Coding in schools building up a head of STEAM

Australian educators should grok the importance of coding as a component of Science Technology Engineering Arts and Maths teaching, *ET Staff*

Code, it's everywhere, behind your smartphone, driving your computer and possibly in the near future driving your car. The only place it doesn't seem to be entrenched in is in school curriculums.

So are students interested in learning code? Well if the response to Microsoft's #WeSpeakCode four-day conference in May was anything to go by the answer is a resounding "yep".

The figures speak for themselves: launched in 2014 the first year attracted 1000 students keen to interact with those coding professionally and familiarise themselves with basic coding. That number jumped this year to 7000 students over the event's duration with 800 swarming UTS's Great Hall on a single day with an eye on getting amongst the coding community and indeed other parts of the IT industry.

According to Lawrence Crumpton a Developer Platform Evangelist for Microsoft, the enthusiasm was palpable, which brought him back to his very first experiences with coding many moons ago.

"My mother has a picture of me in front of a computer as a kid, eyes wide open with a look of amazement on my face, I saw that same look everywhere during the event."

There's a very pragmatic side to this, employers are constantly bemoaning the lack of software engineering professionals available

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and it was for good reason that the Smith Family charity was among the event's organising partners.

We are faced with nothing less than a crisis in youth unemployment, in some parts of the country it sits stubbornly at around 50 per cent, and this is at a time when there are any number of jobs available to those with high level IT skills. Part of the solution is quite obvious: get kids coding.

"Globally we're seeing a drop off in STEM education, but with a concerted effort in the US we're seeing that starting to turn around. It's timely as we predict that by 2022 there will be a deficit of 12–15 million jobs in STEM fields, millions of them in engineering and computer science.

"The week brought 7000 students from diverse socio-economic backgrounds together. They were tasked with creating a flappy bird type game and received feedback and pointers on their approach, we're careful not to judge or criticise, the most important thing to instil in a young coder is resilience and creativity in resolving problems," Crumpton says.

It's for that very reason that the Associate Professor of Computer Security, Cybercrime, and Cyberterror at the University of NSW Richard Buckland believes that you shouldn't give out marks for programming courses, what is important is to empower students to persist

when faced with a problem as coding tasks increase in sophistication and complexity.

Students at the event were able touch on development for multiple platforms including IOS and Android and to pick up skills in graphical representation and proper organisation of code.

There is any number of relatively or free resources online for teachers who want to begin to include teaching code in their practice, tools which are designed to cater to any age group or level of coding knowledge.

Crumpton is big on Kodu, which is downloadable free and has a very easily navigated drag and drop graphical interface that makes it suitable as a place to start.

"While it's easy to use, Kodu introduces fundamental programming components like loops, times and triggers which underpin any kind of event-driven programming," Crumpton says.

Another online programming tool available free is Google's Blockley, which is a library of code components designed to be fitted together much as you would a jigsaw puzzle.

Yet another is start-up Grok Learning (Grok is coder speak for an intuitive deep understanding) which offers coding courses from the introductory to the very advanced. And if you needed another option there's Code.org, the Silicon Valley originated site, which will give you access to courses for any number of programming languages to suit most ages and levels.

It's high time educators got on top of this. The Microsoft Asia Pacific study Australia found students generally feel relatively unsupported in their interest for coding, signalling an urgent need for educators to look deeper at integrating it as a core subject in the school curriculum.

Only 32 per cent of students in Australia said they had an opportunity to learn coding in school, whether as a core subject or an extracurricular activity, the lowest figure in all countries surveyed.

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Nearly two-thirds of Australian students surveyed said they wanted to know more about coding, but didn't have the opportunities to gain the computer skills they need.

"We have a problem in Australia around the uptake of coding amongst our young people which needs to be addressed now otherwise students could miss out on huge career opportunities," said Microsoft Australia's managing director Pip Marlow.

"It is important for educators to move on from asking whether or not to offer coding as a subject – but how it can be integrated into the curriculum as soon as possible," she said.

Despite those facts, Australia is typically punching above its weight, Australian teams feature in the finalists of this year's Imagine Cup, a Microsoft driven competition designed to identify and award innovative technologies. It has resulted in technology like Team Opaque Multimedia's development of the Virtual Dementia Experience, which enables clinicians and the public alike to experience the effects of dementia via virtual reality.

"I always say to people entering the Imagine Cup 'don't enter it to win', the point is to address the problem at hand, that has led to developments like Virtual Dimentia Experience which has been adopted by the Altzheimers society and will underpin research into the area in the future," Crumpton says.

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