or chairs surrounding a conference table. The room arrangement sets the stage for the climate of the session.

Scheduling the activities or developing the agenda includes selecting activities and placing them into timeframes. Agendas should always include the following: ice breaking, climate setting, goal accomplishment, summary, evaluation, and follow-up assignment.

The ice breaker involves introductions and a group dynamics or warm-up activity to involve the participants and help them feel comfortable. Climate setting is the place to specify the benefits and objectives of the training. Goal accomplishment is the section where training techniques and visual aids are used to help participants gain the knowledge and skill the workshop was designed to facilitate. The summary is a brief review of the main points. The purpose of the evaluation is to help the trainer improve as well as to assess the participants. If a follow up activity is given to each participant, a long range evaluation is also possible. See Appendix J for a training worksheet.

Distribution.

Even if the distribution plan does not provide for each teacher having a copy of the curriculum, one should be
available for review as a part of the training follow up. If a curriculum is not distributed to each individual a borrowing system needs to be established. If the distribution system allows for each teacher to have one, documentation of distribution should be arranged.

Following are sample procedures which could be modified for a curriculum lending library.

<table>
<thead>
<tr>
<th>Task</th>
<th>Person Responsible</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request material(s)</td>
<td>all</td>
<td>as needed</td>
</tr>
<tr>
<td>using appropriate form</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and allowing one week for processing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Send written confirmation of the requested</td>
<td>librarian</td>
<td>upon request</td>
</tr>
<tr>
<td>reservation or available date</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pick up material(s)</td>
<td>staff requesting</td>
<td>reservation</td>
</tr>
<tr>
<td>or</td>
<td>material</td>
<td>date</td>
</tr>
<tr>
<td>Deliver material(s)</td>
<td>librarian</td>
<td>reservation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>date</td>
</tr>
<tr>
<td>Fill out appropriate library card to</td>
<td>staff requesting</td>
<td>upon delivery</td>
</tr>
<tr>
<td>designate borrower, date borrowed and</td>
<td>material</td>
<td>or pick up</td>
</tr>
<tr>
<td>return date</td>
<td></td>
<td></td>
</tr>
<tr>
<td>File library card</td>
<td>librarian</td>
<td>upon comple-</td>
</tr>
<tr>
<td>until material is returned</td>
<td></td>
<td>tion of form</td>
</tr>
<tr>
<td>Return material(s)</td>
<td>borrower</td>
<td>as indicated</td>
</tr>
<tr>
<td>Indicate return on the library card</td>
<td>librarian</td>
<td>upon return</td>
</tr>
<tr>
<td>Contact librarian for extended use or re-</td>
<td>borrower</td>
<td>as needed</td>
</tr>
<tr>
<td>checking the material(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact borrower regarding overdue</td>
<td>librarian</td>
<td>as needed</td>
</tr>
<tr>
<td>material(s)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Teachers are often fortunate enough to be given many printed resources when beginning a new job. Since staff turnover is often high in child care centers and budgets are low, the return of those materials may be important. If the return is determined to be important, the teacher and program would benefit from an organized approach for noting the resources. A form which included the name and condition of each resource could be signed and dated by the teacher receiving the materials. The original should be kept in the personnel file and one copy kept by the teacher.

Accessibility of the curriculum will have a tremendous impact upon the implementation stage. Although care must be given to maintaining the condition and number of curriculum copies, they are of little value if they are not used.

Follow up.

Ongoing support and assistance is needed for implementing any new curriculum. The ongoing effort can occur in groups and among individuals.

Group assistance can occur through staff meetings and trainings. Each staff meeting agenda should allow time for areas of concern regarding the curriculum to be addressed. Several training sessions could be provided for the entire group, focusing upon those points causing the most difficulty.
Individual assistance could be incorporated into regular classroom and teacher observations. It is recommended that the goals be listed and the observation notes reflect actions that facilitate or negate each goal. The teacher then has specific feedback. Examples of how to facilitate each goal could be generated by the teacher and supervisor and a date for additional observations determined. Both the teacher and supervisor should sign and date the observation form after it has been reviewed. The original should be kept in the personnel file and a copy made for the teacher.

Summary.

The initial training is important for providing an introduction and a positive attitude toward the curriculum. Ongoing learning should occur through use of the curriculum. After some hands on experience with the curriculum, additional assistance may be needed through a group or individualized approach.

Evaluation

The specific tasks involved in evaluation of the curriculum and playground design are

1. Field-test ideas, activities, materials, and equipment with the assistance of staff, parents, and others.

2. Obtain feedback from parents, staff, and volunteers regarding the utilization of the activities, materials, and equipment.
3. Finalize curriculum considering feedback from staff, parents, and volunteers.

4. Using a variety of techniques, evaluate the curriculum and design.

5. Make additions, corrections, repairs, and deletions as needed.

Field test.
The period of field testing can be any length of time. The value of field testing is that it encourages the highest quality product possible since mistakes and problems can be addressed and improvements made. Field testing also allows for more teacher and volunteer input. The field test can be informal, formal, or a combination of the two.

Obtain feedback.
The feedback can also be obtained through a formal or informal approach. It is important that the feedback be specific in order to utilize it effectively.

Finalize.
Although a curriculum or playground design should always be in the process of being improved, the overall framework should not require constant change. After considerable time and attention has been given to the evaluation, finalize the curriculum and design.

Techniques.
In addition to formal and informal evaluations, summative and formative evaluations are used to assess curriculum. Specific evaluation approaches include anecdotal notes,
checklists, grading, inventories, conferences, questionnaires, rating scales, self-assessment, and observations.

The evaluation, regardless of the technique, should reflect the criteria or goals of the curriculum. An evaluation instrument and procedures have to be identified. Conducting the actual evaluation occurs next.

**Improvements.**

After the evaluation data is collected, improvement strategies need to be identified. The areas to work on, person responsible, and a projected date should be sufficient.

**Summary.**

To encourage quality services to young children evaluation must be ongoing. The evaluation system begins with the formation of goals and objectives. It continues through the process of planning activities and the environment based on the goals. After the children participate in the planned activities they are reevaluated as are the goals, activities, and environment. The cycle is continuous. Evaluation presents a plan for determining the degree to which goals and objectives are met and methods are followed. Evaluation aids in improvement, justification, and documentation.
Chapter 5
SUMMARY, CONCLUSIONS,
AND RECOMMENDATIONS

Summary

In early childhood education today, there is an ever increasing need for improved playgrounds and outdoor curricula. Evidence of this need is reflected through the increase of literature regarding preschool outdoor learning environments.

The primary purpose of this project was to develop a Piagetian-based preschool outdoor curriculum and playground design. The curriculum and design was developed based upon the research reviewed.

A survey of the related literature was made to determine the recommended types of preschool playgrounds. The safety, play value, and expense of each type was studied.

Conclusions

On the basis of interpretation and analysis of this project, the following conclusions were reached.

1. The American interest in playgrounds has resulted in a transitional period with child oriented and creative environments beginning to replace the traditional asphalt playgrounds with standard equipment.

2. Traditional playgrounds generally include swings, slides, seesaws, and climbing bars.
3. Less cognitive and social play is exhibited on traditional playgrounds than on other types.

4. Contemporary playgrounds are designed to emphasize novel forms, textures, and aesthetically pleasing arrangements.

5. Adventure playgrounds provide children with raw building materials and tools with which they can build their own play structures.

6. Creative playgrounds include an inexpensive mix of hand built equipment and loose parts.

7. With relatively few exceptions, American playgrounds for children under eight years of age are hazardous, inadequately equipped, and inappropriate to the developmental play needs of children they serve.

8. The most serious playground hazard is a hard surface under the playground equipment.

9. Loose parts (tires, wood, plants, and seeds) have equal appeal to children across age levels.

10. Inexpensive play environments can be superior to expensive ones.

11. Volunteer services and donated materials help in constructing low-cost but high-quality playgrounds.

12. Although the development of motor skills remains important, outdoor playgrounds can also contribute to children's cognitive development, enhance communication and social skills, and give children a sense of independence and positive self-image.
13. As the amount of play equipment has increased, the amount of motor play and play with materials has increased, and the amount of social play and conflicts has decreased.

14. Many preschool teachers use the outdoor learning time as a recess for the children and a teacher break.

Recommendations

On the basis of the previously stated conclusions concerning preschool playgrounds and outdoor curricula, the following recommendations are given.

1. Current playgrounds should be checked carefully for hazards and modifications should be made as needed.

2. Playgrounds under construction should lean toward creative and adventure types.

3. Volunteer hours and donated goods should be utilized to provide quality yet inexpensive playgrounds.

4. Child care teachers and parents should be involved in the development of the playground and outdoor curriculum to be used.

5. Loose parts should be a part of every playground.

6. Outdoor equipment and activities should address the total developmental needs of the children served.

7. The equipment and activities should provide a balance between simple and complex, freedom and structure, and individual, small, and large groups.
8. Regular safety checks should be made for playground hazards.

9. Child care teachers should receive training in appropriate outdoor experiences for young children.

10. Child care teachers and administrators should develop criteria for evaluating teaching to determine if the curriculum is designed to lend itself to outdoor education.
1. Rails to be 2"x12" treated pine.
2. Five 12' boards needed.

Each seat to be bolted to brace.

Sand area
NTS
1. Construct using 4x4's.
2. Rings & bridge held in place with rope & eyelets.
3. Overall length: 9 1/2'
CLIMBING PARAMYD

(3 REQUIRED)
AT BASE ON EACH SIDE

CLIMBING PYRAMID

TOP VIEW

NTS
1. Height of pyramid at apex to be 5'.
2. 2 x 6" boards to be nailed to 4" x 4" beams.
3. Six boards on each side.
4. Top is uncapped and bolted together.
DETAIL OF RISER TO BE PLACED IN REAR OF SHED.

1. STRINGERS TO BE MADE OF 2" PLYWOOD.
2. STEPS TO BE 3/4" PINE.

1. DOORS ON EACH END FOR CART STORAGE.
2. DOOR IN FRONT ALSO.
3. ROPE RAIL ON BACK & SIDES HUNG 3' ABOVE SURFACE; LET DIP 8".
4. 2 CARTS: 5'X2'X3' W/ROLLERS
   1 SOLID WOOD
   1 W/5'X2'X1 1/2' TOP SHELF OF 4"; TOTAL HEIGHT: 3'.
5. A RAMP IS ALSO TO BE PLACED IN REAR OF SHED.
TREE STUMPS OR TELEPHONE POLES. MIXED HEIGHTS.

BALANCES
BEAMS TO BE BOLTED TO POSTS.
USE 4"X6" FOR BEAMS
USE 4"X6" FOR POSTS

BALANCES
NTS
MAX. HEIGHT 30"
MIN. HEIGHT 12"

BEAMS TO BE BOLTED TO POSTS.

*SEE SIDE VIEW FOR CLARIFICATION
ALL BEAMS THIS LENGTH

USE 4" X 6" FOR BEAMS
USE 4" X 6" FOR POSTS
ROUND TO BEAM HEIGHT TO BE.

GROUNDED TO BEAM HEIGHT

NOTE: BEAMS TO BE HELD TO POSTS W/ROPE.

GROUND TO BEAM HEIGHT

BEAM (SPLIT RAIL) TO BE BOLTED TO POSTS.
Appendix B

Western Kentucky University Head Start Program

Statement of In-Kind Contribution

DONOR CATEGORY (Please check appropriate space below):

_ Individual  _ Business  _ Civic Organization  _ School

TYPE OF GOODS OR SERVICE DONATED: ____________________________

__________________________

VALUE: $___________  DATE: _____________

(For Office use Only)  (To be completed by Donor)

Received by: ________________  Name of Donor/Organization

Center: ________________

Approved By: ________________  Address: Street & No/PO Box

22/____  26/____

City  State  Zipcode

Authorized Signature of Donor  Telephone number

Donation Worksheet

Dollar amount needed: __________

Dollar amount budgeted: __________

materials/services that could be donated, and their dollar value:

Places from which to request donations: (individuals, businesses, service organizations, and community agencies)
<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Phone</th>
<th>Person Resp.</th>
<th>Date for contact</th>
<th>Contacted</th>
<th>Response</th>
</tr>
</thead>
</table>

Type of contact to be used:
- Telephone:  
- Letter:  
- Personal:  
- Other:  


Appendix C

Grant Worksheet

In deciding whether to apply for grant money answer the following questions:

1. Is the amount of money available worth the work of developing a proposal? _____

2. What kind of chance do you have for being funded? Consider your skills and experience as compared to other bidders.

3. Do you have the time to work on the proposal between now and the deadline? _____

Grants to Request

<table>
<thead>
<tr>
<th>Funding Agency</th>
<th>Amount</th>
<th>Responsible</th>
<th>Due Date</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix D

Collaboration Worksheet

List all possible collaborators:


Answer the following questions about each possible collaborator:

1. Do we have common goals? _______
2. Are we geographically close enough to share a space? _____
3. What do they have to offer us? ______________________
4. What do we have to offer them? ______________________

If after answering the above questions it is determined that collaboration would be beneficial, continue with a plan.

Collaborator(s)  Person Responsible  Contact Date  Response


Appendix E

Sample Budget Worksheet

Column 1 - all possible items needed (wood, bolts, labor)
Column 2 - estimate of expense for each item
Column 3 - source of funds or donations
Column 4 - penciled in expenses as agreements and contracts are made
Column 5 - actual expenses for each line item; this will reveal the under or over estimated expenses
Column 6 - balance of the account for each line item; in the case of an under estimated expense, this will be a negative balance

<table>
<thead>
<tr>
<th>Line Item</th>
<th>Projected Amount</th>
<th>Source of Funds</th>
<th>Obligated Funds</th>
<th>Actual Expense</th>
<th>Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix F

Committee Worksheet

Identify the purpose of the committee: __________________________

Goals of the committee: __________________________________________

Responsibilities of the committee: _________________________________

_____________________________________________________________

Time frame for committee activities: ________________________________

List skills that need to be represented on the committee: 
______________________________________________________________

List agencies or groups that need to be represented on the committee:
______________________________________________________________

Considering all of the above list potential members of the committee:

______________________________________________________________

______________________________________________________________

Who will contact the individuals to invite them to participate?
______________________________________________________________

By what date should the contact be made? __________________________

Results of contacts: ____________________________________________
## Appendix G

### Study Worksheet

<table>
<thead>
<tr>
<th>Activity</th>
<th>Planned</th>
<th>Attended</th>
<th>Visited</th>
<th>Discussed</th>
<th>Reviewed</th>
<th>Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attend conferences and workshops</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visit quality playgrounds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visit quality programs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discussions with professionals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Review informative materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other approaches for study</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix H

Objective and Goal Worksheet

Before listing specific program goals decide the following:

What portion of the day should be spent in child centered activities?

How should teachers involve children in planning their activities?

What role should teachers take in helping children solve problems and learn new concepts?

What grouping strategies are best?

What are the characteristics of the age children served?

After the program goals are decided upon individual activities and materials can be collected or developed. The activities and materials should reflect the program goals.

Activities Worksheet

Curriculum Card

Title ______________________ Unit ______________

Primary Development Area ________ Type __________

Specific Objectives:

Materials:

Procedures:
Appendix I

Development Worksheet

What curricula will be used or modified? ____________________________
____________________________________________________________________
____________________________________________________________________

What playground designs will be used or modified?
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

Person responsible for modifications, if applicable:
____________________________________________________________________

Deadline for completion: _____________________________________________

Person responsible for purchasing or collecting needed materials and equipment:
____________________________________________________________________

Deadline: ___________________________________________________________

Person responsible for arranging for installation labor:
____________________________________________________________________

Deadline: ___________________________________________________________
Appendix J

Training Worksheet

Name of Session: __________________________________________

Trainer: ________________  Trainees: ________________

Date of Session: _________  Place of Session: _________

Agenda

Ice breaker

Introductions

Warm-up activity: ________________________________________

Climate setting

Benefits of training: ______________________________________

Goals of training: _______________________________________

Goal Accomplishment activities (specify training technique and visual aid): _______________________________________

Summary (main points): __________________________________

Evaluation (note approach and attach form): _______________

Follow up activity: _____________________________________
References


Andersen, R. (1972). From an educational point of view. In A. Bengtsson (Ed.), Adventure playgrounds (pp. 84-87). New York: Praeger.


Cooperative Extension Service. (No date). Home vegetable gardening in Kentucky. Lexington: University of Kentucky, College of Agriculture.


