

A world at their fingertips...

Help them discover

Interested in learning more about the Tactograph?

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Enability Foundation for Rehabilitation is a not-for-profit (Section 8) company, incubated by IIT Madras, with a mandate to deliver indigenous assistive technologies at affordable prices.

Want to learn more about developing & using tactile materials?

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Chetana Charitable Trust engages in research, and develops locally relevant solutions to issues in child development, disability, health and education.

TACTILE IMAGES AND EARLY READING

Infants learn about the world using all their five senses – hearing, sight, smell, taste and touch. As they grow, surrounded by pictures and print, they learn that pictures represent objects and print represents words. But what of children who have not played and examined things in the world around them because of an impairment? What of children who have limited exposure to pictures and the wonderful world of stories?



Multi-sensorial input helps a child develop an understanding of the world around. It also helps a child learn concepts better, faster and in a manner that isn't forgotten easily. Early multi-sensorial input is essential for deep and lifelong learning.

Can TOUCH support early reading?

Young children form many of their early impressions from story books, which in turn gives them a symbolic representation of the world. Emerging readers, pre readers and early readers engage heavily with illustrations when engaging with stories in books. They learn many concepts through narrative texts too. Often, when a child is born with an impairment, we focus is on medical treatments and therapy, and forget about simple but enriching activities of play and stories, that provide rich and enjoyable learning experience.



The use of pictures and colours in books enhances the experience of reading in children of any age. Reading to a child can provide much of the drama and excitement of story narrative. Can tactile images support engagement with stories as well?

What we did

Books with tactile images were given to 21 children between the ages of four and ten years. The group included fluent readers, emerging readers and pre-readers. Twelve children had vision impairment, five children had other disabilities - Autism Spectrum Disorder (ASD), Attention Deficit Hyperactive Disorder (ADHD), and multiple disabilities including sensory, motor and cognitive impairments. Would the tactile story book appeal to all children?

What we observed



Guided to touch the pictures, the children quickly engaged with and very soon, took control of the story. Children were able to make sense of the more abstract concepts through their representation as images. Regardless of their literacy level, they were drawn to explore, ask questions, make comments and examine the pictures to see how the ideas in the sentences were represented. Having examined the tactile pictures, a pre-reader who had listened to the story, turned it back to the first page and related the entire story herself, moving from image to image!

What we learnt

All children clearly benefit from books that enable them to use their tactile sense. However, this becomes central when there is a child who has vision impairment, sensory integration dysfunction, multiple disabilities, ADD, ADHD, ASD or learning deficits or differences. The ability to perceive the world through yet another sense, particularly by touch, is of acute importance as it seems to help center their attention and often bridges their gaps in perception and understanding. Tactile images provide an opportunity for the start of symbol understanding, which in turn, supports the development of literacy. The tactile images can aid learning when objects are unavailable or when teaching a concept through objects is impractical. Making commercially available books tactile, accessible and fun for young children could help free their imagination. We know it is important, but how can we do this in an affordable way?



The Tactograph – a simple solution



The Tactograph is a printer that was developed to produce tactile images from saved pictures. The basic design was developed through the Center for Rehabilitation Engineering and Assistive Technologies (CREATE) at IIT Madras, with constant feedback from end users and educators. Enability Foundation handles the marketing and commercialisation of the Tactograph. The challenge given to Enability in this study was to create a tactile version of the



images of a Tulika publication that could be used by children with and without vision impairment. Line and Circle, a book for young children, was selected based on reading level, simple story line and images which ranged from literal matches to the text (one circle, many circles) to those that were abstract representations, especially when explored only through touch (sun, bird, flower). Most children,

regardless of their visual capacity and especially in the less fluent reader categories, really enjoyed the book and were actively engaged by the tactile images. The easy process of uploading an image and printing means that books and worksheets can be created within minutes. Ordinary paper and the use of cheap, easily available glue as the “ink” adds to the value of the machine for everyday use. Enability suggests a “print to order” possibility for commercially available story books when the images lend themselves easily to a simple outline and some texturing.

