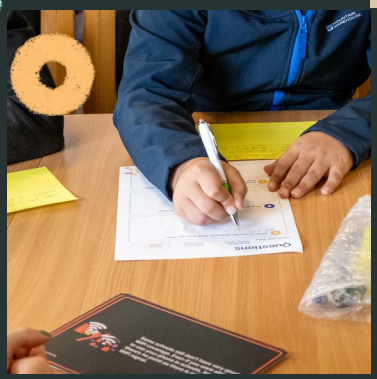
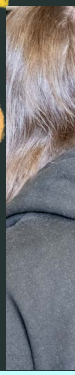
Learning Beyond Boundaries

Perspectives on Artificial Intelligence (AI) in Education:

Insights from Young People and Teachers in Scotland





October 2024

Staff College

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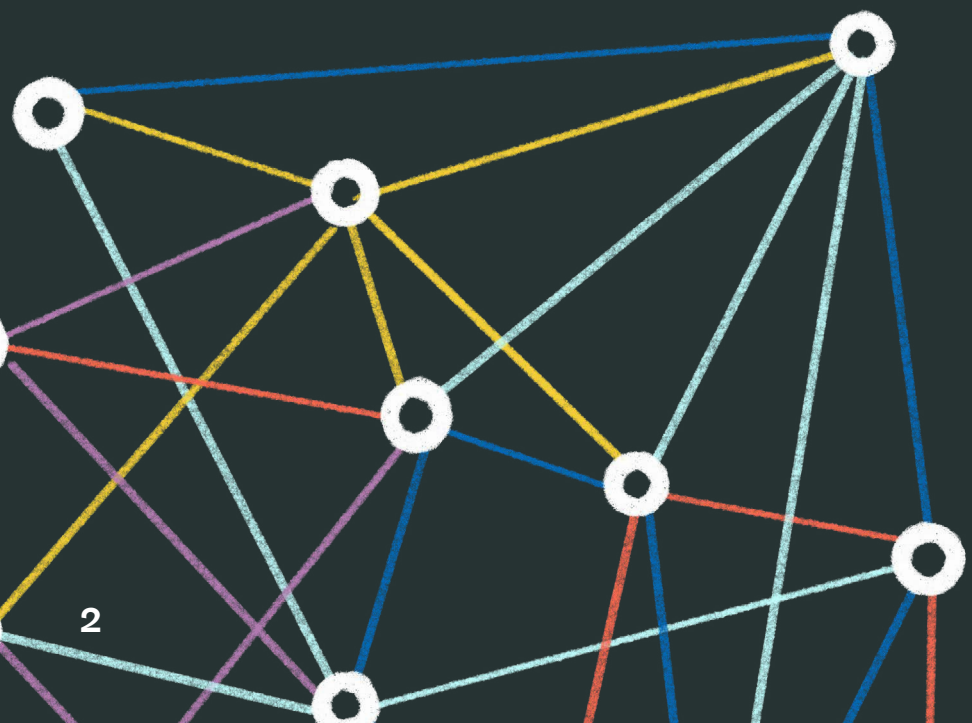

Introduction

In March 2024, The Staff College and the Association of Directors of Education (ADES) began a year-long creative Action Learning project, 'Learning Beyond Boundaries' to explore attitudes towards Artificial Intelligence (AI) within Scottish education with the overarching aim of:

- Stimulating discussion and imagination in Scottish schools on the potential of AI and using it safely and confidently to enhance learning experiences.
- Creating and sharing resources and tools for schools to experiment with and consider approaches to AI related themes.
- Providing a small qualitative research evidence base to support policy discussions (using the critical feedback from the project).
- Reviewing and bringing together other research and resources into an open source website resource.

The project has been led by Horizons Research on behalf of The Staff College and overseen by a Project Steering Group. Since the start there has been a particular emphasis on the creative engagement with young people and teachers themselves which has informed the workshops and discussions. This paper presents the findings from the first two phases of the project, which involved workshop engagement with over 200 young people, more than 100 teachers across Scottish schools and 211 responses to our AI in Scottish education survey. Additional resources and materials relating to this project can be found at the Learning Beyond Boundaries project website.

Policy Context

The far reaching, published report *"It's Our Future: Report of the Independent Review of Qualifications and Assessment[1]"* includes *"Recommendation 12: Establish a Cross Sector Commission on Artificial Intelligence (AI)" states: -*

> ***As a matter of urgency, the Scottish Government should convene and lead a cross-sector commission to develop a shared value position on the future of AI in education and a set of guiding principles for the use of AI.***

In the interim, teachers and learners should be supported to use AI, to take advantage of opportunities to reduce bureaucratic tasks. Coursework tasks should be reviewed.

Last month, in response to the Independent Review of Qualifications and Assessment - final report, the Scottish Government stated that it is committed to[2]:

- *Work with Qualifications Scotland and Education Scotland within the context of Scotland's AI Strategy and the work of the Scottish AI Alliance to ensure that AI can be used effectively and safely in learning, teaching and assessment.*
- *Capitalise on the opportunity which AI may present for reducing teacher workload, we have recently launched an AI for impact 'CivTech Challenge' which invites bids designed to advance a reduction in teacher workload, via the use of AI.*
- *Ensure our education bodies have access to experts from Scotland's leading universities in AI advancements, as well as from outside the education sector, so that our thinking reflects best practice in what is a fast moving and complex area and benefits both teachers and pupils.*
- *With regards to next steps in digital technology we are currently developing a new digital strategy for school education in Scotland, in partnership with COSLA and key education stakeholders. The strategy will outline the important role we believe digital tools and services play in the future of Scottish education and will highlight the key features of successful technology provision. It will consider both people and technology aspects of digital education in Scotland to help support deployment and purposeful use of technology in our schools.*

1 https://www.gov.scot/publications/future-report-independent-review-qualifications-assessment/

2 https://www.gov.scot/publications/scottish-government-response-final-report-independent-review-qualifications-assessment-future/pages/3/

We hope that our *'Learning Beyond Boundaries'* project offers valuable insights, practical feedback, and ideas from pupils and teachers to help realise these policy ambitions. The feedback from young people, classroom practitioners, and wider educational staff makes it unmistakably clear: they are already using AI in all sorts of ways and there is strong support for AI in Scottish education but it highlights an urgent need for infrastructure, training, ethical guidelines and a fundamental review of the curriculum itself, particularly at secondary phase to better prepare our young people for a rapidly changing digital world.

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Summary of findings

General overview

93.4% (197 out of 211) of survey respondents, believed AI did have a place in the Scottish education system. A small minority, **6.6%** (14 respondents), believe that AI does not have a place in the education system.

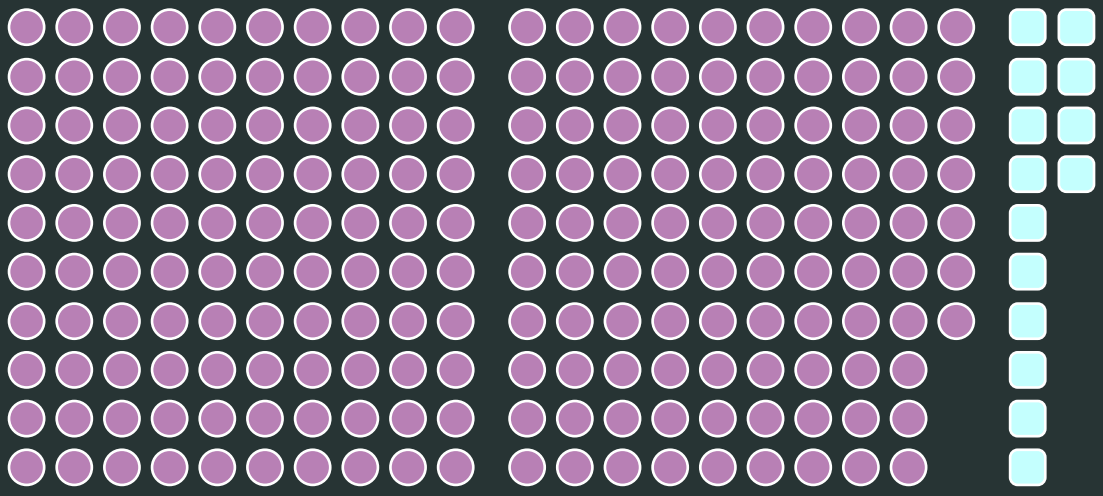


Figure 1: *Teaching staff perspectives on AI in education*

79.2% of survey respondents reported using **ChatGPT (OpenAI)**, making it the most widely used AI tool among teachers and pupils. **37.5%** used Copilot (Microsoft), and **27.8% used Gemini (Google)**, reflecting a growing reliance on mainstream AI tools for both teaching and learning purposes. In contrast, niche platforms like **Adobe Firefly (8.3%)** and **Midjourney (2.8%)** saw significantly lower usage, likely due to their specialised functions, such as image generation.

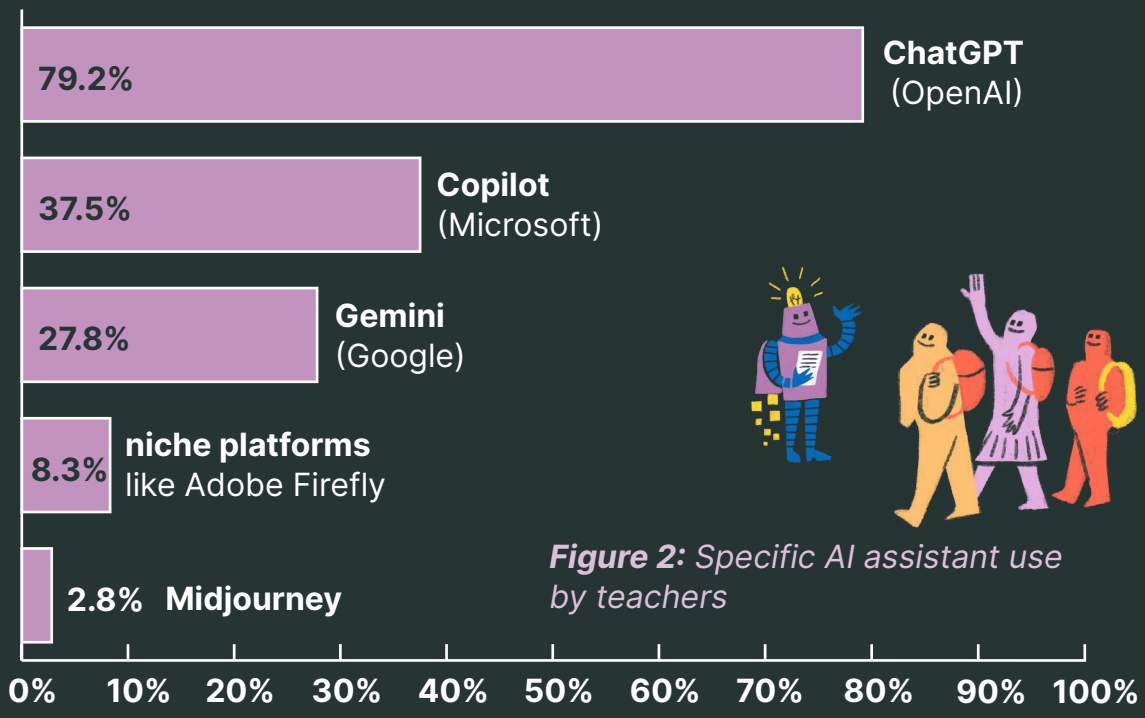


Figure 2: *Specific AI assistant use by teachers*

14.6% of respondents indicated using education-specific AI tools, such as **TeachMateAI**, **Teachers Aide**, **TwinklAI Tool**, and **Canva AI**. While their adoption remains modest compared to mainstream AI tools, these platforms are primarily used to assist with **lesson planning** and **creating visuals**, showcasing AI's emerging but **limited role** in enhancing creativity and resource generation within classrooms

Pupil attitudes toward AI in education were mixed but **largely optimistic**. Many young people saw AI as a valuable tool for making learning more engaging

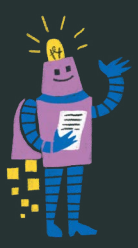
Nearly all young people viewed the potential for **personalised learning** as a positive aspect of AI.

Some young people thought that *"AI could make us lazy"* and others were concerned about the potential loss of interpersonal communication, particularly if AI were to replace teachers or reduce social interactions.

Young people valued face-to-face interaction with teachers. They trusted teachers with their education and the pupil/ teacher relationship was seen, by most young people, as critical and central to their education journey. No matter how AI could support learning, it was generally felt that the role of teachers was central in providing guidance, support and confidence.

There is also a growing awareness among young people that education **may not be adequately preparing them for the future workforce**, where technological skills, particularly in AI, are becoming increasingly vital.

The idea of receiving an **AI personal assistant** on the first day of S1 was widely embraced. Pupils liked the concept of an AI assistant growing and learning with them throughout their six years of secondary school. They especially valued how the AI could explain difficult concepts in ways tailored to their individual learning styles - an idea that appealed to the vast majority.



At the same time, participants were keenly aware of the **inherent unfairness** in some young people having access to AI-supported learning while others did not. They recognised the risk of inequality if AI were not made available to all pupils.

Additionally, young people demonstrated a clear understanding of how AI could **enhance inclusion.** They appreciated that in augmented reality or virtual learning environments, everyone could participate equally, regardless of their background or abilities. This leveling effect of AI was seen as a strong advantage for promoting inclusivity.

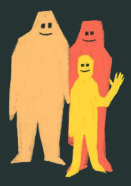
“Education may not be adequately preparing them [pupils] for the future workforce, where technological skills, particularly in AI, are becoming increasingly vital.”

What young people are calling for in relation to AI and their education

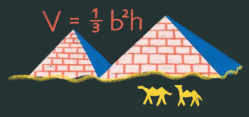
Participants want schools to explain AI at a **basic level**, especially in S1/S2. They seek **ongoing, open information sessions** to understand AI's fundamentals, applications, and risks. These sessions should help **demystify AI** and prepare pupils to navigate its growing presence in everyday life.

Participants called for **discussions on AI ethics**, focusing on privacy, misinformation, and social media. They suggested **debates and conversations** on responsible AI use, helping them understand the **potential risks** such as data privacy and keeping safe.

Young people emphasised their wish to see more **AI tools and resources** designed for pupils with **additional support needs**. They see AI as a way to **ensure inclusivity**, offering tailored support for all pupils regardless of learning differences.



Many participants were excited by the idea of **AI-driven educational games** for subjects like **spelling, maths, and languages**. They wanted to see more AI games which they thought could make learning more **interactive** and **engaging**, sparking creativity and increasing engagement.



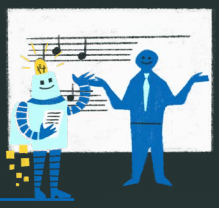
Many pupils wanted schools to equip them with the digital and AI proficiency necessary to succeed in a **rapidly evolving job market**.

Young people showed strong interest in **AI assistants** to help with **homework and learning**. They see AI transforming education from a simple *"memory test"* into a more **dynamic and personalised** experience.

Some participants suggested using AI should be used more in schools to address **real-world issues** in the curriculum, such as homelessness and climate change. They proposed having **10 real-world problems** each year that pupils could explore using AI, encouraging **interdisciplinary learning** and highlighting AI's **practical applications**.

What teachers are calling for to support them going forward with AI

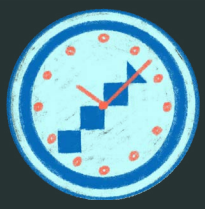
A large number of teachers expressed feeling intimidated by AI and uncertain about its potential risks. Many called for **clear guidance on AI use**, including recommendations for appropriate platforms and best practices.



Teachers report the need for more **professional development**, with many advocating for training sessions to help them navigate the complexities of AI in education. One respondent noted, ***"We need CPD training to fully understand AI's potential and implement it effectively."***

Despite institutional restrictions, many teachers are already using AI in informal ways to support their teaching. However, the lack of **access to AI tools in schools due to blocked platforms** was a common frustration. One teacher shared, ***"We can't use AI much because the school blocks it, so I rely on it more at home for lesson planning."***

Teachers highlighted the need for **time and resources to explore AI's benefits and limitations**. They feel constrained by limited infrastructure and resource shortages, particularly in rural areas where digital access disparities exist. Many believe AI has the potential to enhance teaching practices but feel they lack the support and time needed to experiment with these tools effectively.



There are calls for a **national AI ethics framework** to address concerns about the ethical implications of AI use in education

Teachers are looking for AI tools that can help with **personalising learning materials** as well as streamlining administrative tasks.

Teachers expressed a desire for AI tools that could assist with supporting pupils who have **additional support needs (ASN)** or English as an additional language. One respondent highlighted, ***"More assistive technology for children with additional support needs or English as an additional language is essential."***

Five strategic provocations for policy makers

1.

Investment in digital infrastructure

Findings

Survey respondents and those attending workshops frequently cited issues around digital access and infrastructure, particularly in rural areas. Concerns about unequal access to high-speed internet, outdated technology, and digital disparities were recurrent themes.

Key stakeholders, led by the Scottish Government (SG) should ensure high-quality, equitable access to digital infrastructure across all of Scotland, particularly in rural areas, to avoid a digital divide. Currently, this is left to individual Local Authorities (LAs) to negotiate with private providers.

Teachers and pupils called for more educational digital AI tools to be developed centrally and rolled out to all schools in Scotland.

Action

Investment in high-speed connectivity to ensure all schools are equipped with the emerging AI-compatible hardware is required. This is seen as an essential step to prepare for the future.

SG and LAs should work closely together, linking to the National Digital Office and National Digital Strategy group to develop a strategic approach to more equitable digital access across schools and local authority boundaries. The strategic plan should outline how all schools will be equipped with a fit-for-purpose digital infrastructure (high-speed connectivity, hardware, software and staff professional development) to be able to appropriately access digital tools and services (including AI tools) to better support learning, teaching, assessment as well as administration.

Those working on national curriculum development should work closely with AI developers, to create a pipeline of AI digital tools to roll out to schools. This could focus, initially, on tools to promote inclusion.

“Concerns about unequal access to high-speed internet, outdated technology, and digital disparities were recurrent themes.”

2.

Develop national AI guidelines for use of AI in education, including data privacy, security, and responsible AI usage.

Findings

Education staff showed widespread concern about data privacy, security, and ethical issues related to AI usage in schools. Respondents recognised that advancement in technology is fast-paced and detailed guidance would have a short lifespan. However, many respondents mentioned the need for clear guidelines on how AI should be used in education, particularly regarding the potential for AI to be misused by pupils (e.g., for cheating) or to generate biased information.

Action

There is a strong call for the policy centre to issue guidelines to support teachers, and pupils to develop policies that balance innovation with safety.

3.

Funding for AI in education: Allocate funding to develop AI tools specifically tailored for educational purposes, ensuring that both teachers and pupils have access to the best resources.

Findings

Many participants in the workshops, confirmed by survey returns, requested funding for AI tools and resources that could reduce the workload of teachers while supporting pupil learning. This supports the call for government led investment in developing and implementing AI-driven educational tools that are accessible to all.

Action

Provide grants and financial support to schools to pilot AI learning systems and teacher training.

4.

Reform curriculum for AI integration: As part of current plans to move more towards interdisciplinary learning, update the Curriculum for Excellence to incorporate AI literacy, ethical AI use, and practical AI skills from an early age.

Findings

Over 90 per cent of respondents thought there was a place for AI in education. Participants in the workshops highlighted the potential for AI to assist in marking, assessment, and data analysis, allowing teachers to focus on more personalised teaching. However, they stressed that AI should complement human judgment, not replace it entirely.

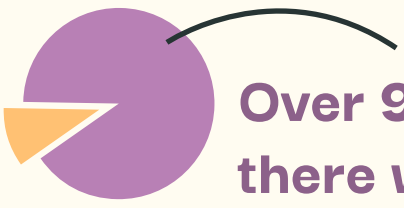
The potential for AI to support individualised learning was widely welcomed by young people attending the more AI tools to personalise learning experiences, as part of current plans to move towards more interdisciplinary learning. This includes AI systems that adapt to pupils' progress and provide individualised feedback.

Action

Introduce structured AI learning pathways starting in primary school and continuing through secondary education, as described below.

In particular, focus more on meta-skills to foster more critical thinking, problem-solving, and how to use AI as a tool while developing their judgment and analytical skills.

Pilot AI-driven personalised learning systems (Learning Assistants) and integrate them with existing teaching methods.



Over 90% of respondents thought there was a place for AI in education.

5.

Professional development and training: Ensure teachers are fully trained to use AI effectively in the classroom, including how to critically assess AI outputs and guide pupils in responsible AI usage.

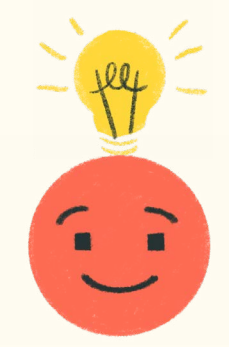
Findings

A strong theme in the survey responses was the lack of adequate training for teachers on how to use AI effectively. Many teachers expressed that while they saw the potential of AI, they lacked the skills or confidence to integrate it meaningfully into their teaching. Respondents emphasised the need for continuous professional development (CPD) to help them understand AI's role in education.

A common response was *"teachers need more CPD training to fully understand AI's potential."*

Action

Provide teachers with protected professional development time to develop their understanding and application of AI to support their practice.



"teachers need more CPD training to fully understand AI's potential."

Methodology

Phase One: February – March 2024

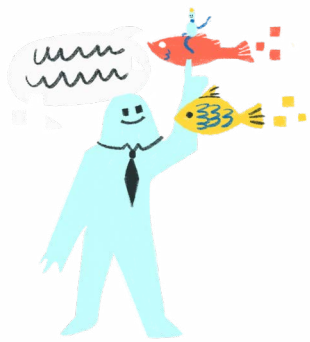
Initially, the team conducted desk-based research on the development and application of AI in education settings. This was followed by a series of ten in-depth 1:1 interviews with key stakeholders in Scottish Education. A project data workbook was created to organise this desk-based research and initial qualitative feedback. The research team were then able to assess what was considered to be driving change (through a STEEPLE framework) in relation to AI and the potential impact on Scottish education in the coming years.

Two critical uncertainties emerged during this initial phase: -

1. **Acceptance, adoption, and trust in AI:** There is uncertainty about whether AI will be widely accepted and trusted in education over the next decade. On one hand, a high level of acceptance and trust may emerge, leading to greater integration of AI in learning environments. On the other hand, low acceptance and trust are equally plausible, which could limit AI's role in education.

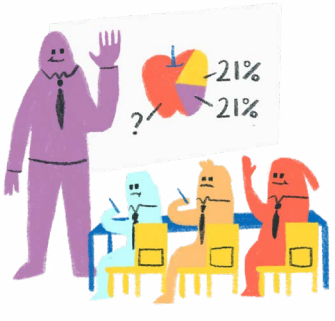
2. **Access to digital connectivity across Scotland:** Another uncertainty revolves around access to digital infrastructure. If high-quality digital connectivity is provided uniformly across Scotland, it could lead to an inclusive digital education system that integrates AI approaches. However, if access remains uneven, disparities in connectivity could exacerbate inequalities, creating divisions between and across different schools and local authority areas across Scotland.

Using these two critical uncertainties, a principal component analysis was used to develop three divergent future scenarios, set in Scotland in 2035, and based on the relationships and interdependencies of various drivers of change. These scenarios were then adapted into stories tailored for S1/S2 and S5/S6 pupils. These 2035 stories can be viewed here: -



Boundless Classrooms:

this scenario envisages a highly personalised and AI-driven educational environment where virtual reality (VR) and AI assistants are commonplace, facilitating a custom learning experience.



Classical Corridors:

this scenario favours traditional education methods with minimal AI intervention, focusing on face-to-face teaching, the use of books, and other classical learning tools.

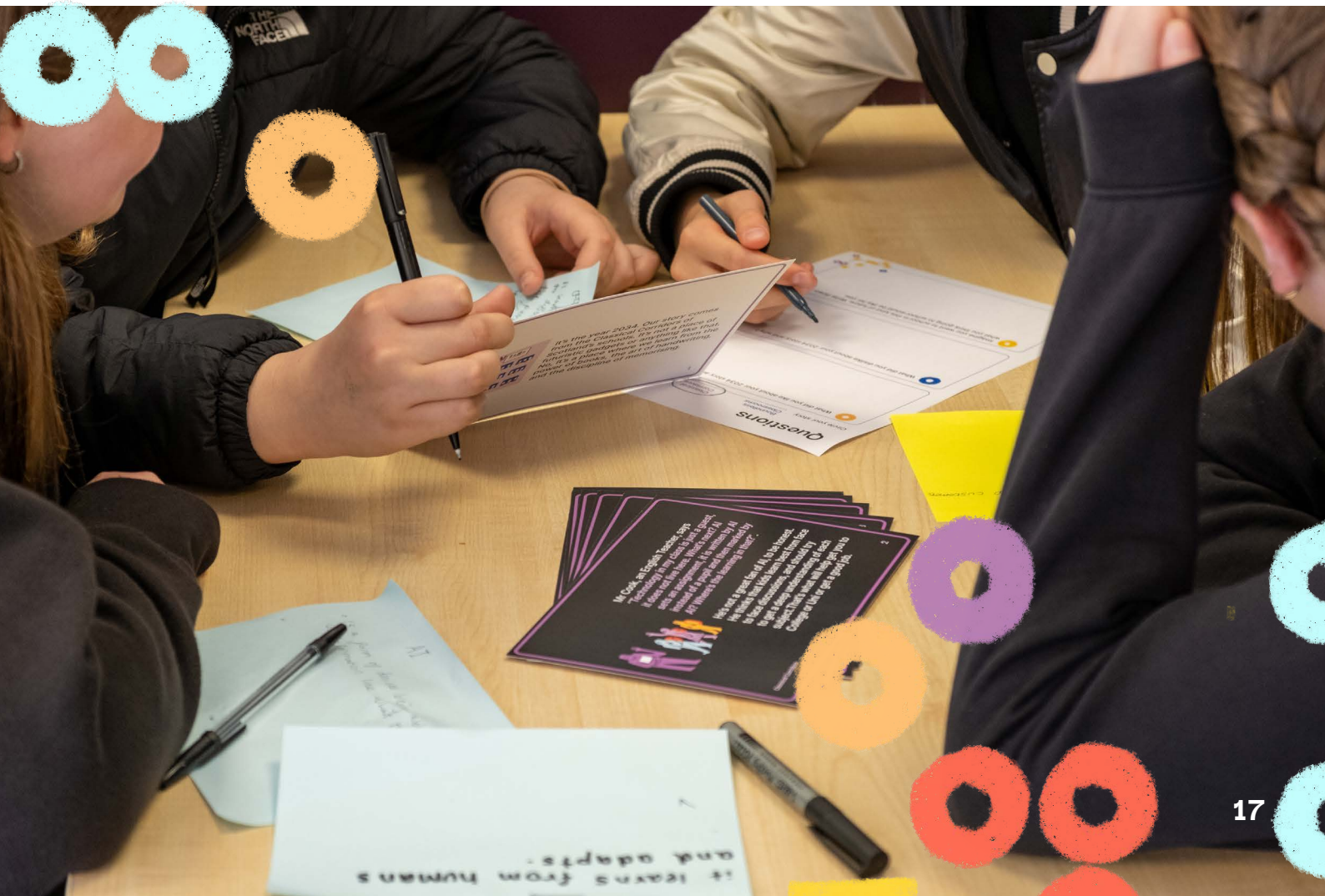
Digital Divide:

this model reflects a split scenario where some schools are well-equipped with AI technologies while others are not, leading to a disparity in educational quality and access.

Phase Two: May – June 2024

By the end of June 2024, the research team had used the scenarios to engage with young people from 18 of the 22 Pathfinder Authorities. Approximately 120 S1/S2 pupils participated in creative workshops where they were immersed in the three future scenarios and asked to think about what they liked and disliked about the scenarios.

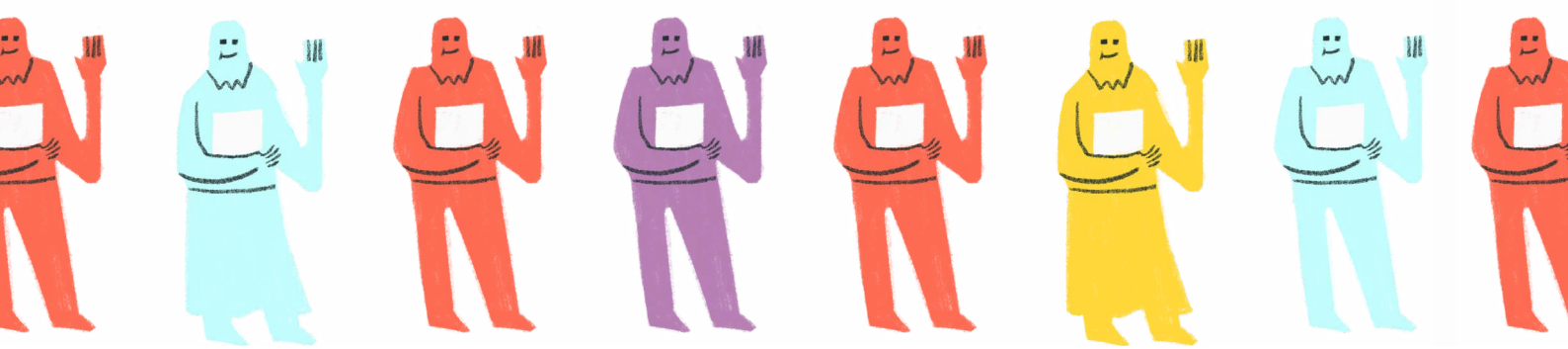
In September 2024, researchers revised the storylines to include the insights and perspectives of young people. These co-developed updates provided a detailed description of the evolving roles of teachers, schools, and education in general. The updated scenarios were then used in a series of four online workshops, engaging around 120 teachers. During these sessions, participants explored their potential roles and opportunities and risks that AI presents for education, reflecting on both the views of young people and their own professional experiences.



In addition, a survey was issued to the school community in Scotland with 211 responses to the questions:

- **Do you use any of the following AI platforms?**
- **If you use AI - either professionally or personally - can you describe your use?**
- **Do you think that AI has a place in the education system?**
- **What areas of your work can you imagine AI supporting in the future?**
- **Can you identify any obstacles to AI usage?**
- **What tools or resources would you like to see being developed in relation to AI and education?**

It is worth noting that of the 211 responses, 73 were classroom teachers in secondary schools, 37 were classroom practitioners in primary schools, a further 5 identified as being in learning support roles and a further 8 classed themselves as Principal Teachers in primary schools and lastly, a further 8 had PT roles in secondary schools. The remainder identified as being in management, leadership roles within schools and within local authorities education departments.



Phase three: October 2024 - January 2025

This paper draws on the research to this point. Following stages one and two of this project, we are now able to review the learning and provide information, resources and tools to address the feedback from pupils and teachers. In the coming months, (November 2024 - January 2025), we will signpost and create resources, toolkits and top tips for schools, all available through a new website. The project materials will be launched in January 2025 and schools will also be able to book a slot with the Staff College to run facilitated sessions. This will involve the Staff College coming to your school and running an AI session with staff and/ or pupils, using the 2035 scenarios.

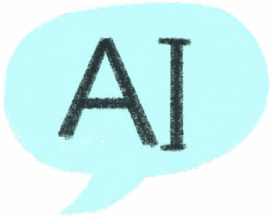
By January 2025, the learning Beyond Boundaries **toolkit,** using the three co-produced scenarios with young people will be published. It will offer creative and engaging ways for classroom teachers to engage young people in the subject of AI and its application.

Discussion

What baseline knowledge do young people have of AI?

Participants in the S1/ S2 workshops demonstrated a broad understanding of AI, associating it with various technologies and platforms such as ChatGPT, Snapchat, and its use in everyday tasks like cyber-attack prevention and also in COVID-19 healthcare. They viewed AI as a tool that can *"write essays," "generate images,"* and *"learn like a human."* Some also acknowledged AI's ability to perform tasks in video games or assist in medical diagnoses, such as interpreting X-rays.

A notable finding was the recognition of AI's role in their personal lives, with many identifying AI assistants like Siri and Alexa as examples. They were aware of the potential dangers, such as AI-generated deep fakes (edited images, video or audio that depict 'fake' content) and the ethical concerns of AI replacing jobs or stealing intellectual property from artists. However, they also acknowledged the powerful ways AI could assist with schoolwork and learning.



Participants in the S5/ S6 workshops (aged 16-18) understanding of AI varied widely, reflecting both their personal experiences with AI technologies and the prominence of popular AI tools. For this group, researchers found no significant gender biases in the pupils' familiarity with AI. In discussions where teachers and practitioners were not present, pupils appeared more open and candid about their use of AI, possibly feeling freer to share their experiences without fear of judgment. Feedback was gathered using tools like Padlet and Teams chat, offering insights into how AI is being used in their everyday lives. The most commonly recognised AI tools were those that have received widespread media attention, such as ChatGPT and Microsoft's CoPilot. Several pupils reported using these platforms to aid their learning, with one pupil mentioning that they had used ChatGPT to generate mock exam questions and review their answers, while another noted that some teachers were already using AI to design lessons.

Young people also mentioned more specialised AI tools like Perplexity.ai, which one participant described as *"very beneficial for gathering fine-combed info."* Another pupil provided an example of using Llama, a locally hosted large language model (LLM), to safeguard personal information - a strategy employed to maintain privacy while using AI. By the end of the workshop, it was clear that young people had an awareness of data privacy concerns, especially in the context of AI use.

Outside the classroom, many pupils recognised that they frequently interact with AI, often without realising it. For example, several pupils referred to Snapchat AI, commonly used for casual conversation or entertainment, and chatbots like Evie (eviebot.com), which are popular for roleplay. This general awareness of AI's presence in social media and everyday apps suggests that while their knowledge of AI in educational contexts may be developing, many pupils are already familiar with AI as a part of their daily lives.

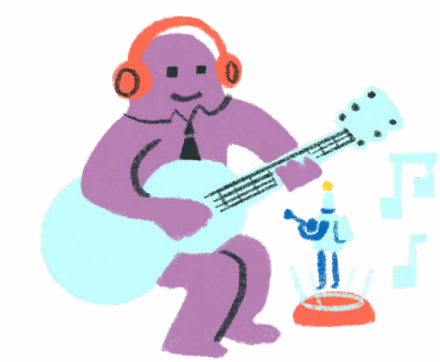
There was also evidence of a gender disparity, particularly regarding concerns over data privacy. Girls, in particular, voiced more apprehension about their data being used without consent and questioned the ethical sourcing of AI data.

What applications do young people see for AI within their own education?

Young people saw various practical applications for AI in education. They liked the idea of using AI to make learning more efficient. Pupils saw AI as capable of simplifying tasks like *"generating quizzes," "providing instant feedback,"* and even *"marking homework"*.

They were also excited about AI's ability to enhance specific subjects. For example, one pupil mentioned that AI could *"take us to different places in virtual reality,"* which would allow them to experience learning in a more immersive way. Others envisioned AI helping with foreign languages, science experiments, and complex subjects by providing tailored explanations and visuals.

Pupils also recognised the potential for AI to assist with administrative tasks, such as lesson planning and marking papers, which they believed could free up teachers' time for more meaningful engagement with young people.



Many young people welcomed the concept of a fully embedded AI education experience due to the increased customisation and support it could offer. They appreciated that AI could make learning more adaptive, allowing them to *"learn at their own pace"* and providing various ways to understand difficult subjects. For instance, pupils

liked the idea that AI could create personalised learning paths, which would be particularly beneficial for those who struggle with traditional teaching methods.

They were excited about the collaborative possibilities, such as being able to work with pupils from other countries in real time. The potential for virtual field trips, such as learning French in a simulated French café, was another feature they found appealing. Pupils also valued the opportunity to learn in ways that were more hands-on and immersive through the use of AI, virtual reality and augmented reality.

What concerns do young people have about AI in education?

Despite the enthusiasm, young people had significant concerns about the over-reliance on AI in education. Some feared that AI could make learning too easy, reducing the challenge and, consequently, the quality of education. They were concerned that if AI took over too many tasks, pupils might lose *"grit"* and critical thinking skills.

Another recurring concern was the potential for AI to diminish human interaction. Many pupils worried that they would lose opportunities for face-to-face engagement with teachers, which they viewed as essential for meaningful learning. One pupil expressed this concern clearly: *"It would be boring to just interact with AI all day; I want to learn from real people".*

Young people were also wary of the ethical implications of AI, particularly regarding data privacy. Girls, in particular, voiced concerns about their data being used without consent, referencing personal experiences with AI misuse. Other pupils echoed worries about AI increasing inequality, with some young people potentially benefiting more due to better access to technology, while those from disadvantaged backgrounds could fall behind.

"It would be boring to just interact with AI all day; I want to learn from real people"

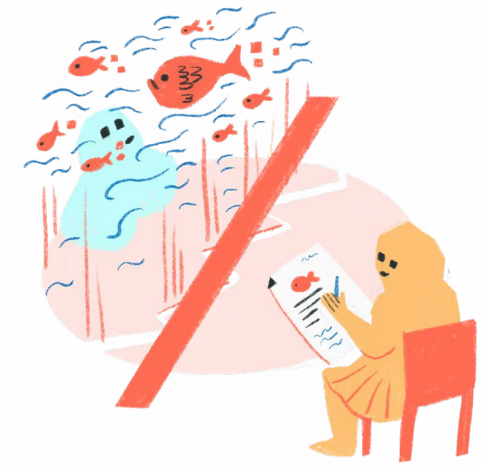
Pupils recognised many positive applications of AI but expressed concerns that relying too heavily on it might be considered cheating or diminish the overall learning experience. They fear that using AI for tasks like homework or exam preparation could bypass the effort needed to truly understand the material, potentially limiting their intellectual growth and problem-solving abilities.

Many pupils feel that schools should focus more on equipping them with the digital and AI proficiency necessary to succeed in a rapidly evolving job market.

Despite their openness to AI, young people highly value the social environment of school and the human connection they have with their teachers. They believe that AI should be used to enhance and support these relationships rather than replace them. The sense of community and personal interaction with teachers is viewed as central to their educational experience, and any AI integration should amplify this, not erode it.

Pupils also highlighted the importance of developing more *"meta-skills"*—particularly critical thinking—to help them navigate a complex world filled with conflicting information and narratives. They believe these skills are essential in making informed decisions in an AI-driven society, where distinguishing between credible and misleading information is more challenging.

Finally, pupils see AI as having the potential to level the playing field in education, especially for those with additional support needs or unique learning styles. AI could offer tailored support, making education more inclusive and accessible. However, they are equally aware of the risks that unequal access to AI technology could deepen educational divides, leaving some pupils at a disadvantage depending on the resources available to them.



Analysis of survey

AI adoption in Scottish education is growing rapidly, with 79.2% of respondents using ChatGPT (OpenAI), making it the most popular AI platform. Following closely is Copilot (Microsoft) with 37.5%, and Gemini (Google) at 27.8%. These tools are primarily used for administrative tasks, lesson planning, and resource creation. However, niche AI tools saw

significantly lower usage, with platforms like Adobe Firefly (8.3%) and Midjourney (2.8%) being less popular, possibly due to their specialised functions, such as image generation or design.

Additionally, 14.6% of respondents indicated using other AI tools tailored for education, such as TeachMateAI, Teachers Aide, TwinklAI Tool, and Canva AI. These tools are primarily used to assist with lesson planning and creating visuals, showing the increasing role of AI in enhancing creativity and resource generation in classrooms.

For many, banning AI in schools was not the way forward. Many respondents expressed concerns about AI being banned in schools. Many believed that banning AI would leave pupils unprepared for the future and limit their ability to engage with technology that will play a significant role in their careers. One respondent warned, *"The worst thing that could happen is if local authorities ban its use. Pupils need to be taught how to use AI safely, responsibly, and ethically, otherwise they'll use it at home without guidance."* Another highlighted the growing importance of AI in pupils' lives and careers, stating, *"AI is going to be a big part of many future careers for our young people, and we cannot afford to ignore it in schools."*

It was noted that, in the coming year, most smartphones will have AI tools built into them so if, AI was banned, schools would also have to ban the use of smartphones, as is being trialed in areas of England.

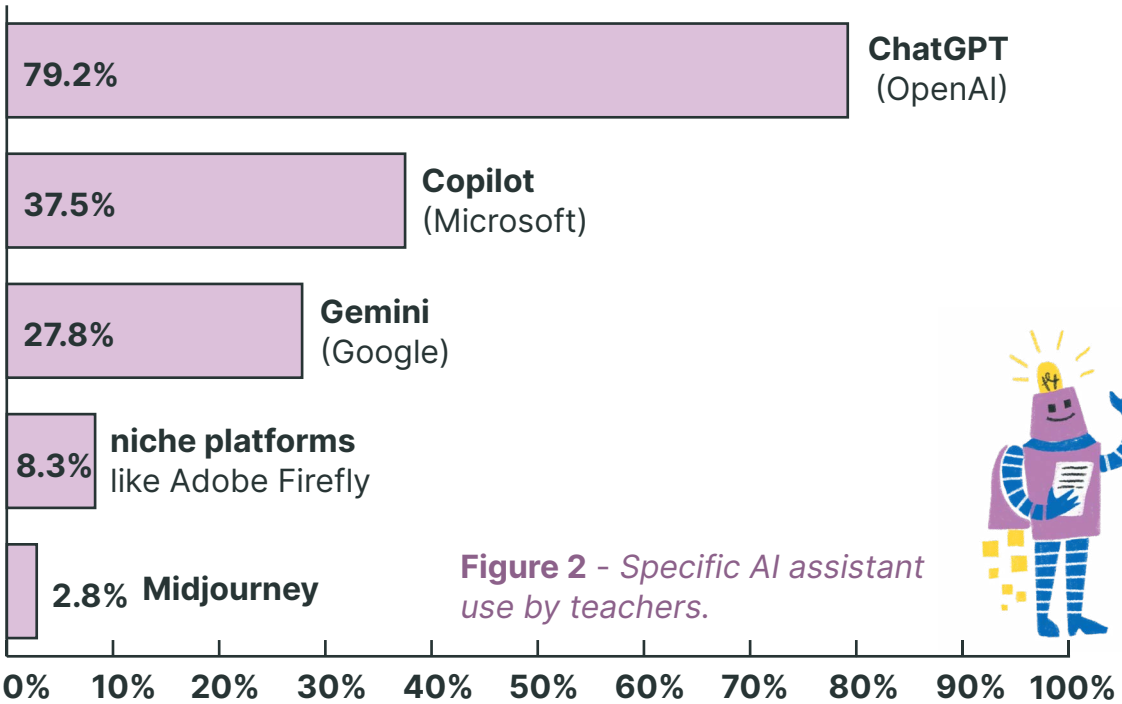


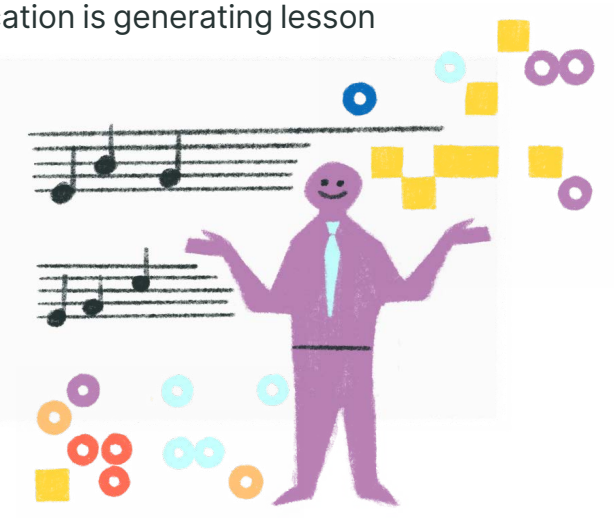
Figure 2 - *Specific AI assistant use by teachers.*

How teachers currently use AI

The survey responses provide a broad picture of how teachers and educators in Scotland use AI both professionally and personally. Out of 217 participants, 165 responded to the question, offering insights into a variety of uses and levels of experience with AI tools.

A portion of respondents indicated that they do not currently use AI, with some expressing uncertainty or the need to explore AI tools in the future. As one participant noted, *"I don't use AI,"* while another commented, *"I've just started looking at TeachmateAI but haven't used the tools yet."*

Many teachers already use AI to streamline administrative tasks, lesson planning, and content creation. A common application is generating lesson plans, assessments, and resources. One teacher shared, *"I use AI to generate lesson plans, reword explanations, and create rubrics."* Another highlighted the use of AI for administrative purposes: *"I use it to check emails, letters, and even newsletters."* Several respondents mentioned using AI to brainstorm ideas for teaching materials, especially in subjects like Computing Science, where staying updated is crucial. *"I use Copilot to check my code and generate case studies for courses like Cyber Security,"* a teacher explained.



Some teachers also use AI for more specific needs, such as analysing pupil data or creating personalised learning materials. For example, one teacher said, *"I use AI to support learning by generating worksheets, comprehension tasks, and model texts."* Beyond lesson creation, AI is also used for visual communication. *"I use AI to create posters and images for work, where I input the text, and AI does all the formatting,"* one educator shared.

Many respondents indicated that they are still in the exploratory phase, experimenting with various AI platforms to understand their potential benefits and limitations. One teacher explained, *"I'm in the early exploratory stage, testing out what AI can produce, like news headlines or questions on a specific topic."* Another remarked, *"I mostly experiment with AI tools to understand their functions and explore how they could be used with staff and learners."*

Many teachers blend personal and professional uses of AI. One teacher said, *"I use ChatGPT for personal tasks, like planning trips, and professionally, I help other practitioners explore how AI can support learning in their classrooms."* Another added, *"I use AI for creating lesson plans and newsletters but also for personal tasks like generating recipes and writing speeches."*

AI is also being used creatively in classrooms. One respondent shared, *"I use Canva's AI tools to let pupils create images, and I've used AI in Glow to support lesson planning and assessments."* Another explained, *"I use AI to generate questions and create extensions for topics, but sometimes the AI focuses on the wrong aspect of learning."*

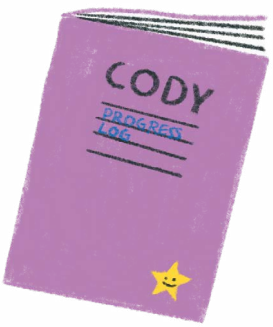
Despite the positive feedback, some respondents face challenges with access to AI in their schools. *"We can't use AI much because the school blocks it, so I rely on it more at home for lesson planning,"* a teacher noted. Another shared, *"Professionally, I've used AI to find research articles, but Gemini is restricted on school computers, which limits its use."*

Some teachers expressed reservations about the accuracy and reliability of AI-generated content. *"Sometimes the AI-generated questions focus on the wrong aspect of the topic,"* one teacher mentioned. Another concern was the potential misuse of AI: *"I experiment with AI to understand how it could be abused and the risks it poses for pupils."*

Overall, the survey reveals a spectrum of AI usage among teachers, ranging from early-stage exploration to frequent professional and personal applications. Teachers use AI for generating lesson materials, managing administrative tasks, and fostering creativity in the classroom, though access limitations and concerns about AI's accuracy and potential misuse remain ongoing challenges.

Challenges and concerns with AI in education

A major concern raised by respondents was the potential misuse of AI, particularly around plagiarism and 'cheating'. With AI tools becoming more sophisticated, there is a risk that teachers might use AI to generate tasks, pupils use AI to write the answers, then the teacher uses AI to mark the work. One respondent highlighted the issue, saying, *"There's a risk of over-reliance on AI, which might impact learners'*



skills in creativity and problem-solving". Another noted, *"AI could inhibit the development of writing skills and thinking skills required to create more complex pieces of writing."* Some teachers expressed concerns about the reliability of AI-generated content. They noted that AI tools can produce incorrect or misleading information, which can create challenges in the classroom. One teacher mentioned, *"AI sometimes spits out nonsense that only an expert would recognise as false. Pupils don't have the skills to make good use of AI."*

Another critical concern was data privacy, with many respondents emphasising the need for clear guidelines on how AI tools handle sensitive pupil data. One respondent raised the issue, saying, *"Privacy concerns - if using AI for writing reports, can the pupil info be saved/shared without our knowledge?"* Ensuring data protection and secure use of AI tools, especially those developed by private companies, remains a key obstacle to broader AI adoption.

Opportunities for AI in education

However, the majority of respondents saw great potential for AI in lesson planning and reducing admin. AI was viewed as a time-saving tool that could allow teachers to focus more on teaching and pupil engagement. One teacher commented, *"AI could help with lesson plans, cutting down on workload and freeing up more time for creative teaching."* AI was also recognised for its potential to streamline marking and assessment, allowing for quicker feedback and reducing the time spent on grading. A respondent noted, *"It would be great if AI could help with marking tests, homework, and exams."* Teachers also saw potential in AI tools for detecting plagiarism and ensuring fairness in grading.

Many teachers highlighted AI's potential to provide personalised learning experiences for pupils. AI can support differentiated learning by creating

"AI could help with lesson plans, cutting down on workload and freeing up more time for creative teaching."

resources that are tailored to individual learning styles and abilities. One respondent shared, *"AI can assist with feedback and lesson ideas for pupils, giving them more interactive learning experiences."* Another noted, *"AI can be used to support ASN [Additional Support Needs] pupils, helping them with reading comprehension, questions, and more personalised learning."*

AI was seen as a tool for fostering creativity in the classroom. A teacher remarked, *"AI could support creative writing, art, and design in the classroom, providing fresh ideas for pupils."* AI was also viewed as useful for curriculum development, with teachers suggesting it could generate learning activities and design materials aligned with particular attainment goals.

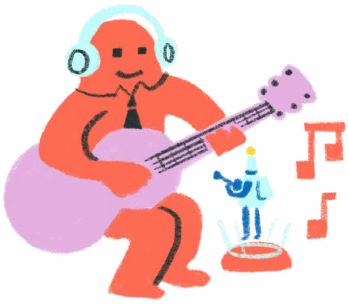
Barriers to AI adoption

The survey revealed a significant digital divide, with respondents in rural areas reporting challenges related to outdated technology and poor internet connectivity. This digital disparity makes it difficult for some schools to fully adopt AI tools. One respondent explained, *"Connectivity in rural areas is a huge issue, especially when discussing access to AI tools."*

Many respondents indicated that they lack the necessary training to use AI effectively. Teachers called for more professional development and clearer guidance on how to integrate AI into their teaching practices. One teacher commented, *"We need more CPD training to fully understand AI's potential and to implement it effectively."*

Some teachers expressed resistance to adopting AI, citing concerns that it might replace traditional teaching methods or diminish the role of teachers in the classroom. A participant said, *"There's a fear that AI could be seen as de-skilling pupils or teachers if it's not integrated properly."* A few teachers expressed hesitation or scepticism about AI's role in education. Some were concerned about the ethical implications and the potential to diminish the human element of teaching. *"I'm very hesitant to use AI. It's important we focus on developing critical thinking rather than relying on machines."* Some respondents commented, *"I don't think AI should be involved in education at all - teaching needs to be personal and human-centered."*

The survey results reveal a strong appetite for AI in Scottish education, with teachers recognising its potential to enhance teaching and learning, streamline administrative tasks, and support personalised education. However, significant challenges remain, particularly around data privacy, infrastructure, and training. There is a clear need for more professional development, ethical guidelines, and investment in digital infrastructure to ensure AI's successful and equitable integration into the Scottish education system.



"We need more CPD training to fully understand AI's potential and to implement it effectively."

Educational touchpoints for inclusion of AI

Of course, the school curriculum needs to contain digital learning from 3 years old through to 18 years old. From the feedback received in this project from secondary pupils and teachers, it can be suggested that there are several stages throughout secondary education where different aspects of AI should be introduced.

Secondary phase	Curriculum focus on AI
S1/S2	Introduction to AI resources setting out what AI is and how it works. Ethics discussions and debates to help understand the ethical implications of AI. Hand out clear guidelines on how to use AI responsibly in school and at home. Provide clear instruction on what is permitted in school and what is not, updated yearly and ideally co-designed with pupils and teachers.
S3/S4	Develop more critical thinking and problem-solving skills through AI. As part of exam preparation, allow AI to test knowledge and prepare for assessments. Introduce AI tools for pupil self-assessment to understand and track learning progress. Encouraging more experimentation with AI to deepen subject understanding.
S5/S6	Teach workplace-ready AI skills including the introduction of AI tools commonly used in professional environments. Introduce learning how to analyse and interpret AI-generated data to solve real-world problems. Introduce AI to enhance project work.

What do young people want now, in 2024, to help them navigate AI in education?

First and foremost, participants highlighted the need for schools to explain what AI is at a basic level, particularly at S1/ S2 level. They wanted ongoing, open information sessions to ensure that pupils understood the fundamentals of AI, its applications, and its risks. Such sessions would help demystify AI and equip pupils with the knowledge to navigate its growing presence in society.

Feedback from this project suggests young people have a strong desire for ongoing discussions on ethics with a focus on using AI safely. They suggested activities like debates and discussions on AI's influence on areas such as privacy, social media, and misinformation. More information sessions would support young people to explore the potential risks, including data privacy and security concerns, to ensure that they are using AI responsibly and ethically.

There was a clear demand for more AI tools and resources specifically tailored to support pupils with special education needs. Participants saw AI as a means to ensure inclusive educational experiences, allowing all pupils - regardless of learning differences - to benefit from AI technology. This inclusivity could serve as a starting point for aspects of curriculum redesign in relation to AI.

Young people were excited by the potential for AI-driven educational games, suggesting these could cover a range of subjects, including spelling, mathematics, and languages. They believed such tools could make learning more interactive and engaging, shifting away from traditional methods and sparking creativity and engagement in education.

Many participants showed interest in using AI assistants to help with homework and learning. They saw AI's potential to transform education from being merely a ***"memory test"*** to something more dynamic and personalised. AI assistants could provide tailored support, help pupils practice concepts, and clarify complex topics, enhancing their learning experience.

One suggestion involved incorporating real-world issues into the curriculum and using AI to address them. A participant suggested that each year's

curriculum should include a list of 10 real-world problems (for example, homelessness, climate change) that AI could help pupils explore across different subject areas. This approach would encourage interdisciplinary learning and show the practical applications of AI.

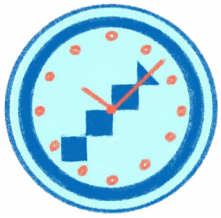
What do teachers want now, in 2024, to support them?

Teachers also identified several barriers to AI adoption that they feel are outside of their control, such as digital access disparities and infrastructure limitations, particularly in rural schools. These limitations hinder their ability to incorporate AI meaningfully into their teaching. Many respondents pointed out the need for better infrastructure and accessibility to ensure that all schools, regardless of location, can benefit from the technological advances that AI offers.

In this project, many teachers reported feeling intimidated and uncertain about its safety and potential risks. Teachers are calling for clear guidance on the use of AI.

Teachers want more training and awareness sessions. There is a strong demand for professional development to equip teachers with the skills to use AI confidently and ethically in their classrooms.

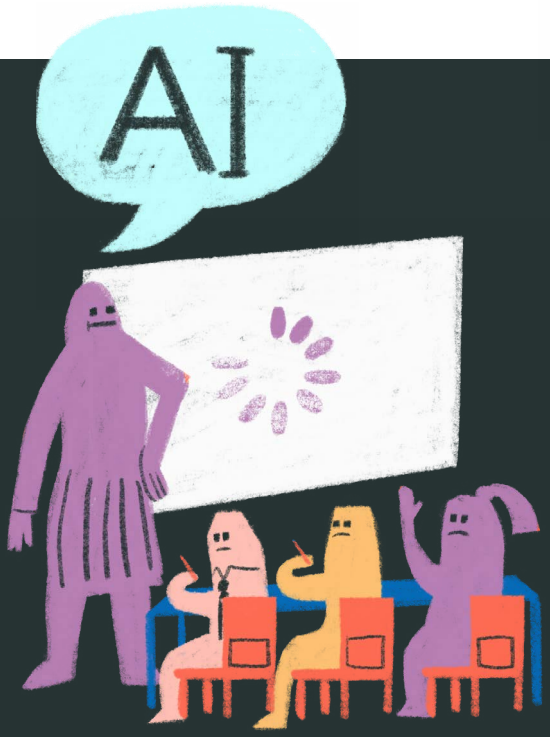
Currently, AI is being used informally by many teachers to support lesson planning and administrative tasks, but institutional restrictions often limit its full potential. Teachers are using platforms like ChatGPT and Copilot to create lesson plans, quizzes, and assist with marking, but the lack of clear policies and blocked access to certain platforms in schools has become a significant barrier which needs to be removed. One respondent mentioned, *"We can't use AI much because the school blocks it."*



Teachers report needing both the time and support to explore AI's benefits and limitations. They are eager to experiment with AI to enhance their teaching but feel constrained by limited resources and institutional barriers.

There were also calls for more specialised AI tools to support pupils, particularly those with additional support needs (ASN) and English as an additional language. As was pointed out by one participant *"one in four pupils in Glasgow alone don't have English as their first language".*

There were consistent calls for a national AI ethics framework, reflecting the broader concern that AI usage should be governed by clear ethical guidelines. Teachers emphasised the need for policies that address data privacy, security, and plagiarism concerns, ensuring that AI tools are used responsibly. As one respondent pointed out, *"There needs to be clear policy and procedure to support good governance and risk management."*



"We can't use AI much because the school blocks it."

Next Steps

To maximise the strategic impact we will now seek to ensure that the findings from the project contribute to considerations by the Scottish Government and National Digital Office. Progress from other AI projects/ groups throughout the country suggest different projects have been considering different angles and approaches. Now would be a good time to draw together and harness the learning.

As well as looking to support any national strategy group, we will also build on previously made connections. If you have an interest please make contact with us at hello@thestaffcollege.uk with a view to working in partnership to bring the best opportunities for our young people?

In addition, practical follow on measures specifically for the Learning Beyond Boundaries Project will include:

- making available the tools and resources used in this project;
- offering support with dissemination;
- consideration of how to reach out to other stakeholders not so far involved.

For more information on this project, contact, colingrantades@outlook.com

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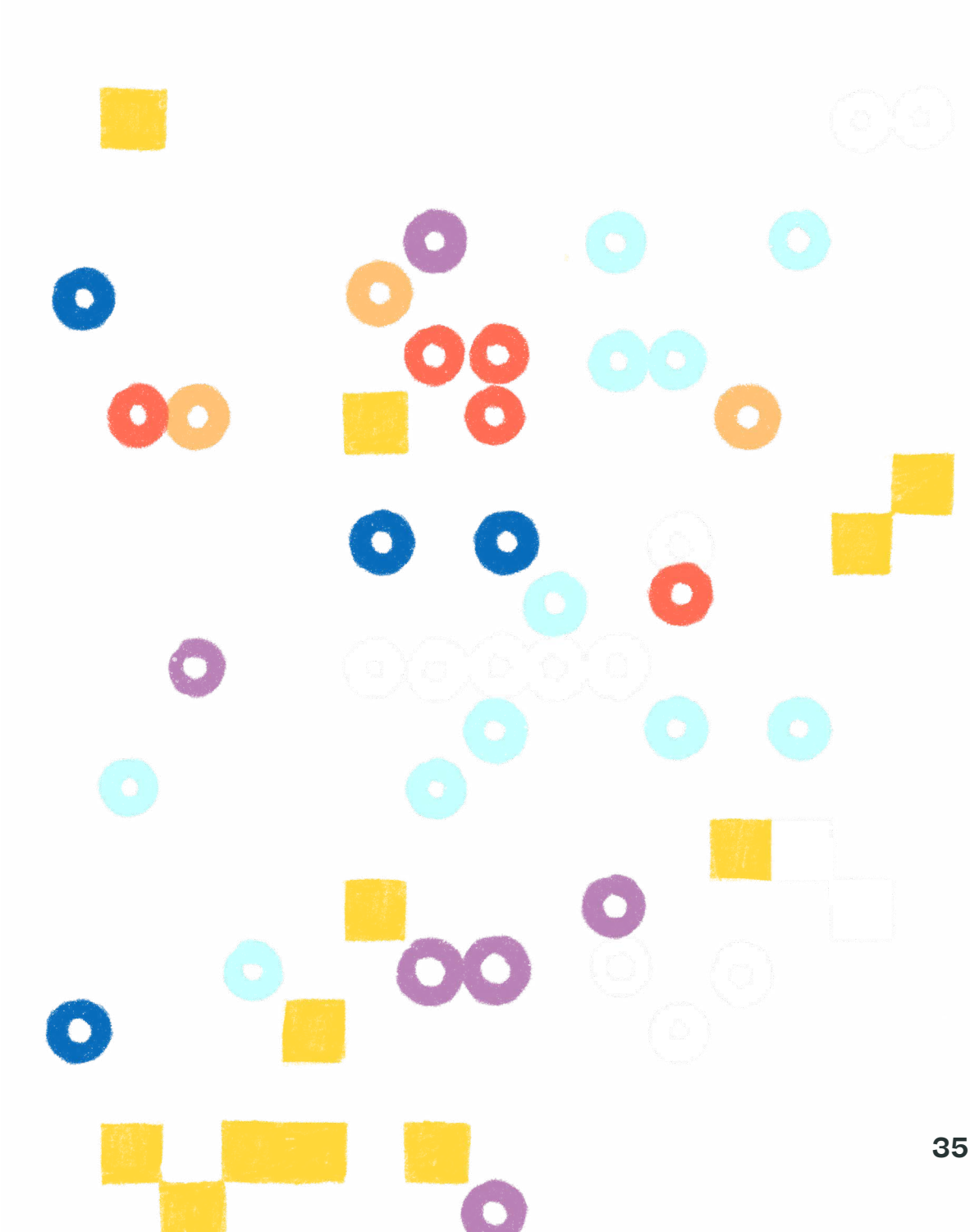

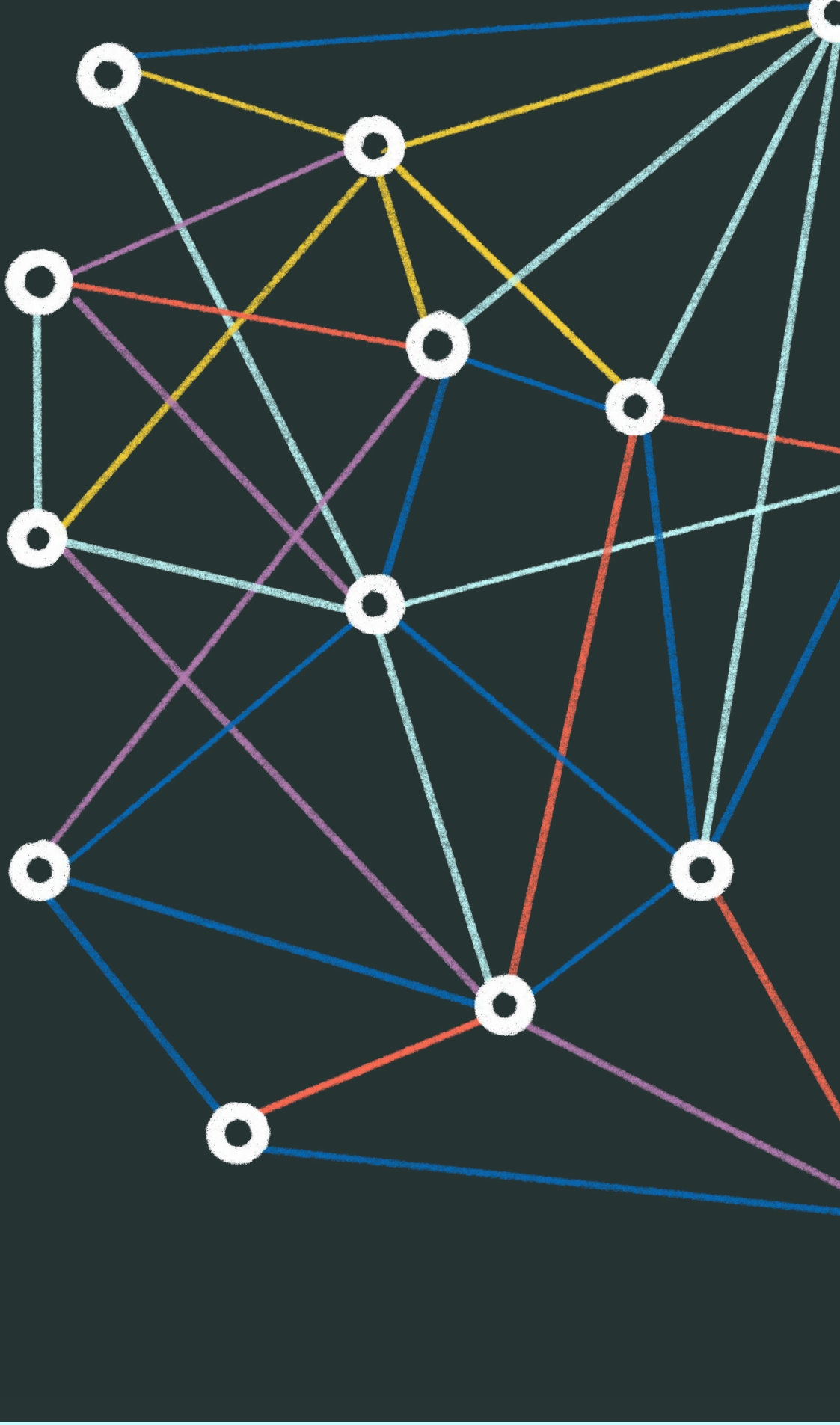

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