DESIGNING FOR KIDS

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Adults are from Earth; Children are from the Moon

One of the challenges we constantly face when designing for children is to create an environment (including equipment and furniture) that produces the desired behavior and outcomes and deters undesirable behavior. This challenge holds true whether we're designing a children's environment for entertainment, edutainment, play or enrichment (early childhood education). Just as there is a gulf of misunderstanding between genders, often described with the analogy "Women are from Venus; Men are from Mars," likewise there is a gulf of misunderstanding between most adult designers of children's environments and the children they're designing for.

If you are designing a location for younger customers, Randy White explains why designing for children is a complex challenge.

Kids will do the darnedest and most unexpected things when it comes to interacting with the environment. If you have any doubts about this, consider a recent news story: A seven-year-old boy crawled inside an arcade-type crane machine at a Piggly Wiggly supermarket in Sheboygan, Wis., and then couldn't get out.

The Web site for Action 2News in Green Bay, Wis., reported that when firefighters arrived the child was sitting inside the machine among the stuffed animals. He had crawled into the eight-inch by 10-inch vending slot while his father talked on a pay phone three feet away. The child remained calm during the hour that it took a locksmith to free him, then made a quick dash for the restroom, said fire department officials.

This story is a good illustration of how children will make things in the environment that aren't meant to be interactive, interactive. And, the younger the child is the more likely this will happen. This is because of the vast differences in the way children and adults look at their environment.

DIFFERENT VIEWS

Adults view the environment in terms of form, shapes, structures, and as background. So if something like a couch is in a public place, adults will interpret it only for its socially acceptable use: for sitting upon. Children, on the other hand, interpret the environment holistically and evaluate it for all the ways they can interact with it.

They use the environment to aid their development and improve themselves. They look for the environment's affordances, the opportunities it affords them to do things. Also, children interpret the environment in terms of its possible function rather than its form. So in the case of the couch, because children haven't yet acquired the social norms for its accepted use (and aren't developmentally ready to accept social norms for behavior), they see the couch as something that affords them opportunities for bouncing on, sprawling out on, climbing on, jumping over and hiding behind. A rock, if small enough, is perceived by a child as something to grasp and throw, it affords grasping and throwing. If the rock is larger, it could afford stepping on, looking under or climbing on.

Another simple example is a long straight hall in a building. A child sees it as affording her a chance to run, and run down the hall she will. Similarly, a wall three-feet high is perfect for walking and balancing on. In all these cases, the child is not misbehaving. She is doing exactly what her brain is biologically wired to have her do, based upon the environment's affordances and her developmental age.

She is fulfilling what is known as her development tasks, one of which is to explore and interact with the environment. When a child behaves in an environment in a way that adults see as improper, it is not usually the child's fault, but more often the fault adults for not designing the environment appropriately for children.

Environments for children need to be designed with

careful consideration of four basic environmental needs children have:

Movement

The environment needs to offer children an invitation to move within safe and tolerable limits, and every child will move to a different drummer. If too restricted, children become frustrated and fidgety, or they try to gain access to prohibited components of the environment.

Comfort

A feeling of comfort is important to children's use of and exploration of the environment. There needs to be moderate and varied levels of stimulation for all the senses. Behavior is optimized at a comfort zone of stimulation, neither too little or too much. An overload of sensory stimulation and noise will exacerbate children's feelings of discomfort and result in undesired behaviors.

Competence

Children need to feel successful in negotiating the environment. Yet the world at large forces them to constantly confront intimidating and frustrating experiences. Successful children's environments are designed to make children competent inhabitants and users.

Control

Children need the ability to exercise control over the environment and acquire increased levels of autonomy. Children must have experiences that allow them to experiment and make decisions. The balance of this article explores in greater detail the elements of design required to accomplish these four goals and create successful environments for children's use.

"The environment must be designed not only to prevent unsafe behavior or situations and injury, but also designed to minimize injury when an incident occurs."

DESIGN CHALLENGES

One of the challenges in designing environments for use by children is to offer them the affordances for the desired behaviors. Through deliberate design you can keep children from using the environment in inappropriate ways by eliminating affordances for undesired behavior.

When it comes to leisure and play areas, this is accomplished by offering children age-appropriate affordances that produce the desired outcomes. If children are drawn to the entertainment and play components, they will not be drawn to inappropriate use (in an adult's eyes) of the other elements in the environment.

This requires that children be challenged and not become bored. Otherwise, they will start interacting with those other elements or sometimes become aggressive in their behavior. Of course, there is also the issue of eliminating affordances for the wrong behavior, such as not having throwable stones, walls that can be climbed and walked, or long straight halls.

Children become bored when there's a mismatch between what they have the ability to do and what they are expected or want to do. They enjoy themselves when their skills match the developmentally appropriate task at hand. If they're challenged beyond their capability they become anxious and often claim boredom as a defense. If not challenged enough they're bored.

In either case a bored child will find ways to be challenged by climbing, running, or other behaviors that match their abilities. Children prefer and are most drawn to play environments with high degrees of challenge, diversity, novelty, and complexity. The type, quality, and diversity of children's play environments directly affect the type, quality, and diversity of their play.

Since children's developmental tasks and skill levels change constantly as they age, the point where boredom sets in is a moving target. Children's physical (fine and gross motor), intellectual, and social skills are constantly advancing. This means that children's environments must offer what is known as graduated challenges, a range of challenges, as even the same age children have different levels of skills and acceptable challenge.

The ability children posses to interact with, control, and transform their environment is very important to them. Children want to explore, manipulate and transform the environment. Environments that include loose parts that children can manipulate, move, and construct with are immensely more engaging than static equipment and environments.

Most of young children's play centers around their incredible imaginations. The environment needs to promote and support imaginative role-play with props and loose parts. However, the environment needs to be open-ended so children can use their imaginations to develop their own play scripts. Highly scripted, structured, and overly themed environments stifle children's creativity, short-circuit extended play, and can quickly lead to boredom.

DESIGN CONCEPTS

An important aspect for children's use of the environment is that they are more interested in the process of using the environment than achieving an end result like adults do.

Then there are the concepts known as anthropometrics and ergonomics (sometimes referred to as human factors engineering), which means designing things to match children's physical sizes and abilities. This includes such characteristics as height, grip, reach, field of vision, etc., so that tasks can be performed with a minimum of stress and maximum of efficiency and safety.

It doesn't do any good to design equipment that doesn't fit a child's anthropometrics and skills and isn't ergonomically correct. Either he will not be able to use the equipment or he will feel incompetent trying to, and neither outcome will make him desire to return. And poorly designed equipment, furniture and environments that don't match children's anthropometrics can actually be dangerous. If a shelf is too high and a child wants something on it, she will often find a way to get to it, likely in an unsafe manner such as climbing on lower shelves that may not be designed to support the weight of a child.

Ergonomically incorrect environments can injure children. Research is now showing that children, with their still growing musculoskeletal systems, may be susceptible to musculoskeletal injury (MSDs) by using improperly designed equipment such as standard adult-size computer keyboards and ergonomically incorrect computer workstations. Surveys report a high incidence of children's computer-related aches and pains, including discomfort with wrists, necks, and hands.

OK, as complicated as all this sounds, it gets even more challenging. There's the issue of children's attention spans, which can be much shorter than that of adults. So something that at first interests a child can 10 minutes later become boring. To overcome this challenge, the environment must offer a wide variety of options. Too little a variety of equipment and materials limits children's play options and leads to increased levels of boredom and aggression.

Another factor that drives the need for variety is known as multiple intelligences. The theory of multiple intelligences challenges the traditional notion that intelligence is a single, fixed commodity. Rather, it says we all possess eight distinct and somewhat autonomous intelligences to differing degrees: linguistic, logical-mathematical, musical, spatial, bodily kinesthetic, intrapersonal, interpersonal, and naturalist. We tend to be most interested in activities that match our stronger intelligences. There are also distinct differences between the interests of girls and boys. Therefore, the variety of activities must appeal to the broadest range of multiple intelligences and to both genders.

The scale of the environmental space also influences children's behavior. Research shows that the more child-scaled the environmental space, the higher the quality and complexity of children's play will be, and the longer they will be preoccupied in the play. In other words, a child-scaled environment increases children's interest and concentration, and it delays boredom. In a large space, children are encouraged through reading the environment to move about from one thing to another, whereas in small-contained areas, they are more focused. Areas for different activities need to be well defined with identifiable boundaries in ways that children can interpret.

The relationship between areas and activities, what we call adjacencies and zoning, also has an impact on children's behavior and the quality of their activities. Institutional size and looking buildings and large entries, lobbies and public spaces are very intimidating and uninviting for children. Children are most comfortable with residential looking buildings and residential scale spaces.

Other factors also influence children's enjoyment of play and entertainment. Indoors this includes the decor, colors, lighting and acoustics. And outdoors, nature and the abundant use of plants in informal settings have been shown to enhance children's concentration, reduce their stress, increase their feelings of well-being and help them further develop imagination and a sense of wonder. Children have a strong preference to play outdoors in a natural environment, as opposed to one built indoors.

Predictability and routine are important to children as well. It helps give them a sense of control over the environment and their daily lives. There needs to be a balance between not too much sameness and not too much change and contrast, what is called differences-within-sameness. This concept is best exemplified by nature with its subtle changes of wind, light, sounds, and its seasons. If an environment a child repeatedly visits is constantly changing, the child will experience discomfort and anxiety.

A well-designed environment can be deciphered by children. They can orient themselves, recognize how the space they are in connects to adjoining spaces, and figure out how to get to a desired destination, a concept known as wayfinding. Children's short stature makes this especially challenging unless the environment is designed from a child's-eye view. Younger children don't read. So where

signs work for adults, the environment itself needs to be designed to give children equivalent non-language wayfinding communication. An important aspect of younger children's orientation is known as transitioning. Children cannot process new enviorments as quickly as do adults. They need more time to adjust. The use of transitioning spaces and transparency from space to space greatly assists children with transitioning.

MORE CONSIDERATIONS

Safety is also a crucial consideration. The environment must be designed not only to prevent unsafe behavior or situations and injury, but also designed to minimize injury when an incident occurs. Situations where a child cannot evaluate the risk, such as head and finger entrapments, need to be avoided. However, to be interesting to children, equipment must present some risks, but risks where a child can evaluate the challenge.

What are considered risks for older children can be hazards for younger children. Environments considered appropriate and safe for older children will often be dangerous to younger children, requiring age segregation of areas. Environments with activities that are safe when children are supervised can be dangerous if children are left unsupervised.

Children's familiarity with each other also affects their play and interactions with other children. A group together regularly in a childcare setting will interact differently both with the environment and with each other than will children who do not know each other. The same environment design won't necessarily work for both groups.

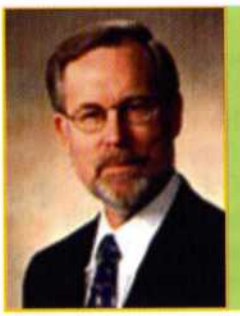
Another consideration: Children are also more sensitive to environmental hazards than adults are. This includes chemicals, VOC emissions (volatile off-gassing organic chemicals from building materials), and foods they are allergic to. Good air quality is essential. Toxicity and sanitation are especially important considerations for the youngest children who will often mouth anything they come into contact with. Many designers overlook the aspect of selecting non-toxic indoor plants and outdoor vegetation in children's environments.

Accessibility for children with disabilities is another design challenge. Unfortunately, the Americans with Disabilities Act (ADA) fails to adequately address children's accessibility, as it focuses mainly on wheelchair accessibility for adults. Even the alternative ADA children's standards fail to address the environmental challenges faced by children with non-wheelchair mobility disabilities, including walkers, leg braces, limited vision, Attention Deficit Disorder (ADD) and Attention Deficient Hyperactivity Disorder (ADHD).

The other problem is that following ADA standards during the design process can often make the environment and equipment unusable by able-bodied children. An approach known as universal design is required to make environments truly usable by the greatest number of children. Universal design is an approach to design that honors human diversity and addresses the right for everyone from children to the elderly to use all environments, products, and information in an independent, inclusive, and equal way.

Durability and maintenance are important considerations in designing any environment for children's use. Children will give things more wear and tear than adults do and will definitely get things dirtier faster. Materials need to be durable and easy to clean and maintain. Using materials and finishes that can be sanitized is important, especially with infants and toddlers will be present in the environment being designed.

Designing for children is no simple task, since most adult designers have a completely different perception of the environment than the users they are designing for. If you put children in an environment not properly designed for them, all kinds on unexpected and undesired behaviors and outcomes result. Children are going to use the environment in ways that their biology tells them to, so it's the responsibility of adults to design children's environments carefully to produce the desired behaviors. Positive outcomes for children's behavior in a leisure or education setting will be produced only when the environments have been design with a thorough knowledge of child development, play, anthropometrics, ergonomics, environmental factors, way finding, environmental psychology, and universal design. ▲



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