



Although she suffers from spinal muscular atrophy type 2 and is confined to her bed, Miss Vivian Goh, seen here with her mother Ivy Yong, is able to run an online business, play online games, watch YouTube videos and attend online church services on her mobile phone and laptop, all thanks to eye-gaze technology, which tracks her gaze on the keyboard and types out words for her. ST PHOTO: SHINTARO TAY

This is the 11th of 12 primers on current affairs issues that are part of the outreach programme for The Straits Times-Ministry of Education National Current Affairs Quiz

Primer

Assistive technology changes lives of the elderly and disabled



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Miss Vivian Goh, 40, runs a small online business selling clothes and an assortment of products, which now include face masks.

Nothing unusual about that – till you realise the severity of her disability. She is unable to do most of the things able-bodied people take for granted, such as walking, going to the toilet independently and even sitting upright.

She suffers from spinal muscular atrophy type 2, a neuromuscular disease that causes her muscles to waste away progressively, and she spends her days confined to her bed. She has also lost the ability to type or use a mouse.

Yet, she is able to use her mobile phone and laptop, all thanks to eye-gaze technology.

Miss Goh would look at the letters of the alphabet on the keyboard and the eye-gaze technology, tracking her gaze, would type out the words for her.

Her mother, Madam Ivy Yong, 66, helps her in her online business.

Said Miss Goh: "The eye-gaze technology is very good and convenient. It helps me to be independent."

For many people with disabilities like Miss Goh, the smart technology found in assistive technology devices has helped them lead more independent lives and overcome some of the challenges they face related to the demands of daily living.

Such assistive technologies include voice-recognition software, power-assisted wheelchairs and smart home devices.

For example, a person with a degenerative disease who is confined to his bed can use his voice to activate the Google Nest Mini smart speaker to switch on the light or turn on a fan in his home.

He can use the Dragon NaturallySpeaking speech recognition software that converts speech into text. This is a useful alternative for those with physical disabilities and have problems typing.

Mr Tan Chuan Hoh, senior occupational therapist at the SPD Specialised Assistive Technology Centre, explained that smart hubs

such as Google's Home and Apple's Siri are personal assistants that listen to the user's instructions. Using artificial intelligence, they execute commands such as searching for a phone number or controlling a smart home device.

Mr Tan added: "Assistive technology can help level the playing field and provide opportunities to persons with disabilities by allowing them to maximise their potential, integrate into mainstream society and be productive contributors in the workforce."

The SPD is a charity that helps people with disabilities.

GOING DIGITAL

In recent years, the Government has been urging Singaporeans and businesses to embrace technology to improve lives and livelihoods through the Smart Nation push.

And agencies, such as the Government Technology Agency of Singapore (GovTech), have been working to ensure all segments of the population benefit from this push towards digitalisation.

For example, the SingPass mobile app is designed by GovTech to facilitate ease of use, including for users such as seniors and people with disabilities. SingPass allows users to transact with more than 60 government agencies online easily and securely.

A spokesman for GovTech said: "The SingPass team continually conducts user research to gather feedback and enhance the features to address a wide spectrum of needs and reduce potential digital exclusion."

For instance, the Siri voice command is enabled for iOS users in the SingPass app. This means that features in the app can be voice-activated, which is especially useful for the elderly and the visually impaired who may find navigating the app more challenging.

For those with vision problems, the information shown in the app can also be "read out" through Android and Apple voiceover technologies, said the GovTech spokesman.

Besides people with disabilities, another group of vulnerable Singaporeans benefiting from smart technology is the elderly, especially those living alone or with little family support.

For example, GovTech has recently built a personal alert button using smart sensors that seniors can use to activate for help.

They send a message through the alert button that is installed in their homes, and an alert is sent to a senior activity centre, among other agencies, which assesses and

dispatches the help needed.

The trial of the personal alert button was recently completed and plans for it will be announced in due course, the GovTech spokesman said.

Lions Befrienders chairman Anthony Tay said personal alert systems give seniors peace of mind, knowing that help will come quickly when they need it.

Lions Befrienders is a charity that runs senior activity centres and other services for the vulnerable elderly, such as befriending programmes.

Besides using smart sensors to alert others for help, a team of researchers has also used such sensors to detect mild cognitive impairment that puts the person at a higher risk of developing dementia. This is important, given Singapore's rapidly ageing population and the growing numbers diagnosed with dementia.

Presently, doctors ask the patient a series of questions and perform other tests to determine his cognitive ability. But these traditional tests usually catch cognitive impairment at a later stage, said Singapore Management University's Associate Professor Tan Hwee Pink, who is the study's

co-principal investigator.

The researchers used a network of smart sensors to track 49 seniors' memory, movements and sleep patterns over two months.

In about seven in 10 cases, based on the sensor data, the researchers correctly identified the seniors who have been diagnosed with mild cognitive impairment by medical professionals. The researchers did not know beforehand which of the seniors being studied had mild cognitive impairment.

Prof Tan described the study's results as promising and said using sensors could complement traditional screening tests for mild cognitive impairment.

A BETTER LIFE

With the Covid-19 pandemic upending lives and livelihoods, smart technology has facilitated communication and connection at a time when social isolation and the avoidance of large gatherings are required to keep the virus at bay.

Charities such as Lions Befrienders have turned to technology to reach out to seniors living alone. For example, Lions Befrienders has partnered DBS Bank in a tie-up that will see 1,000

of the bank's staff befriend 1,000 seniors online, starting this month.

These befriending sessions will comprise conversations and other virtual activities such as singalongs and online games.

The seniors go to the Lions Befrienders senior activity centres and they interact with the DBS volunteers through videoconferencing tools like WebEx.

Lions Befrienders' Mr Tay said: "This period serves as a window of opportunity for the seniors to adopt modern technology, as they have been more open to taking up new skills in order to continue engaging with others online."

"In the past, the ability to interact with others physically took precedence over the need to learn and use technology."

He said many of the seniors they serve are uneducated or have little education, and they find it difficult to learn how to use smart devices such as smartphone or tablets.

Another challenge faced by the vulnerable groups is cost.

For example, SPD's Mr Tan said that cost can be a big concern for users as some of the assistive technology devices can be relatively more expensive.

For instance, the eye-gaze system and laptop that Miss Goh has cost almost \$5,000.

However, the eye-gaze system was paid for by the Assistive Technology Fund, which those with disabilities can tap for government subsidies to buy or repair assistive devices.

Miss Goh's laptop was funded by the Medicorp Enable Fund, which helps people with disabilities.

There is also Tech Able, an initiative of SG Enable and SPD, which runs a loan library with about 600 types of assistive technology devices for loan.

Satellite loan libraries are also found at the polytechnics and Institute of Technical Education, where students with disabilities can borrow an assistive technology device. These satellite loan libraries are a partnership between the Infocomm Media Development Authority and SPD.

For people with disabilities like Miss Goh, assistive technology has made her life so much better. For example, she enjoys playing online games, watching YouTube videos and even attends online church services now.

She said: "The eye-gaze technology is as good as using my hand to type. It is very easy to use. And with it, I can do so many things on my computer."

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About The Big Quiz

On Mondays, for 12 weeks until July 13 in the Opinion section, this paper's journalists will address burning questions, offering unique Singaporean perspectives on complex issues.

The primers are part of the outreach of The Straits Times-Ministry of Education National Current Affairs Quiz, or The Big Quiz, which aims to promote an understanding of local and global issues among pre-university students.

The primers will broach contemporary issues, such as the necessary skills that will count in the post-pandemic world of work and journalism in the age of disinformation.

Other issues include the rise and future of e-sports and why

modern climate change has gotten the world abuzz.

Each primer topic will give a local perspective to help students draw links back to the issues' implications for Singaporeans.

For the third year, The Big Quiz will be online, allowing all pre-university students to take part in the current affairs competition, this time over six online quiz rounds – on March 30, April 13 and 27, June 15 and 29 and July 13.

The online quizzes are based on the primer topics and will be available for two weeks from the start date of each quiz.

This nationwide event is jointly organised by The Straits Times and the Ministry of Education.