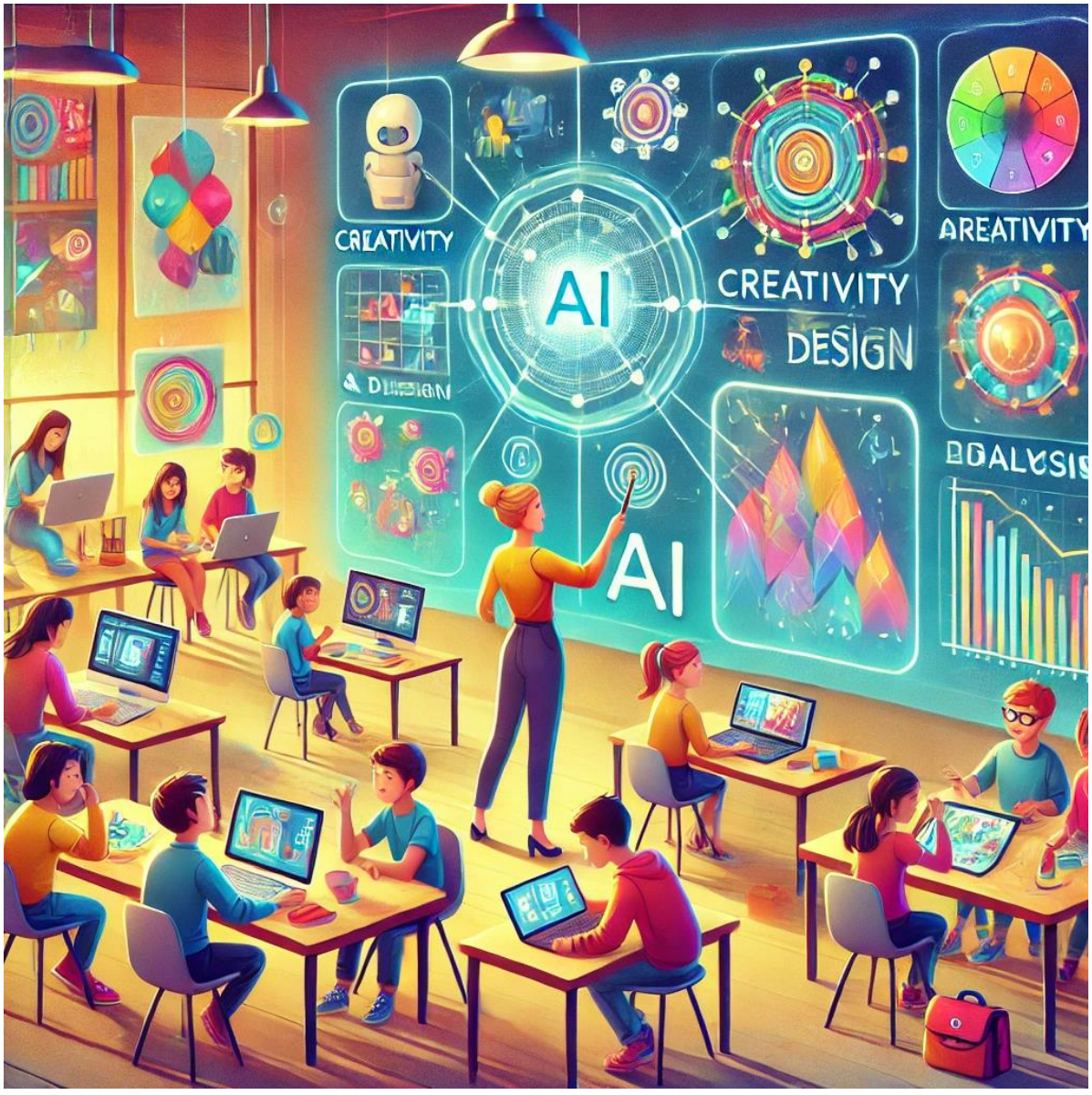
The Scottish Parliament
Pàrlamaid na h-Alba

Scotland's Futures Forum
Fòram Alba air Thoiseach

Goodison Group
in Scotland
INFLUENCING LEARNING

Seminar Report: Artificial Learning in Education, Learning and School



This event, held on 17 September 2024 at the Scottish Parliament, showcased innovative approaches to integrating AI in education, highlighting its potential to enhance learning, foster creativity, and support ethical, inclusive practices. Through engaging presentations and discussions, participants explored key themes such as AI's role in creative thinking, children's rights in AI, and its impact on critical thinking

BRAID
Bridging Responsible AI Divides

UKRI Arts and Humanities Research Council

UKRI UK Research and Innovation

and education systems. Voices from young people, educators, and experts emphasised the importance of collaboration, ethical guidelines, and empowering both students and teachers to navigate AI responsibly, ensuring it augments rather than replaces human connection and creativity.

The first draft of this report was generated using AI to summarise the transcript. It was then edited by humans. It may contain errors or inaccuracies, and should not be relied upon as a substitute for professional advice. If you find any content that is offensive or discriminatory, please report it to us. It may not represent the views of everyone present at the event.

There were two presentations from the Bridging Responsible AI Divides (BRAID) funded, scoping project, Towards Embedding Responsible AI in the school system - co-creation with young people.

Presentation 1

Exploring Creativity and AI in Education

This presentation was about a new educational programme, designed to engage young people with digital skills, creativity, and artificial intelligence (AI). Craig Steele, the director of Digital Skills Education, shared how his team has been working with partners, including the University of Edinburgh, and other organisations as part of the Bridging Responsible AI Divides (BRAID) funded project, Towards Embedding Responsible AI in the school system – co-creation with young people. The programme aims to create interactive learning experiences for students, focusing on making technology education fun, relevant, and cross-disciplinary.

The programme called "Unbelievably Talented" is aimed at 11-14-year-olds, who are old enough to have some experiences of using technology, the Internet and in the broad general education level of learning.

The programme is designed like a talent competition, but with a twist: some of the contestants get help from AI tools to perform their acts. The challenge for the student audience is to figure out which performances are purely human-created and which ones have AI involvement. This approach encourages students to think critically about AI's role in creativity and to question the ethical implications of blending human and machine-made content.

The purpose is to help students understand AI not just as a technical tool but as something that can be creatively integrated into various fields—

ranging from writing and comedy to art and even cooking. It raises important questions like, “If an AI tool helps a comedian write jokes, does it make the jokes less funny?” or “Can someone still be considered an artist if they use AI to generate their work?”

Craig also emphasised that young people should be equipped to navigate AI in a safe and informed way, so they can appreciate its potential benefits while being aware of its limitations and risks. He stressed that this programme isn’t just for students in technology classes; it’s designed to be cross-curricular and relevant for broader learning, promoting digital literacy, critical thinking, and ethical debate.

The programme is an innovative way to prepare the next generation to understand and navigate the complex world of emerging technologies by using creativity, humour, and interactive experiences.

At the time of the event, the programme had been experienced by 100 pupils across Scotland.

Presentation 2

The Promise, Pitfalls and Hopes

For Presentation 2 from the scoping project, Dr. Harry Dyer and Dr. Cara Wilson led a discussion with a panel of young people, from Edinburgh and Dereham, Norfolk, who had taken part in workshops as part of the project. The focus was to give young people a platform to express their opinions, concerns, and hopes around the future of AI in schools. The output from these workshops, a zine, can be found here.

The young participants made it clear that AI is already a significant part of their daily lives, and its influence will only grow in educational settings. They highlighted AI’s potential to enhance the learning experience by making it more engaging and personalised.

YP1 (young person), one of the young contributors, believed that AI would make it easier to access educational resources, stating, “AI is capable of giving loads of resources in a matter of seconds.” They imagined a future where AI might be the focus of dedicated classes within the curriculum or be integrated into existing subjects like computing. They also considered how easier access to resources may change the way coursework will be provided to students.

However, they were cautious about its overuse. For example, YP4 emphasised that while AI could support learning by providing structure and resources, it should not replace critical thinking or the process of

learning itself. “…when used irresponsibly it [AI] creates a superficial learning experience,” they explained, using an insightful analogy: “Students may know that a tomato is a fruit, but they wouldn’t know never to put it on a fruit salad.” This underscored the risks of overreliance on AI.

The Promise and Pitfalls of AI in Creative Subjects

The young people were particularly optimistic about AI’s potential to support creative subjects and complex problems. They saw it as a powerful tool that could enable students to express ideas more vividly. YP2 shared that AI could help students who may struggle to convey their ideas visually, stating, “If they want to get an idea across, but maybe they’re not the best at drawing … they could use AI to help them illustrate what they were thinking…...”

However, again, this optimism was balanced with caution. Subjects like mathematics, where a deep understanding of logical processes is required or in English, the ability to write an entire essay, might suffer if students simply rely on AI to provide answers. YP2 warned that, in these contexts, AI could be a shortcut that undermines learning. As YP4 stated, “…I believe that learning is more of a process. It's when you discuss this with peers. It's when you scrutinise your work, going over and over it again until you actually understand what's going on.”

A Call for Responsible Use: What Should Schools Do?

The young speakers consistently emphasised the need for responsibility and transparency in how AI is integrated into education. YP3 warned that irresponsible AI could have severe consequences, such as reinforcing biases and compromising privacy: “If the model’s been trained on data that already contains biased practices, it could continue these biases unknowingly and unfairly impact students.” This, they argued, could deepen existing inequalities if not carefully managed.

YP5 echoed the need for thoughtful implementation, suggesting that schools should “be transparent with their students about AI and show them how to use AI to benefit their studies, not cheat their way through. which will only hinder them in the long run.”

This sentiment was widely shared among the group, who called for a balanced approach that educates students about AI’s strengths and limitations.

AI as a Partner, Not a Replacement

The overarching theme was that AI should support—rather than replace—human teachers. As YP2 put it, AI could “take some of the work off teachers” by handling routine tasks, allowing educators to focus on the nuanced, complex interactions that only humans can provide. However, they were clear that AI should never replace the critical “human connection” that is central to learning and development.

YP4 explained that if students start using AI to write essays or solve problems for them, it would lead to a “superficial” learning experience where true understanding is lost. They warned that AI misuse could widen the rift between students and teachers, as schools would have to introduce more stringent monitoring and policies.

YP2 summed it up perfectly: “In the real world, it’s not just going to be all technology. You still need the authenticity of human connection.” They stressed that AI should be integrated in the same way that technology, like iPads, has been, with caution and clear boundaries.

Preventative Approaches: Using AI for Good

Interestingly, the group also saw AI’s potential to prevent harm. YP1 suggested that AI could be used proactively to steer young people away from negative behaviours or radical ideas. They supported the idea of AI interventions that would subtly “nudge” students towards safer choices if they input harmful or problematic prompts. “For young, impressionable minds … it’s for the safety of not only themselves but for the better of mankind,” YP3 agreed.

The Balance of Human and AI Support: A Collaborative Future

When asked whether AI should be used for more personal challenges, such as mental health support, the group was thoughtful. While YP2 acknowledged that AI might offer some benefits, they insisted that human support is irreplaceable: “There’s something very intrinsic about how humans interact with each other, solve problems … just talking to another person on a personal level is more effective than getting answers from a machine.”

YP5 argued that AI could complement human guidance but should not replace it entirely. They advocated for a hybrid model where AI is used as a “collaborative partner” rather than a stand-in for real relationships.

The Path Forward: Accepting AI, but with Caution

In their closing remarks, the young participants made a powerful case for accepting AI in education—but with clear boundaries and robust

safeguards i.e. a mix of openness and caution. YP4 called for rigorous ethical frameworks, and YP5 emphasised the need for transparency and education around AI.

The young people's perspectives remind us that as AI becomes more prevalent, it's essential to listen to the voices of those it will impact the most. Their thoughtful insights challenge us to consider how AI can be a force for good, while staying vigilant to the risks it might bring. As YP3 wisely concluded: "We shouldn't poke it with a stick but accept it with open arms—while keeping an extra bat behind us, just in case."

Presentation 3

Learning Beyond Boundaries

The talk by Alex Scroggie from Horizons Research focused on a project called Learning Beyond Boundaries, which aims to explore the potential of AI to transform learning experiences in Scottish schools. The project, funded by two-thirds of Scotland's local authorities, involves research and collaboration with teachers and students across the country to understand how AI might impact education and to support future policy decisions.

The project isn't just predicting the future of AI in education but is instead generating realistic scenarios for what schools might look like by 2034. They created three primary scenarios:

1. Boundless Classrooms: Schools integrate advanced AI tools like Virtual Reality, Augmented Reality, and personalised AI tutors to create immersive learning environments.

2. Classical Corridors: A future that looks much like today's traditional classrooms, where AI plays a minor role in education.

3. The Digital Divide: A scenario where inequality in AI access leads to a significant gap between well-resourced schools using AI effectively and underfunded schools lagging.

The team worked with 250 secondary students across Scotland. Through interactive sessions, they explored students' understanding of AI and gathered their views on what future classrooms might look like. One key takeaway was that students struggled to imagine classrooms without the traditional "teacher-at-the-front" model, despite the potential for AI to change learning dynamics.

Younger students were more conservative in their views of AI, often focusing on traditional classroom setups. There was a strong interest in AI's potential to enable personalised learning and improve inclusion, which could benefit students with different learning needs. Students also showed concerns about privacy and the ethical use of AI, especially around issues like deepfake images and the misuse of personal data.

The project also involved in-depth discussions with educators, who expressed mixed feelings about AI. While many teachers use AI informally (e.g., for marking or lesson planning), they worry that AI might diminish the learning process for students. They also emphasised the need for more training and guidance on how to safely and effectively integrate AI into their teaching. Teachers called for a national AI ethics framework to ensure consistent and safe use across schools.

The next step is to develop a set of tools and resources for both teachers and students to experiment with AI and to facilitate discussions around its impact. The project also plans to share findings and best practices through a dedicated website, aiming to create a collaborative platform for educators, students, and researchers to explore the use of AI in schools together.

The project again highlights that AI should not replace traditional education but rather augment and support it, with a focus on enhancing human connections and promoting ethical, inclusive learning environments.

The final report can be found here.

Presentation 4

Exploring Children's Rights and AI

In a thoughtful discussion led by Rona Blackwood and Sandra Rabbow from the Children's Parliament, we were offered an insight into a project focused on exploring the relationship between children's rights and AI in education. The presentation highlighted the importance of including children's voices in conversations about AI and ensuring that technology upholds their rights and wellbeing.

What is the Children's Parliament?

Before diving into the details of the project, Rona provided an overview of the Children's Parliament, an organisation dedicated to promoting children's rights and empowering children under the age of 14 to be advocates for their own and others' rights. She emphasised that their

work is rooted in a children's rights-based approach, which means creating environments where children can learn about, experience, and feel their rights in action.

A critical part of their approach involves building the capacity of adults—educators, policymakers, and AI developers—to better understand children's rights. As Rona put it, "A children's rights-based approach is not just about knowledge but also understanding and being able to live and feel their rights."

The Project: Exploring AI Children's Rights and AI

The Exploring Children's Rights and AI project, launched in partnership with the Scottish AI Alliance and the Alan Turing Institute, started in 2022 and continued until mid-2024. The project aimed to investigate how children understand AI and to ensure that they are meaningfully involved in the development and use of AI technologies. To achieve this, the team worked closely with children from four schools across Scotland—from Shetland to Stirlingshire—to get their perspectives and input on AI.

Key Phases of the Project

1. Understanding Children's Perceptions of AI

The first phase involved helping children build a solid understanding of what AI is and how it functions. Rona noted that this stage took longer than expected, as children needed a good foundational grasp of AI before they could critically engage with its implications.

2. Investigative Workshops and Case Studies

After the children gained this base knowledge, they explored different issues in relation to AI and their rights and named four areas of interest that were especially important to them to investigate further. In the second project phase the classes, represented through 12 MCPs (Members of Children's Parliament) investigators worked together with several partner organisations to delve into the identified themes of fairness and bias, safety and security, AI in education and learning about AI. Children's Parliament and partners used creative activities and artistic outputs to explore these topics, allowing the children to express their ideas, feelings and concerns in unique ways.

3. Calls to Action

The children's insights culminated in key messages and 12 calls to action, which were presented at the Scottish AI Summit in 2023 and 2024. These calls to action reflect the changes they want to see in AI policy and practice, emphasising the need for ethical, inclusive, and child-centric AI systems.

Key Themes and Findings

The children identified several crucial themes related to AI in education, which have implications for both policymakers and educators:

1. The Role of AI in the Classroom

The children believed that AI has the potential to be a valuable educational tool but were adamant that it should support rather than replace teachers. They felt strongly that human interaction and the role of educators in their learning experience are irreplaceable. Systems used in education need to be inclusive and support all children and their human rights.

2. Concerns Around AI in Learning

The children voiced concerns about AI being used to make decisions about their learning levels or challenges without adequate human oversight. They feared that AI could introduce biases and unfair practices if it wasn't carefully monitored.

Some children worried that relying too heavily on AI might result in a loss of autonomy over their own learning and create a system where "AI learning tools might decide on the level of their learning … without having a choice or human monitoring."

3. Inclusion and Equity

Children emphasised the need for AI to be inclusive, considering the diverse ways that children learn. They wanted AI systems to be designed to reflect different learning needs and to ensure that no one is left out or unfairly judged based on AI's interpretations of their abilities.

They also highlighted the importance of protecting their right to privacy and ensuring that AI does not share or misuse sensitive data.

4. Learning About AI and Rights

A recurring theme was the need for children to learn about AI in relation to their rights. The children felt that this type of education should be a part of the formal curriculum, so they can understand both the

opportunities and risks associated with AI. As one child noted, “It’s important to learn about AI for the now and the future.”

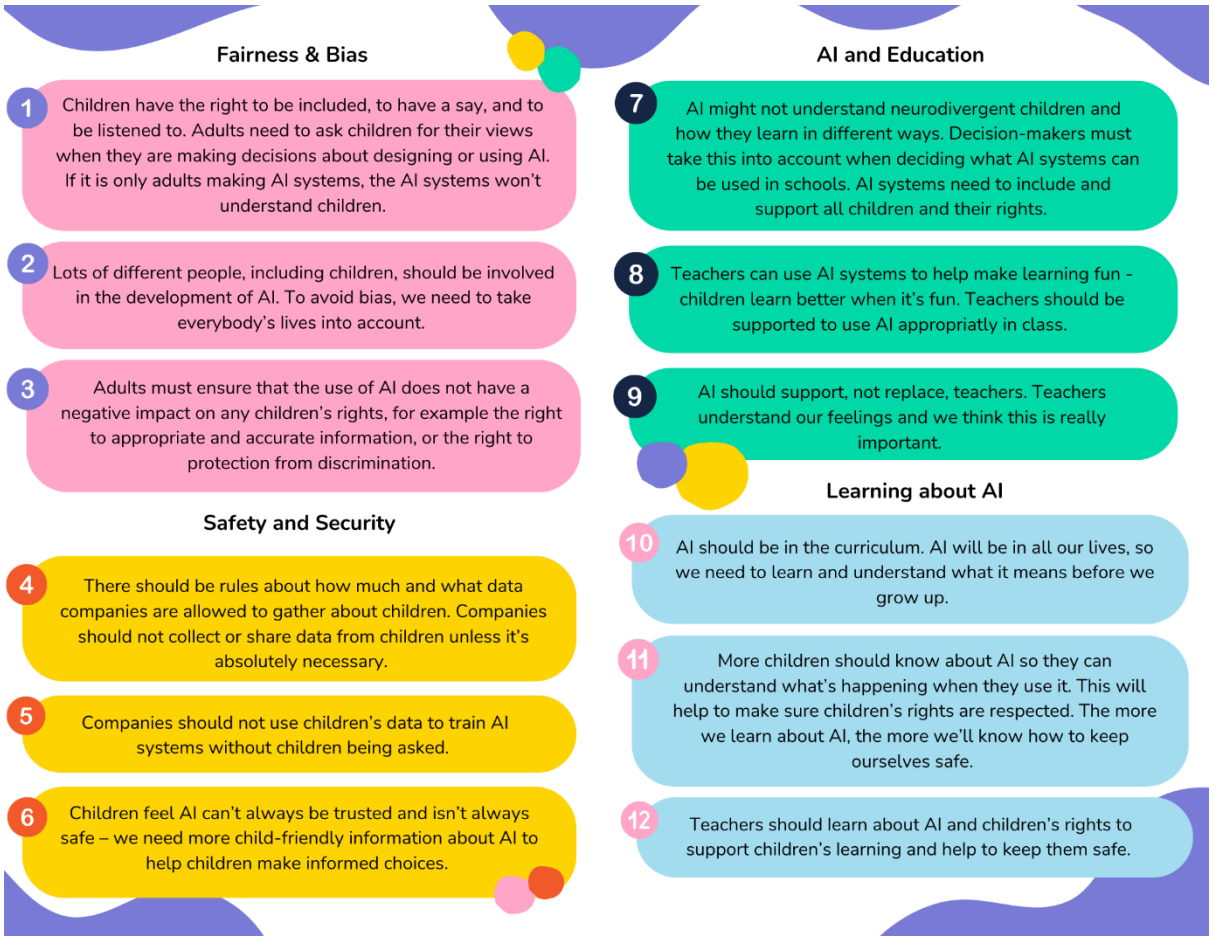
They advocated for an active role in the development of AI systems used in their schools, suggesting that children should be consulted and their consent sought when data is used to train AI models.

5. Making AI Learning Fun and Creative

Children stressed that learning about AI should be engaging and hands-on. They wanted opportunities to explore AI creatively and suggested partnerships with AI experts to better understand complex concepts like algorithms. “Learning about AI should be fun and creative, but also help us understand the technical side,” one child remarked.

Calls to Action: What Do Children Want?

Their calls to action reflect a desire for AI systems that are ethical, inclusive, and that respect their rights.



More information about this work can be found here.

Challenges for Teachers

The team also conducted national surveys with both children and teachers. The findings revealed that while many children were curious about AI, most hadn't yet learned about it in school. On the other hand, teachers reported low confidence in teaching AI-related topics. According to the survey, 71% of teachers had "no confidence or low confidence" in teaching AI, and 79% said they hadn't received adequate guidance to do so. Despite this, 45% were already using off-the-shelf AI resources, which raises concerns about the impact on children's rights and data security.

Conclusion

The Children's Parliament's project concluded by highlighting the need for ongoing collaboration: "Once the children are equipped with the knowledge about their rights and about how AI works, they are very capable of thinking critically about AI and how it should or should not be applied in education."

As AI becomes more integrated into education, it is crucial to consider children's voices and ensure that AI systems are designed with their best interests at heart.

Presentation 5

AI and Creative Thinking

Helena Good from *Daydream Believers* delivered an inspiring presentation on how AI can foster creative thinking in education, offering practical insights from her organisation's work. She shared examples of how AI is being used to support both students and teachers, emphasising the need for collaboration, experimentation, and openness to innovation.

Daydream Believers

Daydream Believers is a not-for-profit organisation dedicated to providing free, classroom-ready resources for teachers. These resources are designed to support project-based learning and help young people develop critical thinking and problem-solving skills through real-world challenges.

A key focus of the organisation is on empowering students to recognise and develop what makes them uniquely human, using AI as a *co-pilot*

rather than a replacement for their creativity. As Helena put it, “When we recognise and develop what makes us uniquely human, Gen AI can support us in that experience.”

The Creative Thinking Qualification

Helena introduced an innovative qualification in creative thinking, developed by *Daydream Believers*. This course, equivalent to Scotland’s National 5 and Higher levels, is designed to foster creativity without the pressure of traditional exams. Instead, it focuses on:

- **Process over Product**: Students are assessed on their creative journey, not just the final outcome
- **Encouraging Failure**: The programme includes “rewarding failure” to help students learn from mistakes, with over 800 students striving to “get an A in failure”

The qualification is now offered in 56 schools across 20 local authorities, and it has been well-received for its focus on nurturing creativity and critical thinking.

AI as a Tool for Creative Thinking

Helena highlighted how AI tools, like ChatGPT, are integrated into the creative process in the qualification’s curriculum. Students use AI to:

- **Generate Ideas**: AI helps students flesh out concepts and visualise ideas they might not be able to create themselves
- **Iterate and Improve**: AI provides instant feedback, enabling students to refine their ideas
- **Overcome Barriers**: Students who might struggle with traditional methods of creativity (e.g., drawing or writing) can use AI to express their thoughts in new ways

One student reflected on how AI helped them: “Being able to just type in what I had in my head and then see it come to life was very helpful for me.”

Supporting Teachers with AI

Recognising the challenges teachers face in integrating AI into their classrooms, Helena’s team created the *Gen AI Exploration Hub* with support from Education Scotland. This hub provides:

- **AI-Integrated Resources**: Materials that map AI prompts and tools to specific learning outcomes
- **Professional Development**: Training opportunities for teachers to build confidence in using AI for lesson planning, tracking, and creative activities
- **Practical Guidance**: Examples of ethical considerations and real-world applications of AI in education

Helena emphasised the importance of giving teachers a “handrail, not a barrier” when introducing AI, ensuring they have the resources and support needed to use it effectively.

Student Voices

The presentation featured insights from students who had participated in the creative thinking qualification. These students shared their experiences of using AI to:

- Develop revision tools and solve problems
- Create visual concepts for projects, such as AI avatars for games
- Push the boundaries of their creativity without fear of judgement

One student noted how AI gave them the freedom to experiment: “Why would you not use something that’s so readily available and helps you make a better, more robust idea?”

AI’s Role in the Classroom

Helena stressed that AI should be seen as a *co-pilot*, augmenting rather than replacing human creativity and teaching. She shared the perspective of a teacher, who explained how AI has improved their practice by handling routine administrative tasks, freeing up time to focus on delivering better learning experiences. “AI has allowed me to be a better teacher because it’s freeing up time to reflect on how I can make the best experiences for students.”

Build Windmills, Not Walls

Helena concluded her talk with a powerful metaphor: “It’s easy to worry about getting it wrong and want to build a wall. But we need to think about building windmills instead.” She urged educators and policymakers to embrace AI’s potential while staying mindful of its ethical and practical implications.

Takeaways

- **For Students**: AI can unlock creativity, encourage experimentation, and help overcome traditional barriers to learning
- **For Teachers**: AI offers tools to streamline tasks, foster creativity, and enhance teaching practices.
- **For Education as a Whole**: Collaboration and openness are key to integrating AI in a way that supports, rather than undermines, the human aspects of learning

Helena's presentation was a celebration of what's possible when education embraces the potential of AI, not as a replacement for human creativity, but as a partner in the journey toward innovation and imagination.

More information about Daydream Believers and the Gen AI Exploration Hub can be found here.

Summary of the Q&A Session

The Q&A session concluded the meeting, providing a platform for participants to share reflections, raise questions, and discuss diverse perspectives.

General Reflections and Concerns

Distrust in Media and AI's Role:

Concerns were raised about the growing distrust of media among young people and the potential for AI to exacerbate this mistrust. Educators face challenges in teaching students to critically evaluate the reliability of information presented by AI systems.

Importance of Small Language Models:

Emerging research on small language models was highlighted as a promising avenue for educational contexts. These models could be tailored for specific institutions, offer data sovereignty and reduce environmental impact compared to large models.

AI in Early Education:

Participants emphasised the need to introduce AI education at a younger age, starting in primary school, to foster understanding and critical thinking. Integrating a rights-based framework in teaching AI

could help children consider its implications on health, happiness, and safety.

Balanced View of AI:

The narrative around AI should avoid portraying it as inevitable or infallible. Environmental and ethical considerations, including energy consumption and the extraction of rare minerals, must be discussed alongside AI's potential benefits.

Role of Government and Policy

Regulation and Infrastructure:

Governments must better understand AI and address global regulatory challenges to mitigate risks like fake news and radicalisation. Ensuring equitable access to digital infrastructure, such as broadband and Wi-Fi in schools, is essential for levelling the playing field.

Integration into Educational Reform:

AI should be incorporated into the broader reform agenda for education, including early ethical education about AI, use in assessment and personalised learning and preparing students for AI-integrated workplaces.

Global Competitiveness:

Participants noted the risk of falling behind other nations in AI adoption and innovation, particularly in education and advanced manufacturing.

Closing Thoughts

Inequities in AI Access:

Echoing historical efforts like public libraries, the discussion reflected on modern disparities in access to AI tools and knowledge.

Scottish System as a Model:

The inclusive approach of the Scottish system, valuing children and young people as key stakeholders in these discussions, was lauded as exemplary.

Future Directions

The session concluded with a commitment to exploring equality in AI in upcoming discussions and a call for continued input from participants. Participants expressed optimism about the role of community-driven dialogue in shaping a fair and effective approach to AI in education.