Information and communication technology in schools must move beyond covering literacy and skills.

Over the past few months attention has increased on mathematics and science in Australian schools. Unfortunately information and communication technology (ICT) has been overlooked, not only in Australia but also overseas, where concerns have been raised about the lack of students studying STEM (science, technology, engineering, mathematics) subjects.

The use of computers and ICT more generally has never been greater. There are record sales of smart phones and tablets. Many people are developing apps and websites with increasingly sophisticated tools.

The amount of information that students can search is overwhelming. But there is a difference between consuming information using advanced ICT technology, and having sufficient understanding to develop it for innovation.

With the changing technology platforms, and new behaviours brought on by social media, it is a challenge for schools to keep up with the education needs with respect to ICT. I would
like to see the role of ICT in schools re-evaluated and more thought given to how it is taught.

The first concern is that different aspects of ICT are confused. The term ICT (or interchangeably for this article, IT, with the communication word omitted) is used to refer to three different things: infrastructure such as networks, hardware and software; basic skills such as searching the web and using spreadsheets; and concepts such as algorithms and data structures.

The word for the discipline that teaches such concepts has a variety of names including informatics, computational thinking and computer science. There have been suggestions in the UK of banning the term IT altogether and starting again with a new word.

The second issue with ICT in schools is what is in the curriculum and where it should be taught. Basic skills should be introduced throughout the range of school subjects, and concepts such as algorithms should probably be with mathematics.

While there is some progress, we are a long way from reaching agreement. The Australian Curriculum and Assessment and Reporting Authority has been inviting submissions into its proposed national curriculum. The Australian Council of Deans of ICT made two submissions: one to the design and technology stream about skills, and one to the mathematics and science stream about concepts.

A third concern is the lack of well-trained ICT teachers in schools. It is especially difficult with the training because technology is rapidly evolving. Admittedly, the lack of skilled teachers is a problem with other areas of mathematics and science as highlighted in the Chief Scientists’ reports.

The final concern is a misunderstanding of an IT professional job and career. The stereotypical view is a narrow one of someone who sits behind a desk and programs. That is a rarity. Career counsellors often do not have that appreciation in my experience, and fewer students are channelled to an ICT course than is necessary to drive innovation in ICT in the Australian economy.
What can we do to improve the situation? Firstly, we need to increase recognition that ICT has multiple facets.

Secondly, we need to present better role models and understanding to students. Further encouragement is needed for IT professionals to visit schools similar to the scientists and mathematicians in schools programs. More opportunities for recent graduates to talk to school students should be set up.

Thirdly, we need to have better pathways between schools and universities. Students should have more opportunities to study ICT at university while still at secondary school to complement their education experience.

Finally we need to ensure a structure that allows rapid evolution of the curriculum. App development was a completely different beast two years ago, before the launch of the iPad. Having the skills of design, marketing, as well as software development and lifecycle, and basics of data structures are all essential.

By promoting ICT in schools in its multiple facets we can better serve Australia’s needs for innovation in the future.

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