

everyday SCIENCE

Culturally Relevant Exhibits for People with Disabilities



The Museum of Science, Boston, has a long-standing commitment to developing exhibits for people with disabilities. More than 20 years ago, Betty Davidson, a museum exhibit planner who was in a wheelchair herself, paved the way by working with a team to redesign a diorama exhibit with multisensory components. Christine Reich, manager of research and evaluation, drew inspiration from that early work during the design of *Making Models*. The goal of this exhibition is to explain what a model is, present examples of different models, and give visitors the opportunity to experience how to make models. Their hope was to ensure not only that people with disabilities would have access to the exhibition, but also that they would be able to learn the science behind making models, largely because the material was presented in a culturally sensitive way.

Reich and the other members of the *Making Models* team set the bar high. They wanted to create some exhibits for people with many disabilities: wheelchair users, those who are blind or have low vision, and people who are deaf or hard of hearing. To accomplish this goal, they organized a community advisory group that consisted of people with various disabilities who were also experts on access, representatives from state agencies, or activists in the field. One member of the group, a science illustrator, had some expertise about modeling and also had multiple sclerosis. Another member had low vision and worked at a community services organization for older adults with low vision. Another, who was in a wheelchair, could move only his hands; this individual had extensive knowledge about psychology and the arts. Each advisory group

member brought a much-needed perspective to the conversation.

The elements in the exhibition ended up incorporating many of the ideas discussed by the advisory group. For example, the human models were not just of able-bodied people. One of the male models was a tall African American with a prosthetic leg. The leg shown was not state of the art, either; it was the kind of prosthesis that ordinary people would probably purchase. And three models of hands showed them signing the letters A, S, and L, which stand for American Sign Language.

Interactives also were a part of the exhibition, and the key to designing them was to ensure that visitors could access them using multiple senses. "At

Making models by placing beaded metal chains on to magnetic boards allows visitors with physical disabilities to interact with exhibit materials.



the model-making station,” explains Reich, “people with limited reach could create a model using beaded metal chains on a magnetic board. At another station, they could build a model by pressing buttons.”

Two particularly innovative options allowed visitors to build models using light or sound. On a stage, visitors could manipulate color, the position of light, and its intensity to create a seasonal image, such as a sunset in winter or a sunrise on a summer day. The buttons and knobs that manipulated the light were easily reachable without moving, and there were places where visitors could rest their wrists.

At the sound station, visitors could select sounds from a series of electronic files to create a scene. Sounds included snoring, meowing, an alarm going off, or people chatting. Like the light stage, the sound models were created by pressing buttons and turning knobs.

Throughout the exhibition, visitors had access to audio and text labels, so learning was possible through either mode. The availability of multiple modalities for learning also meant that a sighted visitor could explore the exhibition with a friend with low vision, or that parents could have different ways to explain ideas related to the science to their children. The exhibition area also was easy for individuals in wheelchairs to navigate.

The Impact of the Exhibition

Did these adaptations increase the ability of disabled visitors to engage with the exhibits and to learn the science? According to the summative evaluation report,¹⁰ in many ways, they did. For example, those with mobility impairments—wheelchair and scooter users and amputees—could get around without any trouble. One obstacle reported, however, was that objects in a case were hard to see, and an amputee noted the need to have more places to sit down.

Blind and low-vision visitors, however, did find some parts of the exhibition difficult to access. Some expressed disappointment that they couldn't touch the objects described in the audio, while others were frustrated if they had trouble getting the sound to work. One blind visitor suggested the following: “The exhibit needs an overall orientation, and a Braille map would be helpful, too. Some of the stations need to provide more feedback to blind visitors in order to be accessible. . . . Some type of clearer pathway would benefit some disabled visitors.”

The report also revealed that even though it is extremely difficult to make every exhibit accessible to every visitor, enough options were available, making the experience equitable in the opportunities it provided for learning. According to the evaluation report, about one-third of these visitors said their understanding of models changed as a result of the exhibition, a response rate similar to that of able-bodied visitors. Yet there was still room for improvement.

“The goal is to make sure that there are enough experiences so that all visitors feel included,” says Reich. “And some exhibits carry more weight than others. If people are excluded from ‘landmark exhibits,’ they feel like they missed out on the experience.”

Moving forward, Reich notes that many museums, including the Science Museum of Minnesota and the North Carolina Museum of Life Sciences, are working hard on issues of accessibility and equity. But there is much to learn. “Professionals want a checklist, a list of items they can check off and then say that they have done everything right,” says Reich. “But that’s not the way this works. What is really involved is a willingness to engage in a process of involvement and engagement, a change in mindset, and a re-assessment of what is ‘normal.’ Then people will realize that they need to tend to all these issues in order to reach everyone.”¹⁰