Universal Design 2016: Learning from the Past, Designing for the Future
H. Petrie et al. (Eds.)

doi:10.3233/978-1-61499-684-2-431

Universal Design in a Zoological Setting

Mark TRIEGLAFF [1]
Accessibility Consultation and Training Services, Inc., USA

Abstract. Universal Design in planning for exhibiting animal collections for the public has been a part of the culture of one particular zoo in the US. This paper looks at the steps in designing a zoological park that is universally accessible to all visitors.

Keywords. Universal Design, zoos, exhibit planning

1. Introduction

Zoos and aquariums are places of wonder and enjoyment for people throughout the world. They appeal to all ages from young to old. In the United States over 181 million people attend zoos and aquariums every year. This is more than all the people that attend national hockey, football, basketball and baseball games combined.[1] Around the world, the number of people who visit zoos and aquariums is over 700 million.

While zoos and aquariums are popular for many people, how facilities and exhibits are designed can be a barrier to people with disabilities. In this case study we will look at the efforts used to incorporate Universal Design into various public amenities as well as the renovation and construction of new facilities at Chicago Zoological Park's Brookfield Zoo.

2. General Public Areas

2.1. Physical Entrance

The Brookfield Zoo has incorporated Universal Design at the very start of a guest's visit, from where you park a vehicle and how you enter the zoo to accessing the various exhibits and facilities. The Zoo has two main entrances into the park. Even though both entrances offer accessible parking and routes into the zoo, the South Gate provides a shorter and more level route than the North Gate (Figure 1). Guests with disabilities are informed of the easier access at the South Gate through the website and brochures on accessibility, or when they call ahead to plan their visit. Because of the anticipated increase in use of the south lot, the percentage of accessible parking was increased and located directly across from the entrance.

[1] Corresponding Author, 915 Eddy Court, Wheaton, IL, USA; E-mail: mark@actservicesconsulting.com

Figure 1. South entrance to Zoo is level to sidewalk so no curb ramps are required.

Originally the entrance to the South Gate had a curb separating the sidewalk and roadway. Unfortunately individuals that needed a curb ramp had to separate from their group and go to one of the curb ramps located off to the side. There was not a route directly in front of the Gate. When the parking lot was resurfaced, the level of the lot was raised to be even with the curb and sidewalk eliminating the need for a curb ramp. Now everyone can smoothly transition from the parking lot, to the sidewalk and entrance into the zoo keeping families and groups together. Large planters were placed at the edge of the sidewalk to help keep cars from accidently driving up onto the sidewalk and keeping the guests safe. This inclusive design and the open concept of large archways at the gate incorporate the Universal Design Principles One, Three and Seven offering useful design, easy to understand way finding and appropriate spacing for mobility.

2.2. Maps and Information

To continue with the ease of way finding, at each gate the public has the ability to be given a zoo map that includes access information. This map, available in large print 18-point font, allows a person with low vision to more easily read. Also on the map is accessibility information related to various disabilities using correlating symbols. Information on assistive listening device for shows and tram tours is noted, details on the enhancement of exhibits with touchable and life sized statues and their locations as well as the availability of Braille and large print handouts offered in the Children's Zoo. Additional information on ramps or sloped walkway entrances into the buildings and their locations were indicated. Rental opportunities for electric scooters, wheelchairs

and strollers for those that need some assistance going through the zoo are provided at each gate. Offering detailed information, as well as universal symbols most people were familiar with incorporates the ease of use and understanding regardless of a user's experience, knowledge or language skill outlined in principles One and Three of Universal Design.

2.3. Transportation

Brookfield Zoo is one of the largest zoos in the U.S. at 210 acres. Besides the optional electric scooters, wheelchairs and strollers to rent, a tram and bus transportation system is available. The trams are available during the warmer months and the buses during colder months or inclement weather. Both transportation systems were updated to provide wheelchair access on each vehicle, allowing a guest using a wheelchair to get on any vehicle at any time (if the space was available) as noted in the equitable use of Universal Design Principle One (Figure 2). The decision to provide all vehicles as accessible transportation eliminates previous experiences of a visitor with a disability having to wait for the next available accessible vehicle or an accessible vehicle had to be called out for them. This inclusive design allows friends and families to ride the vehicles together.

Figure 2. All transportation vehicles provide a ramp system.

2.4. Restroom, Facilities and Exhibits

The entrances to all public buildings and exhibits have been modified over the years to remove all stairs and replace them with sloped walkways and if terrain was an issue to install ramps. The sloped walkways are designed to be less than 5% and provide easy

access to guests using a wheelchair but also many visitors who are pushing a stroller or pulling a wagon. Level landings are at all doors for ease of grabbing a door handle to pull or push open. Also automatic door openers are installed at many entrances to provide easy access through the doors. Offering the low effort design of Principle #6 is not only helpful for a person using a wheelchair or other mobility device, but the general public appreciates the extra access, especially at the restaurants when carrying large trays of food and drink.

In places that offer restroom facilities, family and Unisex restrooms were added. Most are located either at the entrance of a restroom or as a separate room nearby. These additional restrooms, advertised as daddy/daughter or mother/son restrooms are also intended for couples where one spouse needs assistance but is still cognitive enough and resistant of going into the restroom of the opposite sex. This allows for a wife to assist her husband in his toiletry needs. In one instance, two female staff members supervised a group-home of developmentally disabled men. Two of the men needed assistance in the restroom. These accessibility designed Unisex restrooms provided the ability for the female staff to assist the men in an easy and respectful manor.

In addition to the Unisex restrooms, stalls with lower toilets are provided in the larger restroom facilities. Since the zoo is visited by a large number of toddlers and young children, a couple of stalls in each restroom are designed with an additional lower toilet. This provides an easier height for young children. This stall is also helpful for an adult who is short in stature. These flexible designs meet the needs of various abilities and ages as intended by Universal Design Principles One and Seven.

2.5. Benches and Tables

Provided throughout the park are many benches and resting areas for viewing exhibits. Because of the large size of the park, many individuals find it too big to cover all at once. The benches and resting areas offer those with less stamina like older adult and younger children the chance to rest before moving on. They also provide a comfortable space for an extended time to view specific animals. The bench designs were intentionally selected to provide backs and armrests for better support, ease of sitting as well as ease for raising themselves up from a seated position, reducing the effort needed for standing or sitting following Principle Six.

Each restaurant area provides regular tables as well as picnic tables that are of an accessible design. The goal is to provide access at large restaurants and picnic areas but also at food stands and gathering areas intend for shorter breaks or rests. Various types of accessible tables including one side access, double access or round accessible tables. This provides more diverse, flexible and equitable use as desired by Principle One and Two.

3. Exhibit Design and Enhancement

Today many zoos are undergoing redesign and development of new exhibits. From a code requirement the Americans with Disabilities Act (ADA) only looks at an accessible route up to the exhibit area. No additional standards are provided specifically regarding the exhibits themselves. The concepts of Universal Design

Principles were incorporated into the public designs of the new as well as some existing exhibits of Brookfield Zoo as early as the 1990's.

The Smithsonian Institute in Washington DC developed the "Smithsonian Guidelines for Accessible Exhibition Design" [2] under the direction of Janice Majewski, Coordinator of the Smithsonian Accessibility Program. These original guidelines were then reviewed and update by a committee organized by the American Alliance of Museums (formally the American Association of Museums). From this committee an updated and more comprehensive version of the "Smithsonian Guidelines for Accessible Exhibition Design" have been developed into a manual called "Everyone's Welcome" [3]. The intent of this undated manual was to provide additional guidelines for different types of exhibits (such as a zoo or live animal collection) and to provide a more Universally Design guidelines. The guidelines provided access of exhibits by a more diverse age group as well as various types of abilities.

Because the zoo was interested in Universal Design before this manual was developed, an advisory group was formed of organizations serving types of disabilities such as mobility issues, hard of hearing or deaf, low vision or total loss of sight. From this group a specific focus group of both low vision and totally vision loss of both adults and children provided feedback on how to make Brookfield Zoo more accessible for them. From their input, three main ways to increase access were implemented.

First was the creation of life-size and detailed statues of the animals at exhibits. Since many animals are in large enclosures and not easily viewable by visitors with low vision or cannot be touch (for obvious safety reasons) the statues provide details and dimensions they may not typically aware of. Second, when the creation of a life size statue was not practical, the development of a miniature but detailed statue was a second recommendation. These statues still provide many helpful details of shapes, dimensions and design they may not know previously. Third, the creation of cutouts that are life-size offer an idea of the proportion of the animal even though not all of the details are available. The cutouts are painted realistic colors and patterns of their skin and fur so guests with low vision could see the patterns and designs up close.

These recommendations from the group have been incorporated in several exhibit areas throughout the zoo. The Tropic World is home to a life-size adult male gorilla statue by the entrance (Figure 3). This statue shows the wear of many, many visitors enjoying the up close experience. It is also a favorite photo opportunity for many visitors. The Seven Seas area provides a statue of dolphins and sea turtles at its entrance and a life size statue of Olga the Walrus. Habitat Africa has a baby giraffe kneeling on the ground. Each of these statues is popular attractions for all zoo visitors.

Animal cutouts are mounted at two locations. The Siberian Tigers had one near its exhibit while the Bear Grotto had cutouts representing different bear species and their relative size to each other. The Indian Lake Nature Trail had several statues at the entrance and along the path. Several animals are life size but a few were reduced in size for exhibiting convenience. Animals native to the area such as ducks and frogs display accurate information of the animals' dimensions and portions.

Along with man made statues different animal artifacts mounted near exhibit signage offer another type of information regarding the animal on exhibit. Items such as antlers, porcupine quills, equipment used on animals and sometimes even their food provide educational opportunities for all zoo visitors. The design of exhibits with a multi-sensory approach meets many of the Universal Design Principles. The equitable and flexibility of use from Principles One, Two and Seven combine with the ease of

understanding and effective communication of information from Principles Two and Three.

Figure 3. Life size bronze statue of male gorilla is located along side the accessible route.

Adding to a multi-sensory experience some exhibits incorporate features of sound as well as smell. The sound exhibit in the Australia house is a recording of a Kookaburra bird's song. The recording housed in a box with an easy to operate push button, is positioned within reach range for children as well as a person in a wheelchair.

A zoo animal collection is well known for the unusual smells that can be encountered. Some exhibits intentionally provide various types of animal musk. In the Children's Zoo that featured mainly local native animals, the musk of a deer and a skunk were incorporated into the exhibits. Other exhibits such as in the Tropic World provided various musk's of the great apes.

When visiting a zoo or animal collection often fencing or enclosures block the view of children or individuals needing a mobility device. With the design of new exhibits, different considerations are being implemented. Many exhibits now have large glass viewing windows, providing excellent viewing and an immersion experience (Figure 4). Several exhibits such as the lions and African dogs incorporated heated coils next to the viewing windows, encouraging the animals to lay and rest in the location that offers an excellent view of them to the zoo guests. This is especially helpful for visitors with low vision who can literally get within inches of the animal to view them safely up close and in a natural environment.

Older exhibits have been modified to provide easier viewing. The Baboon Island was originally designed with large rockwork around the edges that allowed viewing into the exhibit only by standing and looking down into the exhibit. It was impossible

for a person using a wheelchair to comfortably view the animals and could be dangerous for a child being picked up and held on top of the rocks. Through a grant, viewing windows were installed in corners of the exhibit to allow easier viewing in two different directions.

Figure 4. Viewing window into African exhibit.

Also taken into consideration in the design of an exhibit must be signage. Providing signs at a height and distance easier to access by a person in a wheelchair, shorter adult or child and use of 18-point fonts of accessible design delivers the information in a usable fashion to all visitors.

For many of the aging population hearing challenges are becoming more and more evident. Along with visitors that are deaf or hard of hearing noisy spaces with lots of visitors create challenges to receiving information offered at an exhibit, such as a video of information on the animals and their environments. The texts of the presentations are provided in the video as open captioning or the full script of the presentation is on display below the video itself.

Brookfield Zoo offers narrated shows that now have assistive listening device systems available. The equipment used can be directed to a receiver a guest picked up at the south gate entrance. The equipment is also designed tow work with personal hearing aids to receive the transmission directly. This allows for a clear sound, no background noise and a better chance of hearing all the information. Assistive listening devices are used on the trams that passed by several of the narrated shows. It is important to consider bleeding of sounds into both narrations. Providing a system with several channels prevents the bleed over of sounds and better understanding of the useful and entertaining narration the tram personnel provide on their tour. Principle

Four, perceptibility of information regardless of ambient conditions or the users' abilities should become common practice for exhibit designers.

4. Conclusion

The Brookfield Zoo for many years prior to the passing of the Americans with Disabilities Act showed an interested in giving all visitors the best possible experience. Supporting full time staff to assist visitors with disabilities, developing educational programming to include visitors with varying abilities and planning renovations and new construction to incorporate the design elements described above set Brookfield Zoo apart from many zoos around the country.

The zoo was recognized in 1999 by an international committee as one of 30 world organizations effectively using Universal Design and was featured in "Universal Design Exemplars" an online publication of the Center for Universal Design. The same year "The 1999 Accessibility Award" was presented to the Brookfield Zoo by the American Association of Museums and the National Organization on Disabilities for the use of Universal Design in exhibit interpretives, programs and visitor amenities.

The overall accessibility of the Brookfield Zoo has increased access to a large and diverse audience of guests. By incorporating the Principles of Universal Design all visitors are offered equal experiences as they interact with the animal, exhibits and each other. Without even realizing barriers have been removed, everyone, regardless of their abilities, has a more enjoyable and inclusive experience.

References

1 Gusset, M. & Dick, G. (2001). The global reach of zoos and aquariums in visitor numbers and conservation expenditures. Zoo Biology 30:566-569

2 Smithsonian Guidelines for Accessible Exhibition Design. Smithsonian Accessibility Program. (1996), Washington, DC: Smithsonian Institution Press.

3 Everyone's Welcome: The Americans with Disabilities Act and Museums. (1999), Washington, DC: American Association of Museums.