Temporary Disabilities

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Introduction

A temporary disability is a short-term impairment that prevents people from completing the requirements of their employment. According to the State of Missouri's Department of Health and Senior Services, temporary disabilities are "of limited duration that is not covered by the ADA (e.g., broken leg, pregnancy)." In Massachusetts, a person can receive a temporary disability parking permit if they are experiencing temporary maladies such as vision impairment or functional impairment of an arm or leg. In British Columbia, Canada, financial support is provided for people as they recover from injury, surgery or illness. Temporary disabilities are short term, impact the workplace and are supported by the government.

Product manufacturers recognize the opportunity to address people who experience temporary disabilities through aiding and adaptive products. People can purchase relief for the temporary discomfort of bug bites, sunburn, and allergic reactions. Auto manufacturers supply drivers of high-end cars with rear facing cameras and proximity sensors to improve their vision in blind spots. Crutches and walkers are available in color with cloth attachments to help people recovering from injury and surgery. Bags, strollers, and other products are available to new parents who are sleep deprived and challenged with a new child. Products are available for many instances of temporary disabilities as people do need help dealing with the normal routines of their lives.

Industrial design students are very adroit at rendering concepts on the computer, developing sleek, fashionable forms, and designing appropriate interfaces for a myriad of potential users. But they have difficulty identifying the traits of a user group that is older or younger than college age. By identifying temporary disabilities, students are able to improve their project effort by:

- focusing, defining, and resolving issues that are specific to users and, in turn, field testing their concepts to these standards regardless of age.
- assuming that all people are temporarily disabled at some time in their lives, encouraging students to implement additional features to their concept, thus broadening their approach to the project.

This paper will provide several examples where students' exploration of temporary disabilities has increased their understanding of users' needs and have broadened their academic experience.

Ride-on Toy

An example of this is a ride-on toy project completed in a junior industrial design course. The students were very capable at identifying the child by age and understanding current market placement through Web and store site visits. The forms and supporting surfaces were well conceived and satisfied children's needs and abilities. Students successfully addressed the difficult task of designing for the physical change in height and weight of the users across the age range (three to five years). In addition, students listed the range of school activities as a symbol of mental capability and implemented appropriate technology. In order to broaden their approach, students were asked to explore temporary disabilities that may be involved in the product use process. Through visual storyboarding and observation, students identified issues of balance, lack of experience with the motion, and physical/emotional dependence on a parent, grandparent or caregiver. In this way, students were able to incorporate the push/pull/safety interaction of an adult into their design solutions and increased the breadth of the concept beyond the child's obvious needs. In addition, this encouraged the students to explore the needs of an adult in this

role and implement secondary functions and advantages to the product concepts. This exercise resulted in conceptual products with greater function and features and potentially greater penetration into the market.

Figure 1. Ride-on storyboard image.

Shower Spa

Another junior industrial design class addressed the physical needs of an older user through the design of a shower spa product. Briefly, the product provides a steam bath that can be followed by a water shower. Given the user demographics, students identified the physical needs, experience, and expectations of the group. Interviewing users and storyboarding the product use process, students described the expected activity of showering and the general expectation of the product. They identified and addressed the physical comfort issues of entering the hot space of the shower or exiting the shower into a cooler space. They addressed the interface issues of shower spa selection as well as temperature control for each. They addressed the physical, permanent disabilities of wheelchair use and haptic sensitivities. The group was then asked to explore temporary disabilities that may be experienced by the user. Given that the majority of users wear glasses but not in the shower, the students determined that the users were temporarily, and at varying degrees, visually disabled. Students addressed this area by providing storage for glasses while the user is in the shower as well as control type font size and format contrast to aid the visual impairment. In this way, the students expanded the breadth of their concept as well as their understanding of the potential user.

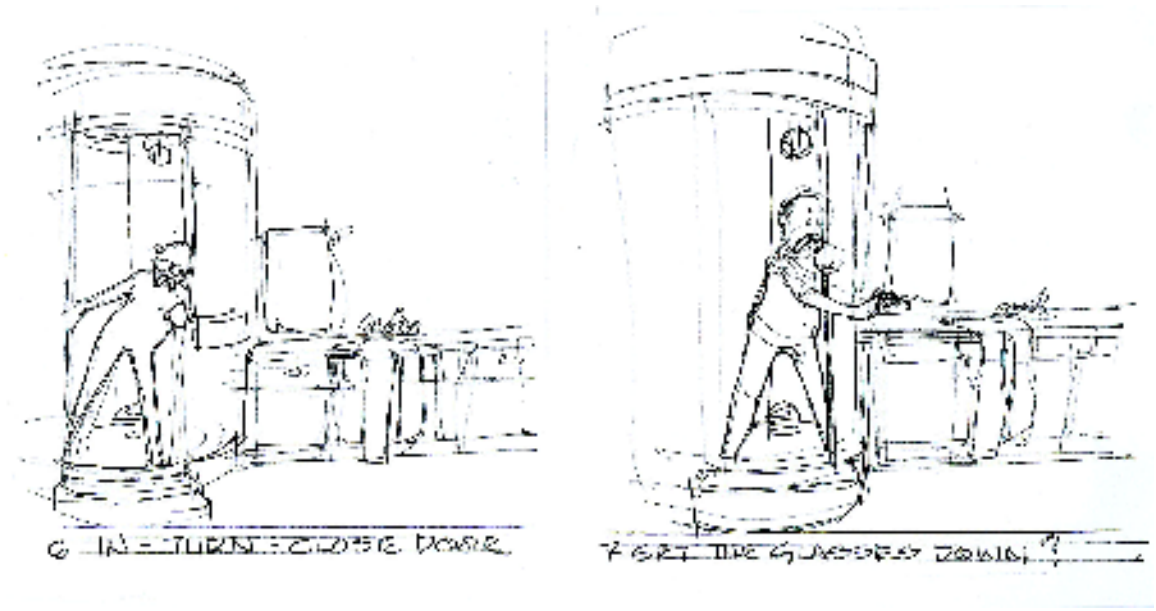

Figure 2. Shower spa storyboard.

Lecture Hall Seating

In the design of lecture hall seating, senior students were able to identify the users, the functional process, and the issues of entering and exiting the seat with a list of potential carry-on items. The design teams addressed issues of laptop use, digital test taking/responding, refreshments and even sleeping. But it was not until the design teams observed students in the lecture halls did they witness an unusual temporary disability or more an ability. In this case, students were observed climbing over the seats to traverse rows to claim an individual seat. The students' general agility and lack of inhibition to expected norms encouraged this unusual and potentially dangerous activity. By implementing this errant behavior into the project objectives students designed tables that folded down or rolled on rails to provide more space, and seats that collapsed back and down to provide clear climbing space. In review, when the students searched for temporary disabilities, they discovered behaviors that were beyond their expectation but accepted in the space. In this case, the issue of temporary disabilities reversed and was better titled a temporary ability, and as such addressed an added feature and function to the solution.

Figure 3. Lecture hall seating observation.

Diaper Changing

Pregnancy is a joyful and often welcomed temporary disability. Many countries provide time off to mothers and fathers for births and adoptions. Studies show that new parents are sleep deprived and temporarily disabled by the new all-encompassing interaction with the child. These issues certainly affect the adult in the workspace and their ability to perform their job at optimum levels. There are several instances of temporary disability involving a parent and a child that does not make the research charts but are worthy of mentioning when designing products for users.

- Adults with an infant or a young child consume a larger footprint when they are walking. This is caused by the child being carried on the parent's arm/side, pushing a stroller, or the child walking along/around the adult.
- When the child is carried by the parent in a upright position, the parent's vision is blocked by the child's head and their attention is splintered by the child's interaction and proximity to their face, ears, etc.
- An obvious, but often ignored, disability is that the parent carrying a child is one handed and must perform usual tasks with the free hand.

One project that exemplifies this point is the design of a diaper-changing surface. Storyboarding the process showed that several activities required product support. The changer needs to have several clean items within their reach as well as the support products to discard used or soiled items. Children as subjects in this activity are often active and rolling over as a mark in their development. But the rolling child needs to be gently restrained to avoid contact with soiled materials or worse, falling from the changing surface. This is achieved most often by the changer's hand. This results in a one-handed, diaper-changing activity. Students' design concepts fixed needed changing supplies within the reach of the free hand on one side of the child. Weighted test mannequins proved that clean and soiled storage is best served by the same hand that is then cleaned. From a project standpoint, this disability is easy to identify and interesting to resolve. Field-testing with actual babies was not conducted due to time and university review board constraints. But the identification of the temporary disability was paramount to the successful resolution of the design project.

Conclusion

In conclusion, students need to be introduced to new ways and means to enhance their competitive design abilities. Certainly, sketching, computer, storyboarding, and research skills remain high on the list. Less treaded means, such as the exploration of temporary disabilities, provide new ways to review user needs, identify user characteristics and push the concepts into a broader range of solutions. All of these attributes will help students to design better solutions in the classroom and should help to contribute this trend as alumni.

References

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