University of Washington

Abstract

Understanding and Supporting the Adoption of Assistive Technologies by Adults with Reading Disabilities

Katherine Nichole Deibel

Co-Chairs of the Supervisory Committee:

Professor Alan H. Borning
Computer Science & Engineering

Professor John D. Bransford
Education

Reading disabilities such as dyslexia are life-long conditions affecting an estimated 5–15% of the population. For adults with these conditions, participation in today’s information society can be problematic. By using the very digital media that is helping drive this information society, computing technologies may be a viable means of providing reading support and accommodation. For such technologies to be successful, though, they must be adopted into regular use. Unfortunately, studies have shown that 35–50% of all assistive devices are abandoned after purchase.

This dissertation explores the many sociocultural, technical, economic, and environmental factors that influence the adoption and usage of assistive technologies by adults with reading disabilities. A key element in these factors is the invisible nature of reading disabilities. People with reading disabilities often choose to not disclose their disability. As using an assistive technology may make one’s disability evident to others, choices made about technology usage are complex social negotiations involving issues of identity, normalcy, and disability.

The key approach used in this dissertation is Value Sensitive Design. By taking a multidisciplinary perspective and focusing on human values and a diverse set of stakeholder groups, detailed insights are developed for the design and deployment of reading-support tools better suited for adoption and ongoing usage by reading-disabled adults. Specific contributions include the following:

- A literature analysis establishing critical value issues involving the multiple stakeholders relevant to reading disabilities.

- Case studies derived from online message board discussions and one-on-one interviews involving
adults with reading disabilities and the roles of technology and disability in their lives.

- Value-based reviews of existing assistive technologies and design guidelines for future development.
- A detailed proposal for deploying *socially flexible* assistive technologies that address the critical issues of disclosure, privacy, and stigma management among adults with reading disabilities that is based on the use of meta-tools that assist in recommending and integrating other reading tools.

This work also establishes Value Sensitive Design as a powerful and beneficial approach for conducting assistive technology research and refines and expands upon the Value Sensitive Design methodology.