

Education, Children, and Young People Committee

31st Meeting, 2023 (Session 6), Wednesday 13 December 2023

AI and education

Introduction

1. At its business planning day in September 2023, the Committee agreed to hold an evidence session on AI and education at a future meeting.
2. This session will build on the themes discussed at the recent [Scotland's Futures Forum events](#) on AI in education held in June 2023 and November 2023.
3. The key messages emerging from the June event were—

Artificial Intelligence [AI] has the potential to assist learners and teachers by responding effectively to individual needs. It could help make content accessible and relevant to learners, especially those with complex needs, and enable learners to explore subjects more deeply.

While AI offers personalized learning, there is a risk of creating a narrow bubble around learners, limiting exposure to diverse perspectives and hindering personal growth.

AI in education raises ethical and moral concerns, such as the impact on human interaction, the automation of previously human systems, and determining the boundaries of legitimate learning support and cheating.

The expansion of AI technology might challenge the purpose of schools, shifting the focus from instruction to building capacities and shared values among a diverse community of learners.

AI could exacerbate inequality if access to learning resources and technology is limited, but it could also provide equal opportunities by simulating diverse school environments and enabling remote access to quality education.

The impact of AI extends beyond education, requiring consideration of its implications on society, power structures, sustainability, and the overall purpose of education.

4. The November event considered the following questions—

How can Scottish education develop AI policies, strategies and practises that drive and influence the right AI innovation future for education and learning?

What do we want AI to do in Scottish education and will such policies benefit all in education ecosystem, learners and educators to the future. What are the fears and opportunities we need to discuss?

Will such opportunities support and enable educational reform, promote, promote responsible and ethical use of AI?

5. A report on the November event will be published on the website in due course.

Committee meeting

6. At its meeting today, the Committee will take evidence from—
 - Ollie Bray, Strategic Director, Education Scotland;
 - Helena Good, Director, Daydream Believers;
 - Chris Ranson, Physics Teacher and Lead for AI Integration at Dunblane High School;
 - Professor Judy Robertson, Chair in Digital Learning, Edinburgh University.

Supporting information

7. SPICe has prepared a background briefing paper which is attached at **Annexe A**.
8. The Committee has received a written submission from Daydream Believers which is attached at **Annexe B**.

Education, Children, and Young People Committee Clerks
8 December 2023

ARTIFICIAL INTELLIGENCE AND EDUCATION

In the past few years, the increasing power of AI has led to questions around the impact on education. The purpose of this short briefing is to sketch out a selection of reports and discussion on AI and education. This is not intended to be an exhaustive representation of this issue.

Key themes are around recognising that there are both challenges and opportunities to generative AI in relation to education. As well as that, another theme is that there are potential impacts on the intended outcomes of education.

International Council of Education Advisers

The 3rd report of ICEA set out seven proposed strategic areas for consideration by the Scottish Government. [The sixth strategic area was](#), “Artificial Intelligence (AI) and the Digital World”. This said,

“The emergence of Chat GPT in late 2022 has seen a huge interest in the promise, benefits, cautions and inevitable challenges of this disruptive technology. It is already evident that Artificial Intelligence (AI) provides amazing opportunities and new challenges for education. Governments and educators must now act quickly to maximise the positive effects and manage the risks for the benefit of young people and adults alike.”

Of the opportunities, the ICEA said—

“AI has huge potential to free schools from some of the constraints associated with mass education. For teachers, it can cut through many of the administrative, routine assessment, and basic curriculum planning tasks that have diverted time and expertise from teaching and learning. In these ways it can support the wellbeing of pupils and teachers. It may also provide adaptive feedback about the learning of individual pupils that will allow direct support to individuals in real time. For the young people themselves, it can provide access to sources of personalised support for their learning in ways that are less constrained by the pace of the class and the rhythm of the school day. AI can also contribute directly to our understanding of the impact of education policy and practice. Its ability to interrogate massive data sets can provide fresh insights into desirable future policy directions.”

The ICEA said that the risks included, “isolation, plagiarism, cheating, privacy and intellectual property infringement, and the end of intrinsic learning motivation (since one can simply use AI to generate a piece of work).”

The ICEA also suggested that “the important point now is to be prepared for a shift in the education paradigm and to ask fundamental questions rather than to be beguiled by the excitement that AI is currently generating”. The ICEA continued—

“If young people develop skills that compete with AI, they will inevitably lose out in the competition for future employment. The challenge for policy and practice is to focus on the unique aspects of human intelligence that can work with and through technology.”

This reflects the findings of an OECD report [published in March 2023](#) which looked at how well AI can do the literacy and numeracy tests of the OECD Survey of Adult Skills of the Programme for International Assessment of Adult Competencies. The OECD reported that experts expected AI to be able to solve all the literacy and numeracy questions on this test by 2026. This was based on data from before the release of ChatGPT. The OECD concluded that—

“Despite its limitations, this study suggests that advancing AI capabilities with respect to literacy and numeracy may have important implications for employment and education. Most workers use these skills every day at work. At the same time, these skills have not improved in most countries in the last decades. By contrast, AI capabilities in literacy and numeracy are developing quickly ... Even the best-ranking countries to date cannot supply more than a quarter of their workforce with the literacy and numeracy skills needed to outperform AI. In this context, the focus of education may need to shift more towards teaching students to use AI systems to perform literacy and numeracy tasks more effectively.”

The ICEA propose that—

“Scottish Government should immediately set in train work to learn more about, discuss, debate, make key actionable recommendations on the potential, promise, applicability and cautions of AI in education, soliciting and incorporating student and teacher input. There will also be an immediate need for systematic professional learning to build educators’ ability and confidence to use AI in their teaching, learning, leadership, assessment practices and daily tasks.”

Committee work on AI

The Committee has explored the impact of Ai with a number of witnesses in recent months. A key consideration is how generative AI will impact on modes of assessment. The Committee took evidence from Professor Hayward on the Independent Review of Qualifications and Assessment in September. [She said](#)—

“All countries are struggling to decide how to respond to artificial intelligence just now. You will know from the [Independent Review of Qualifications and Assessment] report that there were two fundamental views. One view was that we should go back to tests and examinations, because at least you can control those. Another view, which came initially through the international baccalaureate, was that the learners with whom we are working will have to live with artificial intelligence and we have a responsibility to make sure that they are able to cope with that.

“AI may change the nature of tasks. For example, it becomes fundamentally important that learners are able to discern the difference between what is fake and what is real. That is an issue for all of us. That will become not something in the margins but a fundamental skill. For example, it may change the nature of assessment tasks. There may be a task whereby you would ask young people to generate a response using artificial intelligence, but the task would be for them to critique it, to identify some element of dependable evidence within that and to ask where the false news is.”

During the Committee’s work on Education reform, the Committee explored the impacts of AI with witnesses. For example, [Dr Marina Shapira said on 8 November 2023](#)—

“I can share the way that we, in the university, think about AI. It was quite an interesting process, because, approximately a year ago, there was almost a moral panic over what we were going to do—all students were going to write their essays using just AI. Gradually, that has now developed into an acknowledgement that AI can be used creatively and to enable learning in so many ways. Yes, it will not be easy, and it will demand that everyone engage with and think about what the existence of AI means. What will it mean to the way that we teach, the way that we assess and the way that we think about knowledge? We are at the beginning of an interesting process, and I am glad that we are now thinking about AI not as some bogeyman but as something that will be used to improve our lives and educational experiences.”

A headteacher, [Peter Bain, said to the Committee on 15 November 2023](#)—

“We believe that a necessary forerunner to anything that we do is for Government to establish a degree of expertise and guidance that would guide education nationally, through into local authorities and then to schools, incorporating an understanding of AI ... We need employers, universities and colleges to be involved. We need a holistic picture of society to have the discussion about and understanding of AI. Ultimately, the job of a school is to prepare our youngsters for life and work and, unless we fully understand where AI is going in life and work, we cannot prepare them. We need to be at the forefront of the development, but we also need to be at the tail end of the discussion—otherwise, how do we know what we are aiming for? That is quite a dichotomy.”

Scotland’s AI strategy

[Scotland’s AI strategy was published in March 2021](#). This seeks to realise a vision that—
“Scotland will become a leader in the development and use of trustworthy, ethical and inclusive AI.”

The strategy highlighted existing work where AI was being used to support health; analysing satellite imagery to map Scotland’s land cover; creating better population estimates; and supporting the finance technology sector.

Scotland’s AI strategy said that “AI presents specific challenges and opportunities for children”. It continued—

“Our children interact with AI in many ways, but these systems are often not designed with their specific needs in mind. Today children live in a world where AI can help to improve their lives and, at the same time, has the potential to become a negative influence ... Recognising the specific challenges and opportunities AI presents for children, we will also adopt UNICEF’s policy guidance on AI for children which draw on the UNCRC. AI policies and systems should aim to protect children, provide equitably for their needs and rights, and empower them to participate in an AI world by contributing to the development and use of AI.”

The strategy drew on work of UNICEF and identified “nine requirements” in relation to children and AI. These were:

1. Support children's development and well-being
Let AI help me develop to my full potential.
2. Ensure inclusion of and for children
Include me and those around me.
3. Prioritise fairness and non-discrimination for children
AI must be for all children.
4. Protect children's data and privacy
Ensure my privacy in an AI world.
5. Ensure safety for children
I need to be safe in the AI world.
6. Provide transparency, explainability, and accountability for children
I need to know how AI impacts me. You need to be accountable for that.
7. Empower governments and businesses with knowledge of AI and children's rights
You must know what my rights are and uphold them.
8. Prepare children for present and future developments in AI
If I am well prepared now, I can contribute to responsible AI for the future.
9. Create an enabling environment
Make it possible for all to contribute to child-centred AI.

The strategy highlighted tertiary education related to AI in 2019-20. This said—

- 7 out of 16 universities offer AI degrees at undergraduate and postgraduate levels.
- 2 offer it at undergraduate level (Edinburgh and Robert Gordon University).
- 7 offer it at postgraduate level.
- 960 students are studying it at undergraduate and postgraduate levels.
- 565 students study it at undergraduate level.

- 395 students study it at postgraduate level

[Education Scotland has a short webpage](#) on AI in education. This highlights four ways in which AI could support school education. This included—

- Personalised learning: using data to create individual learning pathways for learners
- Tutoring systems: one-on-one tutoring, providing real-time feedback and support
- Grading and assessment and administrative tasks
- Student support: chatbots could provide learners with instant support and guidance, answering common questions

UK AI strategy

In September 2021, the UK Government published its [National AI strategy](#). The UK Government has an Office for Artificial Intelligence which is a unit within the Department for Science, Innovation and Technology. This unit is responsible for overseeing implementation of the National AI Strategy.

This strategy has three aims:

- Invest and plan for the long-term needs of the AI ecosystem to continue our leadership as a science and AI superpower;
- Support the transition to an AI-enabled economy, capturing the benefits of innovation in the UK, and ensuring AI benefits all sectors and regions;
- Ensure the UK gets the national and international governance of AI technologies right to encourage innovation, investment, and protect the public and our fundamental values.

The action plan included continuing support for the [National Centre for Computing Education](#).

The UK Government [commissioned research on the UK's AI sector, including figures on size, employment, revenue and investment](#). This was based on data in 2022 and published in March 2023. In terms of geographical spread of the industry, this report found—

“Fifty-five percent of AI trading locations are in London. A further 20% are in the South East and East of England, leaving approximately one quarter of AI trading locations spread across other regions. The South East, North West and Scotland each account for around 5% of AI trading locations.”

In [February 2022, the UK Government announced that it was providing](#) “funding for scholarships on AI and data science conversion courses will help underrepresented groups get tech jobs even if they have no previous experience in the field”. This funding is for England only.

The UK government states that it is seeking to take a ‘pro-innovation’ approach to AI regulation and has set up an expert [Frontier AI Taskforce](#) to help the UK adopt the next generation of safe AI.

The Department for Education has published a 'policy note' [on generative artificial intelligence in education](#). The policy note provides a short commentary on:

- Opportunities for the education sector
- Using AI effectively
- Protecting data, pupils and staff
- Formal assessments
- Knowledge and skills for the future

UNESCO Guidance and the Beijing Consensus on Artificial Intelligence and Education

UNESCO [published guidance for generative AI in education and research](#) in September 2023. This included a useful snapshot of the capabilities of generative AI at the current time. It said, "at a superficial level, GenAI is easy to use; however, more sophisticated outputs need skilled human input and must be critically evaluated before they are used." The guidance explores some of the "controversies around generative AI" including: the effects on digital poverty; respecting intellectual properties rights; and "reducing the diversity of opinions and further marginalizing already marginalized voices" as the tools will reflect the framing of data which was or is used to train the models. The guidance made recommendations around the regulation of AI in education.

In terms of education and research policies, the UNESCO guidance suggested actions under the following eight themes—

- Promote inclusion, equity, linguistic and cultural diversity.
- Protect human agency.
- Monitor and validate AI systems.
- Develop AI competencies for children and young people.
- Build capacity for teachers and researchers to make proper use of AI.
- Promote plural opinions and plural expressions of ideas.
- Test locally relevant application models and build a cumulative evidence base.
- Review long-term implications in an intersectoral and interdisciplinary manner.

Ned Sharratt
SPICe Research

Annexe B

Written submission from Daydream Believers

[Daydream Believers](#), in collaboration with Glasgow School of Art (GSA), Dentsu Creative, and the British Interactive Media Association (BIMA), is actively investigating the potential and influence of Generative Artificial Intelligence (Gen A.I.) within creative processes in both commercial and educational settings. They see this exploration is a significant step towards understanding the evolving role of Gen A.I. in these sectors.

Simultaneously, 34 high schools across Scotland are currently integrating the [Daydream Believers Creative Thinking Qualification](#), at SCQF levels 5 and 6, into their curriculum. This project-based educational approach provides a distinctive opportunity for both learners and educators to gain insights into the capabilities and challenges presented by Gen A.I. It aims to foster a deeper comprehension of this technology's potential in educational contexts, equipping participants with the necessary skills and knowledge to navigate the emerging landscape of Gen A.I. in education.

In November 2023, Daydream Believers and GSA hosted an event dedicated to professional development focusing on Gen A.I. They have created a [3-minute video](#) that encapsulates the essence of that day. Centred around the thought-provoking question, "What if we get it right?" the video narrates the experiences and insights shared by teachers and partners during this event.