

Creating Universally Accessible Play Environments for All

by Ingrid M. Kanics and Heather Scrivner-Mediate

Human beings are hard-wired to play. It is during play that all children develop an understanding of the world around them and their place within it. Through play, they develop the cognitive, social, physical, and emotional skills they need to thrive and succeed in the world they live in. For children with disabilities, opportunities for community play experiences are often limited by barriers in the play environment design. This article will discuss the theory and practice of creating play environments that support children of all abilities. The design must incorporate the Principles of Universal Design, Developmentally Appropriate Practices, and Experiential Variety.

Universal Design Principles

It is important that spaces designed for children embrace the principles of Universal Design (The Center for Universal Design, 1997). These guidelines allow built environments to better support every visitor, regardless of age, ability, or background. The principles also help support all children, those who are developing typically as well as those who might be using assistive devices. Universal Design provides the foundation for a full family experience, enabling all to play in the environment. This includes the growing population of “wounded warriors” returning home from war, and the expanding baby boomer generation who want to have meaningful family experiences with their children, grandchildren, and great-grandchildren.

Principle 1: Equitable Use

This first principle strives to provide full access for all visitors, regardless of size, age, ability, or other personal factors. The ultimate goal is true inclusion, so that everyone can use the

feature and no one stands out in any way. This is often a hard principle to attain because with each choice in a design, someone is often excluded. An example of equitable use is the installation of a sensor-operated entrance to a play environment, which allows access for all visitors, the child using a mobility device, the parent pushing the stroller, and the fifty-child fieldtrip with an assortment of bags, coats, and lunches in tow. Sensors can also be used in an assortment of ways to activate an exhibition’s lights as well as any of its interactive components.

Principle 2: Flexible Use

When equitable use is not possible, flexible use becomes the next option. With this principle, the design looks to provide a variety of options so that visitors can find the most comfortable way in which to engage in an activity. An example of flexible use is providing a variety of bathroom fixtures so that all children can find the right fit for their size. It is important that public restroom options include at least one ADA compliant sink, toilet, and mirror so that an individual using a wheelchair can comfortably use these facilities.

Flexibility of use goes well beyond bathrooms. Exhibitions can easily incorporate this principle by having a variety of table and chair heights throughout. There should be an assortment of chair types available including stools, chairs with backs, and chairs with backs and arms. This allows each child to have the right seating support for success in the available activities. Another easy way to add flexibility in an exhibit is to have a variety of tools. This includes art tools (crayons, markers, paint brushes, scissors, etc.) and other play props (shovels, tools, etc.).

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It is easy for all visitors to understand that music happens in this area of the play environment. Courtesy of the Center for Creative Play.

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arrival 	breakfast 
finger play 	music 
outside play 	story 

A visual schedule like the one above (created with Microsoft ClipArt) helps children understand the activities for the morning. Courtesy of the Center for Creative Play.

Principle 3: Simple and Intuitive Use

Children's play environments should be simple and intuitive in design. Both child and adult visitors should be able to look at the environment and understand what happens in each area or exhibit. They should understand when they are free to engage with the things they see there and whether anything is off-limits. (e.g. in a museum that has some items that can't be touched). Play items and activities should be hands-on as much as possible and support the concepts presented in the exhibit.

Principle 4: Perceptible Information

Any signage in the environment should have good contrast and print size and provide information in a way that all can understand. The use of universal symbols and pictures can be an easy way to share information with all visitors regardless of their communication or language skills. The use of visual schedules can also be used to support children while they play in an exhibit. This system—often used by children with autism spectrum disorders—provides each child with a visual understanding of the components of an activity. A visual schedule can be used to describe the steps involved in creating an art project, or to let group members know the next phase in the

fieldtrip experience. By seeing what happens next, many children are able to let go of the anxiety they feel during transitions from activity to activity.

Principle 5: Tolerance for Error

An important part of childhood play is being able to learn from mistakes. This principle, tolerance for error, focuses on designing the environment so that a child can safely make mistakes during play. An example of this principle is the inclusion of a paint-splattered wall in an art easel area. As children refine their painting movement, they often go off the paper. The splatter design allows their art "accidents" to become part of the wall pattern. Interestingly enough, children do not seem drawn to paint on the wall directly, but understand that if they get paint on it by mistake, there is not a problem.

Principle 6: Low Physical Effort

It is important that each child be able to engage in the play environment comfortably and efficiently, with minimal fatigue. The use of low rise (6 - 7 inches [178 mm]), deep tread (9 -11 inches [254 mm]) stairs provides children with a way up to other play features while supporting their development of stair climbing abilities. The lower rise is easier on shorter legs, while the deeper tread creates a larger target to increase foot placement accuracy. A child-height railing (a maximum of 28 inches [710 mm] from the ground) is recommended for additional support (Young, 2003).

Principle 7: Size and Space for Approach and Use

In a child's play environment, size and space for approach and use are critical, not just for those using mobility devices, but for groups

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of children who play together. Wider entry ways and hallways at a minimum of 60 inches [1.52 m] allow all to move freely through the play environment (Young, 2003). The expanded section of the bridge path (pictured) allows two visitors using wheelchairs the chance to pass each other as they roll from either end of the bridge. It also provides groups of children with a place to pass each other, as well as a rest stop for those who want to watch the action below. Large openings (8 to 10 feet or more) into exhibit areas also increase access for strollers and fieldtrip groups. These wider entrances create better line of sight for caregivers to see where their children are and provide appropriate supervision. It is important to make sure that interactive components in exhibits have enough space for someone using a mobility device to approach the component and engage in it without “sticking out” into the other components of the exhibition.

Developmentally Appropriate Practices

Like all other areas of development, different types of play progress through stages. It is important that the environment allows for children to play in their current developmental stage. An environment that does this will support all children, those who are typically-developing as well as those with disabilities, who may be delayed or who may have reached a plateau in the play developmental sequence. A play environment that is developmentally appropriate allows children to make meaningful choices and broaden their sense of self. In addition, it builds on their boundless curiosity, provides opportunities for collaboration, and allows each child to engage in self-initiated, spontaneous play (Center for Creative Play, 2006).



The “bell” on the bridge path allows two visitors using wheelchairs the chance to pass each other as they roll from either end of the bridge. It also provides groups of children with a place to pass each other. Courtesy of the Center for Creative Play.

The design should avoid splitting children by their chronological age, but focus on providing a developmental variety around a specific type of play. For example, a children’s museum may choose to have a pretend grocery store exhibit that includes an area for early learners (typically infants and toddlers) with developmentally appropriate grocery items (larger grocery items that are not a choking hazard). At the same time it can provide more mature learners (preschoolers to school age children) with the more detailed components of the grocery store experience (stocking merchandise, shopping, selling and paying for items). This allows the whole family to enjoy this area as a unit because each child is able to engage at

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his or her own level while playing.

Experiential Variety in Design

Children are active learners who are drawn to interact directly with the environment around them. A play environment should provide them with a wealth of safe, sensory-rich experiences that they can explore at their own pace, thus allowing them to master their environment through play. Experiential variety acknowledges that all individuals learn through sensory experiences and strives to provide them with the diversity necessary for optimal neurological development.

Sensitivity to Sensory Needs

Children learn about their world through their senses, but these senses and the nervous system that is receiving the input are very much in formation during childhood. It is important that the environment be flexible in the sensory experiences it includes, as well as provide supports when needed. One example of a support is the creation of a sensory or multi-sensory room that tends to be calming to an overloaded nervous system. Options for this sensory room include fiber-optic lighting, calming music, and vestibular swing systems that can be used to provide deep pressure and calm, rhythmic swinging.

The environment should provide experiences in all seven sensory systems: touch, movement (vestibular), deep pressure (proprioception), vision, sound, smell, and taste (Center for Creative Play, 2006).

Touch

A variety of textures should be incorporated throughout the environment to support the play experience. These can be introduced

through props (toys, dress-up clothing, etc.), wall surfaces, and flooring.

Flooring

Flooring can add depth to a play experience. A change in surfacing may be used to define each play area, can be a play element in itself, and provides additional sensory input to those who use wheeled mobility devices. For those with visual impairments, a change in flooring can be an indicator of a change of play area. For example, a pour-in-place rubber surface indicates an active, gross-motor play area, while a plush carpet suggests a quieter play area where children can sit on the floor with puzzles and games. The detail of the flooring or sidewalk can become part of the play itself.



Flooring is used here to create a pretend nature scene. Courtesy of the Center for Creative Play.

For example, changes in color and texture can define the “pretend creek” in the sidewalk. For those who use wheeled mobility devices such as wheelchairs and walkers, floor materials can provide a rich sensory experience as the texture of the floor is transmitted through the device to the user. The important thing to remember is that all flooring must have a seamless transition, allowing all to move easily from surface to surface.

Deep Pressure

Children often enjoy “rough and tumble” play. This type of play allows them to activate their deep pressure (proprioceptive) receptors. This input helps them get a sense of the strength needed to engage in different activities. For many children who get overwhelmed with sensory input, deep pressure can also have a wonderful calming effect. These children will often seek to wrap or bury themselves in things that feel heavy. Make sure that quieter areas of the play environment include pillows and blankets that children can wrap themselves in if they need to calm down. Dig pits can also provide a great experience of deep pressure for those children who like to be “buried” in materials.

Movement

Vestibular motion involves moving in all planes—front to back, side to side, up and down, rotating, and spinning. All of these movements help children understand gravity and how they move through space. The play environment should provide opportunities for all children to experience these movements at their own pace. Make sure that surfacing in these areas provides a safe fall zone for these activities, as some children may spin and jump extensively. Often these activities are built into outdoor components in museums to provide enough



A child enjoys vestibular movement in a Gonge Top. Courtesy of the Center for Creative Play.

safe space for the movement that many children need.

Vision

Human beings are highly visual beings, and this sense is not yet fully formed during early childhood. The play environment should therefore support the development of healthy vision. Signage should have good contrast so that all can see easily, and permanent signage should include Braille for those with visual impairments. Lighting and color choices both have an impact on vision as well.

Lighting

The use of multiple lighting options can definitely enhance a play area. Natural lighting is soothing to children, whether it is direct or filtered light. When using fluorescent light fixtures, make sure these have non-hum, non-flicker ballasts. The use of natural spectrum bulbs in all artificial light fixtures is recommended. The use of tract lighting and other light systems that are user-friendly to individuals with light sensitivities is encouraged. Placing light fixtures on dimmer switches provides an additional level of flexibility, allowing the adult (or child) to adapt the lighting to a comfortable level. In this way lighting can be increased to support those with low vision while it can be dimmed for those who are over-sensitive to light.

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A father and son enjoy making "music" together. Courtesy of the Center for Creative Play.

Colors

Bright, primary, and high-contrast colors can become over-stimulating to many children. Consider using more muted and natural tones to support children during play. Paint finishes should be eggshell in low traffic areas and semi-gloss in high traffic areas, to reduce overall glare in the environment. Glossy paint finishes often feed into the visual overload experience for many children with autism spectrum disorders.

Sound

Sound can have a huge impact on the play experience. It can enhance the experience or distract a child at play. It is important to monitor background sounds (HVAC fans, fixtures, etc.) to be sure they do not detract from the play experience. Make sure the environment includes the chance to explore an assortment of sounds and music with independent control, so that the volume can be lowered as needed. Use sound in exhibits that visitors can simply activate as opposed to sounds that visitors have limited control over. Some visitors might become overwhelmed by sounds that are "looped" continuously in an exhibit area.

Smell and Taste

Children can have a variety of responses to both smell and taste. For those children who might be extra sensitive to smell, be aware that art supplies like glue and paint have odors that may seem noxious to them. Cleaning supplies should be monitored for toxic features of odor and ingestion off of table surfaces. Consider exploring alternative cleaning options like steam cleaners that can be safely used on multiple surfaces without toxic results.

Staff training

Finally, it is important to realize that a barrier-free environment is only part of the picture of providing a warm and welcoming play environment for children of all abilities. The other component is staff training. For indoor play environments, it is important that staff be trained to understand the benefits of their barrier-free environment to all visitors, whatever their place on the developmental spectrum. Staff members need to be trained to have a person-first focus, meaning that each child and visitor is seen as a person first, each with unique strengths and weaknesses, likes and dislikes. When a parent says, "My child has autism; tell me what play things are here for him," the answer should be, "Tell me what your child likes to do and then I can give you some ideas of the best place to start your visit with us." Staff should be aware of quieter play area locations and be able to provide a visitor with directions to these areas should their child need a quiet space to regroup.

When creating group programs, museum staff should be aware of each step in the group activity and be able to break the sequence into smaller steps so that visitors can be successful during the activity. Some programs may need

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to be designed for a special needs group and be offered during closed or quieter museum hours. These activities can then be expanded into general museum hours to allow children with special needs to “grow” into the busier daily museum experience at their own pace.

It is also important that all levels of staff understand the purpose of special features in your space (such as extra-wide pathways) so that they can be maintained properly. While it may initially seem like a pain to keep pathways free from encroaching chairs, signs, and other items, once staff understand the theory behind

the practice, they are more likely to notice and respond when an exhibition’s accessibility slips below par. Even the most well-designed play environment can, with poor staff support, still lead to an awful experience for visitors.

Conclusion

Ultimately, the best play environments are those that provide all children with their “just right challenge” in play. They are environments that do not disable visitors, but enable them to be all that they can dream! ✨

Providing a variety of tools throughout your space allows each visitor to find a perfect fit in terms of shape, size, and support.

Crayons

Barrel crayons ranging in size from slim to chunky

Finger crayons (short and cone-shaped; help to develop handwriting)

Crayon wheels (six colors in one graspable unit)

Make-your-own funky crayon shapes with melted wax remnants

Paint Tools

Standard brushes with a range of handle sizes
‘Shaving-style’ brushes

Refillable brushes with sponge applicators

Foam/sponge shapes to use as stamps

Scissors

Right- and left-handed

Various lengths of handles and blades

Self-opening

Loop scissors

Rolling scissors

Double-handed training scissors

Pencils/Pens

Weighted pens

Assortment of pencil grips

Squiggle writers (vibrating pens)

Pretend Play Items

Cleaning set with a variety of push, whisk, and corn brooms

Shovels with built-up and differently-shaped handles

Workbench tools ranging from simple hammers to complex nuts & bolts

Universally designed OXO utensils in the pretend play kitchen