Giving students the skills to design the future

As the world changes, educators are transforming the way they structure learning, writes Peter Barrett.

Students at Mentone Girls' Secondary College tackle design thinking projects.

Blade Heweston, 16, may have the fastest locker in the south-east. Frustrated by the time it took to open his regulation combination dial every day, the then-year 10 Cornish College student decided to upgrade. Using his school-issue RFID (tap and go) student card, Bluetooth, a microcontroller and a small car battery, he developed a successful prototype, installed it and, hey presto – open sesame. Now everyone wants one.

"It's definitely been a big change," says Blade, currently in year 11. "I've had many comments saying 'if you're going to make a product like that, please implement them here'. It just makes the process [of opening a locker] 10 times easier."

Blade came up with the idea and developed it as part of Cornish College's Design Futures program. Sitting alongside the school's VCE studies, Design Futures allows students to co-create a personalised curriculum that matches with their areas of interest and aspirational goals.

Students team up with a "steward" (mentor), whose job is to stretch, challenge and facilitate – but never do the work for them.

Now in its second year, about a third of year 10 students have opted into the program. Cornish College principal Nicola Forrest (who happens to also be Blade's steward) says students have chosen to explore everything from men's mental health and elite young athlete nutrition, to building water-cooled computers, and studies on the role of play in schools.

"It's an opportunity for kids to do things without the normal pressures of externally driven assessment," she says. "And some students will tell you they do more work and more in-depth inquiry in Design Futures than they do in anything else – even though when we steward them we don't give them a criteria for success, they develop that themselves."

Students who complete 100 hours of Design Futures receive accreditation in the form of "Digital Badging" to add to portfolios and potential tertiary applications. The program also recognises that university pathways are changing and skewing away from ATAR-only to ATAR-plus demonstration of real-world problem solving, critical and creative thinking skills.

With a keen interest in mechatronics and robotics, Blade's Bluetooth tap and go locker project could be very handy indeed when he applies for courses or jobs. "I definitely want to veer towards the inventions industry and be able to solve problems and make the world a better place," says Blade.

And, while Design Futures currently makes up about 100 hours of year 10 student time, its core principles – student agency, thinking creatively and solving real problems – are being adopted elsewhere, says Forrest.

"It's such an important thing for [our students'] futures – for them to be more agile and adaptive learners – that we are committed to embedding Design Futures principles right across our school. It's the change that education needs at the moment."

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'We need our students to see themselves in the future. And, if you don't anchor that in reality, then everything is just theoretical.'

Linda Brown

At nearby Mentone Girls' Secondary College, information and communication technology (ICT) and design thinking principles are now woven throughout the curriculum. The journey began in 2019 when Mentone's principal, Linda Brown, created the position of director of emerging technologies, employing former civil engineer Diana Gilbert.

"I know that the future lies with students having really well-developed creative thinking skills, and problem-solving skills, but also that they need to be ICT savvy," Brown says.

Gilbert brought together a team of teachers from across all subject areas to develop a design thinking project for students transitioning from year 8 to year 9. At the time, the City of Kingston was considering high-density housing in the area, so council representatives were invited to visit the school and explain to students some of the real-world problems they needed to take into consideration.

The experience has since morphed into a highly successful three-day intensive where year 8 students tackle those same problems in teams of six. Each member of the group is assigned a specialist role – in the areas of residential design, demographics, commercial planning, park and activity centres, transport, and marketing – and, after a briefing from the City of Kingston, each specialist engages in an hour-long immersive workshop.

The teams then come back together, discuss, form a plan, build 3D models, incorporate robotics, lighting, virtual reality, 3D printing and laser cutting, and ultimately pitch their concept to a panel of judges. To pull off the project, students need to draw on multiple STEAM skills as well as so-called "soft skills" in communication, creativity, problem solving and collaboration. But Brown says there are other reasons for structuring learning in this way.

"We need our students to see themselves in the future," she says. "And, if you don't anchor that in reality, then everything is just theoretical. A lot of the students will be familiar with these local areas that we're talking about, so I think it raises awareness, but it also widens their sphere of understanding about what the future might look like, and what their role is in that future."

Brown says this kind of applied knowledge approach has also led to an increase in numbers of students opting to study more challenging maths and science subjects. "What I believe we're seeing is students pushing their own boundaries and that is empowering," she says.

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By Peter Barrett
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