

Early Childhood Special Education

Adapting the Physical Environment to Meet the Needs of All Young Children for Play

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INTRODUCTION

Preparation of the play environment is a powerful tool for supporting and enhancing children's play and development. Thoughtful arrangements of space and materials can invite children's participation in play and contribute to their efforts to organize and utilize materials, engage peers, and persist in play. In many instances, environmental enrichment or modifications result in changes in children's behavior and learning with less effort or intrusion than would be the case with more direct teacher interventions (Bailey & Wolery, 1992).

High quality, developmentally appropriate environments are the foundation for sustained, complex play for all children. However, some adaptations of the physical environment may be necessary to enable children with disabilities to participate fully in play. Allen and Schwartz (1996, p. 224) point out that environments which allow children with disabilities to "be included easily and naturally, convey a powerful message about human values: *all types of children can play together and have fun.*" The discussion that follows highlights considerations in designing high-quality, developmentally appropriate indoor play environments for all children and also describes specific provisions and adaptations for children with special needs.

ARRANGING CLASSROOM SPACE

Arranging Play Areas

Arrangement of space into clearly defined places to play using visible boundaries to separate play areas, helps children to focus on the play materials in each area and promotes complex play and interactions with peers (Dempsey & Frost, 1993; Field, 1980; Moore, 1987;

Teets, 1985). Shelves and furnishings should not obstruct observation of children by staff or staff communication and should be low enough to allow children to view the room and make play choices.

High noise levels have the potential to impede communication during social play. In general, noise levels should be moderate so that children and teachers can be responsive to each others' social cues (Ramsey, 1991). Noise levels are a special consideration for children with hearing and vision impairments. Hearing aids amplify all of the background sound, not just relevant sounds. Children with visual impairments are highly dependent on auditory cues. Furthermore, some children with central nervous system dysfunction are hypersensitive to noise and other stimulation. The play space can be separated into noisy and quiet zones and drapes, carpets, corkboards, and acoustic tiles can be added to a room to help absorb sound.

Lighting is another consideration in determining the location of areas. Play activities in which children must attend to detail, such as art, reading, puzzles, and manipulatives, should be located in well-lighted areas, preferably with good natural lighting. Window shades may be used to reduce glare and shadows. Lighting conditions are particularly important for children with low vision and for children with hearing impairments (who rely on visual communication systems such as sign language or speech reading).

Accessibility of Play Areas

A significant issue in designing play space for inclusive classrooms is accessibility of play areas. Pathways should be free of obstructions such as scattered toys or misplaced equipment that children with poor vision might trip over or that might impede the movement of children with physical disabilities from one area to another. Paths should be wide enough to accommodate assistive devices such as wheelchairs, walkers, and crutches. Children should never be denied access to a

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play area due to a physical or visual impairment. Loft areas, for example, may be difficult for children with physical impairments to gain access to. If at all possible, a ramp should be provided. However, traversing an environmental structure such as a loft, with close supervision, may offer a child with a disability such as a visual impairment, a confidence-building experience that may aid in the development of mobility in the classroom and community (Bailey & Wolery, 1992).

SELECTING AND ARRANGING PLAY MATERIALS

Diversity of Play Materials

Careful attention should be paid to the variety and balance of play materials available to children. Materials furnished should encourage all types of play (e.g., functional, constructive, dramatic, games, solitary, parallel, and group) and all aspects of development in young children (e.g., motor skills, social competence, cognitive abilities, creativity, language skills, literacy). In addition, it is desirable to diversify within categories of materials. For example, blocks and other construction materials that vary in weight, size, material, texture, and shape (e.g., wooden unit blocks, hollow blocks and boards, cardboard blocks, Lego® blocks, magnetic blocks) should be available.

In inclusive classrooms, diverse ability levels need to be considered when selecting materials. For example, a teacher will need to provide a wide range of puzzle types, to accommodate preschoolers with diverse cognitive and/or fine motor abilities. The puzzles might range from simple two to five piece separated wood inlay puzzles to 6 to 20 piece interconnected inlay puzzles and beginner level jigsaw puzzles and should include puzzles with knobs and/or raised pieces. To illustrate, Isaac, a four-year-old child with Down syndrome, has a poorly refined pincer grasp and has difficulty grasping the fine edges of puzzle pieces. However, he can successfully complete knobbed, separated inlay puzzles with up to nine pieces and recently completed an interconnecting five-piece knobbed puzzle with a picture of a rooster without any assistance. In the same classroom, Dominic, a child with autism who is also four years old, regularly completes complex puzzles on his own. Recently, he assisted other children in a group project in which the children assembled a 48-piece dinosaur floor puzzle.

It is important to keep in mind, however, that most of the materials typically provided in early childhood classrooms can be used in many different ways by children with a wide range of capabilities and interests. For

example, blocks can be placed in containers or stacked and toppled or they can be used to create complex structures that demonstrate understanding of spatial relationships and representational thinking.

The degree of realism of play props provided for pretend play is a significant developmental concern. Younger preschoolers (or children with significant cognitive delays) are more likely to engage in pretend play with highly realistic props, such as actual cups and saucers (McLoyd, 1983; Pederson, Rook-Green, & Elder, 1981) while realistic props tend to inhibit the dramatic play of older preschoolers (Olszewski & Fuson, 1982). In classrooms with children with diverse abilities, real objects and highly realistic replicas (e.g., real telephones, realistic appearing dishes and eating utensils) should be included, while also providing open-ended materials (e.g., pieces of fabric, sheets of paper, boxes of all sizes, boards, blocks, plastic tubing) to encourage symbolic transformations. Teachers can use various strategies to create a mix of realistic and nonrealistic materials. For example, the teacher might place pots and pans and eating utensils in the construction area with hollow blocks, observe if children use the blocks as a stove or table or in other creative ways, and provide support to individual children to encourage object substitution through modeling or verbal prompts.

Another important consideration for inclusive classrooms is the social value of play materials. Children with disabilities often display difficulties in the development of peer-related social competence (Guralnick, 1986; Odom, McConnell & McEvoy, 1992) and engage in less social play than their typically developing peers (Doctoroff, 1996; Guralnick & Groom, 1987; Kopp, Baker, & Brown, 1992). Thus, it is crucial for teachers to be alert to factors that set the stage for peer play.

Some toys and materials lend themselves to higher levels of social play (e.g., dramatic play materials, blocks, wagons), while other play materials are likely to be used in solitary or parallel activity (e.g., art materials, puzzles) (Rubin, 1977; Stoneman, Cantrell, & Hoover-Dempsey, 1983). Many materials naturally invite use by more than one child at a time. Examples include puppets and a puppet stage, wagons, tandem trikes, balls, and a rocking boat. Props and accessories for reciprocal dramatic play roles such as mail carrier and customer, driver and passenger, doctor or nurse and patient offer rich opportunities for social interaction. In many instances, simply providing duplicates of play items can stimulate increased social play. For instance, Maria, a child with a moderate hearing loss, severely delayed expressive language, and mild cognitive delays, enjoyed sitting in a large wooden "car" that had been placed near

the dramatic play area and pretending to "drive." Other children soon joined her and suggested trips they might take together in the "car." One of the classroom teachers provided some suggestions to help the children further expand on their play and also assisted Maria and the other children to take a variety of roles in the play (e.g., driver, passenger, mechanic, car wash attendant).

Finally, the materials provided to young children should represent the diversity that children see around them, including diversity of abilities, as well as ethnic and cultural diversity. Materials such as books, puzzles, dolls, and other play materials that depict children with disabilities should be present in early childhood settings. Representation of children with diverse abilities in classroom materials promotes self-esteem and attitudes of acceptance and sends the message that everyone belongs (Favazza, La Roe, Phillipsen, & Kumar, 2000).

Increasing and Maintaining Interest

Teachers can do much to increase or maintain children's excitement about the possibilities for play that the environment offers. Selectively adding touches of novelty to the mix of materials can help maintain children's interest in the activities offered in the play areas, stimulate their creativity, and draw children into play areas they typically do not play in. Substituting baking and cooking utensils for the usual sand implements in a sandbox or providing dolls or doll clothes to wash in the water table may help children to see new possibilities for play. Materials can also be added to enhance play in the various classroom play areas. For example, in the block area, accessories such as people and/or animal figures, dolls, dollhouse furniture, trains, and small traffic signs may be provided. In one classroom in which teachers determined that the block corner was visited infrequently, teachers used a recent visit to the zoo as an opportunity to augment the materials and enhance the possibilities for play. In addition to the basic materials in the area (e.g., unit blocks, vehicles, traffic signs) the teachers added zoo animal figures, trees from a Lego® set, and materials which could be used to "landscape" animal enclosures (e.g., pebbles, twigs). The added materials resulted in an increase in the number of children playing in the area and helped to stimulate elaborate block constructions and sociodramatic play among the children.

As important as novelty is for stimulating children's interest and creativity, it is equally important to balance it with children's needs for continuity and predictability in the environment. Although materials should be rotated in accordance with curricular themes or recent

experiences, some stability should be maintained by retaining staple materials such as unit blocks and basic art materials and favorite books and toys.

Some children, such as those with Fetal Alcohol Syndrome (FAS), have difficulty making transitions and coping with change due to central nervous system dysfunction (Olson, 1994). Unanticipated changes in the environment may be particularly difficult for the child to adapt to. To prevent problem behaviors, the child can be prepared ahead of time or can participate in making the changes (Hughes, 1998). Direct involvement may help the child to feel comfortable with changes. Children can help by moving and sorting materials or can be involved in choosing or suggesting new materials. Thorough orientation to changes in the physical environment is also essential for facilitating exploration and play in children with visual impairments.

Organizing Materials and Equipment

A well-organized play environment is essential for all children, but is critical for children who have difficulty focusing their attention, selecting among activity options, sustaining play, controlling impulses, and/or regulating emotions or level of arousal. Such characteristics are observed in children with conditions such as Attention Deficit Hyperactivity Disorder (ADHD) and FAS. Visible storage and display of materials and labels on shelves to indicate where materials can be found and where they belong will help orient children to potential play choices, as well as facilitate clean-up. Materials should be placed on low, open shelves to make access easy and immediate. Small loose materials such as manipulatives, crayons or markers, collage materials, and play figures are best stored in small storage bins, boxes, or baskets. Labels placed on shelves to indicate where each object or material belong, are particularly helpful in facilitating clean-up. Labels can be drawings or pictures of objects cut from catalogs or cartons. Tactile cues can be added for children with visual impairments by gluing real objects to labels or using white glue to make raised drawings.

Jones and Reynolds (1992) stressed the importance of clarifying figure-ground relationships when arranging materials. As well as ensuring that materials are easy to find, relationships between play materials should be highlighted. For example, Jones and Reynolds (1992) describe placement of rubber animals on a shelf, sorted into traditional family groups of mother, father, and baby. The teacher not only provides a well-ordered environment when children first start playing, but supports play by reordering as play continues:

What this teacher does is to keep re-establishing clear figure-ground relationships, spontaneously creating order out of disorder to make the possibilities clear to children. If they "mess up" (use and change) what she has provided, she knows she's succeeded in supporting their play. Their order is always different from hers. And the classroom is theirs, not hers; she sets it up so they can re-create it. (pp. 18-19)

Carefully thought-out arrangements of materials and equipment are also critical for children with visual or motor impairments. The child who spends time in a wheelchair may be unable to access materials that are on shelves above or below the reach of the child's arms in a seated position. It is important that high-interest materials are available on shelves at varying heights to accommodate to changes in the child's positioning throughout the day. Consistent placement of materials in the same location is important for fostering independence in children with visual impairments. When materials are added or replaced, these changes should be pointed out and the child thoroughly familiarized with the location of new materials.

Adapting Toys and Play Materials

Generally, all young children can play with the same play materials. However, in some instances play materials that meet the motor or sensory needs of children with disabilities will need to be specifically selected or existing toys and materials will need to be adapted. Motor impairments, such as cerebral palsy, often affect the child's ability to grasp and manipulate objects. Providing a sufficient variety of age-appropriate toys in sizes that are easy for the child to grasp may be adequate for children who are less severely affected. Simple adaptations include increasing the width of an object by wrapping it with foam and tape; gluing knobs to puzzle pieces; or placing a Velcro strap around a child's hand to allow the child to grasp an object.

Children with cerebral palsy often experience uncontrolled movement and difficulty in directing the hand to a desired location. This can cause objects to be unintentionally moved out of reach or knocked over. A number of options are available for stabilizing toys. Boundaries can be created for moveable toys by placing the toy in the top of a cardboard box, a tray with edges, or inside a hula hoop placed flat on a surface. Dycem, a sticky plastic material, can be placed under objects to prevent slipping. Masking tape can be used to secure paper for artwork or a puzzle to a table.

An alternative for children with extremely limited hand function is the use of switches to adapt toys. A

switch is a battery-operated on/off device. Adapted switches can be easily activated using some movement the child has control over, such as pushing with a hand, foot, head, knee, or elbow; breathing; wrinkling a forehead; moving a finger; blinking an eye; or vocalizing. Switches not only allow children with significant motor impairments to control their environments and participate in play, but can also offer opportunities for play with peers. A number of resources are available on adapting play materials, making and purchasing switches and battery-operated toys, and computer-based play experiences (see Angelo, 1997; Armstrong, n.d.; see Glennen & Church, 1992; Langone, Malone, & Kinsley, 1999; Musselwhite, 1986; Parrette & Murdick, 1998; Schaeffler, 1988; The Preschool Technology Training Team Project, 1995; and issues of the periodical *Exceptional Parent*). Several websites also offer information about using assistive technology to support play such as the Let's Play Project at <http://cosmos.ot.buffalo.edu/letsplay/> and the Technology Integration website maintained by Linda Burkhart at <http://www.Lburkhart.com/>.

Selecting appropriate toys for children with visual impairments can be challenging. Some age-appropriate toys for preschool and kindergarten-aged children, such as miniature play figures and props, may lack meaningfulness for a child who is blind (Rogow, 1988). Tactile and auditory feedback from play materials is often necessary to engage children with visual impairment in play. However, many of the commercially available toys that provide sensory feedback are designed for infants and are not age-appropriate for preschoolers and kindergartners. Play with chronologically inappropriate materials can affect the way the child is perceived by others and reduce opportunities for interaction and play with peers. Further, Skellenger, Hill, and Hill (1992) pointed out that even age-appropriate toys that provide sensory feedback such as sizzling frying pans or electronic games may encourage selective attention to the sensory qualities of the toys, self-stimulatory behavior, and stereotypic play.

Merely providing access to age-appropriate toys to children with severe visual impairment will not ensure higher level play. Adults must help the child to link meaning to objects and play materials. Children with visual impairments need many concrete, hands-on experiences with common household items and with functional everyday activities to provide a foundation for symbolic play (Fazzi, Kirk, Pearce, Pogrund, & Wolfe, 1992). For example, experiences with food preparation (e.g., helping to bake cookies, preparing fruit salad for a snack) may help to facilitate participation in pretend cooking.

Sensory feedback can also be provided in appropriate ways to increase the meaningfulness of toys and materials. For example, storybooks could be accompanied by small objects or textures that relate to the story content (e.g., including a small teddy bear, a pair of doll overalls, and a large button with the story of *Corduroy*).

CONCLUSION

The creation of high-quality inclusive play environments is based on the premise that the play of *all* young children must be supported. Environmental support for play encompasses a wide array of strategies, ranging from well-defined, individual areas for play and strategic selection and placement of play materials to making the play space and materials fully accessible and responsive to children with diverse abilities, interests, and needs. A classroom play environment that is carefully planned to meet the developmental, sensorimotor, behavioral, social, and emotional needs of *each* child has the potential to enrich and extend the play possibilities for *all* of the children.

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