

# Artificial Intelligence in school education: are you ready for it?

Dr Jane Hunter, Senior Lecturer, University of Technology Sydney

Interest in the use of Artificial Intelligence (AI) in Australian schools is growing. More educators are participating in important exchanges about AI as understanding develops around how it will impact the work of teachers and students in schools. This article adds to nascent conversations on AI and raises issues and questions that are critical as we start to think about AI in school education.

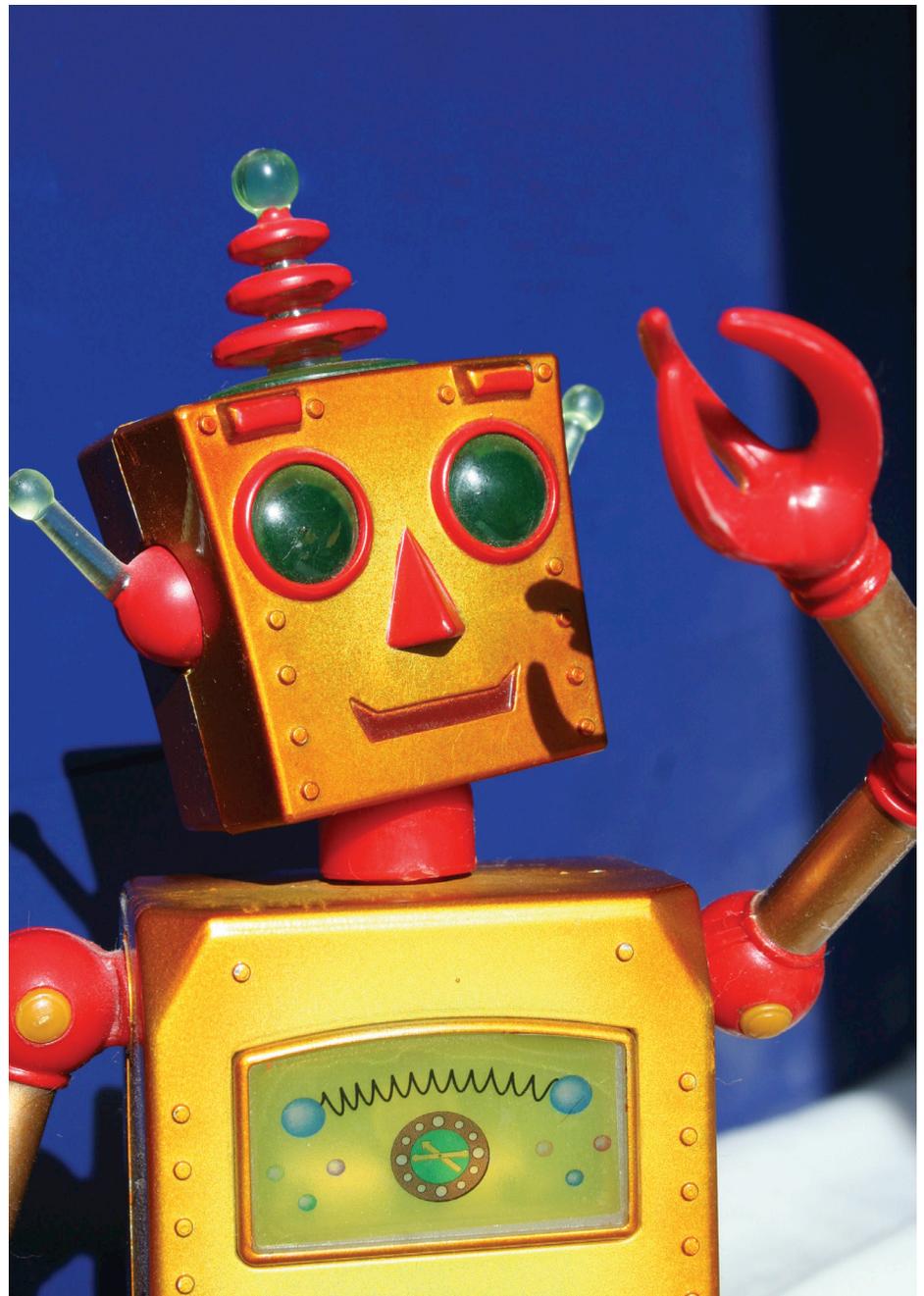
## What do we mean by 'Artificial Intelligence'?

Defining the term 'Artificial Intelligence' or AI as it is commonly known is tricky because the field is so interdisciplinary, and AI relates to many different branches of knowledge including computer science, education, game design and psychology, just to name a few.

I like the definition offered by Swedish-American physicist and cosmologist Max Tegmark. He describes Artificial Intelligence systems as being 'narrowly intelligent because while they are able to accomplish complex goals, each AI system is only able to accomplish goals that are very specific.'

I like this definition because it mentions how complex AI can be but makes us focus on the reality that AI is narrowly focused to fulfil specific goals.

We already live in a world full of AI systems including Siri, Alexa, GPS navigators, self-driving cars and so on. In the world of education big international companies are currently working on or already marketing AI systems that develop 'intelligent instruction design and digital platforms that use AI to provide learning, testing and feedback to students.'



We need to pay attention to how AI will impact pedagogy, curriculum and assessment in schools, that is, how it will impact end users (teachers and students). There is a lot to think about and talk about here already.

### Artificial Intelligence in Education

Conversations about Artificial Intelligence in Education (AIED) have been going on for many years in the world of education. This year the London Festival of Learning organised by Prof Rose Luckin and her team brought together scholars from around the world in the fields of AIED, Learning at Scale (large scale online learning platforms) and the Learning Sciences.

Closer to home the NSW Department of Education has been on the front foot in raising awareness of AIED in a series of papers in its Future Frontiers agenda. This is a compilation of essays that canvas ‘perspectives from thought leaders, technology experts and futurists from Australia and around the world.’ These are helpful and well worth seeking out to inform budding discussions you might want to have about AIED.

### Questions for schools and teachers

It is important for researchers and teacher educators like myself to explore how AIED will supplement and change the nature of teachers’ work in schools. We need to understand how this can be done in education so that the human intelligence and the relational roles of teachers dominate.

How will schools be involved? And how could the changing education landscape be managed as the subject of AIED attracts more attention?

Leading research scientist and world expert in AIED at University College London, Professor Rose Luckin (who incidentally is a former teacher, school governor, and AI developer/computer scientist), captures the core argument when it comes to school education. She says: “It’s more about how teachers and students will develop sufficient understanding of AIED so that it can be augmented by human intelligence when determining what AIED should and should not be designed to do.” For example, Luckin suggests if only purely technological solutions dominate the agenda then what AIED

**There is conclusive international evidence** that we are at a critical moment for setting **clearer directions for AIED in school education**

can offer for change and transformation in teaching and learning will be limited.

The Australian Government’s Innovation and Science Australia (2017) report, *Australia 2030*, recommends prioritisation of the ‘development of advanced capability in artificial intelligence and machine learning in the medium- to long-term to ensure growth of the cyber-physical economy’.

It also lists education as one of its ‘five imperatives for the Australian innovation, science and research system’ that will equip Australians with skills relevant to 2030, thus highlighting the need to understand the implications of AIED for schools.

### Critical moment for school education

There is conclusive international evidence that we are at a critical moment for setting clearer directions for AIED in school education.

With crucial questions being asked internationally about AIED and national reports like *Australia 2030* published we must start to probe Australian policy makers, politicians, school principals, students and parents, as well as the teaching profession more broadly about such vital issues.

Schools are one focus of the agenda, but how are teacher education programs in universities preparing preservice teachers for this future? Are we considering questions of AI in our preparation programs? If we need to lift the skill levels of all school students to work in an AI world then what changes might we need to make to accommodate AI in school curriculum, assessment, pedagogy, workload and teacher professional learning?

The debate about robots replacing teachers is not the main event. There will be assistants in the form of a dashboard/s for instance but humans will still do all the things that machines cannot do.

Moreover there is also a great need for deeper understandings of learning analytics. There are also questions of opaque systems, bias in algorithms, and policy/governance questions around data ethics.

Such topics could form foundational programs in teacher education courses.

### More hard questions

What implications do AIED and automated worlds have for school infrastructure? How can higher education and industry support schools to be responsive and supportive to this rapidly changing world of AI?

Leaping back to the London Festival of Learning for one moment, Prof Paulo Blikstein, from Stanford University, in his keynote address painted a grim picture of the dangers that lie ahead and he told his audience that it is time to “make hard choices for AIED.”

He explained a phenomenon of *We Will Take It From Here* (WWTIFH) that happens to researchers. It is when tech businesses tell researchers to ‘go away and play with their toys’ and that they will take over and develop the work technologically ... taking over things ‘in the most horrible way’. Blikstein outlined how most tech companies use algorithms that are impervious and don’t consult with the field – there are few policy or ethical guidelines in the US that oversee decision making in these areas – it’s a “dangerous cocktail” described by Blikstein’s formula of:

*WWTIFH + Going Mainstream + Silicon Valley Culture + Huge Economic Potential = DANGER.*

I agree with his caution in that people in positions of power in teaching and learning in education need to be aware of the limitations of AI. It can help decision makers but not make decisions for them. This awareness becomes increasingly important as educational leaders interact and work more frequently with tech companies.

In teacher education in Australian universities we must begin to talk more about AIED with those whom we teach and research. We should be thinking all the time about what AI really is and not be naïve and privilege AI over humans. There are many participants in the AIED conversation and those involved in education at all levels in Australian schools have an important voice. This is a serious and necessary dialogue.

**Dr Hunter will speak at the Leading a Digital School Conference being held on 8, 9 and 10 August 2019 in Melbourne.**