

Virtual reality providing real-world literacy and numeracy learning tool

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PhD student Jonny Collins helps a user operate the system. Credit: University of Otago

Virtual reality is moving beyond purely entertainment to become a potential tool in improving literacy, and the University of Otago is behind one ground-breaking approach.

The University of Otago Information Science department has been working with Methodist Mission Southern to look at a totally new way of helping prisoners in the Otago Corrections Facility at Milburn to improve reading and writing skills.

The resulting prototype has proved so successful, Animation Research Limited and Methodist Mission Southern are developing the concept into a commercial enterprise – with support from Ngāti Kahungunu.

Virtual reality (VR) uses computer technology to create a simulated environment. Instead of viewing a screen in front of them, users are immersed inside an experience and able to interact with three-dimensional worlds.

Otago's Department of Information Science has been at the forefront of investigating functional uses of both virtual and augmented reality over the last decade; the aim being to find meaningful ways for computing to solve real world problems.

Methodist Mission Southern Business Development Leader Jimmy McLauchlan approached the Information Science group because the social agency wanted to rethink the way literacy is taught to people who often fall through the cracks – particularly those in prison.

"A novel approach was needed, and we thought research and development may help us think outside the box," Mr McLauchlan explains.

PhD student Jonny Collins then brought the need and the technology together into a prototype [virtual reality](#) application using a setting that is both familiar and motivating to the learner - a simulated car workshop. Jonny worked together with Mission Southern to integrate educational content, and local company Animated Research Limited provided

assistance with the panoramic environment.

The Dunedin City Council also recognised its potential, with some of the funding needed for the project coming from the GigCity Community Fund, set up to develop community, learning and workforce opportunities in Dunedin.

Head of the University's Information Science Department Professor Holger Regenbrecht says it's already understood that people can learn another language through immersion, both in a real-world context and through using [virtual reality technology](#).

"It was good for us to be able to test the idea that learning to read can also be achieved through virtual reality immersion in a specific setting targeted at a particular user group."

"This more interesting and relevant environment can help learning, and improved literacy skills for prisoners in this case improve rehabilitation and integration into the community," Professor Regenbrecht says.

He says the University is now keen to extend the boundaries of virtual reality, to better understand interface development, and proving feasibility of using VR in this way now opens up new possibilities for research.

But the researchers are not only answering some of the technological questions, they're also doing it to meet a very real need that will benefit the community.

"It is expected that there will be significant international interest in virtual [reality](#) contextualised learning. I believe this immersion technology has the potential to revolutionise learning," says Professor Regenbrecht.

At the same time this gives the University a positive way of connecting to business and the community.

The prototype is a 360-degree virtual world programme that involves car assembly in an automotive workshop, consulting with an actual automotive repair business to make sure the virtual world represents a realistic environment.

The prototype model has already been showcased at an education conference in Los Angeles, USA.

It is hoped that eventually this programme will be used in [literacy](#) and [numeracy](#) education with prisoners inside prisons across New Zealand.

Provided by University of Otago

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