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FOREWORD

Early Childhood Education is an integral component of public education programs. Facilities that effectively support the early childhood curriculum must interrelate with the overall school design while addressing the unique requirements of instruction for young children.

The accelerating pace of technological change that has characterized the Information Age dictates flexibility and innovation in the design of instructional programs and facilities within which they will be implemented. Public school facilities that provide flexibility while maintaining long-term economy and useability, are essential.

This publication describes early childhood education programs and facilities and is a supplement to the *North Carolina Public School Facilities Guidelines*. It is intended as a resource that can assist design professionals to plan facilities that meet the evolving needs of public schools in North Carolina. We hope you find it useful.

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INTRODUCTION

BACKGROUND AND OVERVIEW

Each school day, nearly 500,000 children ages three through seven walk into classrooms across North Carolina. Bustling with energy, these children reflect the rich diversity of our state. From the mountainous western regions to the flat coastal plains, they bring with them a variety of experiences, interests, and needs.

The early years are the most important period in children's development. Classrooms must be created to make learning occur. Both the physical structure of the classroom and the environment established by the teacher lead children to interact with one another and to value a cooperative way of life. Classroom design should support children as they grow physically, developing motor skills and coordination, and as they learn and develop the social skills which can ensure success in life.

Design professionals face the challenge of melding necessary physical components which can support developmental needs of young children into a facility shared with programs and services for other populations. Inclusion of children with special educational needs in early childhood education programs presents additional and unique considerations to the design process for an integrated facility.

The initial phase of the planning process should include the joint identification of activities and spaces required by the program; the size of each space; a detailed description of the activities, by space; furnishings, by space; relationship of spaces to each other; relationships to outside activities; psychological or social parameters; and environmental needs. The most effective facility design reflects a marriage of sound program planning by the school system and knowledgeable , inventive application of design principles by the design professional. A well-designed facility embodies flexibility to sustain current and emerging approaches to educating young children. These planning guidelines are intended to enhance that endeavor.

EARLY CHILDHOOD EDUCATION

The human brain grows rapidly during childhood. Because the young child's day-to-day experiences affect neural growth and brain development, it is crucial to make the most of the available time with young children. As their brains develop, children begin to show new understandings and skills in cognitive, social, and emotional areas. At the same time, they grow physically.

With rare exceptions, the developmental process unfolds in a similar fashion for children, regardless of their gender, race, social or economic background, or culture. Yet within this process, children grow and learn at their own paces and in their own unique ways. Rates of development within each domain vary for individual children and individual children mature and progress at different rates. The challenge for designers of both programs and facilities is to use what is known about child development and learning as a basis for creating learning experiences in safe, nurturing, productive learning environments.

While facility planners have traditionally interpreted early childhood to encompass prekindergarten and kindergarten, early childhood education programs in North Carolina's public schools serve children through grade 2. Two documents provide direction as educators plan programs for young children. The *North Carolina Standard Course of Study* sets forth curriculum competencies. The *North Carolina Guide for the Early Years* frames broad issues regarding curriculum and instruction, identifies and describes major curricular and instructional approaches used in North Carolina and across the nation, and provides a framework for local planners. Both documents are referenced in the Additional Resources section.

USING THE PLANNING GUIDELINES

This publication is a reference document for school facility designers. It describes early childhood education programs and the facilities that support them. It is neither comprehensive nor all-inclusive, but provides an initial understanding of the nature and purposes of early childhood education programs around which facility designs evolve. The planning guidelines in no way supersede state or local codes or regulations, nor do they replace federal or state legislation regarding building design and construction, access, safety, or other pertinent issues.

While early childhood and day care programs operated by public schools in North Carolina are not required to be licensed by the state, many will elect voluntary compliance or seek formal licensing. In any event, *Child Day Care Requirements* (1996, North Carolina Department of Human Resources) provides an appropriate set of minimum planning guidelines for the design of facilities for young children.

There is more to planning a quality child care facility than choosing child-size furniture. The facility should be inviting and functional. The program's liability may be reduced by spaces which can be easily supervised and storage areas which are readily accessible. Well-placed windows enhance learning. Easy access to the outside, even in rainy weather, promotes physical development and play while allowing observation of nature and the outside world. More productive parent involvement is possible if space is available for casual gatherings and formal meetings. Staff members require areas for planning and for quiet retreats during break time.

A well-planned facility enhances the learning process. In a world that often seems gigantic and overwhelming to young children, spaces developed with elements that provide spatial scale help

children gain mastery over their environment. They can practice adult jobs while gaining self-help skills. As young children learn that they can depend on their environment, they are able to develop independence. They are free to explore, to discover, and to decide.

Some aspects of all early childhood education programs and facilities are similar in nature and are described in the introductory portions of this guide. Sample floor plans supplement and clarify printed descriptions and are not intended for direct replication within facility designs.

As a design takes shape, it is likely that additional, more detailed information will be needed about the programs, equipment, and purposes that will function within the facility. A number of publications are listed in the Additional Resources section of this publication. In addition, staff consultants with the Early Childhood Education Section of the North Carolina Department of Public Instruction are available to discuss areas of concern and may be contacted by phone at (919)715-1878.

EARLY CHILDHOOD EDUCATION FACILITIES

THE INDOOR ENVIRONMENT

The arrangement of a facility is as critical as its size. Spatial perception changes with age and physical size. Children often select closely-defined spaces for play. A room that seems small to an adult can seem much larger to a small child.

Children should be able to move freely from one activity to the next without unduly disturbing others. Activity areas should be divided so that children in one area are not distracted by those in other areas. The environment should be attractive and colorful and provide for the display of children's work and other pictures at their eye level. The use of natural materials will provide tactile and visual experiences for children.

Natural light should be provided, and, wherever possible, direct visual contact and access to the outdoors. Windows should be low enough to allow children to see outside but not lower than eight inches above floor level (small children see the world from the floor, or, at most, two feet above the floor), should be arranged to take advantage of the natural climate for both light and ventilation, and should equal at least eight percent of the floor area. Window sill seating can provide an excellent reading or quiet niche.

If no outside door is provided, at least one window must permit emergency egress, ventilation, or rescue. This window must have a maximum sill height of 32 inches, must be operable from the inside, and must provide a minimum clear dimension of 24 inches and clear opening of 5.7 square feet. Operable shades or blinds should be provided for all windows. Observation windows with sill heights above the child's view level should be provided in hallways and between rooms to aid in supervision of children and in staff relief.

Heat-producing devices, such as ovens or surface burners, are hazardous and should not be installed. Where instructional requirements warrant, small-group teaching kitchens should be placed in an adjoining area or room that can be isolated from normal student traffic. Warm water is desirable; hot water is not recommended. Duplex electrical outlets should be provided on perimeter walls at no more than 12'-0" on center and at a height of 3'-6" above the floor (or above countertops, where applicable) and should have safety covers. Special equipment should be incorporated in a routine, functional way so that children with physical disabilities can do as much for themselves as possible.

Parabolic or indirect lighting is recommended for all applications, but especially for areas where computers will be operated. Illumination should not be less than 50 foot-candles if parabolic fixtures are used or 75 foot-candles if other fixtures are used. Task lighting should be provided for reading activities.

High-quality carpet should cover at least half the floor, with remaining areas (including wet areas) covered with vinyl tile or other appropriate material. Low-maintenance carpet is suitable for some play areas. Access for handicapped children, staff, and parents is required by law. Steps, or even minor level changes, can provide a challenging physical environment.

Furniture should be child-size and, where practical, upholstered. Comfortable adult furniture should be placed about the room to encourage one-on-one interaction between students and adults and closer supervision of student activities. Meal and snack areas should be arranged so adults can sit comfortably with the children.

A minimum of twenty lineal feet of child-height countertop is recommended, and a large, deep sink with warm water should be located to provide for maximum student participation. Cabinetwork should include both fixed and movable units and should provide file drawers, box drawers, wide drawers for poster paper, vertical slots, some open-front bins, and a minimum of "kitchen"-type cabinets. Wall cabinets should be at least 60 percent open shelving for books and display. Tall, reach-in cabinets are preferred for teaching supplies. A secure place for students' and adults' coats and personal belongings should be provided, along with cubicles or "cubbies" for school-related student materials and other similar items. A mixture of portable and built-in storage units should be used.

Classrooms with self-contained toilets are recommended for pre-kindergarten and kindergarten, and these may be counted toward the required number of fixtures set forth in the North Carolina State Building Code for a school. Toilets should be large enough to accommodate diaper changing and, where shared between adjacent classrooms, can provide separate facilities for boys and girls at little additional cost. Provision of adequate visual supervision of toilets can decrease physical and sexual abuse liability. Water closets should be standard size, with step stools as necessary, and sinks and toilet accessories should be mounted at heights which correspond to human dimensions for the ages served. Staff and parent toilets, handicapped accessible, must be available. Student toilet, sink, and drinking fountain locations should be directly accessible from both indoor and outdoor environments. Group toilets should be located on the way to the cafeteria and other assembly areas.

In addition to individual and small-group areas or centers, a large multipurpose room is recommended. This space provides for large-group activities, such as movies, inclement weather exercise, and enrichment programs like music and dance, and for support functions, such as parent meetings and conferences. Space for use and storage of nap mats should be provided, where applicable.

THE OUTDOOR ENVIRONMENT

Outside play, both free and structured, is an integral part of growth and learning experiences for young children. Outside play areas extend the regular classroom environment and can enhance

instructional practices and student achievement. The designer of early childhood facilities will want to integrate outside and inside learning areas to be interdependent and with the goal of physical collaboration toward the achievement of common expectations for students. Outside areas may expand typical definitions of playground through the addition of garden, pet, quiet game, reading, carpentry, or similar areas.

Play areas for young children should be located away from playgrounds for older children. Prekindergarten play areas should be located contiguous to pre-kindergarten classrooms, and kindergarten through second grade play areas should be located in proximity to those respective classrooms. It is often appropriate for pre-kindergarten and kindergarten students to share a play area.

Fencing is recommended for any play area, as required in the North Carolina *Child Day Care Requirements*. When a play area serves as a means of secondary emergency egress from a classroom, playground fences or walls may not exceed 32 inches in height (if there is a locking gate). In general, the *Child Day Care Requirements* specifies a 48" minimum height for fences, with the top free of protrusions and with gates that remain securely closed during occupancy. Fencing should exclude fixed bodies of water. Air conditioning and other mechanical units should be located away from outside play areas.

Play areas for young children should be partially shaded. Varied terrain should be provided, with a variety of ground covers, such as grass, plantings, sand, and paved areas for wheeled toys. Large, open areas for running and organized games should be free of playground equipment and other obstructions. Line-of-sight supervision of all sections of the play area should be possible. Easy access to toilets and water fountains should be provided.

A variety of developmentally appropriate, securely-anchored play apparatus should be provided outside normal traffic patterns and group play areas. Height limits and resilient surfaces under equipment should be incorporated to prevent serious injuries from falling. Places for children to sit and areas for sand and water play are important. Ancillary activity areas, such as gardening and carpentry areas, are desirable. Contiguous storage for outside equipment and toys should be provided. Potential hazards to consider in designing play areas may be found in the Appendix.

VISIBILITY

The design of the early childhood facility should accommodate constant, direct supervision of children by adults between all points in the classroom or outside play area. Supervision of outside areas from the classroom should be a goal, as well. Sight lines should take into account the small size of young children.

In the selection and arrangement of casework, equipment, and furniture, a "child's view" perspective should be assumed. Display boards, tack strips, and decorative graphics should be positioned at eye level for young children.

PRIVATE SPACES

Children who spend long periods of time in group settings need opportunities for privacy and solitude. Such provision can be made by environmental arrangement and planning, both indoors and outdoors.

Privacy can be provided by the use of equipment such as tunnels, playhouses, tables or chairs set apart from regular traffic and activity areas, small enclosed spaces in room arrangement, etc. These areas should be easily supervised.

NOISE

Noise is to be expected and even desired in environments for young children; however, excessive environmental noise can be fatiguing and cause stress. Noisy activities should be separated from quiet activities. Easily supervised relief areas should be provided for early nap risers to perform quiet activities while others are still asleep.

Acoustical building materials, strategically placed carpets, upholstered furniture, grass in outside areas, and other similar sound-absorbing materials can be effective in minimizing excessive noise and enhancing the quality of the environment for both children and adults. Large, flat, hard surfaces which reflect sound well and can create a noisy environment should be avoided, where possible.

FLEXIBILITY

The importance of providing options in facility design is highlighted best by the knowledge that children learn through active interaction with the world around them. When children's environments are rigid and static, too many opportunities for experimentation and seeing the results of those experiments are lost. Children's environments should be viewed as a setting for growth which they can manipulate and change in response to their changing developmental needs.

When making any design decision, it is important to think of the effect of that decision on the entire space. The program's available space--indoor and outdoor--should be considered a total unit, with the outdoor area an extension of the indoor, and vice versa. Fixed casework, to include at least 20' of counter top and storage units, should be held to a practical minimum to accommodate frequent rearrangement of centers and other learning and activity areas. Multi-use and modular units are desirable. Floor and wall treatments which relegate functions to set areas should be avoided, where possible.

The facility should accommodate current and emerging programs and teaching strategies for young children. Close collaboration with school system personnel will be essential to the provision of needed physical flexibility and maximum educational value.

SQUARE FOOTAGES

The minimum net square footage of a pre-kindergarten or kindergarten classroom should be 1,200. First- and second-grade classrooms should contain a minimum of 1,000 square feet, net. These guidelines are based upon the state-recommended maximum class size of 23 for grades K-2. Net square footage refers to usable space and excludes toilets, storage rooms, closets, offices, and recessed doorways.

In general, space size is indicated by the maximum number of children that will be using the space at a given time. Limited indoor play space can be offset by sheltered outdoor space, where climate permits reliance on outdoor space for activities often conducted indoors. Limited outdoor space can be offset by a greater amount of indoor space, such as a gym or multipurpose room.

LEARNING CENTERS

Much of the instructional space in the early childhood facility will be organized around learning centers. Such centers establish a home-like atmosphere in the classroom and help to make the facility serve the curriculum and instructional needs of children. Learning centers allow choices of materials and activities by providing stability and order to the classroom, while encouraging children to explore and experiment. They provide interrelated, hands-on experiences to meet children's developmental needs and interests. Well-planned centers foster physical and social skills, as well as language and cognitive processes.

The physical space should be analyzed before arranging the classroom environment. Classroom learning centers should be located based upon needs for storage and water, the size of the group to be using the center, and space needed for the materials. For example, the toy block center requires about 25-35 percent of the total classroom floor space because it incorporates so many learning concepts, and it should be established first. Floor coverings should also be considered in the placement of centers. Sand and water, cooking, and art centers, as examples, work best on coverings that can be easily cleaned. Descriptions of typical learning centers may be found in the Appendix.

TECHNOLOGY

Computers will be an important part of the instructional environment for even young children. A minimum of two networked (school) computer stations, one of which may be a teacher station, and a printer should be located in each classroom. In cabling for future program adaptability, additional stations may reasonably be assumed. In general, an additional 125 square feet above the recommended minimum floor space should be provided for each computer station.

Provision should be made for a T.V. monitor in each instructional space. A pull-down audiovisual screen should be provided in each classroom. A two-way communication system between the classroom and administrative office is a recommended safety feature for each teaching station, as is a telephone with an outside line.

CHILDREN WITH SPECIAL NEEDS

Facility planning should take into account modifications to accommodate children with special needs. The *Exceptional Children Programs Facilities Planner* (1998, North Carolina Department of Public Instruction) provides recommendations by program category.

STAFF SUPPORT SPACES

While a teacher "station" will be provided within the classroom, adequate staff work, conference, and lounge spaces should be provided away from, but in proximity to, the classroom. Combined or shared areas are recommended for efficiency and flexibility. In addition to an appropriately-sized work surface, staff should have access to a private telephone, a networked computer, and lockable files and storage. Total classroom square footages should not be reduced based upon the availability of such staff spaces.

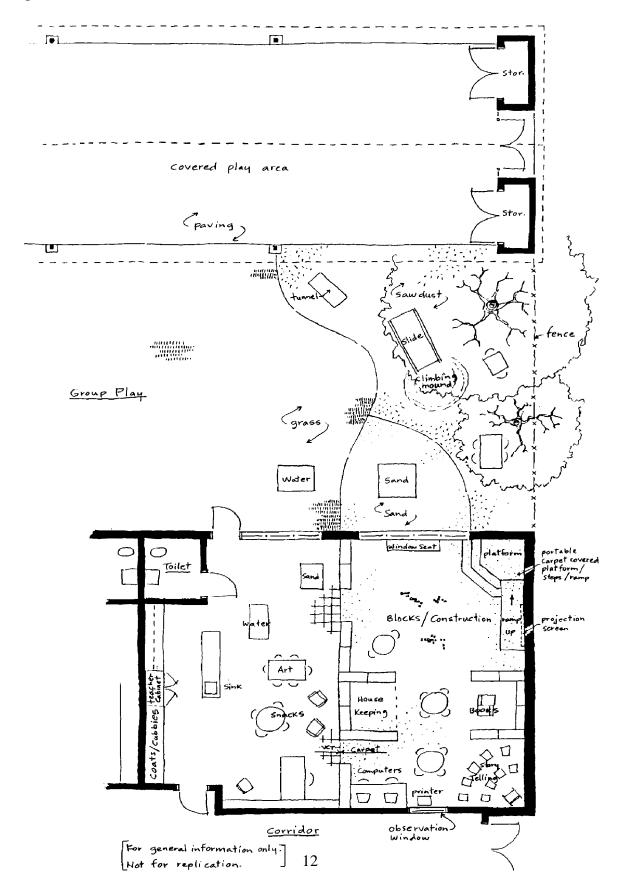
Conference spaces should be readily accessible to early childhood education staff, but may be shared with other staff in the school. Work space for materials preparation should incorporate tables and chairs, countertops with a deep sink and with open shelves below and above, and a section of adjustable shelving for the storage of audiovisual materials and a resource library. Materials processing tools, equipment, and machines will be located in this area. Shared bulletin boards and display areas should be provided.

Access to a suitable staff lounge and toilet facilities is desirable. Combination lounge/workrooms are not recommended. Both lounges and workrooms may appropriately be shared with other school staff.

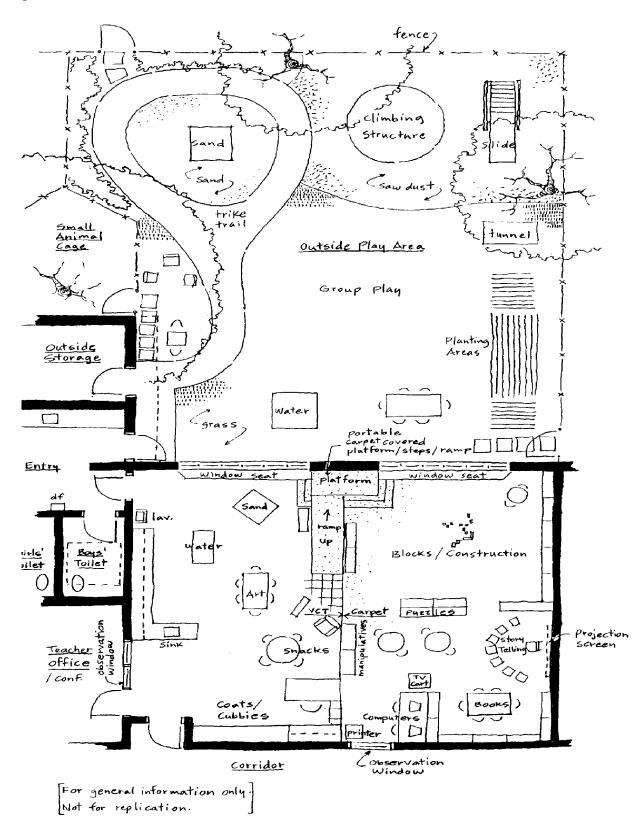
SAMPLE FLOOR PLANS

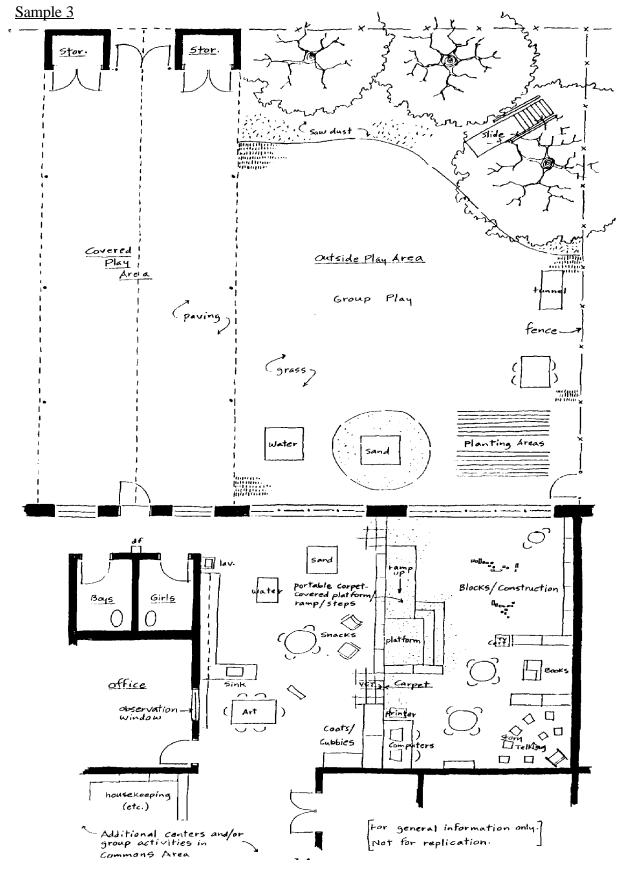
The sample floor plans on the pages that follow supplement and clarify the preceding program descriptions and are not intended for direct replication within facility designs.

Sample 1

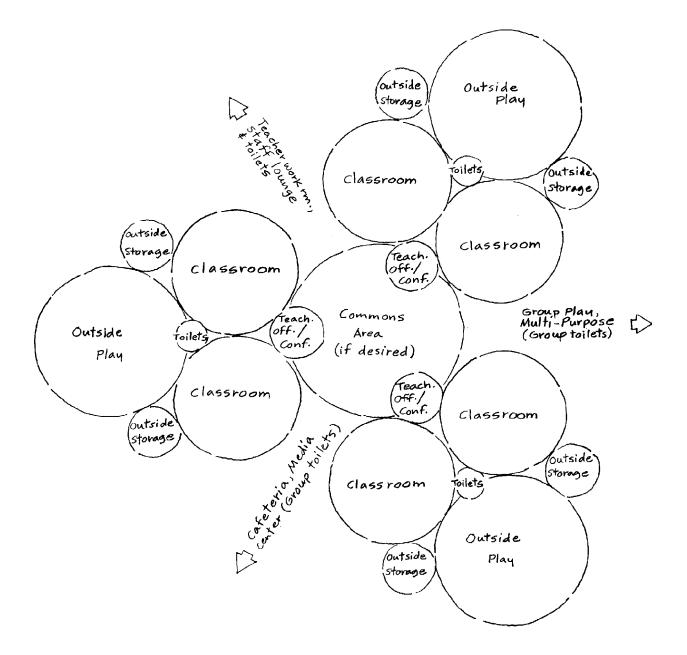








SPACE RELATIONSHIPS

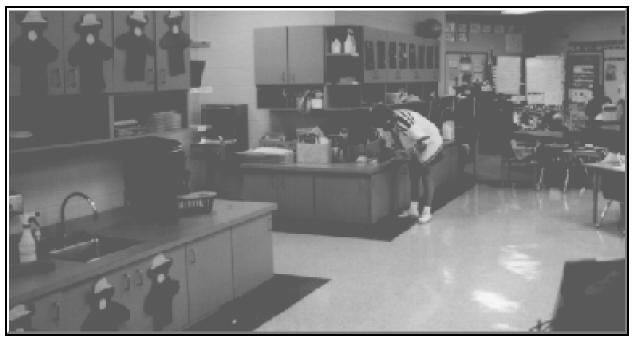


FACILITIES GALLERY

The following photographs depict early childhood facilities in several North Carolina schools, and illustrate descriptions found in the previous sections of this document.

Above: Commons Area: Group activity/play area Below: Commons Area: Group instruction/activity area







Above and below: Learning Centers: Dramatic Play/Housekeeping



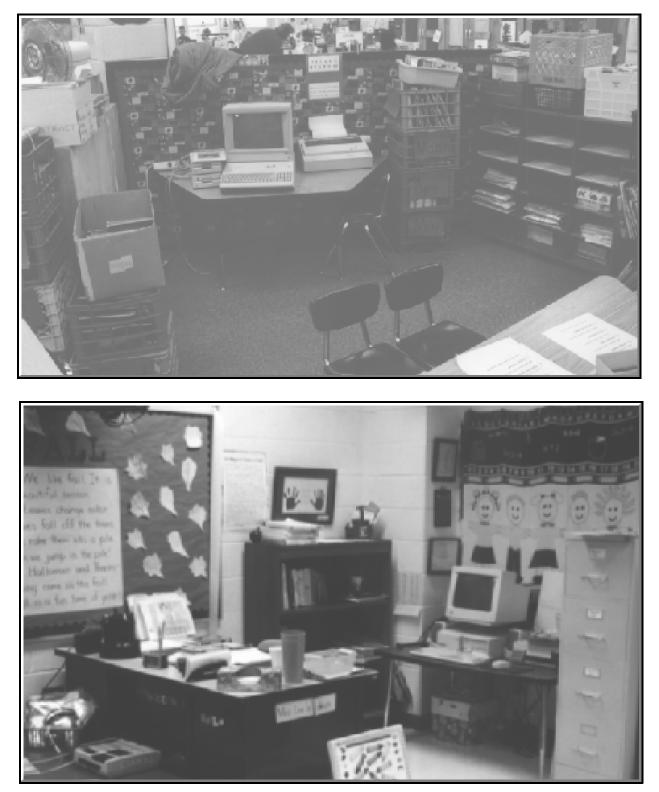


Above and below: Learning centers: Toy Blocks

Above: Learning Center: Multi-use Below: Learning Center: Reading



Above: Learning Center: Computers Below: Teacher Work Station



Above and below: Outdoor Play Areas





APPENDIX

CHECKLIST ON OUTSIDE PLAY AREAS

These checklist items are intended as a resource which reflects some typical considerations in the design of safe play spaces for young children and are not intended to be all-inclusive. Additional references may be found in the Additional Resources section of this appendix.

- 1. The height of structures should be age appropriate.
- 2. There should be clear fall zones around climbing structures and equipment.
- 3. Swings should be located out of areas of traffic flow.
- 4. Safe accessibility to all children should be ensured.
- 5. Sharp points, corners, or edges should be avoided. Rounded edges should have a minimum radius if 1/4 inch.
- 6. All wood should be smooth and free of splinters.
- 7. All wood should be insect resistant or treated. Finishes containing creosote, pentachlorophenol, tributyl tin oxide, or pesticides should not be used.
- 8. Ferrous metals should be painted or galvanized.
- 9. Protrusions or projections should be avoided or, at worst, extend a maximum of 1/8 inch and resist entanglement in clothing.
- 10. Accessible pinch, crush, or shear points should be avoided.
- 11. Openings which could entrap a child's head or body should be avoided. An opening may present an entrapment hazard if the distance between any interior opposing surfaces is greater than 3.5 and less than 9 inches.
- 12. Angles formed by any adjacent components should be a minimum of 55 degrees.
- 13. Anchoring devices should be buried.
- 14. Retaining walls and elevation changes should be highly visible.
- 15. Cables, ropes, wires, or flexible components in high-traffic areas should be avoided.
- 16. Fasteners, connectors, and covering devices should not be removable without tools and should have corrosion-resistant coverings.
- 17. Bearings in joints should be easily lubricated or self lubricating.
- 18. Bare or painted metal surfaces should be located out of direct sun.
- 19. Rung ladders and climbing devices should be avoided as a sole means of access.
- 20. Fall zones for adjacent pieces of equipment should not overlap.

SAMPLE LEARNING CENTERS FOR EARLY CHILDHOOD EDUCATION

Much of the instructional space will be organized around learning centers. Such centers establish a home-like atmosphere in the classroom and provide interrelated, hands-on experiences to meet children's developmental needs and interests. Centers can be defined by the location of fixed components, such as floor covering, bulletin and tack boards, or casework; and relocatable components, such as tables, bookcases, "cubbies", storage chests, or other furniture. The following describes some sample early childhood education learning centers.

ART

- ACTIVITIES: Children use many materials to create both two and three-dimensional works. Projects provide opportunities to experiment with a variety of mediums.
- STUDENTS: One to six at a time, with or without supervision.
- FURNISHINGS: Easels for two to four children. Table space for two to six children. Accessible supplies storage units for students and teacher. Display boards or strips.
- SIZE: Sufficient to accommodate indicated equipment and supplies.
- FLEXIBILITY: Center is not interchangeable with others. May be used for weaving and stitching, printing and writing, and other learning activities by exchanging materials sets.
- SPECIAL NOTES: Contiguous to wet area to accommodate clean-up and project drying.

TOY BLOCKS

- ACTIVITIES: Children build with blocks structures which remain overnight. Children will move about center as they explore, plan, and solve problems.
- STUDENTS: Usually no more than six.
- FURNISHINGS: Open shelves labeled for storage of oversized blocks (usually 500-700) and block accessories, such as animals, trees, cars and trucks, people, traffic signs, etc. Display boards or strips.

- SIZE: Should be the largest center (up to 30% of total floor space).
- FLEXIBILITY: Center is used full time and is not interchangeable with others.
- SPECIAL NOTES: Ample construction space away from typical traffic patterns. May be defined by carpet or low divider walls or may be located in a corner.

COMPUTERS

- ACTIVITIES: Children work with computers, using programs to create designs, stories, etc.
- STUDENTS: One to four at a time.
- EQUIPMENT: Two computers with monitors and networked printer. Child-height computer counter and chairs. Storage for software and supplies. Display boards or strips.
- SIZE: As required for equipment.
- FLEXIBILITY: Full-time use precludes interchangeability with other centers.
- SPECIAL NOTES: Good ventilation/cooling required. Indirect task lighting should be provided and center should be located to eliminate glare from any light source.

DRAMATIC PLAY/HOUSEKEEPING

- ACTIVITIES: Recreating home and family life and community environments and situations, such as peer interaction, sharing and compromise, and dressing, and cooking.
- STUDENTS: One to four at a time, with a supervising adult at times.
- EQUIPMENT: Child-size household (play) furniture, such as couches, chairs, and tables.
- SIZE: Adequate to support student role play and accommodate selected furniture.
- FLEXIBILITY: Full-time use precludes interchangeability with other centers.
- SPECIAL NOTES: Carpeted floor preferred. Proximity to block center preferred.

FAMILY AREA/LIBRARY CORNER/LISTENING AREA

- ACTIVITIES: Class "family" gathers to share experiences or events with one another, play games, sing, read, tell stories, or have brief discussions.
- STUDENTS: Entire class (up to 23)
- EQUIPMENT: Book shelves; open shelves; individual student pillows for sitting.
- SIZE: Adequate to accommodate entire class of students seated comfortably on floor.
- FLEXIBILITY: Full-time use precludes other assigned uses.
- SPECIAL NOTES: Should be located in a corner. Carpeting required.

SAND AND WATER

- ACTIVITIES: Exerimentation through play with sand and water.
- STUDENTS: Three to four at a time.
- EQUIPMENT: Sand table; water table
- SIZE: Adequate to accommodate tables without impeding normal traffic flow.
- FLEXIBILITY: Tables--especially water table--may have multiple uses employing various accessories sets (such as a baby bath for dolls).
- SPECIAL NOTES: Storage needed for aprons, accessories kits, teaching materials, and cleaning supplies. Indoor center best located near door and on washable floor. Outdoor center should be shaded. Tables should accommodate wheelchair users.

WOODWORKING

ACTIVITIES:	Real tools and materials are used for building.	
STUDENTS:	Two, with a supervising adult.	
EQUIPMENT:	Portable workbench with vise and pegboard rack for tools and goggles.	
SIZE:	Adequate to accommodate workbench.	
FLEXIBILITY:	Relocatable	
NOTES:	May be located indoors or outdoors. Noise may be a consideration for location of center.	
MANIPULATIVES AND TABLE TOYS		
ACTIVITIES:	Children play table-top games and with small toys.	
STUDENTS:	Usually no more than four.	
EQUIPMENT:	Pounding bench, child-size table(s) and chairs, "cubbies", shelves, and work trays.	
SIZE:	As required to accommodate equipment.	
FLEXIBILITY:	May be rearranged, but full-time use precludes alternate uses.	
SPECIAL NOTES:	Portable shelving units for storage of games and toys and for reconfiguring the center.	

ADDITIONAL RESOURCES

Child Day Care Requirements, 1996, Division of Child Development, North Carolina Department of Human Resources, Raleigh, NC.

Exceptional Children Programs Facilities Planner, 1998, School Planning Section, North Carolina Department of Public Instruction, Raleigh. NC.

Facility Design for Early Childhood Programs, 1991, National Association for the Education of Young Children, Washington, DC.

Guide for the Early Years, 1997, Early Childhood Section, North Carolina Department of Public Instruction, Raleigh, NC.

Handbook for Public Playground Safety, 1991, U.S. Consumer Products Safety Commission, Washington, DC.

North Carolina Public Schools Facilities Guidelines, 1997, North Carolina Department of Public Instruction, Raleigh, NC.

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The School Site: Land for Learning, 1996, School Planning Section, North Carolina Department of Public Instruction, Raleigh, NC.