Generative AI in education

Educator and expert views

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Introduction

Over the last year, interest in and use of generative artificial intelligence (GenAI) has rapidly increased. GenAI uses foundation models, including large language models (LLMs), trained on large volumes of data. Notable GenAI foundation models are OpenAI's GPT-3.5 and GPT-4, which underpin the chatbots ChatGPT and Bing Chat.[1] These tools can be used to produce artificially generated content such as text, audio, code, images and videos. Other examples of GenAI tools include Google Bard, Claude and Midjourney. This technology is also increasingly being integrated within other digital tools.

Although GenAI is not new, recent advances in the underlying technology and greater accessibility mean that the public can now use it more easily. This poses opportunities and challenges for the education sector.

The Digital Strategy Division in the Department for Education (DfE) asked HM Government's Open Innovation Team (OIT) to explore the opportunities and risks for GenAI in education.

This report contains insights from interviews with teachers and educators at 23 educational institutions, 14 interviews with experts from academia and the education technology (EdTech) industry, a range of quantitative data sources, and key themes from academic and grey literature. We have also drawn on the DfE's Call for Evidence summary of responses where relevant.

The report covers:

- How the sector has responded to and adopted GenAI technology.

- Applications and opportunities for GenAI in education.

- Reported impact and benefits of GenAI use in education.

- Barriers to adoption and risks that GenAI presents for education.

- Support the sector would like to receive from the DfE and government.

When used appropriately, technology (including GenAI), has the potential to reduce workload across the education sector, and free up teachers' time, allowing them to focus on delivering excellent teaching. We want to capitalise on the opportunities technology

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[1] At the time of writing there were three versions of ChatGPT available: 1) ChatGPT-3.5, a freely available chatbot; 2) ChatGPT Plus, which uses GPT-4 and was made publicly available in March 2023 via a £16-permonth subscription; and 3) ChatGPT Enterprise, aimed at businesses, which launched in August 2023.

like GenAI presents for education as well as addressing its risks and challenges, including its potential to tailor educational materials, and support students with SEND.

The Department published a position on GenAI in Education on 29 March 2023. Along-side this position, the Call for Evidence on GenAI in Education, and the GenAI Hackathons project, we are investing up to £2 million in Oak National Academy to improve and expand their AI tools for teachers. We have also provided a further £137 million to the Education Endowment Foundation to encourage innovative and effective evidence-based teaching, including using technology such as computer adaptive learning and AI.

Technology works best as a tool used by great teachers, and it is important to take a joined-up pedagogical approach. Technology, including GenAI, is not a catch all solution to educational challenges and could never replace the valuable relationship between teachers and pupils. Similarly, skills like handwriting will continue to be important in children's development and schooling in England. But technology can support and augment brilliant teachers' teaching. Its use in the classroom should be informed by evidence and best practice, which is why the Department continues to build the evidence base for this technology.

Schools, colleges and universities, as well as awarding organisations need to remain aware of the risks of new technologies and continue to take reasonable steps to mitigate them and prevent malpractice. Mitigations for potential malpractice already exist within the system, including in-person exams where pupils don't have access to the internet and therefore cannot use AI. In addition, it is standard practice that exams are handwritten. The Joint Council for Qualifications published guidance in March 2023 which reminds teachers and assessors of best practice in preventing and identifying potential malpractice in non-examined assessment, applying it in the context of AI use. Ofqual speak regularly with exam boards about risks, including malpractice risks.

Key findings

Teachers and experts acknowledge that GenAI could have a transformative impact on education. From helping teachers save time by automating tasks, to improving teaching effectiveness by personalising learning for students, there is significant potential for GenAI to benefit the sector. At the same time, there is considerable concern about the risks it presents, as well as scepticism about whether these can be mitigated.

Use of GenAI among teachers and students has rapidly increased over the last year. By November 2023, 42% of primary and secondary teachers had used GenAI in their role (an increase from 17% in April). Pupils and students may be using GenAI more than their teachers. 74% percent of online 16-24 year olds in the UK have used a GenAI tool.

Evidence on GenAI use in an educational context shows figures ranging from 14% to 67% of students having used GenAI for schoolwork and studies.

Educators are already realising the benefits of using GenAI, namely in helping them save time by creating lesson resources, plan lessons and streamline administrative processes. Reported benefits for students include increased engagement and better support for students with special educational needs and disabilities (SEND) by personalising learning materials.

There is widespread recognition of the risks GenAI presents for education. There is considerable concern around GenAI-enabled academic malpractice, student over-reliance on GenAI, as well as ethical, safety and data privacy risks of use. The potential for GenAI to widen educational inequalities was raised. There is also concern that the benefits of GenAI for education will never be fully realised due to barriers to adoption. Lack of knowledge about how to use GenAI, and poor digital skills and infrastructure are limiting further use among teachers. Negative media coverage affects some teachers' perceptions of GenAI, as well as raises concern about the threat of AI to teacher job security.

There is appetite for government support to ensure GenAI adoption in education is safe, effective, and aligns with good pedagogy. There is little robust evidence on the impact of GenAI in education, with experts emphasising the need to build an impartial evidence base to better understand the impact of GenAI tools on education. Suggestions for the role of government included sharing guidance and best practice and ensuring student data protection and privacy. As the sector adapts to GenAI, experts and educators also highlight the need for a longer-term strategy for artificial intelligence (AI) in education that is future-proofed to keep pace with the evolving nature of this technology.

Methodology

This report draws on primary qualitative and quantitative research as well as published information from a range of government, academic and private sector organisations.

The methodologies underpinning the findings are varied, including weighted representative online panels, non-representative samples, and annual snapshot surveys.

While sources have been selected to provide the most up-to-date assessment available, there are clear limitations in what can be concluded. GenAI is an emerging technology which is rapidly evolving and its use in education is changing. This means that some figures and findings presented in this report may become out of date quickly.

It is also important to note that some of the findings, particularly those drawn from qualitative research, are only representative of those who participated and cannot be taken to represent the views of all individuals, professionals and organisations.

Qualitative fieldwork

Interviews with experts and teachers were conducted from May to September 2023.

The OIT heard from 14 academic experts and EdTech developers over May and June 2023.

- [Prof. Rose Luckin](#), University College London
- [Prof. Steve Watson](#), University of Cambridge
- [Prof. Mike Sharples](#), The Open University
- [Prof. Rebecca Eynon](#), University of Oxford
- [Dr. Jun Liu](#), University of Ulster
- [Prof. Don Passey](#), University of Lancaster
- [Dr. Andrew Rogoyski](#), University of Surrey
- [Prof. Steve Higgins](#), Durham University
- [Prof. Tim Fawns](#), Monash University
- [Michael Webb](#) and [Sue Attewell](#), Jisc
- [Dr. Alina von Davier](#), University of Oxford and Duolingo (EdTech industry)
- [Dr. Rajeshwari Iyer](#), sAIaptic (EdTech industry)
- [Yvonne Soh](#), Noodle Factory (EdTech industry)

Educators working in 23 educational settings across England were interviewed over August and September 2023. Some participants were recruited from the DfE's Call for Evidence. This included:

- Two educators from early years.

- Nine educators from primary schools.

- Eight educators from secondary schools.

- Four educators from further education (FE) institutions.

- Three educators from higher education (HE) institutions.

- Two educators from special schools and SEND provision.

Please note that some educators represented multiple stages (see Annex B for the full list of educators interviewed).

Quantitative sources

Key sources of data in this report include:

- DfE – School and Colleges Panel – April 2023 wave

- DfE – Parent, Pupil and Learner Panel – April/May 2023 wave

- DfE – Impact of AI on UK jobs and training – November 2023

- Ofcom – Online Nation 2023 report – November 2023

- Oriel Square – Education Intelligence – AI in education edition

- Deloitte – Digital Consumer Trends – August 2023

Additional external quantitative sources were also reviewed.

Detailed findings

Response and adoption

The education sector is acknowledging the need to adapt to GenAI technology.

Advances in AI are likely to have a profound and widespread effect on the UK economy and society.[2] Education is one of the top sectors expected to be impacted by AI and GenAI, alongside industries like banking, research shows.[3] [4] In addition to augmenting educator jobs and tasks, GenAI could also fundamentally alter how and what people learn by changing how information is synthesised and presented.

The sector is responding to widespread access to this technology. Initially some educational institutions prohibited use due to plagiarism concerns. However, acknowledgment that this technology is here to stay is driving a more adaptive stance. Guidance has been provided by the Joint Council for Qualifications (JCQ) for protecting the integrity of qualifications, and Russell Group universities have agreed principles for AI use.[5] [6] UNESCO has published global guidance on GenAI use in education, including proposing frameworks for regulation.[7]

Experts and educators acknowledge GenAI's potential to benefit education, such as by acting as a tool to support teachers with their workload and enable self-directed and personalised learning for students. There is also a strong sense GenAI could profoundly disrupt the sector, including by changing what students need to learn to prepare them to enter an AI-enabled workforce.[8]

However, there is uncertainty, concern, and scepticism. There is a historical pattern of hype that EdTech will improve traditional education.[9] Yet decades of research shows that the use of technology in schooling results in mixed and uneven outcomes, and this was brought sharply into focus during the COVID-19 pandemic.[10] A recent DfE survey shows that teachers are divided in their views about whether technology used in schools has a

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[2] Department for Education (2023). "The impact of AI on UK jobs and training".
[3] https://www.mckinsey.com/featured-insights/mckinsey-explainers/whats-the-future-of-generative-ai-an-early-view-in-15-charts
[4] Department for Education (2023). "The impact of AI on UK jobs and training".
[5] Joint Council for Qualifications (2023). "AI Use in Assessments: Protecting the Integrity of Qualifications".
[6] Russell Group (2023). "Russell Group principles on the use of generative AI tools in education".
[7] UNESCO (2023). "Guidance for generative AI in education and research".
[8] https://www.theguardian.com/commentisfree/2023/jul/14/ai-artificial-intelligence-disrupt-education-creativity-critical-thinking
[9] UNESCO (2021). "Digital technology and the futures of education – towards 'non-stupid' optimism".
[10] UNESCO (2023). "An ed-tech tragedy? Educational technology and school closures in the time of COVID-19".

positive or negative contribution to pupil attainment.[11] GenAI also introduces many new risks that need to be managed.[12]

> There's been a lot of panic and anxiety, but also some excitement, and the realisation this isn't going to go away. It will fundamentally change education. – *Rose Luckin, University College London*

Adoption of GenAI among teachers has rapidly increased, with two in five teachers now having used GenAI in their role.

According to a survey from TeacherTapp in November, 42% of primary and secondary teachers have now used GenAI to help them with schoolwork (see Figure 1).[13] This has increased from 35% in August and 17% in April.[14] [15] In comparison to the wider public, around a quarter of the UK consumers (aged 16-75) had used a GenAI tool in June 2023.[16]

Figure 1 Adoption of GenAI for education among school teachers
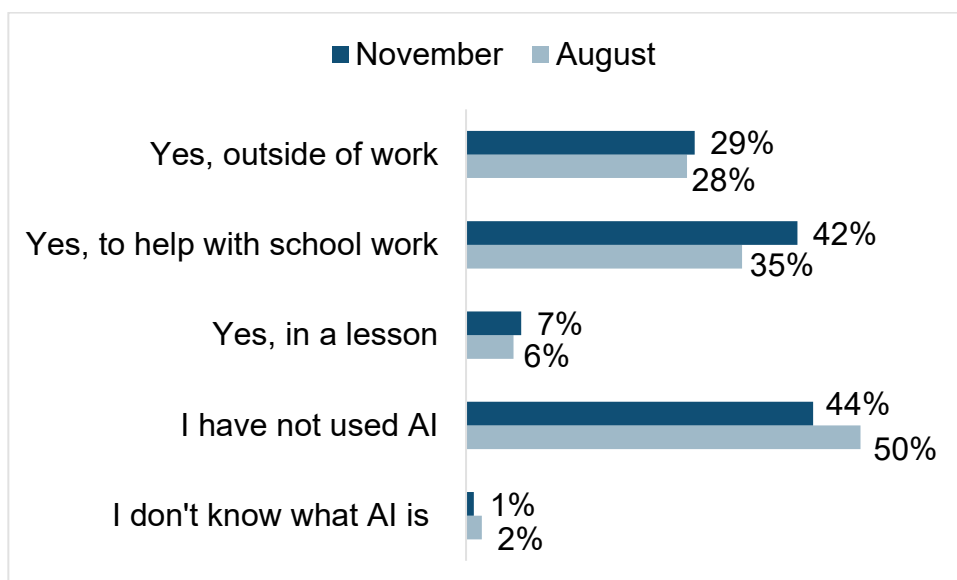
Source: Teacher Tapp. Primary and secondary teachers. Question asked in August (n=9,138) and in November (n=9,275). Results weighted to reflect national teacher and school demographics. Respondents could select multiple "yes" options.

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[11] Department for Education (2023). "Technology in schools survey 2022 to 2023".
[12] Government Office for Science (2023). "Future Risks of Frontier AI".
[13] https://teachertapp.co.uk/articles/how-to-improve-behaviour-wellbeing-and-how-youre-using-ai-in-schools/
[14] https://schoolsweek.co.uk/chatgpt-one-in-three-teachers-use-ai-to-help-with-school-work/
[15] Oriel Square (2023). "Education Intelligence report".
[16] Deloitte (2023). "Digital Consumer Trends 2023".

Educators interviewed reported using a range of non-specialised GenAI tools, including ChatGPT, Google Bard, Bing, DALL-E, Midjourney, Canva, and Microsoft Designer. Some were also using education specific GenAI tools, such as TeachMateAI, Ask Arbor and Memrise.

There was significant variation in the frequency of use among the educators interviewed. Some reported using GenAI tools daily, and that use was widespread among colleagues. Others had only used GenAI a few times and were not aware of colleagues using it.

Educators who are men, younger and those in secondary schools are more likely to be using GenAI.

DfE's survey of school and college teachers (conducted in April 2023) showed that those who were more likely to have used GenAI were:

- Working in secondary schools: 14% of secondary school teachers compared to 9% in primary schools. 23% of college educators had used GenAI.

- Male: 18% of teachers who are men compared to 9% of teachers who are women.

- Younger: 15% of teachers aged 18-34 had used GenAI compared to 9% of those aged 45-54.[17]

Independent school teachers were more likely to use GenAI in their roles compared to those in state schools and to report that they had received information about using AI technologies in school, other research shows.[18] 17% of teachers in independent schools had used GenAI to help with their work compared to 9% of teachers at state schools.

This aligns with trends in awareness of GenAI among the UK public:

- Men: 60% of men had heard of GenAI compared to 46% of women.

- Young people: 73% of under 35s had heard of GenAI compared to 27% of 65-75s.[19]

Pupils and students may be using GenAI more than educators.

Ofcom reports that 74% percent of online 16–24-year-olds in the UK have used a GenAI tool.[20] Among younger children use is similarly high, with 79% of online teenagers (aged 13-17) and 40% of online 7–12-year-olds reporting that they had used ChatGPT, Snapchat My AI, Midjourney or DALL-E (see Figure 2). The most commonly used GenAI tool among children is Snapchat My AI.

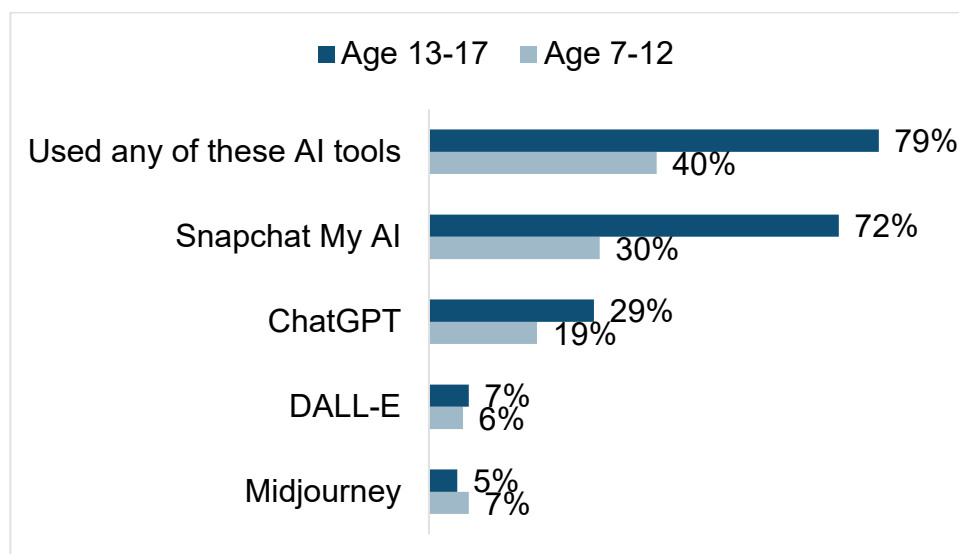[17] Department for Education (2023). "School and College Panel – April 2023. Research Report".
[18] Oriel Square (2023). "Education Intelligence report".
[19] Deloitte (2023). "Digital Consumer Trends 2023".
[20] Ofcom (2023). "Online Nation 2023 Report".

Figure 2 Adoption of GenAI tools among online children

Source: CHILDWISE summer omnibus 2023. Services used in the past six months: Fieldwork conducted June-July 2023. As reported in Ofcom Online Nation – 2023 Report.

When it comes to using GenAI for schoolwork specifically, educators interviewed reported students commonly using ChatGPT, Bard, Midjourney, and Canva to support their studies or in lessons. One reported a student using Snapchat My AI to ask questions about their homework.

DfE's survey of secondary school pupils showed 14% using AI tools for schoolwork (see Figure 3). However, other surveys show figures of 67% of secondary school pupils using GenAI tools for schoolwork and around half of HE students using ChatGPT to support their studies.[21] [22]

Understanding the true figure of GenAI use among students for schoolwork and studies, including use that may constitute academic malpractice, is challenging to determine due to use being hard to detect and not always reported by those using it. However, instances of academic malpractice due to AI were anecdotally reported by the experts and educators interviewed, as well as in DfE's Call for Evidence Summary of Responses.[23]

> Students are more familiar with GenAI than staff. Staff know that ChatGPT exists, but almost all of our year 10s have explored how ChatGPT and other GenAI can be used. – *Pete Dring, Fulford School*

[21] https://www.rm.com/news/2023/artificial-intelligence-in-education

[22] https://pebblepad.com/company/news/survey-finds-uk-students-using-ai-to-support-studies/

[23] Department for Education (2023). Generative AI in education – "Call for Evidence: summary of responses".

Parents lack clarity on their children's use of AI tools. DfE's survey of parents of secondary school pupils showed that 37% were unsure whether their child used AI for schoolwork (see Figure 3).

Figure 3 Adoption of AI tools (incl. ChatGPT) for schoolwork among pupils, as reported by pupils and parents
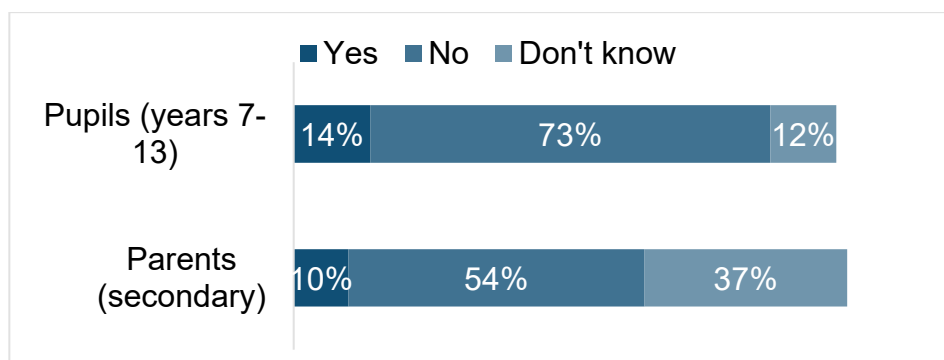
Source: DfE Parent, Pupil and Learner Panel (April/May 2023). Pupils in years 7 to 13 (n=3,238), secondary parents (n=1,738).

Some institutions are actively managing how educators and pupils use and experiment with GenAI.

Some educators reported that their institution had banned teacher and/or pupil use of GenAI. This was primarily enforced through server restrictions or policies. However, educators and experts interviewed generally viewed outright bans as shortsighted, due to the sense that this technology is widely accessible and will be increasingly integrated into existing tools and platforms used in education (e.g. Microsoft Copilot).

Other institutions were managing adoption at their institutions by conducting tool risk assessments, allowing a small group of teachers to experiment with "approved" GenAI tools, or piloting tools. Other educators reported their institutions had minimal oversight of how they were using GenAI tools, and felt they had autonomy to experiment.

One educational institution interviewed, Bolton College, is experimenting with integrating GenAI technology into the college's existing digital tools. The college has integrated GenAI into a student support chatbot to enhance its performance, and is applying GenAI to its internal assessment platform, FirstPass.[24]

Early adopter institutions rely on GenAI advocates to drive use, and tend to be more digitally mature.

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[24] https://www.fenews.co.uk/fe-voices/whats-next-for-bolton-colleges-ada-service/

Educators who were using GenAI reported a number of factors that they considered to support their GenAI use and encourage wider adoption at their institution.

Champions: Educators using GenAI reported having a personal interest in it and trained themselves on how to use it, including in their spare time. Social media platforms, including LinkedIn and Instagram, were cited as useful sources of information and tips. These GenAI educator "champions" advocate for GenAI use and support wider knowledge and skills sharing at their institutions.

Digital maturity of the institution: Institutions with high levels of GenAI use often had strong IT infrastructure, resource dedicated to IT training and support, and widespread use of EdTech. Institutions also had processes in place to review and approve GenAI tools (e.g. conduct risk assessments) in line with other EdTech tools and digital infrastructure. Some institutions, such as multi-academy trusts (MATs), managed tool approval centrally.

Collaboration with educators: Early adopter educators reported collaborating with colleagues to share knowledge, including running training sessions for each other or informally discussing ideas for GenAI use. Knowledge sharing across some MAT networks helped facilitate adoption.

Senior support: Educators using GenAI often described their institutional culture as being innovative and supportive of use of new technologies. Some reported senior leadership who actively endorsed GenAI or gave others autonomy to experiment.

Application and impact

Application of GenAI among teachers

The most common application of GenAI among school and college teachers is creating educational resources.

Educators are commonly using GenAI in relatively low-risk ways, such as creating content for lessons and for administrative supportive (e.g. writing letters and emails to parents, developing marketing resources) (see Figure 4). Fewer educators were experimenting with using GenAI for marking and assessment. Over one in ten were using GenAI to support learners with SEND.

Figure 4 GenAI applications amongst the subset of school teachers and leaders using it

Application	Percentage
Creating lessons/curriculum resources	62%
Planning lessons/curriculum content	42%
Communicating and engaging with parents/carers	17%
Delivering lessons (e.g. using AI tools during live teaching in class)	16%
Formative assessments (e.g. giving feedback or marking)	13%
Drafting policy documents	13%
Supporting pupils with SEND	13%
Collaborating and sharing resources with other teachers	12%
Summative assessment	11%
In teacher training	5%
Other	5%
Don't know	1%

Source: DfE School and Colleges Panel (April 2023). Leaders and teachers using GenAI in their role (n=280).

Other applications reported by educators included:

- Research and writing aid: Using GenAI tools to support research tasks, including researching a topic or concept and summarising articles, books and videos. GenAI tools were also used to transcribe or translate content, as well as proofread and edit written content.

- GenAI skills and AI literacy: Educators used GenAI tools to deliver training to other staff and pupils on what GenAI is and how to use GenAI tools, as well as raising awareness of the risks and limitations of tools. As part of this, GenAI tools were used to give demonstrations.

- Continued professional development (CPD): Some educators reported using GenAI to support their CPD, including summarising articles or using GenAI tools

as virtual tutor to upskill them on topics that they felt less confident teaching to students.

> My area for CPD has always been religious studies. My knowledge is not great so I thought, can I help myself by allowing ChatGPT to teach me? I copy and pasted in [to ChatGPT] the unit that I needed to be teaching, what the outcomes should look like, and it created a sequence of sessions that would help me, with explanations of what the technical vocabulary was. It was really, really good. – *Anthony Bandy, King Edwin Primary and Nursery School*

DfE's research shows differences in use by educational stage and educator role:

- Secondary school educators were more likely than those at primary schools to have used GenAI for assessments, both formative (18% vs. 6%) and summative (16% vs. 3%).

- School leaders were more likely than teachers to use GenAI for administrative purposes, including communicating with parents (31% vs. 15%) and drafting policies (30% vs. 10%).

There is evidence GenAI tools are being used by across most subjects in schools.

Subject specific applications reported by educators interviewed included:

- English and Modern Languages: Educators used GenAI to create good writing examples and comprehension questions for learners. Apps like Memrise were used to aid language learning by providing conversational support.

- Science and Computing: GenAI produced science experiment ideas. Students co-created revision materials with GenAI, and educators used tools to generate multiple-choice questions (MCQs) for science texts. GenAI was also used to create code in computing lessons.

- Mathematics: Educators used GenAI to create self-marking maths quizzes. One educator had experimented with using Google Bard as a personalised GCSE maths coach. Though some noted that GenAI's performance in solving mathematical problems is currently weak.

- Humanities and social sciences: Websites with embedded GenAI have been used to create historical characters that students could interact with in lessons.

- Art, music and design: Canva, Midjourney and Padlet are just a few of the tools that educators mentioned using with students to generate creative artworks or artefacts in the classroom.

Impact of GenAI among teachers

Teachers report that GenAI is improving their efficiency and creativity.

The key benefits of GenAI use reported by educators interviewed included:

- Saving time on tasks: Educators using GenAI tools reported saving time on tasks, in some instances of multiple hours. Creating lesson content and report writing with GenAI offered significant time-saving wins. Automating tasks reduced time spent working out of hours, improving some teachers' work-life balance.

- Creative and engaging teaching: GenAI was used to generate ideas to teach a course, concept or topic that educators said they may not have thought of themselves. More experienced educators noted that they may have taught a topic in a certain way for years and appreciated suggestions for new activities or experiments.

- Personalisation: GenAI tools have enabled teachers to easily tailor and differentiate resources for learners, such as developing worksheets for students with SEND so they could progress at a pace suited to them. Bing was used to translate English text for learners with English as an Additional Language (EAL).

   Embracing AI in teaching not only significantly lightens my workload but also enhances my creative expression, allowing me to design more innovative and engaging learning experiences for my students.
   – *Trudi Barrow, Sandringham School*

Case study: Fulford School is using GenAI to create revision resources and tools for learners.

Background and context

Fulford School is a coeducational comprehensive school in York with over 1700 pupils.

A small number of educators at the school are currently using GenAI tools to help with teaching tasks. The main tools used are ChatGPT and Copilot with Bing Chat. These are used to create learning resources, such as materials for lessons, as well as to support students with learning outside of the classroom. Students at the school have also been introduced to AI and GenAI tools, including MS Designer and Pixlr, to create artwork and designs.

Application: Student support chatbot

The school is experimenting with using GenAI to develop revision resources for pupils. This ranged from using GenAI to provide key word definitions and revision rhymes, to creating a revision application. Bing was used to generate code for a tool that produced multiple choice questions to support revision. The tool was developed with students in a lesson. One teacher reported:

"Within 20 minutes students had designed, tested and used their own revision app – it provided them with personalised access to a tutor."

"Year 8 generated raps and songs to help revise key points on topics."

Impact and next steps

The school has delivered initial training on GenAI for senior and middle leaders. This has focussed on the implications for assessment. Teaching students about digital life skills is a priority, so the school is actively engaging all year 10 students in a discussion around AI and GenAI.

The school is particularly concerned about GenAI exacerbating the existing "digital divide". Educators were also concerned around additional responsibilities being placed on teachers to identify instances of student malpractice due to AI – which they felt was becoming increasingly challenging to identify and judge.
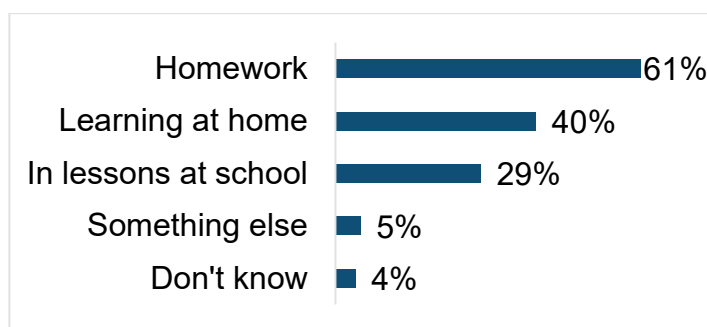
Student use of GenAI

Students are using AI tools to help them with school work, both in and outside of the classroom.

Secondary students

DfE's survey of secondary school pupils showed 14% self-reporting AI use for schoolwork. Among those who had used a GenAI tool in an educational context, the most common application was to help with work at home, including with specific homework tasks (61%) (see Figure 5).

Figure 5 Application of AI tools (incl. ChatGPT) among the subset of secondary students (years 7 to 13) who have used it

Application	Percentage
Homework	61%
Learning at home	40%
In lessons at school	29%
Something else	5%
Don't know	4%

Source: DfE Parent, Pupil and Learner Panel (April/May 2023). All pupils in years 7 to 13 who have used AI tools (n=449)

FE and HE students

Research from the National centre for AI in tertiary education (Jisc) explored current usage of GenAI among HE students.[25] Applications included:

Writing: As a writing aid to generate ideas, produce an initial structure for written work, and improve the quality of writing (e.g. correcting grammar, spelling).

Understanding: Using GenAI tools as a search engine to define or clarify the meaning of words, to explain concepts and to answer questions. GenAI tools were also used by students generate quizzes to test their own understanding of a topic. Translation and transcription features were also used, particularly among EAL students.

Research: HE students reported using GenAI to search for academic literature.

Images: Using GenAI tools to create images, digital artwork, and presentations.

Maths and coding: Some HE students reported using GenAI to solve maths problems and verify the accuracy of their own solutions. GenAI was also used to support coding, as an alternative to developer support tools (e.g. Stack Overflow).

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[25] Jisc (2023). "Student perceptions of generative AI".

Reported impact of use among students

Educators reported strong student engagement with GenAI tools and content developed by GenAI. Some noted that students found tools exciting to use and that they enjoyed the interactive element of GenAI tools. Though this highlights a potential "novelty effect" risk.[26]

Student creativity was supported by GenAI, according to some educators. Students who might normally struggle with art and design could produce high-quality, creative outputs by using tools.

Educators felt that GenAI benefitted EAL students and those with SEND by improving the accessibility of educational content (e.g. tailoring content to a learning level or translating material). One educator noted that GenAI was helping ADHD learners overcome the "starting paralysis" they experienced with some tasks.

Reported negative impacts among students included challenges in discerning inaccuracies in GenAI content, as well as instances of plagiarism due to AI.

Opportunities for GenAI in education

There is potential for GenAI to scale personalised learning and provide real-time feedback to learners.

Key opportunity areas for GenAI identified by experts and educators:

- Personalised learning: AI tutors could personalise learning based on needs, offer instant feedback, and adjust difficulty in real-time. GenAI tools that offer personalised learning currently have the greatest EdTech market share and are already being used in schools (e.g. Noodle Factory).[27] However, more evidence is needed to understand the impact of personalised and "intelligent" tutoring systems on student outcomes.[28] [29]

- Assessment and feedback: Educators emphasise the potential for GenAI to enhance assessment by automating marking, saving time for teachers and delivering timely feedback to learners. Educators were experimenting with using GenAI tools to interpret grading criteria, producing feedback and marks on essays

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[26] Rodríguez-Aflecht, G., Jaakkola, T., Pongsakdi, N., et al. (2018). "The development of situational interest during a digital mathematics game".

[27] https://www.reachcapital.com/2023/09/11/pipeline-perspectives-trends-from-280-generative-ai-edtech-tools/

[28] Xu, Z., Wijekumar, L., Ramirez, G., et al. (2019). "The effectiveness of intelligent tutoring systems on K-12 students' reading comprehension: A meta-analysis".

[29] St-Hilaire, F., Vu, D.D., Frau A., et al. (2022. "A New Era: Intelligent Tutoring Systems Will Transform Online Learning for Millions".

within minutes. However, results were mixed with some reported inaccuracies, and data privacy and ethical concerns remain.

- Insights and analytics: AI-driven data analysis could provide better insights, identify learning or skills gaps, and aid in decision-making for more effective teaching strategies. It could also enhance organisational efficiency, channelling resources into improving learning experiences and designing programmes to aligned with employer needs.

> GenAI's scalability can reduce grading time from six hours to 20 minutes, showcasing its potential for large-scale assessment automation. – *Joel Mills, BPP University*

Self-directed study using GenAI tools could support students and life-long learners.

Experts highlight that any learner will, theoretically, be able to tutor themselves on topics of interest using GenAI tools. This could include assessing pre-existing knowledge of a topic, developing a learning plan, creating content, and testing knowledge. GenAI tools are already supporting educators with their CPD. Educators interviewed reported using GenAI tools to summarise articles to support their teaching practice and learning.

However, implicit assumptions that new technologies will enable life-long learning lack evidence. The rise of devices, platforms (e.g. YouTube), and open courseware (e.g. MOOCs) has led to an assumption that all can benefit. However, there are structural barriers to adoption. Research shows that those who are younger, affluent, and educated are more likely to use the internet for life-long learning.[30] There is a risk the benefits will accrue to learners who can pay to access tools and those with the skills to use tools to enhance their learning.

> Some students will teach themselves with AI. More confident students can command a range of tools to support their learning. – *Mike Sharples, The Open University*

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[30] Eynon, R. and Malmberg. L-E. (2020). "Lifelong learning and the Internet: Who benefits most from learning online?".

Case study: Noodle Factory provides personalised tutoring for students, supported by LLMs

Noodle Factory, a Singapore-based AI EdTech company, has developed an AI-enabled tutoring system that uses GenAI. The platform personalises learning pathways and offers instant feedback to users. It analyses student performance to provide individualised support.

Crucially, it uses institution-specific content and can be integrated into existing learning environments. It is primarily used for out-of-class learning (e.g. homework), as well as for online and remote learners.

Application

Institutions and educators can upload learning resources to the platform which educators and students interact with. The platform can be used by educators to create engaging lesson plans and have interactive conversations with students, while students use the platform as a personal tutor.

The tool prioritises institutional (or educator-curated) content so as to ensure that students get accurate information. There is an option for institutions to switch on or off access to LLMs (e.g. GPT-3.5/GPT-4) if the tool is unable to answer student questions within the educator-curated content. This means students can expand their knowledge on a certain subject beyond the information and content that has been pre-programmed. Educators can view student interactions with the tool so they can step in if needed.

Impact

Noodle Factory has been deployed in Singapore, US, UK, Mexico and Portugal. The University of London is currently trialling Noodle Factory with its online Laws programmes to see how well it can support students with their academic questions. It is also being piloted in schools in England. In Singapore, the platform is used in K-12 schools, polytechnic colleges and universities.

Noodle Factory states that teachers report at least 50% time-savings, and the platform earns satisfaction ratings of at least 4 out of 5 from students (as reported on Noodle Factory's website).

Challenges and concerns

Teacher adoption of GenAI is mainly hindered by a lack of knowledge and understanding about how to use tools.

Lack of knowledge about how to use tools in an educational context was the most prominent barrier to use among teachers not currently using GenAI, according to DfE's survey (see Figure 6). This was followed by concern about the risks of use. Only 8% felt that GenAI tools were not applicable to their role. Primary school teachers were slightly more likely than secondary school teachers to select this option.

Among teachers interviewed, social media and word-of-mouth were cited by some as their main source of information about GenAI, rather than formal workplace training. Therefore, training for educators could drive willingness to use GenAI.

Overcoming access issues is also key. DfE's survey of teachers showed that 21% of those not currently using GenAI stated they do not have the necessary technology to use it or that their school has restricted access.

Figure 6 Reasons for school teachers and leaders not using GenAI in their role
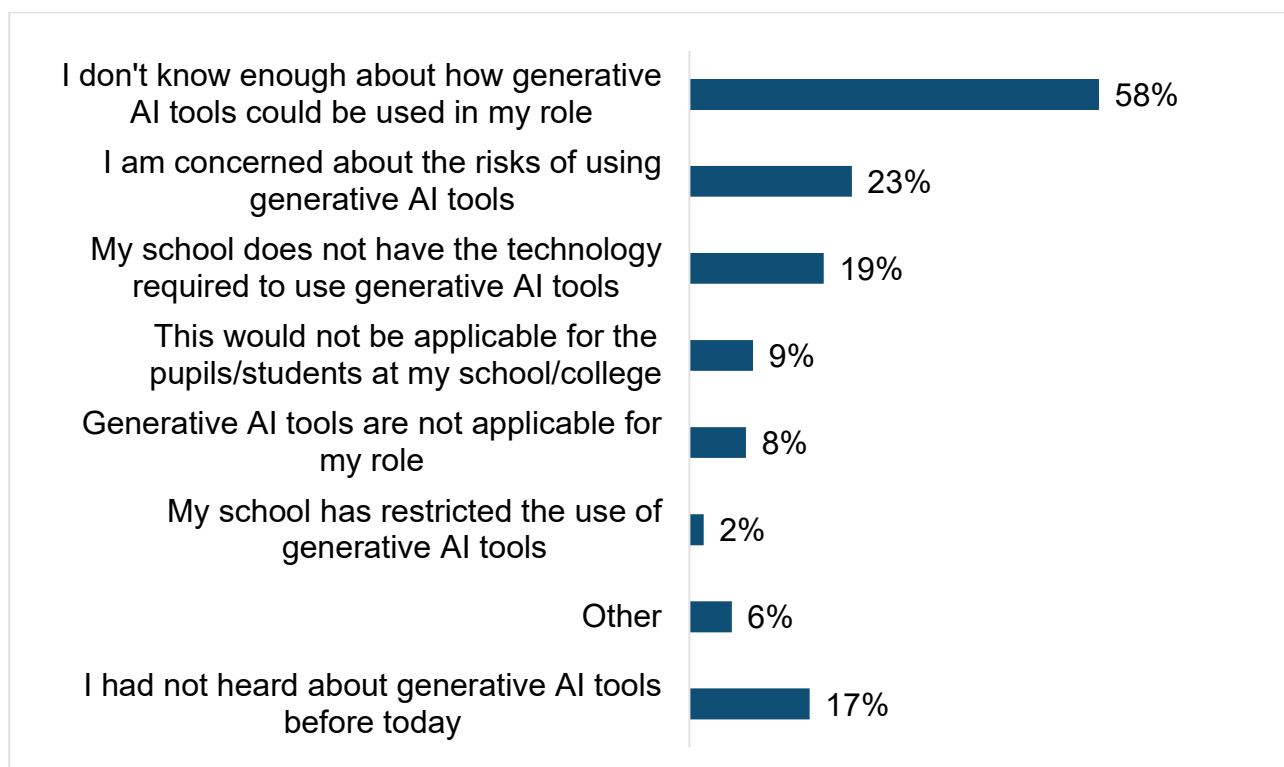
Source: DfE School and Colleges Panel (April 2023). Leaders and teachers who had not used GenAI in their role (n=2,101). Respondents could select multiple options.

Negative media narratives are also shaping perceptions and use.

Negative media coverage affects some teachers' perceptions of GenAI, increasing distrust. There is some evidence to support the view that the media have tended to emphasise "sci-fi" scenarios, for example that GenAI signals the "end of work".[31]

The threat of AI to job security was noted as a concern among some educators and their colleagues. A survey of the UK public showed that 64% believe AI will reduce the number of jobs available and 48% are concerned AI will replace elements of their own role.[32] However, research by the International Labor Organization (ILO) suggests that most jobs and industries are only partly exposed to automation and are more likely to be complemented (rather than substituted) by GenAI.[33]

> It's harder to convey the benefits than the risks because it's easier to scare people. AI can become a bogeyman. – *Aaron King, SEND Educational Consultant*

Regular users of Gen AI are more likely to be optimistic than non-users (62% vs. 36%).[34] But frequent use does not necessarily lead to genuine AI literacy. Research shows that the UK public tend to be too trusting of the accuracy of GenAI outputs. For instance, 43% of users of GenAI tools believe that GenAI outputs are always accurate, compared to 28% of non-users.[35]

Educators and experts emphasised the need to improve AI literacy among the public, including understanding of the opportunities and the risks. Early adopter educators were already delivering AI literacy training at their institutions. AI literacy also encompasses training on future workplace skills, like prompt engineering.

Other barriers to adoption for GenAI are similar to those for EdTech, such as basic digital infrastructure.

Digital infrastructure and access: Provision of the basic digital infrastructure needed to access GenAI (e.g. laptops and Wi-Fi) was noted as sometimes inadequate. In addition, EdTech and GenAI tools themselves may cost money, with paid or "freemium" models. Some educators noted obvious quality differences between free and paid-for versions. Tools may be free initially or to pilot, but companies may charge in the future. One educator stressed the need to agree costs up front with EdTech providers. Ensuring tool compatibility with existing digital infrastructure also supports access and ease of use.

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[31] https://www.cjr.org/tow_center/media-coverage-chatgpt.php
[32] Deloitte (2023). "Digital Consumer Trends 2023".
[33] International Labour Organisation (2023). "Generative AI and jobs: A global analysis of potential effects on job quantity and quality."
[34] Boston Consulting Group (2023). "AI at Work: What People Are Saying".
[35] Deloitte (2023). "Digital Consumer Trends 2023".

Time pressure: While GenAI may offer longer term pay-offs in time savings, it requires short-term time investments for tool selection and training, which some teachers may struggle to do. Survey data from the DfE shows that for 66% of teachers, a lack of time (due to workload or competing priorities) was a barrier to accessing continued professional development.[36] The problem is less acute for better-resourced schools, risking a "digital divide". One educator noted that private schools were more likely to dedicate resource to EdTech research and development.
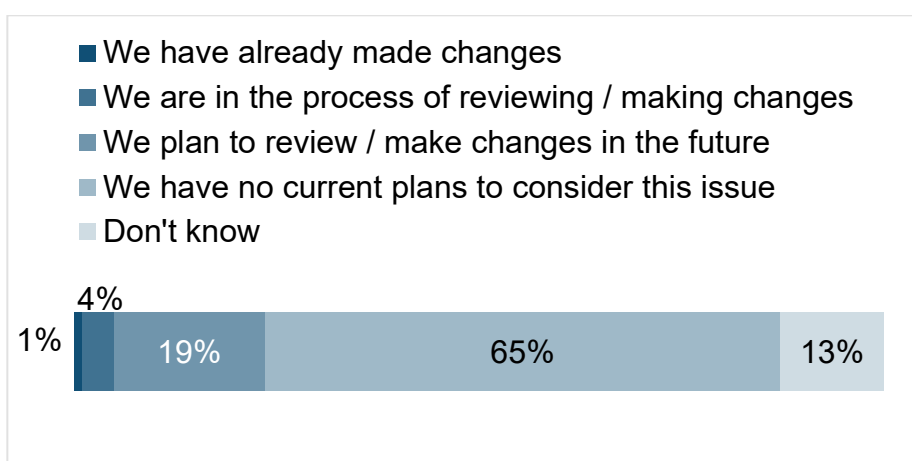
> Many staff members lack time during term periods to explore the potential of using GenAI. – *Heidi Price, Yealmpstone Farm Primary School*

Bottom-up teacher initiatives sometimes lack support from schools and inspectors.

Adoption is often dependent on small number of key staff members, who drive uptake and advocate for GenAI. This approach may be vulnerable to senior or centralised decision-making. One teacher at a MAT school worried that efforts to drive adoption could be undermined by trust-level decision-making.

Institutions actively making changes in response to GenAI, such as producing policies, are in the minority. Almost two-thirds of primary and secondary leaders said their schools had no plans to consider this issue and make changes (see Figure 7). A UNESCO survey found that less than 10% of schools and universities globally have issued formal guidance on AI.[37]

Figure 7 Extent to which school leaders have already or plan to make changes based on GenAI tools

- We have already made changes
- We are in the process of reviewing / making changes
- We plan to review / make changes in the future
- We have no current plans to consider this issue
- Don't know

1% 4% 19% 65% 13%

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[36] Department for Education (2023). "Working lives of teachers and leaders: wave 1".
[37] https://www.unesco.org/en/articles/unesco-survey-less-10-schools-and-universities-have-formal-guidance-ai

Concern about doing the "wrong thing" in response to GenAI may be driving inertia or a "wait and see" approach. One interviewee said that they wanted to push ahead with using GenAI, but felt anxious that school inspectors might penalise them for "taking risks" or doing so in the "wrong" way.

Academic misconduct, data protection, and student over-reliance on GenAI tools are top concerns.

Academic misconduct: In DfE's survey of primary and secondary teachers, 76% of respondents stated that they are not confident advising pupils about appropriate use of AI tools (see Figure 8).[38] Students are still unclear about which forms of AI use constitute academic misconduct, and GenAI integration into tools like Microsoft Copilot is only perceived make the issue more complex. This especially affects EAL students.[39]

Figure 8 Levels of teacher and leader confidence in advising pupils about appropriate use of AI
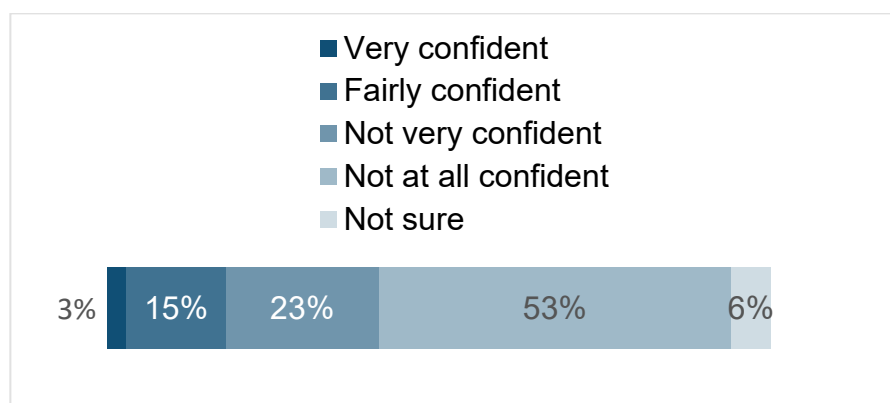
Source: DfE School and Colleges Panel (April 2023). All teachers and leaders (n=2,536).

When it comes to detecting academic malpractice due to GenAI, AI text detectors cannot solely be relied upon to help. OpenAI's own "text classifier" was withdrawn due to low accuracy, and detectors are easy to circumvent by tweaking outputted text.[40] Educators and experts noted that it will become increasingly challenging to detect academic malpractice due to AI, and raised concerns that exam boards are placing the onus on teachers to detect AI use.

Experts suggest that an effective response to AI-related academic malpractice must be multifaceted and consider changes to assessments as well as invigilation. Clear

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[38] Department for Education (2023). "School and College Panel – April 2023. Research Report".
[39] Gayed, J., Carlon, M., Oriola, A., et al. (2021). "Exploring an AI-based writing Assistant's impact on English language learners".
[40] https://openai.com/blog/new-ai-classifier-for-indicating-ai-written-text

communication of malpractice policies, training for human invigilators to detect AI-generated content, and use of oral vivas were all suggested. One HE educator interviewed reported that the professional bodies they work with sought a return to in-person examinations, which they considered more robust and secure.

Some experts also proposed incorporating AI use into assessment, taking cues from "computer-based math", which assumes student access and use of digital aids.[41] However, there was recognition that these changes would entail logistical challenges, and may not be aligned with pedagogical best practice.

Over-reliance on AI: The risk that students could come to depend on GenAI is a key concern. One interviewee said it was "the main risk at the moment." Teacher surveys flagged concerns that use of GenAI tools reduces pupils' creativity.[42] A pupil survey reported 70% of those using Gen AI worried about struggling in exams without it.[43] In Jisc's research with HE students, some expressed concerns that relying too heavily on GenAI tools could impede their intellectual growth.[44]

Data protection and privacy: Educators reported that schools are anxious to fulfil their commitments under the General Data Protection Regulation (GDPR) and recognise the risks that GenAI presents. Institution and educator responses to data protection concerns include risk assessing tools and prohibiting inputting personal data. However, enforcement is piecemeal, and policies are not consistent across the system.

Experts highlighted that privately-operated AI tools are able to change terms of use at any time and lack accountability and transparency. A Stanford-led initiative to assess the transparency of companies developing foundation models looked at indicators such as the disclosure of data used in building the model and the protocols in place for user data sharing. It appraised ten companies, including Open AI and Google, and found that all have significant room for improvement.[45] This is especially problematic when tools use data input by children. Experts emphasised challenges related to children giving informed consent around the processing of their data by GenAI companies.

Societal adoption of AI will change the knowledge and skills students need.

Experts agree that GenAI will have a major impact on future workforce requirements, and therefore on the skills needed. DfE's research on the impact of AI on UK jobs and training

[41] https://www.computerbasedmath.org/
[42] Capgemini (2023). "Future ready education".
[43] https://www.rm.com/news/2023/artificial-intelligence-in-education
[44] Jisc (2023). "Student perceptions of generative AI".
[45] Bommasani, R., Klyman, K., Longpre S., et al. (2023). "The Foundation Model Transparency Index".

shows that employees with more advanced qualifications (e.g. degree level or equivalent) are typically in jobs more exposed to AI.[46]

Curricula need to integrate AI knowledge and skills. Students need to do more than just avoid jobs likely to be replaced by AI, they will need to learn to use AI tools which will become ubiquitous in working life, including effective prompt design. Some universities have acknowledged this in published guidance. Experts noted that students may question the value of courses that fail to prepare them for work.

Demand for AI literacy provision is also growing rapidly. Schools, FE and HE institutions are not yet prepared to meet demand from employers and students for AI literacy skills. Educators and experts interviewed suggested that AI literacy should be integrated into teacher training programmes as educators will require training to teach this knowledge, as well as to use GenAI tools themselves.

Educators want support to identify tools that are safe and effective.

Educators find navigating the growing landscape of EdTech and GenAI tools time consuming. Many educators interviewed described difficulties staying abreast of the market, and emphasised the time required to conduct risk assessments, train staff and students to use tools, and monitor the impact of use.

Experts interviewed warn that sources of evidence to help educators identify effective tools are limited. Existing research on the impact of EdTech tools is small-scale, may ignore novelty effects, and studies less useful metrics like student usage time (as a proxy for engagement) or teacher satisfaction, rather than impact on outcomes or attainment.[47] [48] There is also a risk that research by EdTech companies may be biased and feature exaggerated claims.[49] DfE's own research shows that teachers are divided on the contribution of technology in schools to child attainment, with 45% reporting a positive impact and 43% reporting a negative impact (see Figure 9).[50]

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[46] Department for Education (2023). "The impact of AI on UK jobs and training".
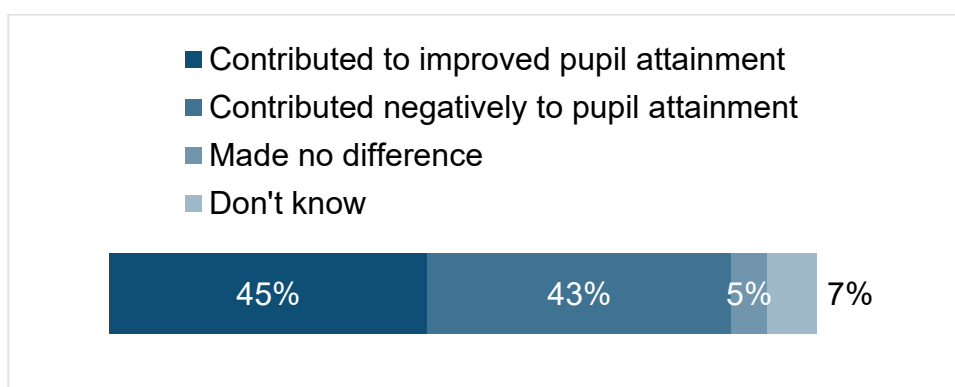[47] https://www.nesta.org.uk/blog/what-is-the-evidence-for-edtech/
[48] UNESCO (2012). "AI and education: guidance for policy makers".
[49] Reeves, T.C., and Lin, L. (2020). "The research we have is not the research we need".
[50] Department for Education (2023). "Technology in schools survey 2022-2023".

Figure 9 Views of teachers on the impact of technology in schools on pupil attainment

Contributed to improved pupil attainment
Contributed negatively to pupil attainment
Made no difference
Don't know

| 45% | 43% | 5% | 7% |

Educators requested support to identify safe and effective tools—for GenAI as well as for EdTech. Educators suggested kitemarking for tools, an "approved" list or package of tools, or government developing its own AI and GenAI tools for institutions to use. Access to trusted, independent and user-friendly sources of evidence could also help educators to make effective choices around which tools to use.

> It would be hugely helpful if there were a recognised kitemark for all EdTech tools. That would speed up the adoption or rejection process. A GDPR compliant and an Ethical AI kite mark would be helpful. – *Daren White, Academies Enterprise Trust*

Best practice guidance can help ensure tools are deployed successfully.

GenAI's impact will depend on how it is integrated into teaching and learning. Experts emphasised the importance of ensuring tool implementation is aligned with good pedagogical practice. This is considered particularly important for non-specialised GenAI tools, such as ChatGPT and Google Bard, as well as education-specific tools that claim to be "pedagogy-aware". Tools that are used directly by learners need to be carefully implemented by teachers to avoid disrupting important pedagogical processes such as teacher-student interaction.[51]

Educators requested training and guidance on best practice use. Some educators noted that they are already integrating GenAI into their training for Newly Qualified Teachers, including on AI literacy, and felt providers of Initial Teacher Training (ITT) should also consider this.

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[51] Seo, K., Tang, J., Roll, I. et al. (2021). "The impact of artificial intelligence on learner–instructor interaction in online learning".

Ongoing stakeholder engagement is needed to facilitate knowledge-sharing. Educators suggested webinars and events to share findings across the sector, alongside published guidance and case studies. In particular, educators and experts endorsed continued engagement with students and teachers.

> We need guidance on what tools we can use, which are most appropriate and best for a certain task, and how it can be used effectively. – *Daren White, Academies Enterprise Trust*

Recommendations

The following recommendations were suggested by experts and educators and have been expanded by the OIT.

Establish a long-term strategy: A strategy is needed to set the direction for GenAI (and AI) in education. Long-term planning should explore how AI could change the current model of education, including implications for the role of teachers and classroom-based learning. For example, "flipped learning" may become more pronounced, where students engage with learning materials outside of the classroom and then come to a lesson with basic knowledge to participate in more interactive activities.[52] A strategy should respond to the challenges GenAI presents for the sector and be future proofed to keep pace with technological advancement. It should be grounded in educator and learner needs, guided by educational objectives, and tailored to educational stages.

Develop stakeholder forums: As this technology rapidly evolves, ongoing knowledge-sharing between stakeholders will be needed to enable the sector to exploit the opportunities GenAI presents and to effectively manage risks. Stakeholder forums should ensure representation from practitioners, students, experts (e.g. academics in AI, EdTech, pedagogy, data protection), and other key groups in education (e.g. examiners, regulators).

Promote evidence building: There is a growing need to build the evidence base to help educators to make informed decisions about which GenAI tools to use based on efficacy. Government should set the metrics that matter (e.g. student outcomes over student engagement), ensure tools are pedagogically grounded, and support routine evaluation. Schools and colleges are unlikely to do this themselves, and EdTech has a vested interest in showing efficacy, so this will require incentives and resources. This could include making funding available to schools to evaluate, as well as build on existing

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[52] Sanchez-Gonzalez, M. and Terrell, M. (2023). "Flipped Classroom With Artificial Intelligence: Educational Effectiveness of Combining Voice-Over Presentations and AI."

initiatives, such as the Oak National Academy. Key evidence gaps include the impact of GenAI on learner outcomes, particularly among disadvantaged and SEND learners.

Academic malpractice, assessment, and curricula: Guidance is needed to help teachers to identify and manage student use of AI and respond to academic malpractice. Government could support by convening current understanding of best practice for managing malpractice to mitigate the risk of students being unfairly penalised based on limited evidence. However, as AI-enabled academic malpractice increases and becomes more sophisticated, it will become harder for teachers to identify it. Funding for research is needed to support the development of tools that can reliably detect AI-generated outputs and for other initiatives that could help (e.g. watermarking outputs). Curricula should also be updated to reflect current student use or to integrate AI tools as an explicit part of learning and assessment.

Workforce requirements: AI is changing the skills that the workforce needs, and our education and training system needs to respond to meet these requirements and ensure student career readiness. Modifying curricula and qualifications to align with employer needs will require cross-sector collaboration between employers, government, awarding bodies, institutions, and educators.

Safety, privacy and data protection: Guidance on GenAI use in education should consider safety and privacy implications. Improving student and educator AI literacy could help manage the risks. AI literacy initiatives should also be aimed to young children to help them understand their digital rights and records. However, this places the onus on users to ensure their own privacy and protection when using tools, and the current lack of transparency around the development of foundation models (as well as how data is used, stored, and shared) presents a key barrier to users being truly informed. Government should explore the applicability and enforcement of existing legislation in the context of AI and GenAI, and better understand the requirements for new regulation to fill gaps in this space. Safety, privacy and data protection accreditations could also help reassure users and signal that developers take concerns seriously.

Deployment: GenAI could exacerbate the "digital divide" in education and there is already an emerging difference in adoption of GenAI between state and independent schools. Government should consider how to support access to AI and GenAI technology by educators and students across the education system. Advice and information on GenAI should be easily accessible to teachers through popular and trusted information platforms. Guidance on the deployment of GenAI should be evidence-informed and pedagogically grounded.

Intellectual property (IP) and publishing: More research is needed to better understand the IP implications of GenAI, including the infringement of IP rights due to data input into GenAI models, as well as ownership of AI-generated outputs. As

educators and students turn to GenAI to produce educational resources, traditional educational publishers could be left behind. Support for educational publishers may be needed to ensure we have a sustainable publishing sector underpinning the education system.

Annex 1: Case studies

Case study: Basingstoke College of Technology is using Google Bard for lesson planning and content creation.

Basingstoke College of Technology is a further education college. The college is experimenting with using ChatGPT, Google Bard and Teachermatic for lesson planning and content, with the aim to save teachers' time. Marking and feedback automation with GenAI is also being explored.

Students and teachers also have access to a range of other commercially-available technology, some of which integrates GenAI (e.g. MidJourney for image creation, Canva for slide design) and some that uses other forms of AI (e.g. Bodyswaps for interview practice, Century for Maths and English personalised learning).

Application: Lesson planning

The college's Head of Teaching, Learning and Digital, Scott Hayden, worked with a small group of teachers and found that they needed support with prompt writing to generate good responses from the GenAI tools.

Prompt templates were developed, covering a wide range of teaching purposes, from simple "summarise" or "explain" prompts, to complex lesson planning and "sequence of learning" prompts that generate outputs aligned with Ofsted priorities.

Teachers often build on the lesson content suggested by using other apps (e.g. Conker for quizzes).

Impact and next steps

Google Bard was selected as the platform for teacher-wide roll out due its transparent GDPR statement, ease of auditing (as staff log-in is required) and user friendliness. Group and individual staff training is offered.

Anecdotally, both new and more experienced teachers have reported positive feedback about time savings and the quality of the teaching plans, activities and resources produced. As Google Bard accesses the internet, there are risks around accuracy and bias in its outputs. Staff vigilance will be needed to mitigate this risk.

Case study: Bolton College is integrating ChatGPT's capabilities into its bespoke AI tools.

Bolton College is a further education college that takes an 'in-house' approach to AI. The college's IT team built an "Ada" chatbot in 2017 using IBM Watson technology. It is linked to multiple college datasets and can answer students' course and administration related questions, freeing up staff time.

It was time consuming to train, with vast numbers of question and answer pairs required to ensure it could answer most student queries. The Ada chatbot technology was then applied to a limited number of subject courses so that students could ask questions about course content.

Application: Student support chatbot

Although the Ada chatbot already incorporates an LLM, a prototype is being developed that uses Open AI's API to leverage ChatGPT capabilities. The benefits of this include:

- speeding up information retrieval

- enabling two-way "conversations" rather than just individual responses

- reducing the time needed to train a subject specific Ada chatbot – teachers will simply need to drag and drop course documents/URLs

The chatbot will still be limited to college content only, to help ensure accurate and contextualised responses.

Impact and next steps

There has been limited assessment of impacts. However, the introduction of the Ada chatbot was associated with a 3% increase in student retention during the first 42 days of the 2018/19 academic year, compared to 2017/8. This equated to an additional £200k revenue for the college.

The ChatGPT-enhanced Ada chatbot was launched in September 2023. It is expected to lead to an increase in the number of teachers setting up subject specific chatbots. These will enable students to tailor course content to themselves for research or revision and to retrieve information from their own uploaded class notes.

Case study: King Edward VI School is using GenAI to support language learning.

King Edward VI School is a grammar school with academy status located in Stratford upon Avon, Warwickshire.

A dedicated group of teachers at the school are currently experimenting with GenAI across a range of applications including content creation, language learning, as a homework and revision aid, and as a personal research assistant (such as for the Extended Project Qualification).

Teachers at the school are using ChatGPT as well as subject specific GenAI tools such as Memrise, a GPT-3 powered AI tool for language learning.

Application: Student support chatbot

Teachers are experimenting with using Memrise as a language tutor to A-Level students, who are using it to practise exam style oral questions. Learners can practise speaking using the tool, which can correct speech and continue the conversation. One teacher reported:

"With Memrise, you effectively have a robot French speaker working directly with each student. A school would never be able to employ that many teachers, so Generative AI is allowing us to do something we wouldn't have been able to do before."

Memrise is also changing language homework, as video tasks can be set instead of writing and reading activities.

Impact and next steps

Teachers report that students find interacting with a GenAI language partner engaging, and there's a sense that some students might be less worried about making an error with a "robot" compared to their teacher.

The school is also experimenting with using ChatGPT as a personal revision assistant. Students are taught how to write prompts to generate an argument for an essay which can then be used to plan revision exercises.

The school have set up an "action research programme" to further investigate the opportunities and challenges AI presents.

Annex 2: Educator interviewees

Name	Organisation	Role	Educational stage	Region
Heidi Price	Yealmpstone Farm Primary School; Plymouth Nursery Schools Federation	Headteacher; Chief Executive Officer	Early years, Primary	South West
Anthony Bandy	King Edwin Primary and Nursery School	Assistant Headteacher	Early years, Primary	East Midlands
Sana Hafeez	Cheam Park Farm Primary Academy	Class teacher	Primary	London
Alex Spencer	Primary school in Norfolk*	Class teacher	Primary	East of England
Patrick Carroll	Hayfield Lane Primary School	Class teacher	Primary	Yorkshire and the Humber
Megan Huntington	Primary school in Yorkshire*	Class teacher	Primary	Yorkshire and the Humber
Trudi Barrow	Sandringham School	Class teacher	Primary	East of England
Graham Macaulay	LEO Academy Trust	Director of Strategic Partnerships	Primary	Nationwide
Daren White	Academies Enterprise Trust	Academies Technologies Lead	Multi (primary and secondary)	Nationwide
Ben Manley	Watford Grammar School	Class teacher	Secondary	East of England
Ilana Ordman	Hasmonean High School for Girls	Head of Science; Class teacher	Secondary	London
David Goh	Thamesview School	Class teacher	Secondary	London
Tracy Birkett	Neston High School	Class teacher	Secondary	North West
Amaryllis Barton	King Edward VI School	Digital Strategy Lead; Class teacher	Secondary	West Midlands

*Has since left the school.

Name	Organisation	Role	Educational stage	Region
Pete Dring	Fulford School	Head of Computing; Class teacher	Secondary	Yorkshire and the Humber
Rod Walsh	Fulford School	Class teacher	Secondary	Yorkshire and the Humber
Aaron King	9000lives	SEND consultant	Multi	Nationwide
Mark Dale-Emberton	Charlton Park Academy	Principal	Special School	London
Rachel Kay	Babington	Chief Learning Officer	Further	Nationwide
Scott Hayden	Basingstoke College of Technology	Head of Teaching, Learning, and Digital	Further	South East
Aftab Hussain	Bolton College	Learning Technology Manager	Further	North West
Jane Williams	Wirral Metropolitan College	Teacher	Further, Higher	North West
Joel Mills	BPP	Head of Generative AI and Digital Learning	Higher	Nationwide
Anonymous participant	Anonymous participant	Anonymous participant	Higher	East Midlands