FROM THE CLASSROOM
"Let schools do what's right for them."
See page 5.

THE RISE OF AI IN EDUCATION
Almost 20% of teachers have used AI for school work. ***See page 6.***

REFRAMING THE FUTURE
30–50% of a child's youth might be spent looking at a screen. ***See page 16.***

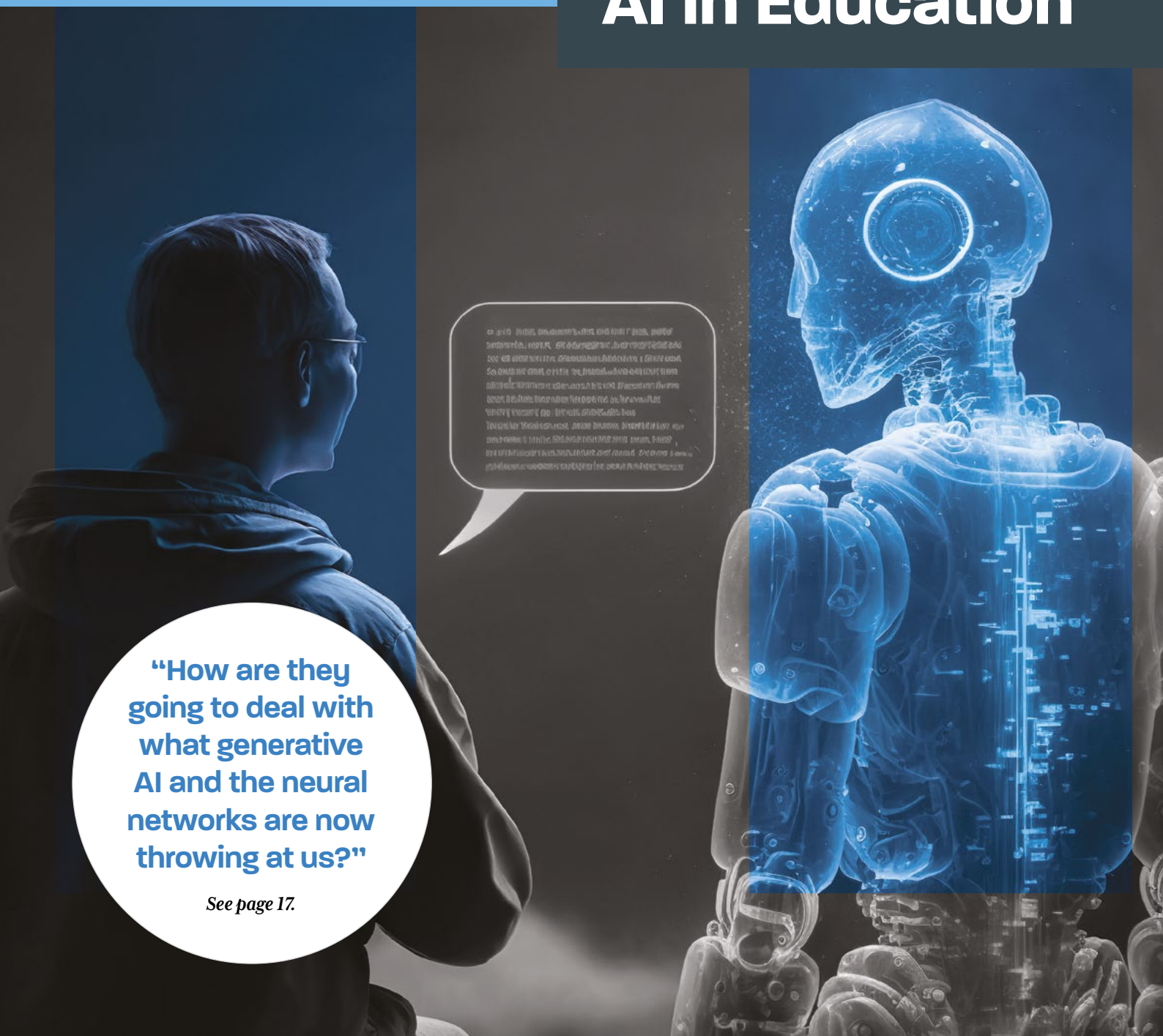
ISSUE 1 | **SUMMER 2023**

Education Intelligence

from ORIEL SQUARE

Your comprehensive source of evidence-based research about education

AI in Education



"How are they going to deal with what generative AI and the neural networks are now throwing at us?"

See page 17.

ABOUT **ORIEL SQUARE**

Oriel Square provides strategy, research, training and content publishing services to organisations involved in education. We work with market-leading publishers and partner with start-ups, EdTech suppliers, charities and professional organisations in the UK and worldwide.

Contact us for a free initial consultation

ABOUT **EDUCATION INTELLIGENCE** FROM **ORIEL SQUARE**

Education Intelligence from Oriel Square delivers critical market insights, trends and in-depth features on the school education industry. The service includes quarterly trends reports, a free and independent weekly research newsletter, and exclusive events covering featured topics.

Find out more about the Education Intelligence service

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Foreword

Introducing the **Education Intelligence** service

When Sam Derby and John Deans founded Oriel Square as an educational strategy, research and publishing services company, it was clear there was an appetite for accurate, timely and concise information about educational research and practice in our industry. There is a constant and vast stream of information coming at us daily and it's harder and harder to sift the wheat from the chaff.

That's why we are launching Education Intelligence from Oriel Square – a new set of research insights for education organisations. Comprising an independent weekly educational research newsletter edited by Dorothy Lepkowska, a series of independent trends and insights reports, and associated events, we want Education Intelligence to be something that all of our colleagues across the education profession can benefit from, and to bridge the gap between the education industry and educators.

You can sign up for the weekly Education Intelligence newsletter for free using the QR code on this page. Follow @EduIntelligence on Twitter. Details of Education Intelligence subscription packages and introductory offers are available on the Oriel Square website. Please enjoy our inaugural report, with a special feature on AI in education!

Hannie Kirkham, Research and Strategy Manager, Oriel Square

Issue 1: AI in Education

I'm delighted to see the first report in the Education Intelligence series launching. If those most involved in developing generative AI technologies are right, the continued exponential growth in their capabilities, combined with human innovation, will hugely benefit teachers and learners alike. The challenge will be identifying which developments will have the greatest benefit, as well as removing or mitigating the associated risks.

This report brings together the most up to date insights from the classroom and from thought leaders in education. It aims to provide a rich seam of information and stimuli to those of us with a stake in high quality educational content and assessment. I hope it will encourage debate and highlight challenges within education, underlining the commitment we all have to using first-rate research to drive our actions in supporting teaching and learning.

Sam Derby, Director, Oriel Square

Trends in Education

Looking back at the last few months, various patterns have emerged in the media as well as from within our own experience of the education industry. Here we collate those that we feel are most pertinent now and that are worth watching over the coming months as well.

This article has been AI-generated and then lightly edited for accuracy and interest by a member of the Oriel Square team.

We wrote this round-up by building a prototype web-app around OpenAI's API. As with our other AI experiments, we looked for ways the AI can support, rather than replace, human expertise. We also wanted the large language model (LLM) to play to its strengths: using its ability to parse and produce language, but not pushing it to invent plausible truths, or spit out superficial filler copy.

Our web app set up a virtual team of AI journalists and editors. Their first job was to read several recent news sources and identify the most common trends; we then chose a set of relevant articles and web pages, and our AI editors made notes of relevant content from each. Next, AI journalists wrote up each trend based on those notes.

The AI team chose interesting trends and wrote informative, readable articles describing each. Particularly given this is an experiment, it was important to us to check for accuracy and style, and that the AI had not plagiarised; and we did this with a light-touch expert human edit.

For language processing, we used gpt-4-0613. This build includes OpenAI's new 'function' feature, which allowed us to work with structured data and direct the task.

Heightened Debate Over Ofsted's School Inspection Regime

The discussion surrounding school inspections is on the rise following recent changes by Ofsted and the judgements it offers. Further spurred by the recent tragic death of Headteacher Ruth Perry, many, including the Education Committee, have posited that it is time for an inspection regime review. Proposing a shift to a 'report card' system, numerous voices in academia, including Bridget Phillipson, shadow education secretary, are advocating for a more encompassing picture of school performance – a move away from tunnel-visioned grading. The proposed 'report card model' was first suggested by Labour in 2008 and has found new supporters. However, critics argue this model alone wouldn't suffice, because it still carries the burden of school regulation. There is also ongoing debate over handling child protection issues, calling for a comprehensive information approach. This renewed scrutiny on the topic, which involves the inspection grades, presents a challenge to the forthcoming chief inspector of Ofsted.

Additionally, an emerging concern is the 'ghost children' phenomenon, where pupils are registered but not regularly attending school. There are calls for improved data capture and multi-agency support to address this. The issue underscores the necessity for a robust and nuanced system for evaluating school performance and ensuring the welfare of pupils. In the face of the growing debate, Ofsted's chief inspector, Amanda Spielman, acknowledges the legitimate discussion surrounding the reform of the current grading system.

Challenges in Funding Access to Education

Financial constraints are inciting a crisis within the UK's education system. Balancing challenges such as the high cost of uniforms, tutoring programmes, and teacher pay, the industry is urging greater government intervention to maintain accessibility for all.

Teacher shortages aggravate these issues, largely due to underwhelming pay and overwhelming workload. NFER's recent Teacher Market Report highlights that teacher recruitment is sliding to 20% below target at primary level, and is dangerously lagging in key secondary subjects such as Physics and Computing.

The desired remedy is clear: a substantial pay increase and a shift towards a more sustainable work-life balance. Options like flexible working are appealing for many in the education sector, marrying technology with the unique demands of teaching.

The House of Commons Education Committee has also launched an inquiry into teacher retention, indicating the urgency of the situation. Meanwhile, reports of strikes and rising dissatisfaction among teaching professionals emphasise the need for immediate action.

The backdrop to this issue is an economy battered with inflation, stagnant wages and economic disparity, causing some to feel that the burden of funding is intolerably high. Indeed, a PwC survey found nearly a quarter of respondents doubtful that the latest budget would make a difference to their situation.

While campaigns to increase the provision of free school meals and achieve better pay for college teachers gain traction, the education sector's financial pressure points remain an acute challenge. As classrooms echo louder with calls for improved funding, the need for decisive action is increasingly urgent.

Rising Concerns about AI in Education

The role of AI in the UK education sector is attracting increasing attention, as exemplified by a recent International Technology Strategy by the government. The strategy proposes an ambitious plan to elevate the UK as a tech superpower by 2030, with a spotlight on AI. This focus is also echoed in the research sector, with discussions on topics from generative AI to safe AI development.

The latest GPT model, GPT-4, is flagged as a potential game-changer in detecting academic misconduct. However, there is still potential for its misuse, as highlighted by the Joint Council for Qualifications. To preemptively address this issue, the council advises the establishment of policies for teachers and assessors on identifying inappropriate AI usage.

AI is expected to transform teachers' workloads due to its potential for creating lesson plans and assessing student work, though standards are still catching up. To foster a secure technological foundation, schools are receiving additional governmental support, such as revised digital and technology standards and a new technology planning service for senior leaders.

Given the potential of AI and its ramifications on the education sector, many call for a re-think on homework and unsupervised study. As this 'deeper think' continues, close collaboration between the education and technology sectors will be needed if the potential of AI, both as a tool and a potential disruption, is to be fully harnessed.

Developing Practical Skills becomes a Focus in Education

The UK education sector stands on the brink of significant transformation, with a renewed focus on comprehensive, practical skills development. This shift, reflected in creative industries, vocational qualifications and 'soft' skills programmes, stresses the importance of embedding practicality within education. From financial literacy initiatives to AI's burgeoning role in education, the trend signifies the government's recognition of the importance of equipping students for a dynamic job market.

Central to this is the Lifelong Learning Bill, a legislative piece aimed at encouraging continuous skills growth. Its alignment with the trends on 'EduTwitter' reflects the changing discourse on skills development, demonstrating an understanding that continuous learning and adaptability are key in the modern job market.

Minister Robert Halfon's praise for the German vocational system further underlines this practical focus, hinting at a shift towards similar, employer-led technical training in the UK. Furthermore, amid digitisation and the growing prevalence of hybird working models, the minister stressed the need for robust digital skills training.

Also pivotal is the revitalisation of apprenticeships – a reform designed in collaboration with industry to create over 600 challenging apprenticeship standards. Accompanied by initiatives like 'Skills Bootcamps' and the proposal of a 'Ladder of Opportunity', this reform aims to lay a robust foundation for creating a highly skilled, adaptable workforce – one that's capable of tackling the shifting demands of the job market while ensuring inclusivity for society's most disadvantaged individuals.

Ultimately, this emphasis on vocational and skills-based training showcases the UK's concerted effort to match education with future skills needs. It champions practical learning, forging a path towards a responsive education system that prioritises skills development.

From the Classroom: Trends from a School Perspective

Paul Urry has been teaching for 31 years, and a headteacher for over 10 of those. He is passionate about giving children the education and support that they need, working coherently with local communities, and supporting staff wellbeing.

CLASSROOM EXPERT

Paul Urry, Executive Headteacher at two inner-city primary schools in Bradford, responds to the trends, discussing his and his schools' experiences.

Ofsted's School Inspection Regime isn't fit for Purpose for Most Schools

What is the purpose of Ofsted? They will say it is to ensure that schools are meeting the required standard, but that standard is quite arbitrary and open to interpretation. So I think their fundamental starting point is wrong and, therefore, the application is wrong. Many inspectors don't seem to have the skillset to account for the different contexts of different schools, and then they judge on things beyond the school's control, such as absence.

To maintain high standards, the best thing would be to have a more collegiate and moderated approach – something that could look at the school's innovations or its changes over time. This should allow for nuance and for a skilled team of individuals to understand circumstances of a given school. That would be a much better way to serve children.

Funding Models Should Enable Schools to make the Right Decisions for the Benefit of their Children

The biggest challenge around funding is actually meeting the needs of the children. At the moment we have a huge concern about the medical, social and physical needs of children coming into Reception. They require so much extra support for language development and communication, and that means more teaching staff.

However, teacher recruitment is a challenge, because even if the DfE does throw more money at them, it won't necessarily compare with industry salaries. Flexible working and better coherence between public and private sectors might attract more high quality teachers, but declining pupil numbers also puts a lot of pressure on schools. If funding per pupil doesn't increase, schools will start making redundancies, streamlining classes, or closing. Primaries are seeing these challenges now but in five or six years' time it will hit secondaries as well.

Schools should Embrace AI and Prepare their Students to use it

AI is going to get better, so let's embrace it; and teach children how to use it, especially in disadvantaged areas where they might not have much exposure to it. My school uses it to create content, images, lesson plans, even some of my school's development plan. It's a great starting point – we edit afterwards but it gives us ideas. A lot of responses seem to be reactionary at the moment; we need to think proactively about the potential opportunities, so that young people don't get left behind.

UK Education Shifts Focus to Comprehensive, Practical Skills Development

The approach here isn't holistic enough. The measures used in primary education, combined reading and maths scores, don't fit well to an agenda that wants practical and vocational work. If the government wants to go down the skills route, they have to really value it and let schools value it. We have to think creatively – the good schools are working around the system, not with it. So loosen the reins on schools, and don't focus so rigidly on academic measures. Let schools do what's right for them.

"...we need to think proactively about the potential opportunities, so that young people don't get left behind."

The Rise of AI in Education? Research Report on Teacher Usage, Teacher Wishes and Teacher Concerns

Hannie Kirkham, Research and Strategy Manager at Oriel Square, Eva Steenhuis, Assistant Editor at Oriel Square, and Karen Wespieser, Chief Operations Officer at Teacher Tapp

Key takeaways

- Around 20% of teachers have been using AI tools to help with school work; only half that number have used ChatGPT specifically.
- There is an apparent gender divide, with male teachers more likely than female teachers to have used AI tools, and also more female teachers citing a lack of confidence in learning about AI as a concern.
- Private school teachers are more likely to have used AI for school work than state school teachers.
- Maths teachers aren't using ChatGPT; about half as many maths teachers are using other AI tools in school compared with other subject teachers.
- The top three perceived future uses of AI for teachers were:
    - creating lesson content, such as model answers or personalised learning
    - analysing attainment data
    - creating lesson plans.
- Teachers most commonly said they could see themselves using AI to create:
    - practice questions
    - model answers
    - personalised content (at secondary) or prompts for creative activities (at primary).
- Only 4% have no concerns about using AI; almost 60% are worried about plagiarism and the reliability of information. There is still a lot of concern that using AI won't save teachers any time.
- More knowledge and training about using AI would encourage teachers to use it in school, but currently there is very little 'official' guidance given; if teachers are finding information it is usually informal and self-procured.
- Around 25% of teachers think their school is unlikely to adopt any kind of AI technology.

This year has seen a lot of media discussion about generative artificial intelligence (AI). Following increasing accessibility to large language models (LLMs) such as ChatGPT, we wondered if and how teachers are making use of them. Using Teacher Tapp's platform, we asked a series of questions to over 8,000 teachers in England, investigating current behaviours with AI, and what teachers would like to be using it for – if they could see themselves using it at all.

The questions were asked in three instalments on the Teacher Tapp app, at the beginning of March, April and May 2023.

Main findings

Almost 20% of teachers are using AI for school work

On 3rd March, 3rd April and again on 3rd May 2023, we asked 'In the past week, have you used ChatGPT?' intending to track any changes in prevalence of usage during that time. We found that there has been a slight increase in the percentage of teachers who say they have used ChatGPT 'in the past week' between March and May. By May, 10% of teachers said they had used it to help with school work, compared with 6% in March. Similarly, 17% of teachers said they did not know what ChatGPT was in May; down 2% compared with April.

Teachers with less experience were more likely to have used ChatGPT than those with greater experience. 12% of teachers with less than five years' experience said they'd used it to help with school work, compared with only 6% of those with more than 20 years' experience.

Only **10%** of teachers said they had used ChatGPT to help with school work.

The percentage of teachers who have used AI tools does increase when not focused solely on ChatGPT. However, a high proportion (62%) still report that they have not used AI or do not know what AI is (6%). Because of this, we suspect there may be a lack of awareness of different types of AI or a dissociation between AI and machine learning software. Machine learning AI is very prevalent in a lot of everyday technology, including many education productions such as Duolingo and Century Tech; even simply the Google search engine. Are respondents considering only generative AI, such as ChatGPT and DALL-E?

Are teachers using ChatGPT?

March

7% of teachers had used ChatGPT outside of work
6% of teachers had used ChatGPT to help with school work
36% of teachers did not know what ChatGPT was

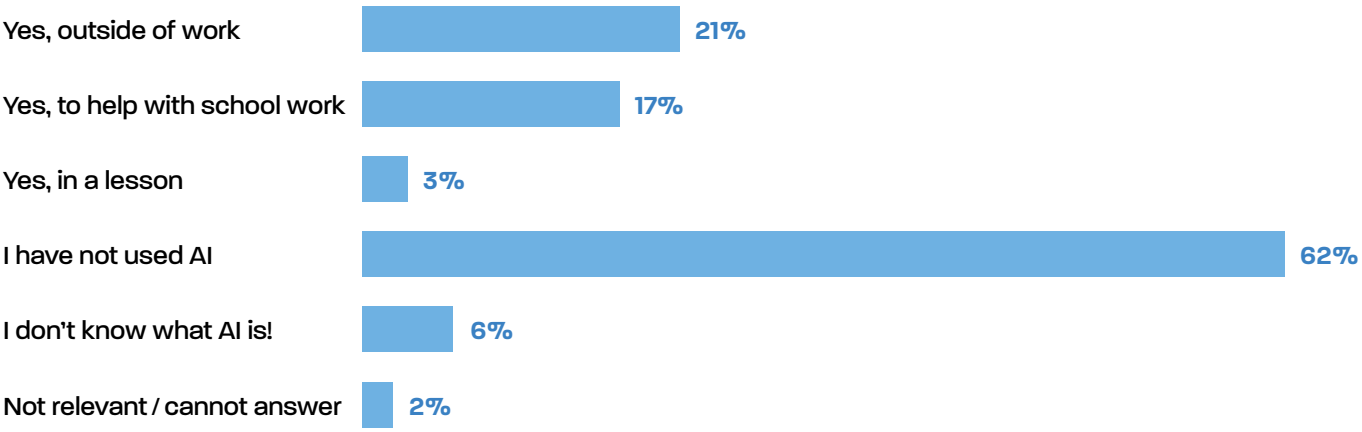
April

8% of teachers had used ChatGPT outside of work
7% of teachers had used ChatGPT to help with school work
19% of teachers did not know what ChatGPT was

May

9% of teachers had used ChatGPT outside of work
10% of teachers had used ChatGPT to help with school work
17% of teachers did not know what ChatGPT was

Have you ever used any AI tools? (e.g. ChatGPT, DALL-E, other machine learning)



Question answered by 8,562 teachers on 03/04/2023 (results weighted to reflect national teacher and school demographics)

21% of female teachers said they did not know what ChatGPT was, compared with only **6%** of male teachers.

Is there a gender divide?

These questions also highlighted demographic differences. For instance, there is a significant gender divide when looking at AI usage and the concerns over using it, which doesn't appear to be explained by other factors, such as the subject choices of respondents.

The percentage of male teachers who had used ChatGPT in the past week, both inside and outside of work, was roughly three times higher than the percentage of female teachers.

Similarly, the percentage of male teachers who had never heard of ChatGPT was much lower than the percentage of female teachers (20% of male teachers vs 42% of female teachers).

Male teachers are also more likely to investigate AI technology for themselves, with 40% saying their knowledge so far was self-taught, compared with 22% of female teachers. This is possibly linked to a lack of confidence or available time for learning how to use AI, which was cited by 17% and 27% of female respondents respectively as an area of concern. When asked the same question, only 9% of male respondents cited lack of confidence and 20% cited lack of time as concerns. However, similar proportions of male (37%) and female (33%) felt it was too early to tell if AI would help or hinder them in their jobs.

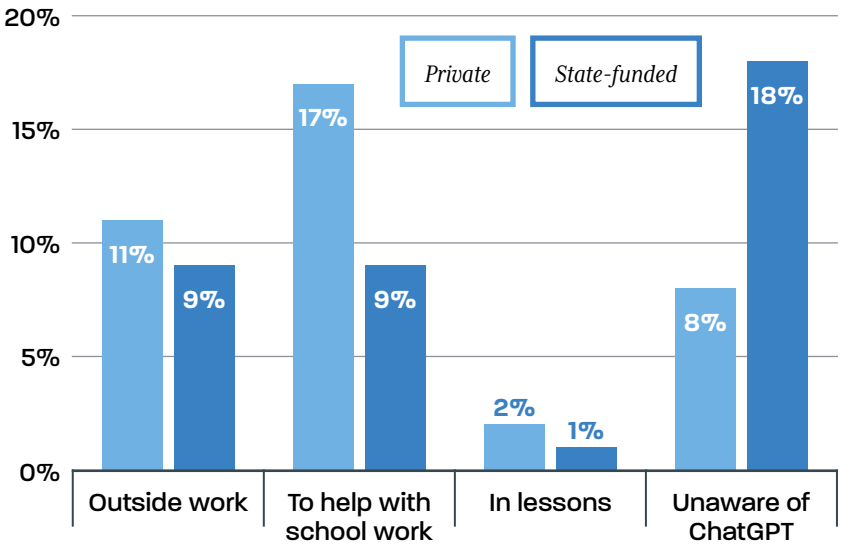
Private school teachers are more likely to have used AI for school work than state school teachers

There is also a stark difference between the proportion of private and state-funded school teachers who have used ChatGPT to help with school work recently. Use in private schools was almost double that of state school respondents,

with 10% of teachers using AI in private schools and only 6% in state schools in May. The difference between those from private or state schools reporting to have used ChatGPT outside of school was even larger (13% in private schools and only 6% in state schools). While not confirmed, it's possible that awareness of AI technology could be a contributing factor to these differences. We found that the percentage of teachers who had never heard of ChatGPT was also far lower in private school teachers than in state school teachers.

How does AI usage differ between teachers from private schools vs state-funded schools?*

**Data collected from our May survey*



In both state-funded and private schools, usage of ChatGPT to help with school work was more common in secondary than in primary. However, the proportion of private school teachers using ChatGPT outside of work was relatively consistent across both phases of education (14% in primary and 13% in secondary). This differed from state school results, where 7% of secondary teachers used ChatGPT outside of work, compared with only 4% of primary teachers.

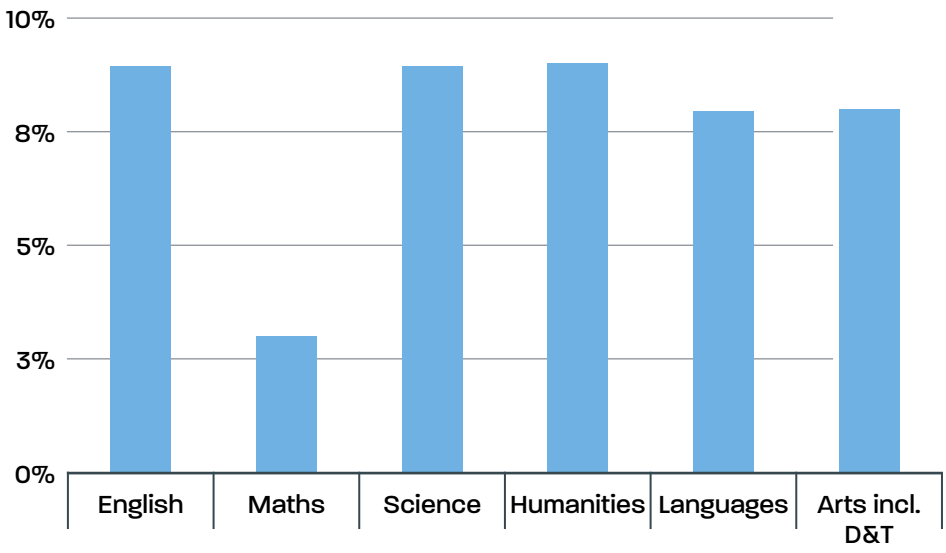
These trends continue when looking at support and guidance on using AI. Private school teachers were more likely to report that they had received information about using AI technologies in school, either from school leaders or their school IT teams. Private school teachers therefore appear to feel much better informed than state school teachers, which may be connected to the amount of time they have for CPD or access to funding if the school is paying for training.

Far fewer Maths teachers are using AI in school than other subject teachers

Maths saw the lowest uptake of ChatGPT among its teachers, with only 4% saying they'd used ChatGPT and just 11% saying they'd used any AI tools at work at all, compared with an average of 25% across other secondary subjects, the highest uptake being in Science and 'Other incl. PE' (which would include computing). The low uptake of ChatGPT in Maths is not wholly surprising given that ChatGPT is an LLM, and Maths is a numerate subject. However, low reported uptake of other AI tools in Maths could further indicate that teachers were only considering generative AI when answering these questions, as Maths easily lends itself to machine learning or algorithm-based software, such as personalised testing and automarking. Without investigation, it's impossible to say whether this low uptake is an accurate reflection of AI usage in Maths.

Maths teachers also appeared more sceptical of the uses of AI compared with teachers of other subjects, with a higher proportion of them (37%) answering 'none of the above' when asked about what types of content they could see themselves using AI to create. Around the same percentage of Early Years/KS1 respondents also answered 'none of the above'. Again, this could be due to the type of content they are expecting to create or the exact tools they are thinking about when answering the questions. Although ChatGPT might not lend itself well to Maths content,

March: Differences in ChatGPT usage by subject



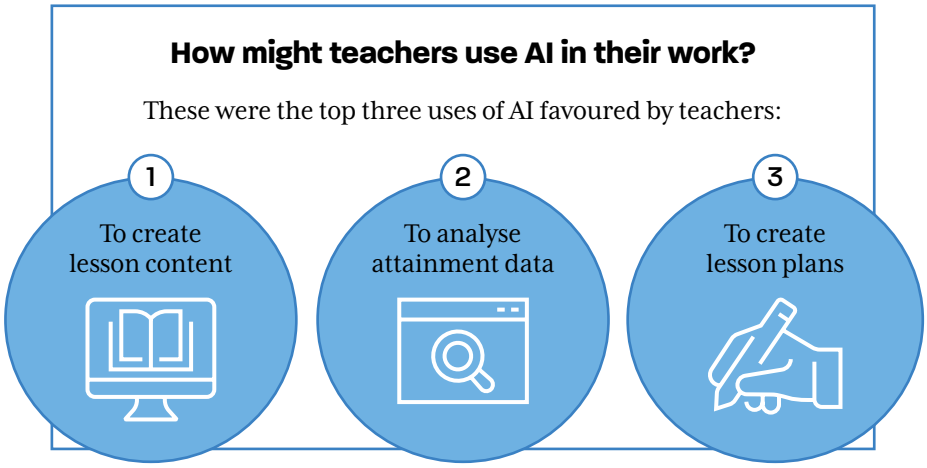
Question answered by 8,438 teachers on 03/03/2023 (results weighted to reflect national teacher and school demographics)

ther machine learning tools could. Similarly, Early Years and KS1 teachers might be less likely to use digital tools with their learners, and thus have fewer opportunities to use machine learning tools with them, though generative AI could support them with activity prompts.

Teachers see potential for using AI to support lesson content creation...

Teachers had a range of views on what AI could help with. The most popular response among teachers was about the lesson content it could help produce, with 42% of teachers (including 48% of secondary teachers) saying that AI could help with this. Around 32% of respondents saw a use for analysing attainment data and 31% also believe that it could help with lesson planning.

These last two options differed slightly depending on which phase the respondent worked in. A higher proportion of primary teachers saw themselves using AI for lesson planning than analysing attainment data, and vice versa for secondary teachers. Secondary also saw a greater response across the range of options, though this might align with the type of work their students are doing. For instance, typically a secondary teacher has more marking to do than a teacher at primary level, hence the greater preference for help with marking among secondary teachers.



... But AI generated content needs checking. It's good as a starting point

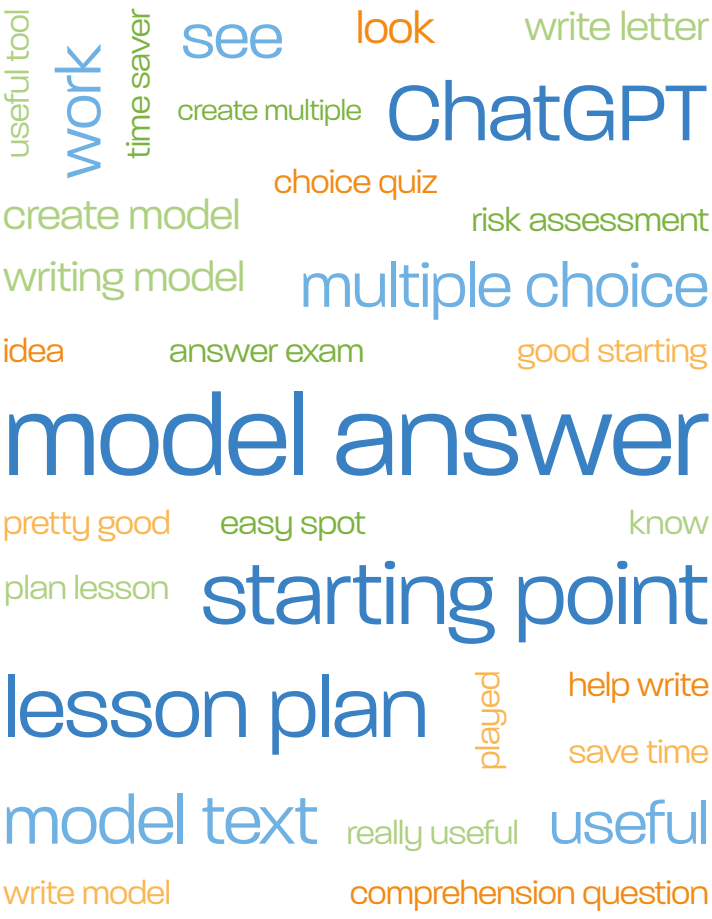
As lesson content was the most popular response, we asked 550 teachers who have used AI about their experiences. In an open response format, many shared how they had used AI to create model answers and texts, but cautioned that the output needed to be adapted to suit their needs. "I've used Chat GPT to write the basis of model texts I then adapted to ensure they were appropriate. The AI was good at including most features I asked it to. The children benefited from learning from more model texts."

We don't know yet how much or how soon AI tools will improve, or if content creators will always need to use AI-generated content as a starting point only.

Around half of all teachers can see themselves using AI to help create model answers and practice questions or quizzes

Around 50% of teachers could see themselves using AI to create practice questions; and 46% would use AI to create model answers. Priorities between primary and secondary teachers are similar, although more secondary teachers than primary teachers said they could foresee AI helping with personalised content and testing (29% vs. 24%) and providing opportunities for students to interact with AI tech (20% vs. 13%).

Tell us about your experience using AI tools



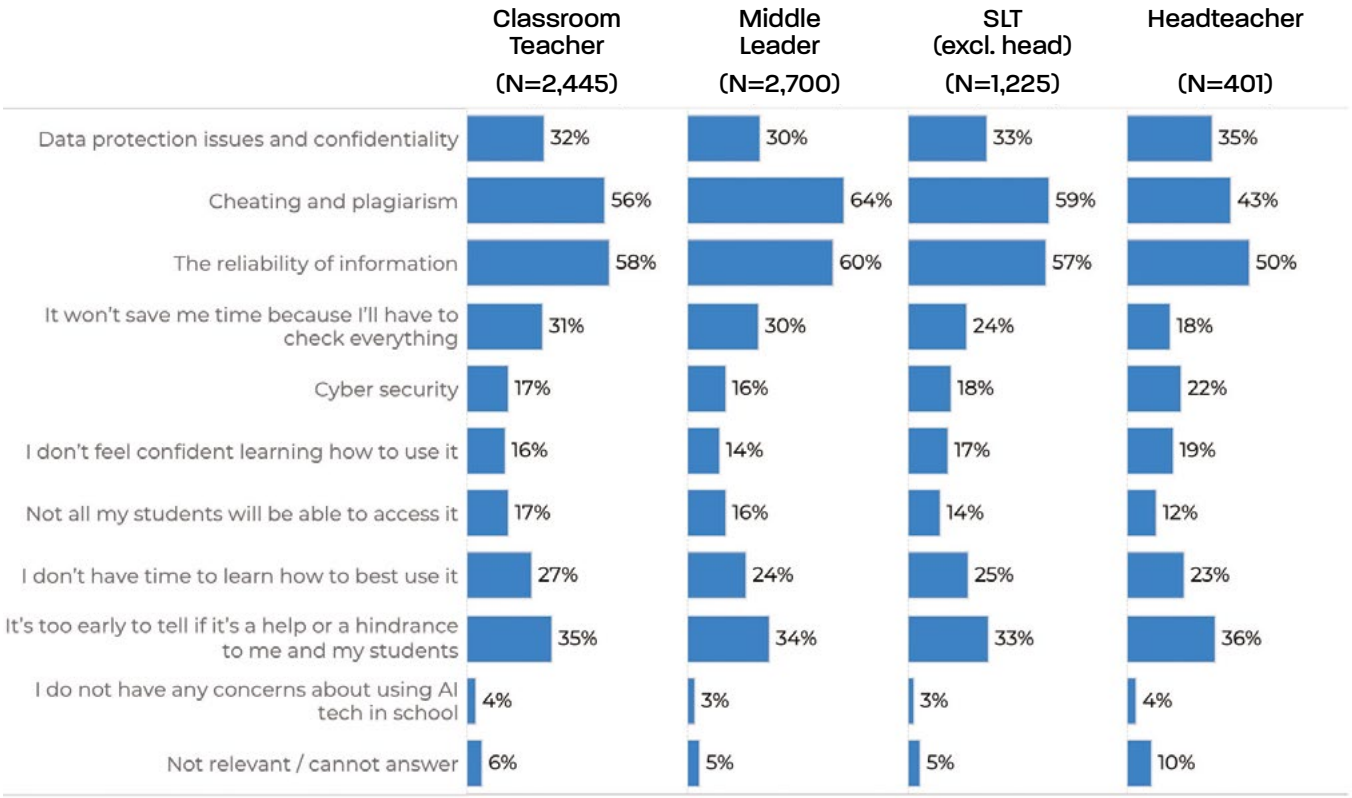
Almost all teachers have some concerns about using AI, including worries about cheating and plagiarism and disbelief that AI will lead to workload reduction

Of all respondents, only 4% answered that they had no concerns at all about using AI. The most common concern cited was regarding cheating and plagiarism (59%), whilst 58% of teachers worried about the reliability of information when using AI. Headteachers were more concerned than classroom teachers about the cyber security element of AI (22% vs. 17%), and around 30% of all respondents were concerned about data protection issues and confidentiality.

59% of teachers said that **cheating** and **plagiarism** concerned them most about using AI.

Several concerns can be grouped within the theme of teacher workload reduction or the lack thereof. It appears that the idea that using AI or learning to use AI might actually be more time consuming than current practice. When asked about these concerns, 25% didn't think they'd have time to learn to use it, 29% didn't think it would save time because they'd have to check it, and 34% thought it was too early to tell if it will be a help or a hindrance.

What concerns you most about using AI technologies in school?



Question answered by 6,801 teachers on 03/05/2023 (results weighted to reflect national teacher and school demographics)

Teachers are not receiving enough guidance to give them confidence in using AI; most information is from informal sources and self-procured

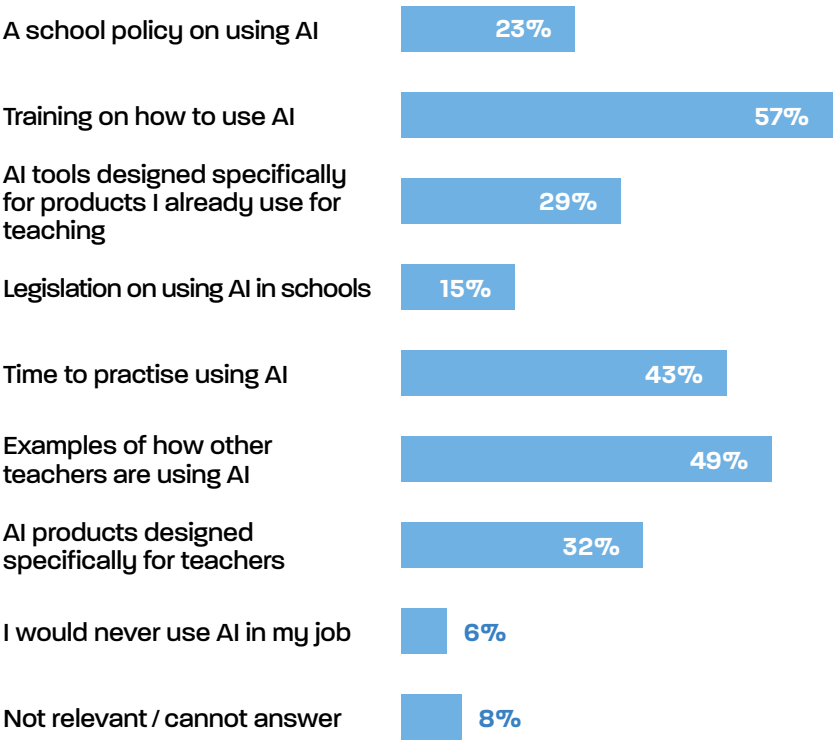
Almost half (45%) of respondents answered that they had not received any information about using AI in school. Those who had received information were mostly self-taught (26%) or had received their information from a blog, article or podcast (26%). Overall, just 9% of teachers had received information from their school leaders.

As such, teachers don't seem to be receiving any kind of 'official' guidance. As discussed earlier, of those teachers that had received guidance, they were far more likely to work in a private school. Close to half of those working in state-funded schools said they hadn't received any guidance on using AI in school; this dropped to less than 25% for private school teachers.

More knowledge and understanding would encourage teachers to use AI in school

We asked teachers what would encourage them to use AI in their work. The most popular answers to this question were centred around the theme of gaining knowledge about AI. High percentages of teachers said that training, time to practise and examples of how other teachers are using AI would encourage them to use it in their work. Only 6% of teachers said that they would never use AI in their jobs.

What, if anything, would encourage you to use AI to support your work in school?



Question answered by 6,708 teachers on 03/05/2023 (results weighted to reflect national teacher and school demographics)

Around 25% of teachers think their school is unlikely to adopt any kind of AI technology (30% primary; 22% secondary)

> **1/4**
> of teachers think their school is **unlikely** to adopt any AI technology.

This percentage is fairly consistent amongst the respondents, with the odd outliers for groups such as Early Years and KS1 teachers (35%), where we might expect the students to interact less with technology directly. However, this still seems a high proportion, given how prevalent machine learning is already in our day-to-day lives. There are many costs associated with embedding a new technology into a school – funding and teacher workload in particular, but also lack of guidance – that might seem too significant as barriers for most teachers across the profession, making AI tools inaccessible for some schools.

Conclusions – the rise of AI in education?

We have tracked a very small rise in the prevalence of ChatGPT, though nothing of particular significance when looking at the general usage of AI tools. Only around 20% of teachers in England report to be using AI tools to support their work in school, and our findings show that this is heavily influenced by factors such as phase of education, type of school and even the gender of the teacher. There are a number of reasons for this, including:

- low confidence in learning to use AI tools
- lack of knowledge/guidance, paired with lack of time given for teachers to learn new tech
- negative expectations over the promise of workload reduction
- limited funding, as suggested by the difference in usage between private and state-funded schools
- some concerns over reliability and users abusing the tech, for example, for cheating and plagiarism.

However, our findings also demonstrated a lot of willingness to use AI in schools. If a teacher were given proper training on how to use a particular tool, it was proven to reduce their workload and if the tool was well-funded, they may well start using it regularly to help with their creation of lesson content or analysing student attainment data. There is the possibility of a significant rise of AI in education, but only if teachers are properly supported in using the technology effectively and their concerns around using AI have evidenced, practical and reliable solutions. Ideally more official, top down and practical guidance needs to be distributed to schools, and teachers need time to learn and practise with these new tools.

Challenges for the Creative Industry in the Era of AI

Peter Doyle is a Policy Analyst at the British Educational Suppliers Association, where he focuses on Curriculum and EdTech policy. Before joining BESA, Peter previously worked for an EdTech start-up, developing products and curricula for the primary sector. Peter studied Philosophy and Politics at the University of Leeds.

Peter Doyle, Policy Analyst, BESA

Generative artificial intelligence (AI) technologies will create an abundance of opportunity across society. As a trade association, we are just as interested in how these technologies will be applied in the workplace as well as in educational settings. From repetitive tasks such as responding to emails to complex computer programming tasks to automating workflows, AI has the potential to be a great leveller of skillsets.

Within education, the integration of ChatGPT into popular learning programs such as Duolingo and Khan Academy provides a useful tool for learners without access to a teacher. This gives students the ability to build a dialogue with the AI teacher as if it is their own personal tutor.

This generative AI technology can only be described as groundbreaking, and many of the opportunities it will offer to educators and employers have not even been realised yet. Like the technological advancements before it, there will also be inevitable challenges as industries will need to adapt their business models in order to maximise the benefits.

> **"AI has the potential to be a great leveller of skillsets"**

In many ways, generative AI is a breathtaking example of how technology can interact with creative mediums in a way that feels natural, effortless, and more often than not, magical. It is important to applaud the advancements in technology, whilst also recognising how these advancements will affect creative industries, which play a significant role in developing the content and knowledge on which these systems are based. However, this is not the first time that technology has clashed with the work of the creative industries, and lessons can be learned from how those obstacles have been overcome in the past.

During the early noughties, illegal streaming of music was fast becoming an issue for record labels, with legal music sales down 9% in 2002. The issue was, that whilst you could manage the information between your MP3 player and your computer seamlessly, to get the music you had to purchase it from a physical store and then 'rip' that CD to your computer, before being able to transfer it to your MP3. This created the opportunity for piracy and file sharing sites to offer music digitally from one central repository, a service that was more convenient for the end-user than the legal alternative, but bad for the creatives who would not receive royalties for the music distributed over these file sharing networks.

ChatGPT presents similar challenges to the industry. The growth of freely available content on the internet was made viable through the use of advertisement. Rather than charging individuals for content, creators' costs are met through advertisement. However, generative AIs disrupt that business model by removing the need for users to visit the website and therefore the adverts which finance that content.

Instead, the AI will 'scrape' data from across the web, eating up information and regurgitating what it has found in a concise format. This is great for the user, allowing them to save time rifling through the endless results of a web search, but less so for the creator. Revenue is lost through advertisement, and costs in hosting the website are increased as 'bots' continuously scour their webpages for relevant information.

In the same way that illegal file sharing came about as music moved from a physical medium to a digital one, a similar problem is emerging for written content whereby the medium with which it is consumed has changed the viability of the business models on which that content was first produced.

This problem is not niche. Major social media platforms such as Twitter and Reddit have, over the past few months, significantly increased charges for usage of their APIs (Application Programming Interface). They have also implemented stricter rules on page view requests, to limit the ability of generative AI platforms to consume information from their platforms. This reflects the contribution content makers have made to generative AI through providing valuable data, on which these models acquire knowledge, and the cost that AI tools create for content curation platforms and by extension, their contributors.

"What the industry needed was a collaborative cross-industry effort..."

So, how did the music industry overcome similar challenges? Well, there were attempts by the music industry to try and create their own solution, though it became clear that they did not understand how to create a system that matched the convenience and seamlessness that technology companies knew how to produce. Commenting on the market at the time, CEO of Apple, Steve Jobs, commented "...tech companies don't understand creativity ... [and] music companies are completely clueless about technology."

"It is crucial that as we move into the era of AI, we do so in a sustainable way which secures the long-term future for human produced content."

What the industry needed was a collaborative cross-industry effort to create a distribution model which worked best for every party – the content creators, technology firms and the end-user. This led to the creation of the iTunes store, a revolution in the distribution of music which took the industry from 'analogue' physical stores to an entirely digital medium. At the time, Apple predicted they would hit one million downloads in the first six months; instead they did it in six days.

This story articulates the importance of making sure that as new technologies emerge, those creating them consider the important role creative industries play in developing the content and knowledge on which their platforms are built. It is crucial that as we move into the era of AI, we do so in a sustainable way which secures the long-term future for human produced content. This will continue to feed into these new systems, creating increasingly useful and relevant artificial intelligence systems.

Summary of Roundtable Event: AI in Schools Now

On the 12th July, Oriel Square hosted an event to explore the uses of AI and share practical tips for teachers. We were joined by Greg Hughes, teaching leader, Apple Distinguished Educator, and global speaker on EdTech/STEM, and 10 teachers, headteachers and senior leaders from eight schools representing MAT, Local Authority, Independent, Primary, Secondary, Grammar school and IB sectors.

Generative AI has dominated recent headlines and its use in schools has divided opinion among educators and policymakers. But what's the impact on teachers and learners? Here, we report the key talking points from this roundtable.

A Trust-wide AI strategy

'Early majority' adopters are the key group for technology success in schools – almost 70% of staff fall into this group. Finding messages and approaches that resonate with this majority, and differentiating your aims keeps people on board. You can support 'Laggards', but don't waste energy – give them reasons to catch up instead.

Five key areas for developing an effective AI strategy

As only a very small percentage of teachers have received information on AI from their central teams, five areas were discussed as key to a successful AI strategy. These areas were cybersecurity; assessment and ethics; student use and curriculum; staff use and CPD; and vision and planning.

An example Statement of Intent discussed the benefits of AI in supporting planning and Assessment For Learning, reducing workload, generating content and supporting research. It identified the need to introduce AI use in two key areas: within the curriculum for students, and to highlight best practice in staff CPD.

However, it was acknowledged that AI comes with risks, so policies and guidelines must set out clear expectations and outline risks of possible biases and inaccuracies. Most importantly, in this rapidly growing area, policies and guidelines must be adaptable.

Greg Hughes is Director of ICT at The de Ferrers Trust and Vice Principal: Digital Strategy at The de Ferrers Academy. Greg has advocated for harnessing ICT since 1990, champions the integration of mobile technology in education, and contributes to the EdTech UK advisory group.

@deepexperience1

AI in schools

None of the schools represented had an AI policy in place, but most attendees had experimented with AI at work. Many attendees said they are still new to experimenting with AI tools, and haven't found the best ways to use it. Interested centred on how it can reduce workload and produce resources, and what subject-specific solutions are available.

The keynote also demonstrated inputting different prompts into generative AI browsers and suggested experimenting to find the best output. Free AI tools such as Clipdrop, Looka, Soundraw and TeacherMateAI were also discussed.

Examples and feedback on using generative AI

Several teachers admitted having poor knowledge about how to prompt AI to generate desired outputs but had some success by iterating their prompts. One Head of Department used it to produce Schemes of Work, but caveated that creating the prompts and revising what the AI produces can take longer than doing the work yourself. Delegates agreed that templating base prompts would be a helpful starting point for teachers starting to experiment with AI.

Conversely, an English teacher said that they would hesitate to use it because it doesn't produce reliable content; it can mimic a good essay structure, but the concepts don't make sense. Another teacher experimented with using AI to mark work by inputting the criteria and students' answers, but it lacked accuracy.

When discussing implications for students' work, a teacher noted that the increasing use of AI is making teachers shift their students' learning goals from producing work towards critical analysis.

The following ideas were also discussed:

- Generating retrieval questions
- Assessing learning gaps
- Midway checkpoints
- Schemes for Learning and Medium-Term Plans
- Generating sample answers for critical analysis
- Creating research summaries
- Media generation

Do students know how to use AI?

Delegates wanted more training for students to demonstrate using prompts to create specific outputs. They agreed that understanding how AI works would also help students identify the risks.

Delegates also discussed a growing accessibility gap, and how using AI technologies at home might widen this.

How have you navigated AI-hallucinated content?

There was hesitancy around using AI for research because of the risk of fake information. Though it was discussed, this remains unresolved.

Has it changed homework policies?

One teacher was conducting essay writing by hand in class, rather than at home, but acknowledged it wasn't a permanent solution. Some schools were adapting homework policies, but these varied by subject. Where homework was set, they said, it should test critical evaluation and research rather than writing.

Have you discussed the climate implications of AI?

Many teachers hadn't thought about climate implications. They agreed more awareness was needed for staff and students.

What are the top things I need to tell my staff about AI?

For whole-school approaches, the priority was producing a policy about how schools use AI, and a publicised Statement of Intent. Aiming for a 1% improvement each day would lead to better results than tackling everything at once.

Where have you received information about AI in school from?

Most delegates had not received guidance on using AI in school, and those with guidance had obtained it through their own research. This included reading other policies, and guidelines from NASUWT, IB Schools, The Key, and Higher Education.

The Analogue Revolution – Reframing the Future of AIEd

Dr Chris McNab

Are we standing on the cusp of what has been called the 'Fourth Educational Revolution'? A future in which AI education (AIEd) delivers personalised, powerful learning journeys to each and every student, freeing teachers to concentrate on pupil development rather than time-draining chores?

It seems likely, certain even. I would argue, however, that if AIEd is to be an aggregate success, we need to *increase* our commitment to *analogue* educational strategies, not reduce them.

We are creatures of biology and psychology. And there's the problem. The rise of digital immersion since about 2007 has been accompanied by profound escalations in physical and mental issues amongst the young, ranging from depression and anxiety to obesity and myopia. The dopamine-tapping trap of excessive screen time is, on the balance of research, simply not good for child development.

This is important for AIEd. In the Western world, the average non-educational screen time of 8–18-year-old children varies between five and nine hours per day. EdTech use in some well-resourced schools is occupies between one and four hours per day. So, for pupils in a tech-heavy learning environment, combined daily screen time can be anywhere from six to 12 hours per day. That means 30–50% of a child's youth might be spent looking at a screen. That is a problem we don't want to exacerbate, however compelling the technology.

Dr Chris McNab is a non-fiction author, communications trainer and educational publishing consultant. His work in education reform has taken him to Kazakhstan, Mongolia, the UAE, Thailand and many other countries, where he has specialised in helping government and non-governmental organisations develop their own educational publishing capacity.

An answer, I would argue, is to make analogue experience central alongside the rise in AIEd. This is not a return to traditionalism. Remember, for digital natives the screen is the *norm*. The analogue, by contrast, can be the disrupter. But how do we ensure the analogue takes its proper place alongside AIEd? In a longer article I develop these ideas, but here are the headlines:

1. Plan digital education in light of *total* student screen time;
2. Deliver analogue education *consciously* as a counterpart to AI learning, using the full spectrum of analogue experience;
3. Assess AIEd's outcomes in the analogue sphere, as a secondary proof of practicality;
4. Develop a broad spectrum of analogue skills, including manual dexterity;
5. Encourage a conscious on/off relationship with technology;
6. Design AIEd so that the student can, ultimately, fail, if that's the logical outcome.

There's lots to unpack here, and I would point readers towards my more substantial article, which will be released on my website on 19th July. Many might object by saying that most schools are still locked in the analogue era. But we are at the beginning of a future we can't see. Roy Amara, a US scientist and president of the Institute of the Future, famously coined 'Amara's Law': 'We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run.' Taking this caution, while embracing and centralising analogue learning might, for digital natives, be a future educational revolution.

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A much-extended version of 'The Analogue Revolution' will be on my website and social media from 19th July 2023.

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A Tricky Market: EdTech and AI in Education

Hannie Kirkham met with Carla Aerts to hear her thoughts on the current state of EdTech and AI in the UK education market.

Carla Aerts is an international transdisciplinary thought leader and innovator in LearnTech/EdTech, informed by Learning Sciences and Learner-Centric design. She was Director of Futures at UCL Institute of Education and Global Digital Director of Education at Cambridge University Press. Carla founded Refracted!, an online learning with tech and translational research community, mentors EdTech start-ups and is an occasional author.

Recently, the educational landscape in the UK, especially for the schools market, has been very tricky, and it's accentuated by the cost of living crisis influencing educational institutions. 'If a school has to choose between "I'm going to buy a new EdTech education" or "I'm going to heat my classroom", the choice is not even binary, is it?'. Carla thinks that this has caused the EdTech market to struggle in an already tough climate; even some of the most-established EdTech companies, such as Emerge, are moving towards higher education rather than K-12.

The problem also partly stems from EdTech being a confusing market for schools and educators to access: 'I was talking to one teacher who said "we spent £190k two years ago on our digital applications and LMS in schools, and most of it is lying dormant because it's too much, we don't know what to do with it, or we use it once and that's the end of it". So in terms of the kind of traction of EdTech in schools, I think startups will continue to find that difficult.' Additionally, Carla highlighted that the recent increase in EdTech investment doesn't necessarily translate to improvement in learning impact[1], despite research showing how important EdTech is to education[2].

The demand for technology in K-12 education is there, as shown by teachers using commercial technology, she notes, but EdTech needs to find the 'sweet spot' between innovation and the needs of educators. 'There's the whole workload sector in EdTech. […] If you can address teacher workload, rather than the content side of things, that's potentially where there's going to be a higher demand. Especially with more teachers leaving the profession as well, so anything on that front will be really quite important.'

AI-driven software such as Blutick (recently acquired by AQA), which uses machine learning for auto marking, is one example of how EdTech can address workload. Oriel Square's own research on AI suggested that most teachers think of generative AI when considering AI in their classrooms, rather than the more widely-accepted machine learning technologies. 'Quite a lot of schools are already using [machine learning]. Teachers will kind of embrace it because they don't have to mark every single question, but have a final look over things […] That's all to do with teacher workload again.'

> **"EdTech needs to find the 'sweet spot' between innovation and the needs of educators."**

Despite this, Carla feels that generative AI will provide an interesting opportunity for EdTechs, as schools and policymakers catch up with its capabilities: 'How are they going to deal with what generative AI and the neural networks are now throwing at us? Because it may mean that they may need to change their models a bit in terms of how they deliver that technology. I think we could see some very exciting stuff happening, but also some quite scary stuff. And quite rightly too, a lot of schools are very scared about what's happening there. That's part of a future discussion, of course.'

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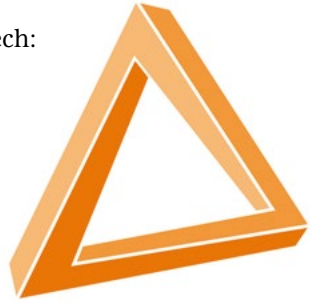
The EDUCATE Ventures Research (EVR) Golden Triangle

Dr Ekaterina Cooper holds a PhD in Developmental Psychology and MSc in Public Health and her research has been focused on unravelling the factors that contribute to successful scaffolding during learning interactions. Her expertise lies in understanding how to effectively support learners in their educational journey, ensuring optimal learning outcomes. As well as being Director of Research and Training for EVR, she is also an Assistant Professor at North Eastern University, London.

Dr Ekaterina Cooper, Director of Research and Training, EVR

The EVR Golden Triangle draws together the three key stakeholder groups in the EdTech ecosystem who need to be better connected if learners, the ultimate beneficiaries of all their efforts, are to prosper. The three corners of the triangle represent:

1. The people who use EdTech: teachers and learners;
2. The people who develop EdTech;
3. The researchers who understand how to collect and use data to evidence that an EdTech tool has a positive learning impact.



The gold connecting the triangle is the data and evidence about impact.

The Golden Triangle manifests the EVR belief that connecting educators, EdTech creators and researchers is essential to foster a transparent ecosystem that operates on rigorous evidence and clear communication. In education, transparency plays a pivotal role in fostering trust and accountability. By promoting transparency, stakeholders can ensure that information, methodologies and findings are openly shared, clearly communicated and accessible. This openness builds credibility and allows for a more comprehensive understanding of the strengths, limitations and implications of EdTech interventions.

For an EdTech intervention to be of high quality, it must be not only appropriate and accessible for learners and teachers but also demonstrate clear results. The development of EdTech products requires close collaboration with educators, who contribute their knowledge of teaching and learning needs, classroom dynamics and student engagement. Educators are invaluable in every stage of assessing EdTech products, offering guidance, ideas and feedback. Moreover, collaboration facilitates professional development opportunities for educators, allowing them to stay updated on technology trends and research findings while enhancing their digital literacy skills.

Typically, the responsibility for providing quality evidence lies with EdTech creators. Often, evaluation methods that fall short of the scientific standard of randomised controlled trials (RCTs), borrowed from the world of medicine, are deemed insufficiently credible. However, findings from an RCT conducted in a small rural school four years ago may not be useful today for a large urban school. Education is contextual, and evidence developed in one context may not be applicable to another. Therefore, educators and schools may benefit from taking a proactive approach to evidence collection related to a specific EdTech product. To evaluate whether an Edtech product will work for them, schools might want to conduct pilot research and test the product within their context.

"For an EdTech intervention to be of high quality, it must be not only appropriate and accessible for learners and teachers but also demonstrate clear results."

AI adds a new tool to be used in the endeavour to evidence the impact of EdTech. It can enable the analysis of a range of data, particularly that collected as people interact with and through technology. This AI-enabled analysis produces key insights into the way in which a technology is or is not supporting learning. Now, more than ever, Edtech developers and educators need to gain a basic understanding of AI so that they can leverage its power to access valuable evidence and learning.

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