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Artificial Intelligence (AI) in primary history – take CARE!

Simon Lea and Ailsa Fidler

Teaching has embraced many revolutionary changes before: the photocopier, the calculator, the internet, even the smartboard! The Assistant Director-General of UNESCO (2023) though feels that these could pale into insignificance when compared to the rise of AI. This article looks at ways in which Generative AI might be used by primary history teachers effectively to address misconceptions, offering the CARE framework to support them in doing so safely.

Potential benefits of AI

Su and Yang (2023) argue that the potential benefits of AI could include individualised learning, improved learning outcomes and better efficiency. The DfE (2023) also argue that AI may allow teachers time to deliver 'excellent teaching'. ChatGPT analysis found that those that have used it are overwhelmingly positive about its potential impact (Impact Research, 2023).

Existing models can help develop letters home, lesson plans, suggest resources, pedagogies, create quizzes, adapt teaching, tailor interventions, create images, PowerPoints and even engage in discourse with teachers and children as an interactive tutor. Dan Fitzpatrick's website is a useful starting point – it includes a list of various classroom AI tools https://aieducator.tools/

Will Bailey-Watson's (2023) useful blog outlines some ways in which ChatGPT can save time. For example, one student teacher asked ChatGPT to design causation cards, something easily transferred to primary, perhaps for the causes of the Great Fire of London of 1666. https://onebighistorydepartment.com/2023/12/06/using-artificial-intelligence-to-support-history-teaching/

ChatGPT and Microsoft Copilot

ChatGPT and Microsoft Copilot are examples of AI which come under the umbrella 'Large Language Models', (LLMs). Both interact with the user and assist in engaging in what feels like a conversation through a chat box. This sounds promising, but as Selwyn (2024) argues there could be serious consequences if the use of AI is not approached in a steady, and reasoned manner. Embracing possibilities needs to avoid the reckless pursuit of technological advancements and undesirable ethical consequences.

Selwyn (2024) reminds us that AI has no genuine understanding of the meaning of the output it produces. Nor is the information always correct; there have been examples of racism, unconscious bias and stereotyping. The systems are only as informative and reasoned as the data they are provided with. For example, Bailey-Watson's blog describes an AI story about the life of Sophia Duleep
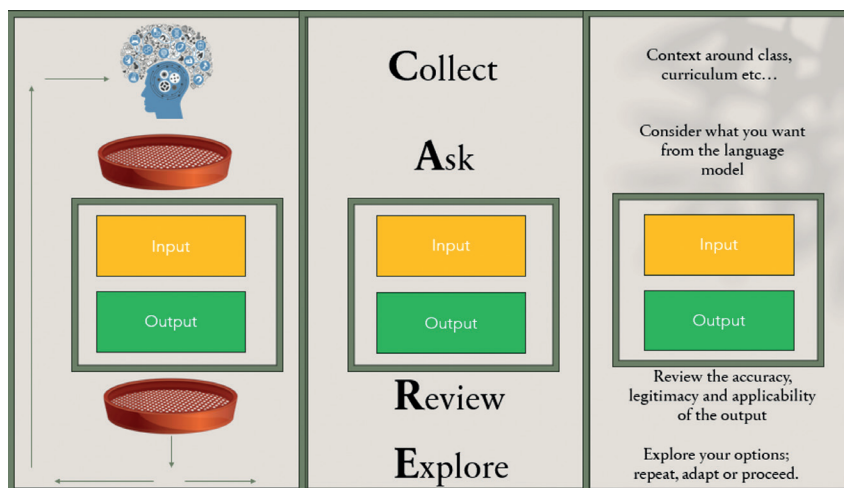
Singh that had a glaring error (she was never in Holloway prison). AI had fabricated this.

We asked Microsoft Copilot to design a picture showing the causes of the Great Fire of London. It included:

- water gushing from a hole in a chimney pot
- a man on a roof – perhaps trying to collect the water in his shiny metal (or plastic) bucket
- a running man with one arm and one leg
- trees with leaves and one that is dead
- some kind of pterodactyl

We then asked it to design the picture with anachronisms. It generated three, all of them included a giant cat in sunglasses. It shows the need for extreme caution.

The role of the teacher is **critical**. The user needs to prompt the system with clear statements, questions or commands. The careful crafting of these prompts is vital. As educators we must also be aware of GDPR, as the data we enter into any AI system could be stored, harvested and reused. Therefore, schools should consider carefully designing an 'AI safeguarding and ethics policy' to ensure that the personal information of the school and children is not entered into them.

A framework for using AI – CARE

The following is a suggested framework to support teachers using AI safely and effectively.

CARE has four steps:

Collect: Teachers gather the information required to input into the AI system, such as class context, curriculum information, assessment information and target audience. Avoid mentioning the school's name or specific children.

Ask: The user must be clear about what they want the AI to do with this information, such as specific learning or lesson requirements, contexts, timings, format, word count.

Review: The language model will quickly generate a response to the input. The teacher should carefully use their professional judgement to review the output, its relevance and applicability.

Explore: The teacher may well ask the AI to start again, re-evaluate its response, change certain elements, question its reliability, provide greater specificity or accept its recommendations.

Two 'sieves' at the **Ask** and **Review** stage emphasise the role of the teacher in carefully judging which information is accurate and relevant before and after the AI system has created its output. Not evaluating the results means failing to engage in critical thinking, creativity, and enquiry. Effective use of AI relies

heavily on teachers' ability to scrutinise, personalise and contextualise what the AI has produced.

How can it help my history teaching?

A key contribution might lie with assessment and misconceptions both addressed as significant, e.g. the HA survey (2022) and the subject report for history (Ofsted, 2023) which highlights the importance of identifying and addressing misconceptions in children's learning.

> **Assessment**
>
> Assessment in history was not fully developed in most of the primary schools visited. Commonly, teachers made broad judgements about pupils' progress, but did not identify or address specific gaps and misconceptions in their knowledge. In around half the secondary schools, teachers used assessment effectively to identify gaps and misconceptions in the most important knowledge they had intended pupils to learn. In the other half, this was not the case.

(Ofsted, 2023, no page number)

Lomas (2022) identified three interconnected ways in which misconceptions may co-exist:

1. Confused core knowledge, especially in relation to chronology – often associated with anachronism and historical vocabulary.
2. Poor conceptual understanding, especially with regard to second-order concepts.
3. An inadequate grasp of the historical process of enquiry – the perceptions that pupils have with regard to 'doing history'.

It can be difficult to consider the specific misconceptions children may have in the history we teach – what misconceptions might a Year 4 child have about trade in the Roman Empire? How can we check for misconceptions? AI may be useful to stimulate thinking and discussion about possible misconceptions and therefore can support with assessment.

Using CARE to identify potential misconceptions
Collect and ask

Firstly, collect relevant information to produce something useful, through a hypothetical class context. We decided to focus upon the concept of 'trade' within a sequence of learning about the impact of the Roman Empire on Britain in a Year 4 class. This class had previously considered the changes in Britain between the Stone Age and Iron Age and had also looked at ancient Egypt but had only briefly considered trade. They understand trade to be an exchange of goods or services but some children struggled with positioning the periods covered on a timeline.

We therefore decided on this initial statement:

> *What misconceptions might an 8-year-old child have about trade in the Roman Empire when they are learning about the impact of the Roman Empire on Britain? The children have already learned about changes in Britain between the Stone Age to Iron Age. Some children find positioning key events on a timeline difficult, particularly BCE. The children have learnt about the ancient Egyptians but only briefly considered trade. They understand trade to be an exchange of goods or services.*

We could have included National Curriculum references, or information from commercial schemes used. We have compiled an overview of the responses from each system, see table below.

ChatGPT also offered ways to address the misconceptions such as using timelines, storytelling and comparative activities.

ChatGPT	Microsoft Copilot
Trade was instantaneous	Trade was always facilitated by roads
Everyone could trade anything, anytime	Trade was always profitable for everyone involved
Trade was just about swapping goods	Trade was all about luxury goods
The Romans only traded with Britain	Trade was limited to Rome itself
Trade was always fair and peaceful	Trade was always peaceful and friendly
Trade was the same in the Stone Age and Iron Age	Trade was only about buying and selling goods
Romans invented trade	All Romans were involved in trade
Trade wasn't important	

Review

Is time saved? Holmes (2023) argues that time saved is merely replaced. Teachers must now invest their time in critical analysis of AI-generated outputs. The outputs from both models suggest some key themes and ideas but the teacher still needs to decide upon their relevance for their children and to ensure that they are appropriate and not entirely made up.

We began by copying and pasting both AI outputs into a document and organising them into themes. We then as teachers considered them for potential misconceptions. These stood out initially (from ChatGPT):

6. Trade was the same in the Stone Age and Iron Age

Misconception: Children might not understand how trade in the Roman Empire differed from earlier periods they have learned about, such as the Stone Age and Iron Age. **Clarification:** Compare the types of goods traded and the methods used. In the Stone Age and Iron Age, trade was more localised and involved basic items. The Romans, however, traded a wider variety of goods, including exotic items from distant lands, using more advanced transportation and infrastructure.

7. Romans invented trade

Misconception: Children might think that the concept of trade was invented by the Romans. **Clarification:** Explain that trade existed long before the Romans, but they expanded and organised it on a larger scale. Highlight how earlier civilisations, like the ancient Egyptians, also engaged in trade, but the Roman Empire's vast network made it more extensive and connected.

These potential misconceptions relate to the children's prior learning. If missed or misunderstood, then trade within the Roman period will be problematic. There are teaching points here for previous teaching and learning especially checking what children already know and understand about trade in ancient Egypt, or Britain in the Stone Age to Iron Age. Are there misconceptions to address? The AI may stimulate thinking about how progression is shown. Potential misconceptions about trade in other periods might also be explored and appropriate progression identified.

Both AI systems identified one misconception children may have, which is that 'trade is always fair and peaceful' stressing the potential conflicts and power dynamics involved. They also agreed that children may think that trade was limited to goods and services when it also included culture and language – an important aspect of progression.

The suggestions were potentially useful in supporting what needs emphasising in the classroom. We decided to use 'Explore' to develop what we may do with this.

Explore

This allows us to accept/refine/reject what has already been said. We focused on the point that trade was only about the exchange of goods. We put the output which the systems had initially returned to us, back into the system and then asked:

What questions can a teacher ask an 8-year-old child to check that they have understood that trade did not just relate to goods and services? Design an assessment activity for this.

It is important to note that ChatGPT referred to slaves initially – we changed this to enslaved people. It shows the need to challenge AI thinking.

Copilot struggled with this request: its suggestions were related to the present. It was then asked to make its response relevant to trade in Roman Britain and produce information about what to potentially teach. ChatGPT immediately produced questions to check for understanding:

1. What are some things people in the Roman Empire might have traded that were not everyday goods?
2. How do you think people learned about new cultures and ideas through trade?
3. Why do you think traders sometimes used bartering instead of money?
4. How could trading with different regions change a person's life even if they never travelled?
5. What kinds of services might people have traded instead of goods?
6. How did the movement of people across different regions help with trade?
7. Can you think of a way that learning a new language would help a trader?
8. What kinds of luxury items do you think were traded in the Roman Empire?
9. How do you think trade helped spread new ideas and inventions?
10. Why do you think communication was important for traders?

HA resources

Bailey-Watson, W. (2023) 'Using Artificial Intelligence to support history teaching' https://onebighistorydepartment.com/2023/12/06/using-artificial-intelligence-to-support-history-teaching/

Lomas, T. (2022) 'Addressing misconceptions in Primary History', *HA Primary Subject Leader Area.*

Assessment activity: Roman trade journey

Objective
To understand that trade in the Roman Empire was multifaceted and involved cultural exchange, communication, and the movement of people, not just the buying and selling of goods.

Materials
- Map of the Roman Empire with major trade routes marked
- Pictures of Roman goods (pottery, coins, jewelry, spices, silk, etc.)
- Role cards (e.g. trader, local merchant, artisan, Roman citizen, traveller)
- Scenario cards describing different trade interactions
- Reflection worksheets

Activity steps

1. Introduction
- Start with a brief discussion about what trade is and ask children to share what they already know.
- Explain that trade in the Roman Empire was more than just exchanging goods – it involved learning new things, meeting new people, and sharing ideas.

2. Role assignment
- Divide the children into small groups and assign each group a role from the role cards.
- Each group gets a set of pictures showing different Roman goods.

3. Scenario cards
- Give each group a scenario card. Each scenario describes a trade interaction highlighting not just the exchange of foods but also cultural exchange, communication or movement of people.
- Examples of scenarios
  - A trader from Rome travels to Egypt to trade olive oil for spices and learns new cooking recipes.
  - A local merchant in Gaul trades wine for Roman coins and learns some Latin phrases.
  - An artisan in Britain sells pottery to a Roman soldier and hears stories about life in Rome.
  - A Roman citizen buys silk from a trader from China and learns about the Silk Road.
  - A traveller uses the Roman roads to visit different regions and sees new types of architecture and art.

4. Group discussion
- Each group discusses their scenario and prepares to share with the class.
- They should identify the goods traded and any cultural or informational exchange that happened.

5. Presentation
- Each group presents their scenario to the class, highlighting the trade goods and the additional exchanges (culture, knowledge, movement).
- Encourage other groups to ask questions to further explore the trade interactions.

6. Reflection worksheet
- Provide each child with a reflection worksheet with the following prompts:
  - Describe what was traded in your scenario.
  - What new things did the people in your scenario learn from each other?
  - How did the movement of people help with trade?
  - Why was communication important for trade in the Roman Empire?

7. Class discussion
- After all presentations, have a class discussion about what they learned.
- Ask questions like:
  - What new things did you learn about Roman trade?
  - How did trade help people learn about each other?
  - Why do you think it was important for the Romans to trade with other regions?

Conclusion
This assessment activity helps children understand the complexity of Roman trade, emphasising cultural exchange, communication and the movement of people. By engaging in role play, group discussions and reflection, children can grasp how trade influenced various aspects of life in the Roman Empire and went beyond just buying and selling goods.

These could be really useful especially for non-subject specialists. It then went on to outline a whole class assessment activity/lesson:

The next steps with this could be:

- Check the information given.
- Ask AI for the answers to the questions (and check its response).
- Ask the AI system(s) to produce character cards.
- Ask AI to generate the reflective worksheet (adapting it for different learners).

Simply repeating the same prompt or adjusting a few words can alter the output given. We can also ask the AI system to critique, evaluate and improve upon its original output, which can also result in a different outcome.

Conclusion

AI systems can be useful in stimulating thinking and discussion about potential misconceptions in primary history. They may be helpful in developing thinking about what progression may look like in class and across a curriculum. It may also offer interesting assessment activities.

However, AI systems come with issues, which in our exploration included:

- Terminology (slave*).
- Hallucinations (including giant cats).
- Lack of 'understanding' when completing commands.

  https://undergroundrailroadhistory.org/the-vocabulary-of-freedom/

Both systems had their strengths and challenges. ChatGPT appeared more able to produce age-appropriate and relevant teaching ideas. However, it did not cite sources and it does not produce images. Microsoft Copilot: seemed confused by some input and ignored elements of others. However, it did cite its sources and also produces images (though caution is advised!).

Overall, we would suggest using:

- CARE.
- your professional eye throughout – **question everything**.
- ChatGPT alongside Microsoft Copilot (or other AI systems).

Finally, be climate aware, there is evidence that AI systems are 'power hungry'. This is worth keeping an eye on. www.forbes.com/sites/petercohan/2023/11/09/equinix-and-vertiv-stock-prices-could-rise-on-generative-ais-energy-use/?sh=914ac6066853

The benefits of AI extend beyond the individual disciplines and open doors to its widespread use across the curriculum. Reducing workload, making teachers' time more efficient, prompting ideas, engaging teachers in different approaches and supporting teachers with subject and pedagogical knowledge: these are recognised as some of the possible benefits in teachers engaging with AI. Recognising the limitations also means that teachers' professional judgement becomes more critical than ever before. There is the potential for more personalised lessons and help for teachers to build their capacity to make important decisions. The intentional use of AI within the classroom has the potential to become a welcome tool within the primary teachers' repertoire – but take CARE!

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Further reading

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Holmes, W. (2023) 'The unintended consequences of artificial intelligence and education' in *Education International Research* www.ei-ie.org/en/item/28115:the-unintended-consequences-of-artificial-intelligence-and-education

Impact Research (2023) 'Teachers and students embrace ChatGPT for education', *Walton Family Foundation*, https://8ce82b94a8c4fdc3ea6d-b1d233e3bc3cb10858bea65ff05e18f2.ssl.cf2.rackcdn.com/ae/84/133976234126a2ad139411c1e770/impact-research-teachers-and-students-tech-poll-summary-memo.pdf

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