ENGINEERS
AUSTRALIA

National Artificial Intelligence Taskforce
Secretariat
NSW Department of Education
Via email: AISecretariat@det.nsw.edu.au

Dear Secretariat,

RE: Draft national AI in schools framework

Engineers Australia appreciates the opportunity to provide input to the National Artificial Intelligence (AI) taskforce on the development of a framework for using AI in schools. The engineering voice is a critical component in these discussions as engineers play a vital role in the development and implementation of AI systems in society.

Engineers Australia is the collective voice of over 115,000 individual members across Australia. Constituted by Royal Charter, our mission is to advance the science and practice of engineering for the benefit of the community. As Australia's signatory to the International Engineering Alliance, Engineers Australia maintains national professional standards, benchmarked against international norms. This includes accreditation of undergraduate university engineering programs.

Engineers Australia advocates for a balanced approach to the regulation and use of AI. This will allow the benefits of AI to be harnessed while safeguarding professionals, educators, students, and the community. This balance must prioritise regulation for AI systems with high-risk implications, ensuring public protection while maximising AI benefits and should include a comprehensive standards framework for AI in education.

As identified in the consultation paper, today's students will need to develop skills and experience in using AI tools to equip them with the knowledge to excel in their careers. The use of the technology also offers educators new ways to personalise learning experiences, aiding student comprehension and practice of essential concepts. However, with these advantages also come risks. The study of science, technology, engineering and mathematics (STEM) subjects requires the ability to grasp foundational concepts before delving into more complex ones. Students must strike a balance to avoid hindering the acquisition of crucial tacit knowledge—the understanding of principles and practical application. To understand the impact of AI on education, in-depth research is needed to explore the effectiveness of generative AI in teaching and learning.

Engineers Australia recommends the following as a critical component of any national framework:

- Principles for ethical engagement with AI
- Guidance on attribution of and evidencing AI-generated work
- Developing 'prompt' engineering skills to efficiently use large language models for a variety of tasks
- Aligning learning outcomes with AI advancements
- Assessments to test human capability, critiquing AI responses
- Ethical implications of uploading student work for assessment.

Engineers Australia agrees that any framework needs to evolve alongside AI technology, ensuring it stays relevant and effective. Below is some further guidance on the draft AI framework for schools.

Engineering House
11 National Circuit, Barton ACT 2600
Phone: +61 2 6270 6555 | Facsimile: +61 2 6273 1488
engineersaustralia.org.au

Will the core elements and principles in the Framework help to guide Australian schools (public, independent and Catholic) in using generative AI safely and in ways that support better education outcomes? If not, what change could we make?

The core elements identified in the proposed framework align with Engineers Australia's broad recommended components. The teaching and learning principles identified are vital to ensure AI is used as a tool and does not replace the development of critical thinking and problem-solving. If AI technologies, such as large language models and generative AI, are relied upon too heavily, students will forgo the development of tacit knowledge. It is also important to ensure students understand these models and the limitations and biases. Students and educators should be aware of the origin of the training data that a particular tool or service has been developed with, to inform users judgement in relying on synthetically generated outputs.

Engineers Australia recommends that the principles around privacy and data protections may need to be strengthened. Data protection and privacy help build trust among users who are concerned with that their data may be used without their consent. In the context of minors, this is even more important. Engineers Australia recommends the framework is strengthened by providing guidance on this best practice, drawing from local and international practices.

Will these core elements and principles help to guide teachers in using generative AI safely and in ways that support better education outcomes? If not, what changes could we make to better guide teachers?

Broadly speaking yes, Engineers Australia supports this framework and believes it will contribute to guiding teachers in using these technologies safely and support better education outcomes. It will be important for the taskforce to ensure further guidance is made available on some of the more critical areas. Some examples include:

- Fairness

Teachers should have guidance to ensure that when generative AI tools are used in the evaluation of assessments, they provide a fair and unbiased evaluation of student performance. In some cases, the developers of these technologies are unaware of any systems biases, making it difficult for users to know. Education professionals should be supported with guidance and tools to safeguard against this. Engineers Australia recommends that innovative approaches to assessments are needed, testing human capability with a human 'in the loop'.

- Accountability

Core element five calls for monitoring. Guidance is needed as to how schools and government departments should monitor these technologies and exactly what are they monitoring them for? Should a register be kept by the school on incidents where these technologies are used in bullying or harassment of other students? Should incidents of cheating be recorded? National best practice guides should be established.

- Privacy and security

Further guidance on what the best practice privacy-preserving data sharing methods are, ensuring consistency around Australia. This includes articulating a definition of robust cyber-security measures to protect the integrity and availability of school infrastructure, generative AI tools, and associated data.

Will these core elements and principles help to guide school leadership and support staff (Principals etc) in using generative AI safely and in ways that support better education outcomes? If not, what changes could we make to better help school leadership and support staff.

The core elements are a good broad guide on the use of these technologies ethically and safely. Engineers Australia reinforces the need for greater guidance on some of the more critical aspects.

However, more research is needed to explore how these technologies are impacting education and learning outcomes. Without this research, it will be difficult to know if better educational outcomes are achieved through using these technologies, particularly from the student perspective.

Engineers Australia further recommends the appointment of qualified personnel in government to monitor the evolution of generative AI and develop the guidance materials needed to support principals and teachers. This should be done immediately by establishing senior engineering roles within education departments around Australia.

What other changes to the core elements and principles are needed to provide a clear framework that will support the safe and effective use of generative AI in schools? For example, do you have any concerns with any of the core elements or principles?

Practical guidance should be provided on many of the higher risk areas as identified in question two.

Consideration should also be given to including under core element six, the protection of students from these technologies being used to bully and harass students or other negative impacts when used by students in a nefarious way.

If you wish to discuss the content of this submission further, please don't hesitate to contact me.

Yours sincerely,

Jenny Mitchell
General Manager, Policy and Advocacy