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DAIICT prof gives 9-year-old a voice

Supporting the Upadhyays whose daughter suffers from dystonic cerebral palsy, Mirror tested the efficacy of Prof Ranjan's award-winning communication system

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Devanshi Upadhyay was just eight months old when she had an epileptic fit. Scared, Vinay and Reshma rushed their daughter to the doctors only to find that she would struggle with spastic dystonic quadriplegic cerebral palsy all her life. Their child was trapped in her body without the ability to communicate her needs. They learnt to read her eyes for clues but her lack of interaction with the outside world had them worried.

Till, they read an article in Mirror about the communication system developed by Prabhat Ranjan, professor at Dhirubhai Ambani Institute of Information and Communication Technology, Gandhinagar. Ranjan had recently bagged a national award for his communication system for quadriplegics and paraplegics.

Devanshi had turned nine and it was important for her to connect with people other than the family. Egged on by this thought, Vinay – who works as a senior manager in a pharmaceutical company — spoke to their paediatric physiotherapist Mona Patel who got in touch with Mirror. Supporting their need, Mirror contacted Prof Ranjan and carried a test drive on the communication system's efficacy in Devanshi's case.

FREE APPLICATION

Considering Devanshi's age and progress, the professor immediately shared the application for free so that her training in the digital medium could begin immediately.

Dr Patel – who has been helping Devanshi better her body alignment, reduce stiffness and increase neuro-development — agreed to check Devanshi's improvement in communication following the use of the device.

THE TRIAL

The test drive was divided in two stages. In the first stage, Devanshi was introduced to a mobile application developed by DAIICT student Dhaval Trivedi. The application enabled her to communicate her basic needs through just one touch. In the second stage, the 9-year-old was introduced to the neuro-headset.

Devanshi was given a touchscreen mobile phone in which Trivedi's application had been uploaded. It had 8 basic icons. This could be upgraded to 32 icons, based on a user's needs. The icons had symbols for basic needs like food, water, washroom, lights and one even to call the mother. The icons could be linked to voice message recorded in any language. The icons could also be set on auto-scroll for people who have very little control over their limb movements. Devanshi was made to test the app (see photographs).

Then, the professor made her wear the neuro-headset which was connected to a computer. It translated her eye blinks into left or right clicks. Head movements were used to move the cursor along. On bringing the cursor over a desired virtual keyboard displayed on a computer screen, she would blink her eye to 'type' the key. With the use of the headset, she slowly typed the words 'cat' and 'Devanshi' on the screen.

END RESULT

However easy it may sound, the entire hour-and-a-half exercise was a tedious task for Devanshi who had to undergo 'rotation' (kneading of limbs) to ease stiffness from her body every 15 minutes. Despite the pain, her enthusiasm in doing things herself was visible in her excitement and her happiness. Each successful attempt garnered claps from everyone present for the trial. It was a victory not just for Devanshi's parents, but for all involved.

"Though presently, she is not in control of her head, we will tweak the software to enable her to operate the computer solely through blinking. At a later stage, she will also be able to operate fans, lights, television and so on using the headset. She can be trained to lead a less dependent life," said the professor.

BETTER FUTURE

The joy of Devanshi's parents knew no bounds. "I am so happy to see her use the communication device. Now, even if I am not around, she can call to others for help. Otherwise, only I could understand her requirement," said Reshma.

"This gadget has given us a lot of hope. Though our girl will have to undergo severe training, we are ready for it because it will help her communicate not just with us but with others, too. She will be able to express her basic needs, operate the television, computer and other electronic devices in her room. And, the device is within our budget. Ranjan sir was kind enough to give us the mobile application for free and guide the test drive. We could not have asked for more," said Vinay.



It took Devanshi great effort to move her finger across the touchscreen to express happiness; Ranjan (right) with Dhaval who designed the mobile app to make the system holistic





Reshma brought a biscuit for Devanshi after she touched the 'food' icon (inset) to show she was hungry