Skilling THE BAY

Digital Technologies

Building digital technology capability in Geelong region schools

The Digital Technologies Program takes a multifaceted approach to supporting schools to enhance student engagement and attainment in digital technologies and STEM (Science, Technology, Engineering and Mathematics) subjects. The aim is to assist the next generation of students to develop skills for the 21st Century workforce.

Aims of the Digital Technologies Program

- Raise awareness of the importance of Digital Technology and STEM for future employment and economic prosperity
- Raise awareness of the importance of Digital Technology to assist school leaders in allocating resources to support such programs
- Build capability and innovation in the teaching of Digital Technology programs in schools consistent with State and/or National standards
- Enable teachers to engage with innovative content and pedagogies, and to integrate these into their practice
- Increase student participation and attainment in Digital Technology and STEM related education, training and career pathways

Student Programs

The first strand focuses on direct engagement with secondary students in Years 9 to 12, to extend their digital technology experiences. The Internet of Things and Gaming with Python programs have three student intakes annually of 15 – 18 students from across the Barwon region. Each intake is of 3 or 4 days duration; one day per week over sequential weeks.

Coding, Robotics and the Internet of Things (IoT)

Students explore the IoT through the application of coding to computer and robotics technology. A robot is coded, constructed, and made capable of receiving sensor feedback, investigating how the interconnectedness of 'things' can be explored to meet emerging trends. The convergence of operational technologies with information technologies is studied, and how this is creating demand for a new type of ICT specialist. Students become aware of the profound effects this wave of technology is having on our lives and the opportunities that arise for both economic development and jobs of the future.

Gaming with Python (Python)

Students learn about the relevance of the Python coding language to a broad range of computing applications. These include web development, data analysis, artificial intelligence and scientific computing. Many developers also use Python to build productivity tools, games and apps. The basics of the Python programming language is learned and applied to the development of a game in collaboration with other participants. A variety of contexts are explored where Python skills can be employed in 21st Century workplaces.

Fast Facts

The 2015 McKinsey Global Institute report, The Internet of Things, estimates that IoT technology will have a total potential economic impact of $3.9 trillion to $11.1 trillion a year by 2025 — the equivalent to about 11 percent of the world economy.

International research has found that 75% of the fastest growing occupations will require STEM skills and knowledge. Meanwhile, the downward trend in student participation in STEM related subjects in Geelong region schools is pronounced.

The need to reverse the trend in decreasing STEM and Digital Technology participation in schools is a priority.

A review of online employment advertising found that employers now seek Enterprise Skills as much as Technical Skills; with presentation skills rising by 25%, creativity by 65%, critical thinking by 158% and digital literacy by 212% over the past three years. [1]

1. The New Basics: Big data reveals the skills young people need for the New Work Order, FYA, 2017.

Teacher Programs

The second strand supports the development of teacher capability in delivering digital technologies curriculum in schools.

Newcomb D-Tech Skills Builder

This pilot program is designed to enhance the digital technology curriculum in schools from Years 7 to 10, integrating key elements of the Victorian Digital Technologies Curriculum and selected training sector curricula.

The Pilot is a collaboration between The Gordon TAFE and Newcomb Secondary College, developing and delivering the new curriculum. The delivery arrangements include:

- Comprehensive professional learning programs and resources for Newcomb teachers
- Core units include Web Design, Networking, Coding with Python, Robotics and the Internet of Things to be complemented with Cyber Security, Virtual and Augmented Reality and Data Analytics
- Newcomb Secondary College and The Gordon experts collaborate extensively to ensure the curriculum applies leading learning practices suited to a secondary school environment
- Recognised Prior Learning for selected training sector packages will be available for students who complete the final assessment of selected modules
- Teaching and learning resources and key components of the curriculum reside in The Gordon's on-line learning platform
- All students from Years 7 to 10 at Newcomb Secondary College are enrolled at The Gordon to enable remote access to the program from the School

Geelong Tech School Professional Development Collaboration

This collaboration addresses the need to improve the capability of STEM teaching practices in Geelong regional secondary schools, as a means of inspiring the next generation of STEM capable students. This works to inspire more students to undertake a STEM pathway to future employment and ensure a supply of graduates to match growing workforce demand.

A significant addition to the STEM ecosystem in Geelong is the new Geelong Tech School. The Tech School's purpose is to build the skills needed in future workforces including thinking critically, communicating clearly, working collaboratively and embracing technology. Up to 18,000 students from 24 partner schools in the Geelong region will access the Tech School annually for specialised programs linked with major employers and key industry growth sectors.

The initiative involves delivery of an integrated suite of teacher Professional Development events over 2018 and 2019, to support the rollout of the Geelong Tech School program and improve STEM teaching practices.

Digital Technologies Program funding and costs to schools

Student access to the Internet of Things and Gaming with Python programs is funded by Skilling the Bay. Students will, however, need to make their own way to and from The Gordon East Campus.

Skilling the Bay also funds the teacher professional learning program enabling teacher access to programs with no cost to schools.

STEM and Digital Technologies Delivery Partners

The student strand of the Digital Technologies Program is being delivered by The Gordon Information Technology Department with support from Skilling the Bay and the Geelong Tech School.

Delivery Methods

Innovative teaching and learning methods are prioritised in all programs along with the latest software and hardware tailored to engage students and teachers, and excite their interest in Digital Technologies pathways.

Further Information

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To find out more about Skilling the Bay go to **skillingthebay.org.au**

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