The Institution of Engineering and Technology

AI in education position paper

There has rarely been a type of technology in history as fast paced as Artificial Intelligence (AI), which now permeates every aspect of our daily lives. With six in ten (58%) engineering employers currently use AI and a further 23% say that while they do not currently use AI software or equipment, they plan to in the future (IET 2025 Skills Survey). AI is influencing how businesses, industries, and technologies operate, as well as how education is delivered, now and in the future.

Recommendations:

1. The Department for Education should continue to review evidence and provide up to date guidance to schools on suitable use of AI, developed in partnership with experts in the field. This should focus not only on the use of AI but the education about AI as a technology.
2. The Department for Education should take a leading role in procurement of suitable AI tools across the education sector to ensure they are trained on the right data and security from cyber manipulation or attack.
3. The Department for Education, together with teachers, students, parents and professional bodies should collaborate on an open-source resource centre for AI developers so that products can be aligned to the curriculum and trained on data suitable for the audience. Answers must be aligned to the appropriate curriculum stage in order to be of benefit to learning.
4. Education around AI should focus on broader considerations such as environmental impact and ethics, and how to use it responsibly. A short module should be developed, that is available to a broad audience including teachers, students, parents and other professions that outlines how to use AI in a positive way, as well as its limitations. This is a transferrable skill that will equip, particularly young people in education, to be agile with new technologies throughout their career later in life.

AI should not be seen as something intimidating or detrimental to learning but rather be used appropriately as an aid to support teaching and learning. Policy in this area needs to go beyond considerations of automating tasks to consider fundamental principles of AI as a technology.

Education surrounding AI should not only include how to use it responsibly, but should also cover the environmental impact, ethical considerations, transparency and understanding of how and why it works the way it does. This will empower the next generation with the skills to embrace new technologies not just to use it, but understand it, thereby increasing product safety and productivity of the users.

AI can help teachers, for example, with their lesson plans. Capitalising on AI can accelerate depth of learning as a source of data and information. However, it should not be used to simply answer questions or do a student's homework for them. It can be a research tool and additional source of information, that is interrogated as much as any other source of information would be.

When introducing AI into education, it is particularly important that it does not serve to further increase the technological divide which could exacerbate inequalities (UNESCO). As we move more towards a digital world, it is vital we play our part in supporting disadvantaged children and families, who do not have the digital means to access STEM education

initiatives and resources and are unable to engage with us and learn about the exciting opportunities a career in engineering and technology offers. It is important that policy makers continue to draw on the ever-increasing evidence and expertise across the world on the use and impact of AI in education, particularly as it is a fast-paced technology. Tackling the digital divide will require a collaborative effort from a community of like-minded organisations and Government.

An open-source resource centre hub should be set up for developers so that AI tools can train on the data from it, ensuring it aligns with the UK curriculum. For example, training on the curriculum itself and lessons plans would ensure suitable age-appropriate responses when asked. There are several STEM resources available for teachers to use across the UK with ready-made lesson plans, however many teachers do not know they exists or that they are curriculum linked. Ensuring AI tools are trained on appropriate data will support greater accuracy and age-appropriate results for an educational setting. Answers must be aligned to the appropriate curriculum stage in order to be of benefit to learning and this will be in part about learning to ask the right questions, in the right way.

To maximise the potential of AI, and user capability, we need to see a suite of agile training programmes, not only in teaching, but across professions. These should also be made freely available to parents and guardians, as they play a critical role in supporting appropriate use of technology. These short courses would need to have the same stringency as GDPR training, for example and be developed to outline the positive use of AI and its limitations. Usage and understanding of AI, as with other technologies, will be valuable skills to use in later life and children should be encouraged to be agile and responsive to new technology. However, it's critical that the limitations are well understood and shown that AI can be wrong. As AI can be deliberately and maliciously manipulated to make incorrect decisions, human judgement is still required. AI is only as good as the data it is trained with, so responsible use is the most important lesson that can be taught. Early adoption of technology also supports learning in later life about the risks and opportunities, thereby learning how to use it properly.

Cybersecurity and online safety considerations when using AI should be taken into account within the context of education and safeguarding. The data that algorithms are trained with and used for could be manipulated by a major cyber-attack from the UK's adversaries, manipulating AI algorithms into making the wrong decisions on purpose. Even without deliberate manipulation, it is common for AI tools to acquire biases, depending on the data they are trained on. This can potentially expose children to misinformation, harmful content and online harms. It is important to ensure that the tools that are procured are fit for purpose, robustly developed and protected from cyber-attacks.

The Department for Education's AI guidance should therefore take an approach that considers the broader technological landscape. The Department should lead on procurement on behalf of educational organisations. It should be focused largely on learning about how AI works and its limitations rather than just focussing on how to use it. The UK Safer Internet Centre (UKSIC) is well placed to provide resources at different levels, teaching children how to use the internet and technology safely. The UKSIC spearheads Safer Internet Day in the UK and uses this as a mechanism to disseminate the resources widely. This would be an ideal opportunity to learn about AI.

In conclusion, AI as with other emerging technologies is something that should be included in the education system in a responsible and managed way to ensure that young people benefit from learning not only how to use it but the opportunities and risks it presents, which will be an essential skill in later life as the pace of technology progresses.