Game on for 3D Printing

Enlist some help teaching 3D Printing, **ET Staff**

If we're to believe the futurists we're all going to be manufacturers plugged into a global marketplace and 3D printing is the technology that, partnered with the internet, will take us there, ushering in the industrial revolution's third wave.

Maybe, but whatever the future of commerce looks like, 3D printing is going to be essential to it and a solid grounding in the technology will be a baseline skill.

Makers Empire is a South Australia-based program and has already won fans in hundreds of schools in Australia and the US. It's aimed at the younger cohort and is designed to upskill teachers in 3D printing to deliver fun, gamey lessons while providing technical and spiritual support.

"Makers Empire helps primary and middle school teachers get started with 3D design and 3D printing, what is important to us is not just putting the technology into classrooms but supporting teachers to use it in a way that helps students to develop critical and creative thinking, design thinking skills, problem solving, empathy, spatial awareness, all of those important skills and ways of thinking that we know our students need to thrive and survive in the future," says Director of Learning Mandi Dimitriadis.

"We have really easy to use intuitive 3D modelling software and we need to be easy to use for teachers as well so we have a teachers' dashboard.

"As students create their designs they upload it to the cloud and the teacher can see every student's design in one place and download designs for printing and assessment."

Makers Empire wants teachers to be confident using the technology in classrooms so a big component of the program is professional learning.

"Every school that comes onto Makers Empire receives online and personalised professional learning. We have an online course and every new school is assigned a Makers Empire learning consultant so

teachers get their hand held every step of the way.

All students have access to the software which operates on any platform and there's several ways that it can be put to use in the classroom.

The software has built in challenges which students are required to solve. It helps them to learn to use the different aspects of the software and to think like designers to overcome problems.

The challenges also give teachers a starting point and are aligned to the Australian, NSW and Victoria curriculums.

The software is engaging and fun to use by dint of its developer's background in game design. Completion of the various lessons are incentivised through reward tokens won which can be used to unlock new shapes. It's very intuitive and represents a distillation of functions that would be found in high end CAD design programs.

"There's a number of free form design modules called Shapers so students are creating their designs using shapes that are in the software or shapes they draw themselves and the other main module is Blocker which is a bit like Minecraft, creating designs by putting a series of digital blocks together."

While the idea is for the process to be

very open ended, support and structure are provided through the 150 plus lesson plans available from Makers Empire.

The software has been a hit with students who tend to pick it up very quickly and run with it but Dimitriadis says teachers typically take a little longer.

There has been a plethora of amazing designs generated through the program but Makers Empire places a premium on solving problems.

"There are actual solutions that are 3D printed, one school's grounds person had his mower run over his mobile phone which destroyed it so he talked to the students about the problem and they 3D printed an attachment that is screwed onto his tractor which his phone could sit in.

"They had to make sure the phone would fit and that the phone holder was strong enough. What we hope for is that students will have these experiences at a young age so they can see that they can solve problems and they do have the skills and processes and materials to be able to create solutions.

"We hope that as they get older they will know that any problem that they might come up against can be improved if they work through a process and collaborate to create a solution."