



LITERACY SPECIALISTS  
TEACHERS • ASSESSORS



Understanding the impact  
of COVID 19 on our pupils



Artificial Intelligence:  
its power and disruption



Dyslexia and its impact  
on adult outcomes

# Dyslexia Review

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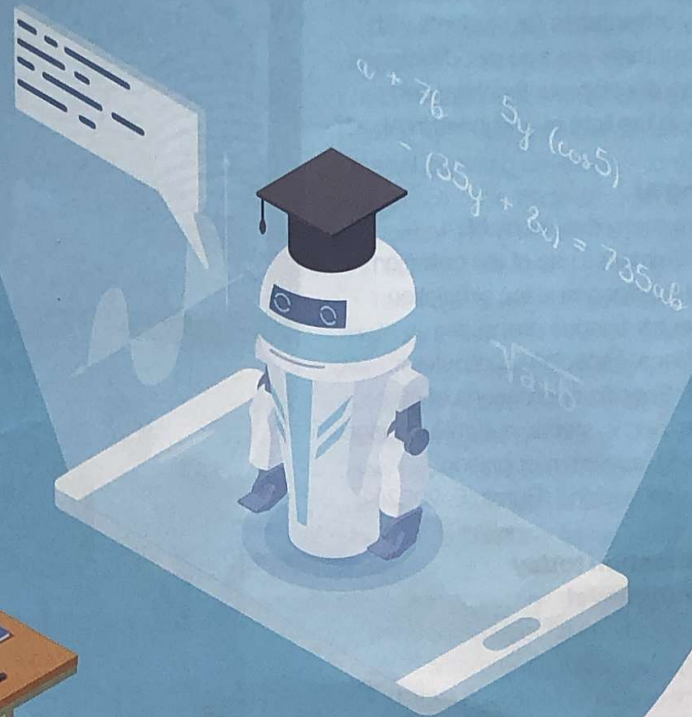


# Artificial intelligence: its power and disruption



## The implications for us as teachers

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## Technology has a history of being fast moving and full of surprises.

By the time you read this article it will be out of date. The speed of development in artificial intelligence (AI) is increasing logarithmically. If you are not a natural mathematician, this may not be easy to grasp in detail. However, you are familiar with it: decibels are measured logarithmically; the Richter Scale (RS) is logarithmic in base 10 so an earthquake RS 7 is 1000 times more powerful than an earthquake with a magnitude of RS 4. AI is merely following in the footsteps of many technical advances that have moved faster than expected and we are being urged to prepare for it.

During the development of the mobile phone in the early 1990s, new technology provided two voice channels for communication and a 'spare' channel.

It was suggested that rather than waste the channel, it could be used to send text-to-text messages between phones and networks. No one assumed it would be used, yet it took off, despite the clumsy nine keys of a mobile phone of the time. By 1997, Nokia had released the first mobile phone with the Qwerty keyboard. Texting was here to stay and the world now sends 23 billion text

messages every day. The first iPhone was released in 2007 and in the interim 16 years, smartphones have become the devices that we cannot live without; as teachers, parents, and students we are all aware of the advantages and disadvantages that the smartphone has in our lives. Education must embrace AI: it is not like the hardware of a smartphone; it is invisible and ubiquitous.



One cannot simply ban it from the classroom to remove its undesirable effects. I wanted to write this article to raise awareness and generate discussions within our profession of AI currently impacting education, being used by our students and perhaps less so within the classroom and to look forward. In my opinion, there can and will be many advantages for students with SpLDs but there are also disadvantages unless we develop our teaching and learning, in the light of advances in AI.

### Defining AI

There are many definitions of AI. This article makes use of the definition: "Artificial intelligence is the simulation of human intelligence processes by machines, especially computer systems. Specific applications of AI include expert systems, natural language processing, speech recognition and machine vision." (Burns, E. 2022.)

### AI in education today at the microlevel

Many applications have AI embedded, including Alexa, Siri, Grammarly, the Editor button in Microsoft Word, Google Classrooms, Duolingo and speech-to-text online text software. This article will focus on two areas of the curriculum where there is some considerable impact from AI already: maths and English. To begin with there has been an explosion in the use of online maths programmes – particularly to set homework, mark, and monitor students' progress from years 7 to 11. These programmes have undoubted advantages for teacher and student. Marking is replaced with monitoring, which targets support and saves time. Programmes can personalise learning, a goal that as specialist teachers we have long advocated, to increase differentiation for our students. Embedded AI can monitor student responses and time spent when logged in and can repeat areas and topics that the student has found challenging. These techniques support overlearning so that students receive a cumulative experience.

Are you aware of apps such as 'Snapmath'? Many of our students are.



The app takes a screenshot of your question; handwritten or from the computer screen, it takes a few seconds, and provides you with a worked solution, (see later panel, GCSE level 3 and 9).

I tutor online and I was introduced to such apps by students. The examples of questions I have shared here have written solutions. I have some students with well-developed intrapersonal skills who may look at the solution, learn from it, and use it as a model to work out the next question independently, until they understand and have embedded the skill in their long-term

memory. However, I have other students who will look at the answer, look at the multiple-choice solutions provided on screen in their maths programme and click. Hey presto A1, 100% correct. Move me on! Unfortunately, within a short space of time, the online programme has 'personalised' their experience beyond their knowledge and skills. You might think, "Goodness me, don't let them find out about these apps" and then you remind yourself that teenagers are smartphone experts and additionally, they are very collegiate and share their discoveries quickly.



$g$  is inversely proportional to the cube of  $h$ .  
Given that  $g = 47.5$  when  $h = 4$ , find the value of  $g$  when  $h = 2$ .  $g =$

To solve this problem, we can use the formula for inverse variation:

$$g = \frac{k}{h^3}$$

where  $k$  is the constant of variation.

We are given that  $g = 47.5$  when  $h = 4$ . Plugging these values into the formula, we can solve for  $k$ :

$$47.5 = \frac{k}{4^3}$$

$$47.5 = \frac{k}{64}$$

Multiplying both sides of the equation by 64, we get:

$$k = 47.5 \times 64 = 3040$$

Now we can use this value of  $k$  to find  $g$  when  $h = 2$ :

$$g = \frac{3040}{2^3}$$

$$g = \frac{3040}{8}$$

On the other hand, research by the University of Cambridge, (Brown, E., Culora, A, and Europe, R., 2021) looked at the relationship between the online platform Sparx Maths and maths outcomes and conclusions were largely positive. The authors note however that whilst the programme does not 'exacerbate any existing gaps for lower pre-attainment students, it is also not able, on its own, to close these gaps.' They emphasise that it is 'usage'

that is important. Therefore, in embracing AI we need to be looking at how our students use the programmes we give them to practise independently. We need to blend their use within class activities and evaluation. If there is no evidence of closing the gap for our lower-attainment students, this has implications for its curriculum usage.

I would advocate that language model-based chatbots can also be helpful but this is also dependent on usage. ChatGPT, AI software developed by OpenAI (allowing developers to access the source code to develop their own products), can generate natural language and can be convincingly human.

This software passed the Turing Test, originally called the Imitation Game, by Alan Turing, the famous mathematician, in 1950. In a recent experiment, I typed into chatGPT the question, 'How powerful is Lady Macbeth?' I asked for 600 words and in less than one minute I had the essay below.

Simplify the expression:

$$p^2 + 2pq + 4qp - p^2$$

To simplify the expression, we can combine like terms. Notice that the terms  $2pq$  and  $4qp$  are like terms because they both have the variables  $p$  and  $q$  raised to the first power. Therefore, we can combine them to get  $2pq + 4qp = 6pq$ .

Now, let's simplify the expression further:

$$\begin{aligned} p^2 + 2pq + 4qp - p^2 &= 6pq - p^2 + p^2 \\ &= 6pq. \end{aligned}$$

Therefore, the simplified expression is  $6pq$ .

Embedded AI can monitor student responses and time spent when logged in and can repeat areas and topics that the student has found challenging.

## Case study

Lady Macbeth is one of the most intriguing and complex characters in literature, known for her ambition and her unwavering determination to help her husband achieve his goals. She is an enigmatic figure who is often the subject of much debate among scholars, with some viewing her as a powerful and ruthless woman, while others see her as a tragic figure who ultimately succumbs to guilt and madness.

At the start of the play, Lady Macbeth is presented as a strong and determined woman, who is willing to do whatever it takes to help her husband seize the crown. She is clearly the driving force behind the couple's plot to murder King Duncan, and she shows little hesitation or remorse as she urges Macbeth to follow through with their plan.

Lady Macbeth's ambition and her desire for power are evident from the very beginning, and it is clear that she is a woman who will stop at nothing to achieve her goals.

As the play progresses, Lady Macbeth's power and influence over her husband become even more apparent.

She is the one who spurs Macbeth on when he begins to falter, and she is the one who devises the plan to frame the guards for Duncan's murder. Lady Macbeth's strength and determination are critical to the success of the couple's plot, and without her, it is unlikely that Macbeth would have ever become king.

However, Lady Macbeth's power is not without its limitations. Despite her ambition and her cunning, she is ultimately unable to control the guilt and the madness that consume her husband. As Macbeth becomes more and more unhinged, Lady Macbeth is powerless to stop him, and she begins to spiral into her own descent into madness. Her guilt over her role in Duncan's murder consumes her, and she is plagued by nightmares and hallucinations that eventually drive her to suicide.

In many ways, Lady Macbeth's power is a double-edged sword. While her ambition and determination are impressive, they ultimately lead to her downfall. Her desire for power blinds her to the consequences of her actions, and she is unable to see the toll that her schemes are taking on both herself and her husband. In the end, Lady Macbeth is a tragic figure, a woman who is destroyed by her own ambition and her inability to control the consequences of her actions.

Despite her ultimate demise, Lady Macbeth remains one of the most powerful and compelling characters in literature. Her unwavering determination, her cunning, and her ambition are all traits that have made her a favorite among readers and scholars alike. While her power may have ultimately been her undoing, there is no denying that Lady Macbeth is a force to be reckoned with, a woman who is not afraid to take control and make her own destiny.





## AI in education tomorrow

On 14th June this year Gillian Keegan, the Secretary of State for Education, launched a call for evidence, seeking the opinions of education and technology experts in 'Using artificial intelligence to transform education in a positive way'. It appears to focus on AI as it is now and not on a yet unimagined or curricular level. We could be teaching, from year 8, lower attainment language students how to access peer-to-peer translation of hundreds of languages, using programmes such as Meta's newly launched SeamlessM4T (Edwards, B. 2023). The Department for Education consultation summary has yet to be published, but it is encouraging to see the education sector placed at the forefront of change. Very recently on 4th July this year, the Russell Group of universities published five principles aimed at ensuring students and educators have 'AI literacy' and that both the opportunities and risks are managed, and these are worth looking at.

The use of AI is not just an ethical dilemma, it is a challenge to us all and one that must be embraced.

If you teach English literature, you will immediately see the flaws. However, if you are a student who struggles with 'how to get started' or with writing organisation and are overwhelmed by the task of essay writing, then the lead sentences of each paragraph would be very helpful to you. Whilst ChatGPT challenges us and may ultimately change the manner of assessment, to ensure authenticity of a student's work within education, it offers some support to students who lack confidence, and the organisational skills required for essay writing. The knee-jerk reaction of announcing that it will be fine if we keep all exams handwritten is not helpful to our students as they navigate this next industrial revolution. Their future career choices will be impacted by AI and the way that AI becomes integrated into education must be at the forefront. Our current secondary school model of classroom layout has not developed greatly since the Victorian era and so we need to begin to use our human skills as good teachers to integrate AI.

Future career choices will be impacted by AI and the way that AI becomes integrated into education must be at the forefront.

As teachers we are innovative and can find many ways of, for example, using such generated essays within the classroom to develop students' critical thinking skills, knowledge, and readiness for the working world they are about to enter.

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