



Developing a Braille Prosthetic

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Abstract

The aims of this research are twofold. Firstly to develop a prosthetic to facilitate learning to read the Braille tactile language. The prosthetic will use sonification of readings from an accelerometer attached to the reader's finger. The sound generated will be synchronous with the reader's finger movements.

An important question to answer is if Braille is still relevant in these technologically advanced times. The ability to read Braille is still incredibly important in contemporary times. There is no substitute for literacy in sighted people, why would it be different for the blind and the Braille language? It teaches blind people some indispensable skills. "*Extensive and early acquisition of Braille are two factors that have a huge impact on blind employment rates.*" The effect of Braille literacy compared to print literacy in children is incredibly evident in the fact that the young Braille readers have double the employment rate of their print counterparts in later life. It's important to note however that people who learned to read Braille after print did not have a higher employment rate than those who had never learned Braille.

Braille readers were found to have extended cerebellar activity, more so than sighted people who were feeling Braille but couldn't identify the characters. Furthermore, evidence indicated this wasn't due to an expanded somatosensory area like other studies have suggested. Sighted subjects tested on tactile symbol identification did not display activity resembling to that displayed by the blind reading Braille or sighted people reading text. These results indicate that "large cerebellar activation during Braille reading is not due simply to increased areas involved in sensorimotor processing of finger movement".