

SUBMISSION

Submission to the Education Ministers Artificial Intelligence in Schools Taskforce

Submission to the National AI in Schools Framework consultation

18 August 2023

The Australian Academy of Technological Sciences and Engineering (ATSE) is a Learned Academy of independent, non-political experts helping Australians understand and use technology to solve complex problems. Bringing together Australia's leading thinkers in applied science, technology and engineering, ATSE provides impartial, practical and evidence-based advice on how to achieve sustainable solutions and advance prosperity.

Generative Artificial Intelligence (AI) in schools can be harnessed to augment teaching and learning, and equip students with the skills they will need to participate in society and the workforce of tomorrow. To fully realise the benefits of generative AI, both students and teachers must be confident in its usage. Students must develop the skills to engage with this emerging technology throughout their education, and teachers should be supported with professional development to improve their pedagogy with the power of generative AI. Teachers should also be equipped with the skills to employ generative AI in reducing administrative workloads. The Australian Framework for Generative Artificial Intelligence in Schools (“the Framework”) scaffolds a new approach to enable education departments, schools and educators to embrace this powerful technology. ATSE makes the following recommendations to improve the Framework and its implementation:

Recommendation 1: Develop sovereign capacity for education AI applications.

Recommendation 2: Extend the “fairness” element of the Framework to include equality of access and require a minimum standard of infrastructure for all schools to access AI technologies.

Recommendation 3: Embed regular professional development for teachers into the “teaching and learning” element of the Framework.

Recommendation 4: Require annual reporting of how schools are utilising generative AI and addressing systemic bias within the “transparency” element of the Framework.

Recommendation 5: Extend the “wellbeing” principle of the Framework to include managing risks to safety and mental health.

Recommendation 6: Embed developing an understanding of human, intellectual property and privacy rights in the “instruction” principle of the Framework.

Recommendation 7: Add a new element to the Framework for “environmental sustainability”.

Implementing the Framework across Australian education systems

ATSE agrees with the core elements and principles prescribed by the Framework. The Framework provides a practical guide for education departments to grapple with the ethical, social and legal issues concerning AI in schools. It strikes a balance of setting out obligations of schools to address potential impacts of AI on academic integrity, while encouraging the use of AI to enhance the educational experience. The commitment to review the Framework every twelve months is a prudent measure to adapt to a rapidly changing technological landscape.

The next step to the Framework is developing the infrastructure and resourcing to deploy it across the education system. A key gap is the lack of national infrastructure to support AI development. This could take the shape of a central Australian agency with the capacity to develop AI models, including for educational use. This would enable more control over training data and outputs. Developing sovereign capacity for educational AI applications would enable design with the Framework in mind.

Recommendation 1: Develop sovereign capacity for education AI applications.

Enabling equal access to AI literacy

Accessing AI technologies in schools requires a minimum level of resourcing. Many popular generative AI services operate on a fee-for-features model, where a base version is freely available but more advanced features require payment. AI services accessed online also require reliable, high-speed internet connections, particularly if there is a large amount of data to be processed. In a classroom setting, teachers must be adept in AI instruction as well as in integrating AI into their pedagogy.

Disparities in resources between schools will create an AI divide if not proactively addressed. Students at well-resourced schools will emerge with more advanced AI competency. AI bans in public schools will only exacerbate this issue. ATSE's recent [submission](#) to the parliamentary inquiry into generative AI in the education system recommended lifting bans in generative AI introduced by state education departments. ATSE recognises that the Framework provides a path forward to reverse these bans and scaffold equitable and responsible usage of AI in schools.

The Framework must embed the principle of equality of access to AI technologies. State governments must then ensure that all schools are resourced to an adequate standard to enable this. This includes providing suitable computers with routine maintenance and high-speed internet connectivity to rural and regional areas. In the absence of national agency for AI, state education departments should also consider licensing agreements to enable schools to access paid generative AI services.

Equality of access requires support for teachers to harness AI, alongside this infrastructure investment. Information technology teachers must be supported to bring AI into curricula. Resources such as [Grok Academy](#) can be utilised to integrate digital and AI skills into classrooms. Teachers of all disciplines and levels also need opportunities to develop the skills to deploy AI in their learning and teaching practices. Given the rapid developments in AI technologies, teachers will require regular AI professional development to stay up to date. State education departments have a role in facilitating access to professional development, including providing for time release for teachers to engage in these programs.

Recommendation 2: Extend the “fairness” element of the Framework to include equality of access and require a minimum standard of infrastructure for all schools to access AI technologies.

Recommendation 3: Embed regular professional development for teachers into the “teaching and learning” element of the Framework.

Managing risks around bias, accuracy and safety

Ethical frameworks for AI must account for identifying and eliminating applications that perpetuate systemic bias. ATSE agrees with the Framework's inclusion of “non-discrimination” as a principle. To support this in practice, AI decision making must be monitored for evidence of systemic bias. This is critical for learning and teaching tools in a classroom setting. For example, generative AI can be used by teachers to assist in assessing student coursework. For an AI model trained on student assignments from a certain demographic, it may be biased in its assessment of work produced by other student demographics (Baidoo-Anu & Ansah 2023). The Framework should require ongoing monitoring through annual reporting for schools utilising generative AI for teaching and assessment, and measures taken to identify and respond to systemic bias.

Risk must also be managed in ensuring AI applications used for teaching are outputting correct information. While this risk cannot be eliminated, it can be mitigated with oversight, for example by requiring educational AI applications to be explainable. ATSE agrees with the inclusion of explainability as a principle in the Framework.

Students may use some AI applications like virtual assistants, seeking information or advice. This can be a helpful tool for managing coursework, but there are risks around advice seeking particularly on issues such as mental health. For example, ChatGPT can provide safety advice consistent with guidelines, but has limitations in conveying where information is unknown and may also present incorrect information without conveying any uncertainty (Oviedo-Trespalacios et al. 2023). A young person may find it useful to converse with an AI application on managing anxiety, for example, but safeguards must be put in place to manage risks around incorrect or unhelpful advice, as well as to identify where intervention is required. The Framework must anticipate this possibility. This can be embedded in the “wellbeing” principle.

Recommendation 4: Require annual reporting of how schools are utilising generative AI and addressing systemic bias within the “transparency” element of the Framework.

Recommendation 5: Extend the “wellbeing” principle of the Framework to include managing risks to safety and mental health.

Understanding legal rights as part of AI literacy

The Framework discusses the rights of students and school communities, from a perspective of human rights, cultural and intellectual property, and privacy. ATSE agrees with the Framework’s requirements of explicitly upholding these rights. As AI usage becomes embedded in schools and society more generally, students should be supported to develop a sense of their rights and options for appeal. This should be considered an integral part of developing AI literacy, alongside developing the skills to understand and utilise AI models. While this intersects with all elements of the framework, it is recommended the principle of “instruction” be expanded to include understanding and upholding human, intellectual property, and privacy rights in the context of AI applications.

Recommendation 6: Embed developing an understanding of human, intellectual property and privacy rights in the “instruction” principle of the Framework.

Embedding environmental sustainability into the Framework

There is a significant environmental cost for developing and using generative AI. Power consumption is a key consideration, with training, operating and maintaining AI applications requiring vast amounts of electricity. For example, ChatGPT’s daily carbon emissions have been estimated at 23.04 kilograms per day (Ludvigsen 2022). There is also an environmental impact associated with infrastructure. For example, upgrades to infrastructure can result in electronic waste. The Framework should include an additional element for environmental sustainability, guiding education departments to roll out AI technologies with energy efficiency and to minimise electronic waste. This may alter decision making such as by investing in better-quality infrastructure that is likely to have a longer lifespan.

Recommendation 7: Add a new element to the Framework for “environmental sustainability”.

ATSE thanks the Education Ministers Artificial Intelligence in Schools Taskforce for the opportunity to respond to the National AI in Schools Framework consultation. For further information, please contact academypolicyteam@atse.org.au.

References

Baidoo-Anu, D, and Ansah, LO (2023). Education in the Era of Generative Artificial Intelligence (AI): Understanding the Potential Benefits of ChatGPT in Promoting Teaching and Learning. SSRN. <https://dx.doi.org/10.2139/ssrn.4337484>

Ludvigsen, KGA (2022). [The Carbon Footprint of ChatGPT](#). Towards Data Science. Accessed 11 August 2023.

Oviedo-Trespalacios, O, Peden, AE, Cole-Hunter, T, Costantini, A, Haghani, M, Rod, JE, Kelly, S, Torkamaan, H, Tariq, A, Newton, JDA, Gallagher, T, Steinert, S, Filtner, A and Renier, G (2023). The risks of using ChatGPT to obtain common safety-related information and advice. *Safety Science*, 167, 106244. <https://doi.org/10.1016/j.ssci.2023.106244>