Every child needs to love science to thrive

Every year we survey recent graduates and ask questions about their employment. And from those figures we are encouraged to draw big conclusions: about the quality of our universities, about the needs of our economy, about the value of different professions.

Why do we continue to do that? Why do we narrow our focus to the present employment profile for last year's graduates, rather than grasp from other countries that the employment profile of the future will be different, and that it is time for our education system to prepare for that difference?

And why do we assume a system has "failed" if it lets science graduates become teachers, or managers, or bankers, or if it lets engineers become economists?

Much was said about science last week with the delivery of the federal budget and the opposition response; some people like some bits and not others. It is an important conversation.

And I hope that we, like other countries, will question the direction in which we're headed – with a little more imagination and ambition.

We could start in schools, where the workers of 2030, 2050, or maybe even 2070, have started to learn whatever we can teach them today.

For 20 years, we have presided over declining levels of participation in science and mathematics in years 11 and 12, and watched our students' performance slip down the global ranks, while assuring ourselves that, with calculators, they'll be all right.

But I think about the sort of jobs a child in school today might want to do in 10, 20, 50 years. And I wonder, which of those jobs will not require an understanding of science? How many will not need to know, at the very least, how science works, and how it might be applied in the workplace?

I'd say very few: in a world utterly reliant on science, most will need at least a reasonable level of scientific understanding. Our education system ought to provide it – to everyone.

Then I think about the issues confronting our country – from growing our economy, to protecting our environment, to providing us with food, to vaccinating our children. And I ask myself, which will not require science to find solutions?

I'd say none: they all require a conversation informed by evidence, and evidence interpreted with understanding. Our schools ought to equip all of our children to understand science, and inspire enough of our children with the passion to be scientists.

And then I think about all the other roles we might want science-trained people to perform, in a global economy founded on knowledge.

Which business will not need to harness technology, manage and utilise data, grasp complex financial arrangements, anticipate the changes of the future? Which industry would not be open to a person with an aptitude for science?

I'd say not many – and none with strong prospects for growth or even survival. And I would expect our schools would work with our universities, vocational training colleges and employers to put science-trained people in all manner of roles.

To do that, we need to look beyond the fossilised categories and expectations of the past and dare to think ahead.

Last month, the US National Bureau of Science released a paper examining its indicators for the science workforce. About 5 million Americans held positions that would traditionally be classified as "science and engineering"; but more than 16 million workers reported that their jobs required at least a bachelor's degree level of science and engineering training. Many of these individuals worked in fields such as sales, marketing and management – reflecting, as the report noted, "the pervasiveness of technology throughout our economy". The science workforce was not simply growing in importance: it was also growing in size and complexity.

The bureau concluded the "contradictory, confusing and often incomplete" picture of science in the economy stymied meaningful discussion of student pathways.

We could say the same thing about the conversation in Australia.

We could also think again about our perception of the skill sets developed through science degrees and vocational courses. In 2012, a study conducted for the Australian Council of Deans of Science asked more than 800 science graduates about their experience in the workforce. One in four worked in scientific or medical research; and 12 per cent worked in scientific or engineering industries. The rest had found jobs outside of science, across sectors including law, government, health, education, food, agriculture, mining and construction.

Regardless of where they were working, 97 per cent of the respondents said their scientific skills were useful in their work. They cited, in particular, their capacity to break down problems, work effectively in teams, question what they heard and adapt to shifting expectations about their roles. They saw themselves as workers well positioned for the changes they could see ahead.

It strikes me that we need people with these skills, and not just in lecture halls and laboratories. We need them in classrooms and corporate boardrooms as well.

We don't all have to be scientists – and few would suggest that we all need specialist science training – but we certainly should not be discouraging those with a talent for science from making something of their abilities.

My message is simple. Let's build the science education system we need to underpin the nation we want. Let's give every child the foundation skills in science to be part of that

stronger Australia. And let's open our high achievers in science to new pathways and to the myriad roles we need them to play, wherever they fit in the workforce of the future.

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