Digitizing Manipulatives for the Blind and Visually Impaired, Phase 3

Manshad, Sara

Legally blind and visually impaired individuals were asked to quickly and correctly complete a set of tasks (numbers, words, and mathematical expressions) by utilizing traditional classroom manipulatives, phase 2 (a set of multi-valued manipulatives with reading grid) and the new novel BrailleGrid. Cognitive load, task completion times, errors, usability, and overall workload were analyzed to determine the effects of this new BrailleGrid. Results demonstrate significantly reduced overall workload, task completion times, and a higher accuracy rate and sense of usability when compared to the traditional classroom manipulatives and Phase II when utilizing the new BrailleGrid. In contrast to traditional manipulatives, this new system allows the user to work self-reliantly due to the audio-feedback via software which provides feedback to denote correct or incorrect interaction. In addition, the new design eliminated the need to search for manipulatives by reading braille, and allowing the ability to compose Braille with real-time feedback during manipulation. The implications for this study will be discussed.

Awards Won: