



Artificial Intelligence (AI) in Education

Guidance for education leaders, teachers and support staff

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Table of Contents

<i>Summary: Artificial Intelligence (AI) in Education</i>	3
<i>Knowledge and skills for the future</i>	6
<i>What is Artificial Intelligence?</i>	7
<i>How does AI work?</i>	7
<i>What types of AI are there?</i>	7
<i>What is Generative Artificial Intelligence?</i>	8
<i>How can AI be used in education?</i>	10
<i>How can schools and users of AI mitigate risk?</i>	12
<i>The use of AI by students</i>	13
<i>Generative AI and assessments</i>	15
<i>Could a school or trust have its own private generative AI model?</i>	16
<i>Further information</i>	17

This guidance was created with the assistance of generative artificial intelligence.

The guide does not promote or recommend any AI tool, system, or model but it will provide examples to model what these systems can do. This guide considers a range of types of AI but focuses on Generative AI in places as the latter is currently the highest-profile AI resource that is accessible to everyone with internet access and shows broad potential to reduce workload and increase efficiencies.

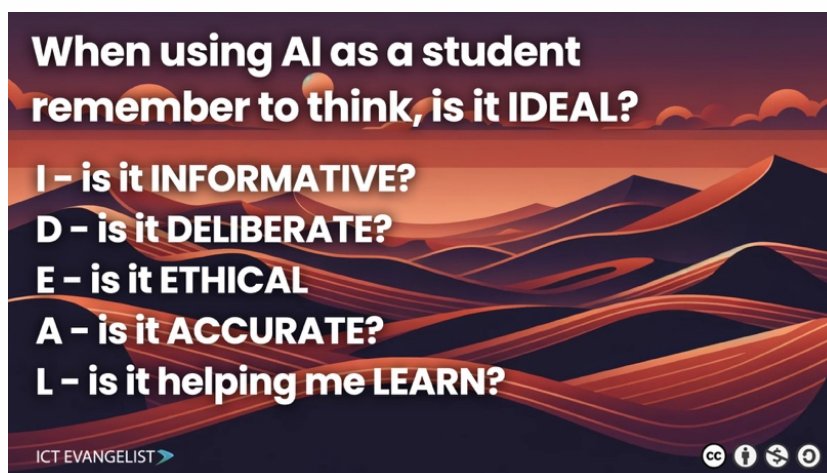
Summary: Artificial Intelligence (AI) in Education

Before incorporating Artificial Intelligence (AI) into the educational setting, it is crucial for Leaders, Teachers, Support Staff and Students to have an awareness and understanding of the following key points detailed in this guidance document:

- Exceed Academies Trust encourages the careful and considerate use Artificial Intelligence (AI) by educators and support staff but advises using AI cautiously.
- AI presents significant opportunities for educational institutions, in terms of teaching, learning and administration, but it also carries inherent risks that necessitate awareness and mitigation.
- School and Trust Data Protection and internet use and security policies are applicable to AI usage, including compliance with GDPR requirements. You must be familiar with and adhere to all related policies applicable to the use of AI.
- Under no circumstances should sensitive or personal data be uploaded to generative AI tools like ChatGPT and Google Gemini. This includes, but is not limited to, sensitive information (commercial, finance, etc) and personal information (such as names and birthdates) shared in text, images, audio, or video formats (including through file names).
- Do not allow or cause intellectual property, including pupils' work, to be used to train generative AI models, without appropriate consent or exemption to copyright. Students' work should not be used to train AI without parental consent (if the student is aged under 18) or consent from the student (if aged 18 or over).
- Recent headlines have focused on generative AI systems like ChatGPT and Google Gemini but AI's scope extends beyond these generative tools.
- Typically, generative AI tools such as Google Gemini and ChatGPT have age restrictions of 13, 16 or 18+. Leaders, Teachers, Support Staff and Students must be mindful of these age limitations and adhere to the related terms and conditions. Written parental consent would also be required for students to use such tools.
- *Educators and support staff should cautiously model the use of generative AI tools such as ChatGPT and Google Gemini rather than allowing students to use it independently. There may be other AI tools that students can use directly but the Teacher should test the tool and monitor its use closely.*
- Certain commercial procured AI powered resources chosen by a school may necessitate the sharing of some personal data. The Headteacher should explore these data protection requirements relating to such resources and seek support where required. They must ensure that data is securely stored in alignment with

School and Trust policies, including GDPR, before purchasing or implementing such systems/resources.

- As well as Data Protection and Online Safety related professional development, school staff should consider accessing AI-related training provided by the Trust, school, and/or other relevant providers.
- Children and young people should be educated about the benefits and risks associated with AI, with guidance provided to parents and carers, to prepare students to contribute to society and the future workplace.



- When applicable, schools and their staff should familiarise themselves with guidance from assessment bodies, including examination boards and The Joint Council for Qualifications, and effectively communicate this information to students and parents or carers. <https://www.jcq.org.uk/exams-office/malpractice/artificial-intelligence/>
- The quality of prompts (what the user asks AI to do) used in generative AI tools, such as Google Gemini and ChatGPT, directly influences the quality of the output. Often prompts require adjustments to achieve the desired results.
- Generative AI serves as a valuable tool for stimulating ideas and providing a starting point, but it usually requires user intervention to produce a high-quality finished product.
- The effectiveness of generative AI depends on the quality of the training data it has received, which may become outdated, biased, or contain misinformation. This includes content that reinforces stereotypes and bias towards underrepresented groups. Users should not use content that reinforces such biases and actively seek inclusive and diverse content. Users should only use such information if they are qualified to verify its accuracy before using it.
- Not all generative AI tools have access to the same training data and not all systems are able to access up-to-date information from the internet. Comparing and

contrasting outcomes from different generative AI tools, such as ChatGPT and Google Gemini, is recommended to get the best outcome.

- AI tools are sometimes available for free use, and in such instances, the company offering the service often considers the user's data as the valuable commodity they seek or their loyalty resulting in future purchases. This is similar to social media, etc.
- The field of AI evolves rapidly. Users should try to stay current with developments that impact AI usage in education and apply a critical eye to developments.
- At the time of writing, the following generative AI tools may be a useful starting point for Leaders, Teachers and Support Staff:
 - Microsoft Copilot: <https://copilot.microsoft.com>
 - OpenAI ChatGPT: <https://chat.openai.com>
 - Google Gemini: <https://gemini.google.com/app>
 - Anthropic Claude: <https://claude.ai/chats>
 - Pi: <https://pi.ai/home>
 - Image Creator: within Copilot and Bing

Knowledge and skills for the future

The Department for Education (DfE) state:

The education sector needs to:

- *prepare students for changing workplaces*
- *teach students how to use emerging technologies, such as generative AI, safely and appropriately*

At different stages of education, this teaching may include:

- *the limitations, reliability, and potential bias of generative AI*
- *how information on the internet is organised and ranked*
- *online safety to protect against harmful or misleading content*
- *understanding and protecting Intellectual Property rights*
- *creating and using digital content safely and responsibly*
- *the impact of technology, including disruptive and enabling technologies*
- *foundational knowledge about how computers work, connect with each other, follow rules and process data*

The education system should:

- *support students, particularly young pupils, to identify and use appropriate resources to support their ongoing education*
- *encourage effective use of age-appropriate resources (which, in some instances, may include generative AI)*
- *prevent over-reliance on a limited number of tools or resources*

DfE will continue to work with experts to:

- *consider and respond to the implications of generative AI and other emerging technologies*
- *support primary and secondary schools to teach a knowledge-rich computing curriculum to children up to the age of 16*

Source: DfE (2023) <https://www.gov.uk/government/publications/generative-artificial-intelligence-in-education/generative-artificial-intelligence-ai-in-education>

What is Artificial Intelligence?

Artificial intelligence (AI) is a branch of computer science that deals with the creation of intelligent agents: systems that can reason, learn, and act autonomously. AI research has been highly successful in developing effective techniques for solving a wide range of problems, from game playing to medical diagnosis.

How does AI work?

AI systems typically work by using machine learning algorithms to learn from data. Machine learning algorithms can identify patterns in data and use those patterns to make predictions or decisions. For example, an AI system that is trained on a dataset of images of cats and dogs will be able to learn to distinguish between cats and dogs in new images.

What types of AI are there?

Not all types of AI are the same.

- **Machine learning (ML):** AI systems that learn from data without being explicitly programmed.
- **Deep learning (DL):** A type of ML that uses artificial neural networks to learn from data.
- **Natural language processing (NLP):** AI systems that can understand and generate human language.
- **Computer vision (CV):** AI systems that can understand and generate images and videos.
- **Generative AI:** AI systems that can create new data, such as text, images, and videos.

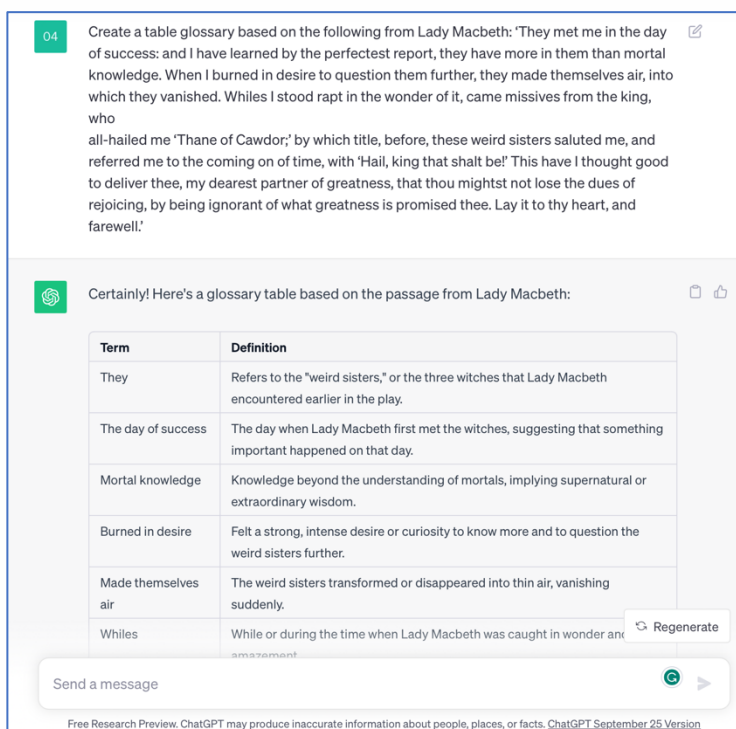
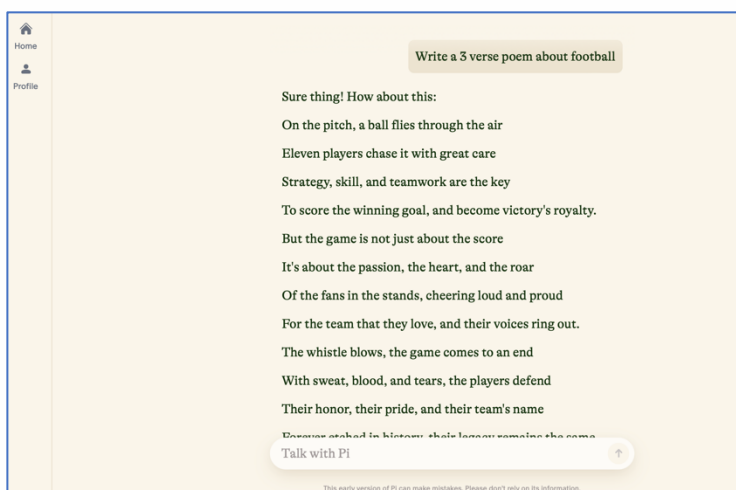
New AI products and improvements to existing tools are happening regularly with new functionality added. Some tools require paid subscriptions, while others are 'free', sometimes with fewer features or older training data. Ultimately, users 'pay' AI companies by sharing data to develop AI products. This makes data security and privacy essential when using AI.

What is Generative Artificial Intelligence?

Generative AI has been high profile in recent months, with generative AI tools such as OpenAI's ChatGPT making the headlines.

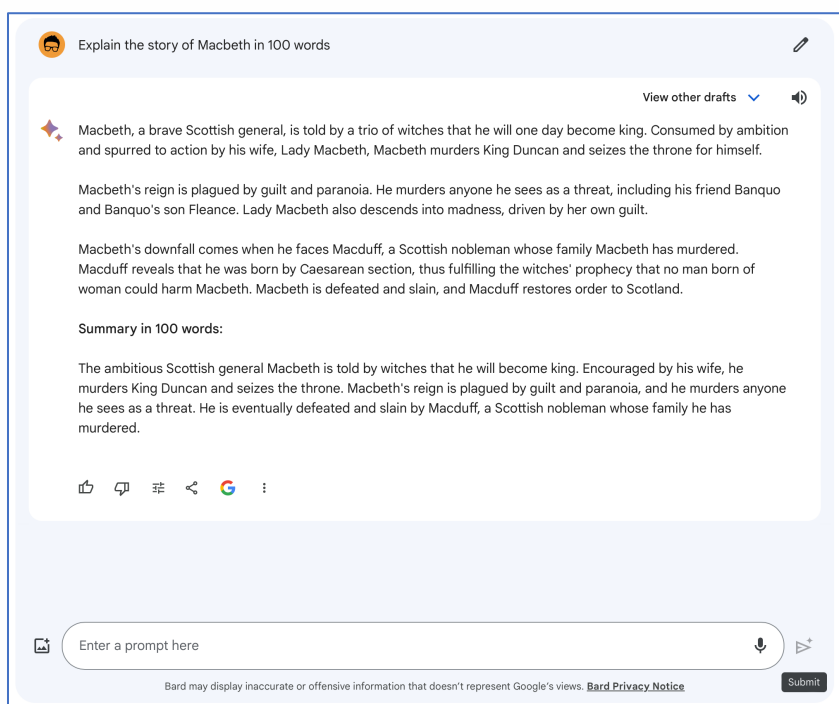
Generative AI uses large language models (LLMs), a type of artificial intelligence (AI) algorithm that uses deep learning techniques and massively large data sets to understand, summarise, generate, and predict new content. LLMs are trained on massive datasets of text and code, which allows them to learn the patterns and relationships of language. Once trained, LLMs can be used to perform a variety of tasks, such as:

- **Text generation:** LLMs can generate text of all kinds, including poems, code, scripts, musical pieces, email, letters, etc.
- **Machine translation:** LLMs can translate text from one language to another with high accuracy.
- **Question answering:** LLMs can answer questions in a comprehensive and informative way, even if they are open ended, challenging, or strange.
- **Reading comprehension:** LLMs can understand the meaning of text and answer questions about it.
- **Summarisation:** LLMs can generate summaries of lengthy documents or articles.
- **Classification:** LLMs can classify text into different categories, such as news articles, product reviews, or scientific papers.



For example, if you use a generative AI model to generate text, the model will have been trained on a large dataset of text, such as books, articles, and code. When you give the

model a prompt (i.e. you tell it what you want it to do), it will use its knowledge of the patterns in the training data to generate new text that is relevant to the prompt.



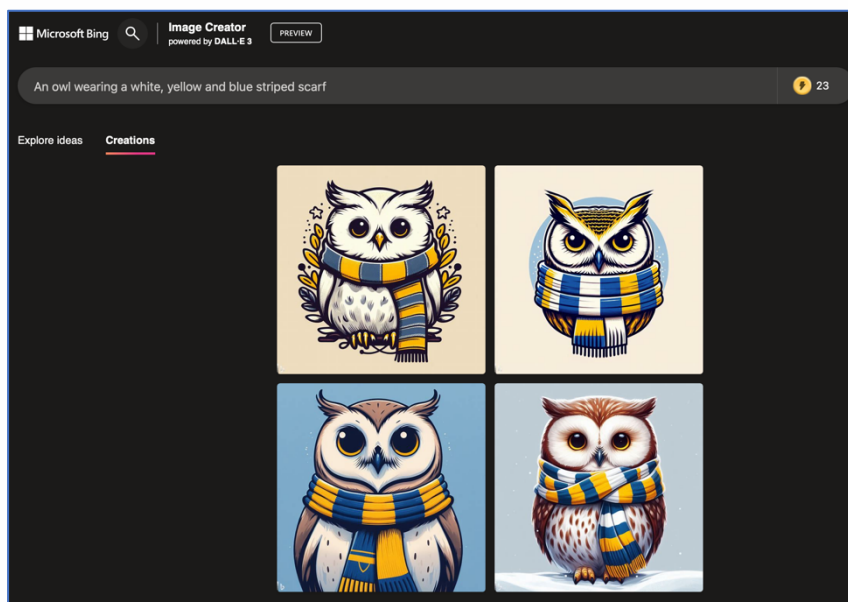
Using a simple prompt such as *'Explain the story of Macbeth in 100 words'*, generative AI will provide this in just a few seconds:

Generative AI can be used to create a wide variety of content, including text, images, audio, and video. It can be used to create new products and services, improve the efficiency of existing processes, and even help us to better understand the world around us. It can help to reduce

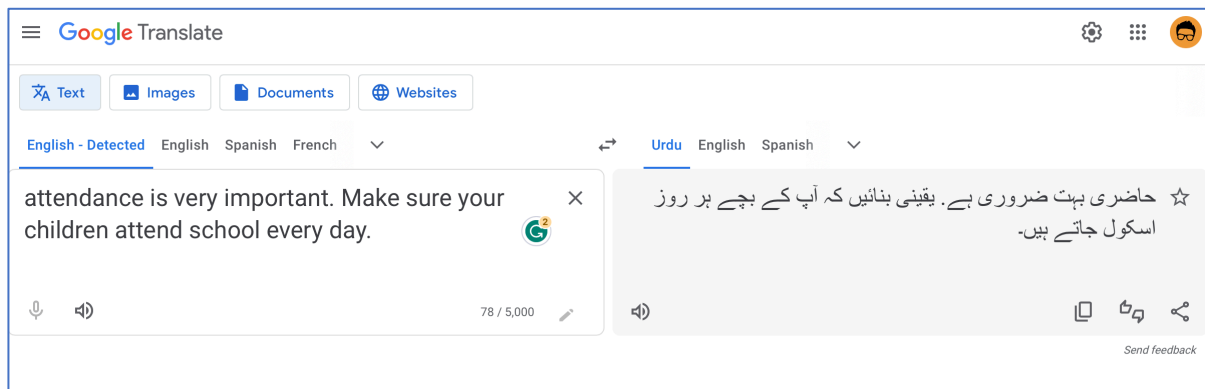
workload, such as providing ideas for the content of a report you may need to prepare for your Local Advisory Board.

Here are some specific examples of how generative AI can use your data:

- To generate new creative content: Generative AI can be used to generate new forms of creative expression, such as poems, music, and art. For example, the AI model DALL-E 3 can generate images from text descriptions, and the AI model Jukebox can generate music from text descriptions.



- To improve the efficiency of existing processes: Generative AI can be used to automate tasks that would otherwise be time-consuming or expensive to do manually. For example, generative AI can be used to generate marketing copy, translate languages, and write code.



- To help us to better understand the world around us: Generative AI can be used to explore and analyse complex data in new ways. For example, generative AI can be used to develop new scientific models and to create simulations of real-world systems.

It is important to note that generative AI can also be used to create harmful content, such as fake news and deepfakes. It is therefore important to be aware of the potential risks of using generative AI and to take steps to mitigate those risks.

How can AI be used in education?

Different types of AI can be used in education in a variety of ways, including:

- **Personalising learning for students:** AI can be used to develop personalised learning plans for students based on their individual needs and interests.
- **Providing feedback to students:** AI can be used to provide students with feedback on their work, such as essays or coding assignments.
- **Automating tasks for teachers:** AI can be used to automate tasks for teachers, such as grading assignments or creating reports.
- **Providing students with access to educational resources:** AI can be used to provide students with access to educational resources, such as online courses or tutoring.

What are the potential benefits of using AI in education?

There are many potential benefits to using AI in education, including:

- **Improved student learning:** AI can help students to learn more effectively by providing them with personalised learning experiences and feedback.
- **Increased teacher productivity:** AI can free up teachers to focus on teaching and interacting with students by automating tasks such as grading and reporting.
- **Increased access to education:** AI can help to provide students with access to education regardless of their location or socioeconomic status.

- **Reduce workload:** AI can help headteachers to draft policies and reports using the data it was trained on to provide generic information as a starting point for the document. The author can then tailor this to their need and context. In the same way, it can provide students with the answers for their homework or write an essay for them to submit for assessment. Claude, a generative AI system, allows PDF documents to be uploaded. A simple prompt of ‘Summarise this document’ or ‘What is the difference between these two documents?’ will generate a response.

What are the risks of using AI in education?

There are several risks associated with using AI in education. These include:

- **Bias:** AI systems are trained on data, and that data can reflect the biases that exist in the real world. This means that AI systems can generate text, translate languages, write different kinds of creative content, and answer your questions in an informative way that is biased against certain groups of people. This could lead to students being exposed to biased information or being treated unfairly.
- **Privacy:** AI systems often collect and store large amounts of data. This raises concerns about privacy and security. Schools need to take steps to protect sensitive information, including workforce and student data, and ensure that it is used responsibly.
- **Overreliance on technology:** There is a risk that students and teachers could become over reliant on AI technology. This could lead to a decrease in independent thinking and problem-solving skills.
- **Lack of transparency:** It can be difficult to understand how AI systems work and what data they are using. This can make it difficult to assess the accuracy and fairness of AI-generated results.

What are the risks of using Generative AI?

Here are some of the most common risks associated with generative AI:

- **Bias:** Generative AI models are trained on data that is collected from the real world, and that data may contain biases. This means that the generative AI model may also generate biased content.
- **Misinformation:** Generative AI can be used to create fake news and other forms of misinformation. For example, a generative AI model could be used to create a fake video of a politician saying something that they never actually said. This type of misinformation can be very damaging, especially if it is used to influence elections or public opinion.
- **Security:** Generative AI models can be used to create new types of cyberattacks. For example, a generative AI model could be used to create spam emails that are so personalised that they are difficult to distinguish from real emails. This could make it

easier for cybercriminals to trick people into revealing sensitive information or clicking on malicious links.

- **Accuracy:** Not all the data is current or up to date. For example, at the time of writing version 1 of the guidance (September 2023), ChatGPT's 'free' to access system used data produced up to September 2021 to train its model. Present day internet searches are only available via paid for Premium subscriptions. By February 2024, live internet search by generative AI were becoming more common.

How can schools and users of AI mitigate risk?

Schools and users of AI can mitigate the risk of using AI in several ways, including:

- **Personal data:** Personal data of students and the school workforce must **never** be entered into generative AI systems, including names and identifiable photos. If the school opts to use AI tools that are designed for educational use these tools are typically more transparent and accountable than general-purpose AI tools such as ChatGPT. But the school should ask questions and ensure they understand how student data is used, processed, stored, and secured before using the tool.
- Develop and implement policies and procedures for the use of AI.
- Educate students and teachers about AI. This includes teaching them about the potential benefits and risks of using AI, as well as how to use AI critically and ethically.
- Monitor the use of AI in schools. This includes tracking how AI is being used, identifying any potential problems, and taking steps to address those problems.
- Be aware of the potential for bias in generative AI models. When using a generative AI model, be critical of the content that it generates. Be aware of the model's training data and the potential biases that may be present in that data.
- Be careful about what data you share with generative AI models. Only share data that you are comfortable with being used to generate new content. You must not in any circumstance share personal data about pupils/students or colleagues with Generative AI, such as names and grades, or sensitive data.
- Use generative AI models from reputable sources. There are many different generative AI models available, and some of them are more reliable than others. Choose models from developers that have a good track record of creating safe and ethical AI systems. This is a fast-moving industry, so you need to be aware of how models evolve and how they use your data.
- Be critical of the content that is generated by generative AI models. Don't assume that everything that is generated by a generative AI model is accurate or true. Be sure to verify the content before sharing it or using it to make important decisions.
- **Overreliance on technology:** Schools can encourage students and teachers to use AI tools in conjunction with other teaching and learning methods. They can also teach students how to think critically about the information that they generate using AI tools.

- Lack of transparency: Schools can choose AI tools that are transparent about how they work and what data they are using. They can also teach students how to evaluate the accuracy and fairness of AI-generated results.
- Job displacement: Schools can prepare students for the future of work by teaching them the skills they need to use AI effectively. They can also work with the community to develop new jobs and opportunities in the field of AI.

The importance of data protection and security

It is important to note that the use of AI in education raises several data protection and security concerns. For example, AI systems often need to collect and use large amounts of data to learn and provide personalised feedback. This data could potentially be misused or hacked, which could have serious consequences for students' privacy. Such data can also be used to 'train' the AI model so the sharing of personal data should be avoided.

It is therefore essential that schools and other educational institutions take steps to protect student data and ensure that AI systems are used in a secure and responsible way. This includes having clear data protection policies in place, training staff on data protection and security, and using only trusted AI systems from reputable suppliers.

Users of AI must adhere to their employers policies.

The use of AI by students

It is also important to note that AI can be used by students in both positive and negative ways. For example, students can use AI to help them with their studies, such as by using AI-powered chatbots to get help with homework or by using AI-powered translation tools to translate foreign languages. However, students can also use AI for negative purposes, such as by using generative AI-powered tools to plagiarise work or by using AI-powered social media tools to spread cyberbullying.

It is therefore important to educate students about the potential benefits and risks of using AI. Schools and other educational institutions should teach students how to use AI responsibly and ethically.

The following is a list of the age restrictions for using the most popular generative AI tools at the time of writing (September 2023):

- Gemini: 13+ with parental consent if under 18
- ChatGPT: 18+
- Pi: 16+
- Claude: 13+ with parental consent if under 18
- Bing: 13+ with parental consent if under 18

Based on these, no student lower down school than Year 9 should be using these generative AI models and written parental consent is required. It is important to note that these age restrictions are not set in stone. Generative AI tools are still under development, and the risks and benefits of their use are still being studied. As a result, some people may believe that these age restrictions are too low, while others may believe that they are too high.

It is also important to note that some generative AI tools may have stricter age restrictions in certain jurisdictions. For example, The UK's Data Protection Act 2018 and GDPR require parental consent to process data of children under 13 years old. So even without a stated minimum age, companies enable parental controls and likely discourage use by under 13s.

You usually need an account to access AI tools. This is likely to be an email address and a registration form may need to be completed to sign-up. Already the user is beginning to connect personal information about themselves, e.g. if the email address used to register on ChatGPT is the same one on your Facebook account. This may or may not concern you, but it is worth remembering. Your data is the product for some businesses.

If you are unsure whether a particular generative AI tool is appropriate for students, it is always best to err on the side of caution. In school where there is a good reason to use generative AI in the classroom, teachers and teaching staff are better to model the use of generative AI rather than allow students to use it themselves.

Here are some additional things to consider:

- Generative AI tools can be used to create harmful content, such as hate speech, violence, and pornography. It is important to talk to students about the potential risks of using these tools and to monitor their usage.
- Generative AI tools can also be used to create deepfakes, which are videos or audio recordings that have been manipulated to make it look or sound like someone is saying or doing something that they never actually said or did. Deepfakes can be used to spread misinformation or to damage someone's reputation. It is important to talk to students about the dangers of deepfakes and to teach them how to identify them.
- Generative AI tools can be addictive. It is important to set limits on usage and to make sure that they are using these tools in a healthy and productive way.
- AI may be more accessible in the home or outside of school. Consider what information the school can share with parents and carers to support the safe and appropriate use of AI.

There are several risks associated with a student using generative AI to prepare a piece of work to submit for assessment. These include:

- **Plagiarism:** Generative AI tools can be used to produce text that is highly similar to existing text, without attribution. This can lead to students being accused of plagiarism, even if they were not aware that the text was not their own.

- **Academic dishonesty:** Students who use generative AI to produce their work are essentially cheating. This can have serious consequences, such as failing the assessment.
- **Lack of learning:** Students who rely on generative AI to do their work are not actually learning the material. This can put them at a disadvantage in their studies and in their future careers.
- **Bias:** Generative AI tools are trained on massive datasets of text and code. These datasets can reflect the biases that exist in the real world. This means that generative AI tools can generate text that is biased against certain groups of people. This could lead to students producing work that is discriminatory or offensive.
- **Misinformation:** Generative AI tools can generate text that is factually inaccurate. This is because these tools are not always able to distinguish between fact and fiction. Students who use generative AI to produce their work could submit work that contains misinformation.

Generative AI and assessments

There are some general concerns about the use of generative AI in education. For example, some people worry that the use of generative AI will lead to a decline in the quality of student work and a decrease in critical thinking skills. Others worry that generative AI will make it more difficult for teachers to assess student learning if a student's work is AI-generated.

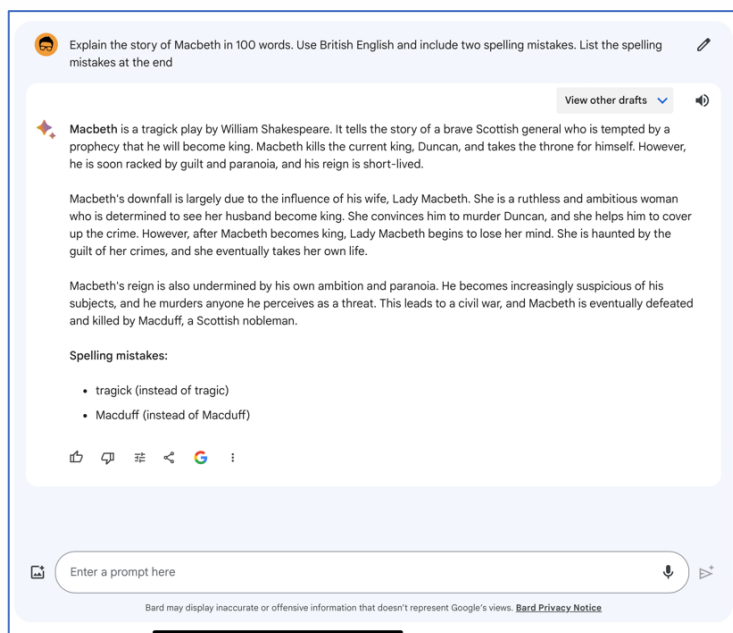
Here are some tips for teachers on how to reduce the risks of students using generative AI for assessments:

- Design assessments that require students to demonstrate their critical thinking skills and understanding of the material, rather than simply regurgitating information.
- Use a variety of assessment formats, including oral presentations, projects, and group work.
- Give students clear instructions about what is expected of them and the consequences of cheating.
- Use plagiarism detection software to scan student work for similarities to existing sources.
- Talk to students about the importance of academic integrity and the risks of using generative AI to cheat.

It is also important for schools to develop policies and procedures for dealing with academic dishonesty. These policies should be clear and fair, and they should be communicated to students at the beginning of the school year. Schools should also consult with test and examination boards for guidance.

Earlier in the guidance we used the generative AI prompt ‘Explain the story of Macbeth in

100 words’. This could be rewritten to ‘Explain the story of Macbeth in 100 words. Use British English and include two spelling mistakes. List the spelling mistakes at the end’. It’s easy to make content look like it was written by a human rather than AI.



It is very difficult to say with confidence whether AI was used or not. There are some tools available to that try to do this, like GTPZero, but some companies have abandoned their efforts, including OpenAI, the creators of ChatGPT.

Generative AI produce content by ‘guessing’ the most likely next word in a sequence. This means that AI-generated content uses the most common combinations of words, unlike humans who use a variety of words in their normal writing. Several programs and services use this difference to statistically analyse written content and determine the likelihood that it was produced by AI:

- OpenAI Classifier: <https://openai.com/blog/new-ai-classifier-for-indicating-ai-written-text/>
- GPTZero: <https://gptzero.me/>
- The Giant Language Model Test Room (GLTR): <http://gltr.io/dist/>
- Turnitin Originality: <https://www.turnitin.com/products/originality> (coming soon)

Could a school or trust have its own private generative AI model?

Yes. But there are both benefits and issues associated with a school or trust purchasing its own private generative AI system rather than using tools such as ChatGPT or Gemini.

Benefits:

- **Control:** Schools would have more control over the data that is used to train the system and the features that are available to students. This could be important for schools that have specific needs or concerns.
- **Security:** Schools would have more control over the security of the system and the data that is stored on it. This could be important for schools that handle sensitive data, such as student records.

- **Customisation:** Schools could customise the system to meet their specific needs. For example, they could add new features or train the system on a specific dataset of text and code.

Issues:

- **Cost:** Purchasing and maintaining a private generative AI system can be expensive.
- **Expertise:** Schools would need to have the expertise to operate and maintain the system. This could require hiring new staff or training existing staff.
- **Bias:** Generative AI systems are trained on massive datasets of text and code. These datasets can reflect the biases that exist in the real world. This means that generative AI systems can generate text that is biased against certain groups of people. Schools would need to be aware of this risk and take steps to mitigate it.
- **Access:** Not all schools have the resources to purchase and maintain a private generative AI system. This could lead to a digital divide between schools that have access to these systems and those that do not.
- **Transparency:** It is important for schools to be transparent about the use of generative AI systems. This includes informing students and parents about how the system works and what data is used to train it.

Further information

Department for Education: Generative artificial intelligence in education

<https://www.gov.uk/government/publications/generative-artificial-intelligence-in-education>

Teacher Development Trust: Understanding AI for School: tips for school leaders

<https://tdtrust.org/2023/09/08/download-understanding-ai-for-school-tips-for-school-leaders/>

Net Support: Exploring effective and ethical use of AI in education

<https://youtu.be/4c2aXGU-KYQ?si=yCK9t-kJG61TCsDN>

The latest guidance from the Department for Education (DfE) is available here:

<https://www.gov.uk/government/publications/generative-artificial-intelligence-in-education/generative-artificial-intelligence-ai-in-education>

Introduction to Generative AI (Google)

https://www.cloudskillsboost.google/course_templates/536

Empowering educators to explore the potential of artificial intelligence (Microsoft)

<https://learn.microsoft.com/en-us/training/modules/empower-educators-explore-potential-artificial-intelligence/>

Exploring generative AI with Copilot in Bing (Microsoft)

<https://learn.microsoft.com/en-us/training/modules/explore-generative-ai-copilot-bing/>

Prompt engineering (OpenAI)

<https://platform.openai.com/docs/guides/prompt-engineering/six-strategies-for-getting-better-results>

Discovering AI with Google for Education Champions (Google)

<https://www.youtube.com/playlist?list=PLP7Bvyb3ap4526l0TCX9Lz0tnkHgQOXCS>

Unlock generative AI safely and responsibly – classroom toolkit (Microsoft)

<https://learn.microsoft.com/en-us/training/educator-center/instructor-materials/classroom-toolkit-unlock-generative-ai-safely-responsibly>