



Promoting Universal Design: A Pilot Study of Wheelchair User Needs Using the Inclusive Design Framework

Sandra Starkey and Jean L. Parsons
University of Missouri, USA

Keywords: inclusive design, disability, apparel design

The aging U.S. population has resulted in a larger percentage of individuals with disabilities and special apparel needs. This demographic shift necessitates a more holistic approach to apparel and accessory design as it becomes an increasingly important market. It is one that is often neglected by the apparel products industry and by design educators (Administration on Aging, 2011, Center for Disease Control and Prevention, 2010). The Inclusive Design framework provides a guide for designers to use when developing apparel and accessories for a range of consumer needs, including needs related to disability. This framework offers the potential to address needs without calling attention to individual differences (Wingate, Kaiser, & Freeman, 1983-1986). It also compliments the Social Model of Disability that views impairment as a social construct and not as an individual problem (Oliver, 1990). The Inclusive Design framework is based on the seven principles of Universal Design that promote developing environments and products for all needs and abilities. The Inclusive Design framework modifies the Universal Design principles by acknowledging that while one design may not work for all, one design may satisfy multiple needs (Carroll & Kincade, 2007).

The goal of this pilot study was to gauge interest and identify needs of a unique market segment, while incorporating the principles of Universal Design. The specific objectives of the study were to evaluate handbag needs of wheelchair users to inform the development of a prototype bag not limited to use solely by wheelchair users. A needs questionnaire was designed using the principles of Universal Design as a guide to elicit responses that will aid in the design of a bag that is “inclusive” to a variety of individuals. Wheelchair users were chosen for this study because, while they have unique needs related to wheelchair use, the design might also address other markets. The research was two-fold and consisted of the needs assessment questionnaire and an investigation of wheelchair bags available on the market. The questionnaire was distributed through email to individuals with wheelchair experience. The names were obtained through local resources for people with disabilities and through word of mouth. The second part of the research was an evaluation of internet resources for bags intended to accommodate wheelchair use. Questionnaire responses of twelve individuals with wheelchair experience were evaluated for the pilot study. Survey respondents were 18 years of age or older but represent wheelchair users that range in age from 8 to 55 plus. Seventy three percent of the respondents

were female. Ninety-two percent of the total respondents report use of a bag at least several times a week and 75% of the total use a bag daily. Wheelchair users were particularly interested in designs that did not set them apart from others. Fifty-eight percent of the respondents were dissatisfied with bag choices currently on the market and expressed interest in multi-functional bags with options for hanging and carrying. There was also interest in bags that could incorporate technology related to adaptations for charging laptops, cell phones or tablets. Respondents also expressed a desire for options that reflect personal style and fashion, and felt that these were lacking in the market place. A review of twelve internet sources revealed minimal color and fashion options for wheelchair users. All of the sources offered a limited selection of styles in primarily a black utilitarian fabric. The bags were designed specifically for wheelchair users and did not include accommodations for other markets.

The results of the pilot study indicate that a need exists for a larger study, using the Inclusive Design framework, to provide bag options that would include the needs of wheelchair users but also appeal to a broader market. Additional research will include design of prototype bags acceptable to both wheelchair users and others to test the possibilities and limits of the framework. Ultimately, this framework could be incorporated into design curricula to teach students design problem solving that includes a wide definition of special needs. There is clearly an opportunity for research that offers potential solutions for meeting the changing demands of the U.S. population to include individuals with unique needs.

References

- Administration On Aging. (2001). Retrieved 2013 from Administration on Aging: www.aoa.gov
- Carroll, K., & Kincade, D. (2007). Inclusive Design in Apparel Product Development for Working Women With Physical Disabilities. *Family and Consumer Science Research Journal*, 35 (4), 289-315.
- Center for Disease Control and Prevention. (2010). Retrieved 2013 from Center for Disease Control and Prevention: www.cdc.gov
- Oliver, M. (1990). The Individual and Social Models of Disability. Paper presented at Joint Workshop of the Living Options Group and the Research Unit of the Royal College of Physicians on People with established locomotor disabilities in hospitals, 23 July. <http://www.leeds.ac.uk/disability-studies/archiveuk/Oliver/in%20soc%20dis.pdf>
- Thoren, M. (1997). A New Approach to Apparel for Disabled Users. In S. Kumar, *Perspectives in Rehabilitation Ergonomics* (pp. 360-367). London: Taylor.
- Wingate, S. B., Kaiser, S. B., & Freeman, C. M. (1983-1986). Salience of Disability Cues in Functional Clothing: A Multidimensional Approach. *Clothing and Textiles Research Journal*, 4 (2), 37-47.