

Thinking in three dimensions

3D PRINTING MAKING ASSISTIVE TECHNOLOGY MORE ACCESSIBLE

By: Nicole Brownlee

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Nicole Brownlee / Winnipeg Free Press

Marc Hache lifts his latest project, a dial to use with the VoiceOver app for people with visual impairments, from his 3D printer. This is Hache's second assignment with Makers Making Change since he started volunteering with them in September.

PEOPLE with disabilities struggling to find affordable technology to help them live more independent lives are championing 3D printing initiatives.

One of them is 12-year-old Nicholas Mercury — he's one of 10 Manitobans who have received a device called a LipSync.

A local assistive tech program called Makers Making Change created the LipSync to act like a cursor, which allows users to navigate any touch-screen device using only their mouths.

Mercury, who is quadriplegic, was introduced to a trial LipSync at a four-week conductive education (CE) program at The Movement Centre of Manitoba Inc. by lead conductor Christopher Martin.

The Mercury family lives in Calgary but visits Winnipeg for one month each summer to see family and attend the CE program.

"When we got the LipSync for free, I was extremely shocked," said Stacey Mercury, Nicholas's mother.

Compusult, an assistive technology retailer, produces a tool similar to LipSync that costs up to \$2,000, but Makers' costs \$250.

Makers uses volunteers with 3D printers to create their assistive tools at low prices.

"He gets to feel like his brother," said Stacey. "Nicholas is playing *Mario Run* on the iPad, and he's able to do it by himself."

Stacey said whenever she requests assistive technology for Nicholas, it usually takes months to access a trial tool. They received the LipSync within a week after Martin's request.

Nicholas said the LipSync makes things easier for him because his parents aren't always free whenever he wants to use technology. He recently learned to play interactive math games with his LipSync, which is his favourite subject.

"When I work with him, I hold him back because I'm the middle person," said Stacey. "He's so bright and smart that if he had more time to work with the technology, he could surpass anything I could have done."

Stacey said Makers allows people with disabilities to reach their full potential by making assistive technology accessible.

The Neil Squire Society, a Canadian organization helping people with disabilities through assistive technology, created the Makers program in 2019.

The program launched in Winnipeg in November later that year.

"I try to not prescribe any equipment that is cost-prohibitive," said Martin. "I don't think it's beneficial for someone to come to our centre and use a \$5,000 piece of equipment once a week as opposed to having something they can use at home every day."

The Movement Centre uses CE, which focuses on how people can improve their mobility through learning.

Martin said the centre tries to use inexpensive tools most families can afford, so the clients can continue working on skills at home. One of the ways Martin practises balance with clients is asking them to step onto a wooden box.

The centre works with Specialized Services for Children and Youth to request devices that can help people with disabilities, but the tools are often not covered by insurance, Martin said.

The Movement Centre started working with Makers in early March to test how Makers' assistive technology could help their clients.

Makers creates tools ranging from simple devices such as a sphere that fits around a pencil to help people write, to more complex technology such as LipSync.

A common assistive tool called a switch, which acts as an accessible button for people with disabilities, costs \$100 on Canadian Assistive Technology's website but costs only \$10 on Makers'.

"It's obscene how much (retailers) charge for stuff, and not because there's a ton of (research and development) or expensive materials, but just because there's not a huge demand," said Martin.

Makers only needs to charge for materials and labour because they directly connect 3D creators to people who need assistive devices.

"If you can save someone 94 per cent of what the market is offering, why wouldn't you do this?" said Suzanne Winterflood, regional co-ordinator of Makers in Manitoba. "We create these tools in such a way the components are cheap, the build is cheap, but they're all, what we call, a prototype. They can always be updated."

Marc Hache met Winterflood while volunteering with Winnipeg Fighting COVID, a local group that 3D prints personal protective equipment for local front-line workers.

Hache said he started volunteering with Makers as a 3D creator in early September to help give back to the community.

"I find it really interesting figuring out a solution to a problem," said Hache. "You don't need a whole lot of knowledge of 3D printing to get started. You just need the time and materials to get it done."

Hache said he enjoys the challenge of creating assistive tech.

"There's always something new to figure out," said Hache.

As of September, 54 people in Manitoba with disabilities have used the 80 Makers tools created in province.

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