Developing Computing Teacher Guidance on GenAI

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Background

Generative AI (GenAI) is becoming more widely available for use in schools by teachers, students, and academics. While many educators appreciate the potential benefits of GenAI for enhancing learning, there are also significant concerns about authorship, authenticity, plagiarism, ethics, biases, and the broader implications of their use in education. A number of organisations, including the Department for Education in England, are starting to issue guidance on generative AI in schools, including LLMs [2]. Additionally, researchers have been starting to report on the use of generative AI in computing education at the university level (e.g. [5]) and at the school level (e.g. [1]). However, given the rapid pace of technological change and the ease with which young people adopt new tools, teachers need guidance on how best to use generative AI in education.

Developing a working group

All over the world, schools are trying to explore how generative AI can be used in the best interests of learners and teachers, while the constant announcement of new tools and applications makes it incredibly difficult to keep up. Computing teachers are at the sharp edge of these developments as they seek to keep pupils educated in new aspects of technology, where they have a responsibility for internet safety, and where they may be seen by their schools as resident experts.

Conscious of the needs of computing teachers, including all those who may not necessarily consider themselves specialists, a small working group of interested teachers and researchers worked together to develop guidance relating to the area of generative AI and its use in the teaching and learning of computing in schools.

Method

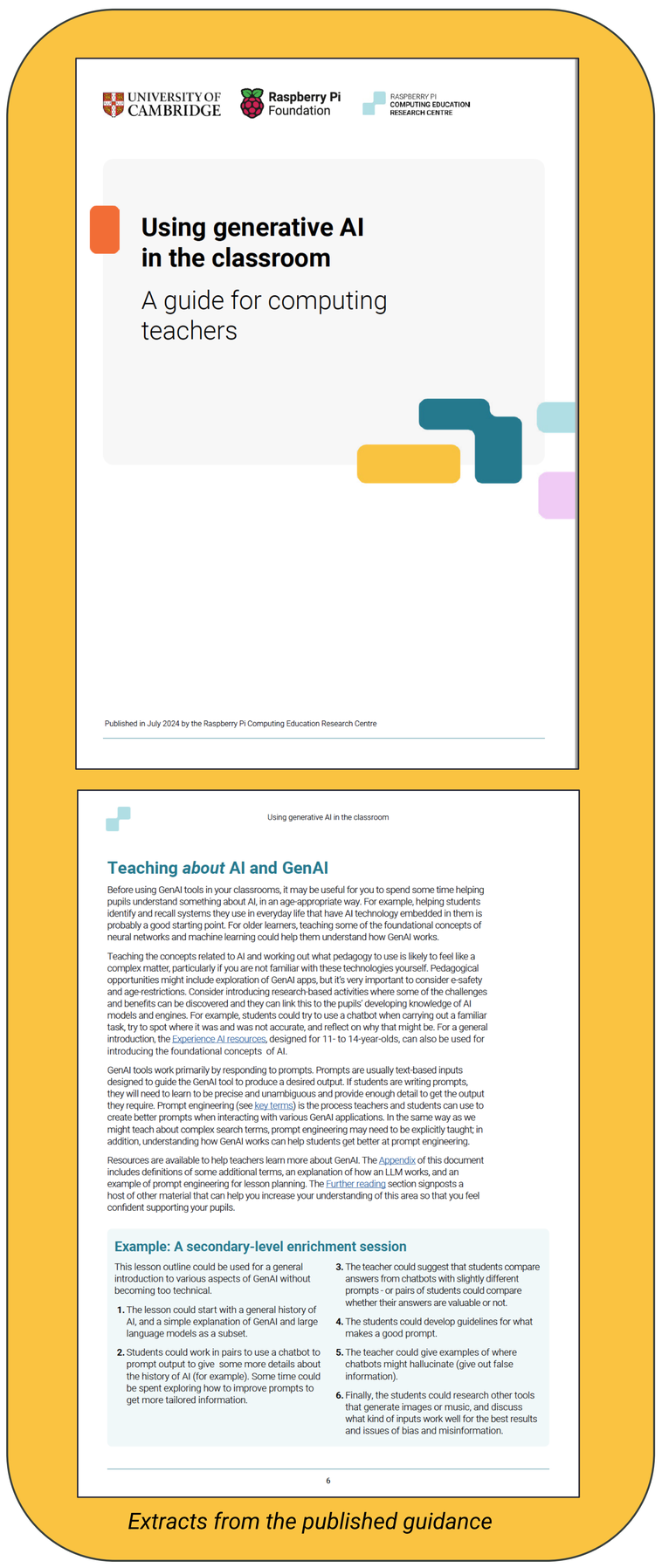
Participatory research and design [4] was used to develop guidance for computing teachers (primary and secondary), underpinned by a number of questions specifically pertinent to computing teachers:

- How can GenAI benefit school education, and what impact will they have on pedagogy, curriculum, and assessment?
- How can we ensure that young people understand the affordances of AI and the associated concepts and skills?
- How can computing teachers support their schools as they grapple with these issues?

Developing the guidance

The working group consisted of eight computing teachers (two primary and six secondary) alongside a small number of other academics and researchers, meeting three times between December 2023 and March 2024. Working group discussions were recorded and transcribed, with emerging themes identified that underpinned the resultant guidance. The guidance was developed using an iterative process to ensure that all working group views and perspectives were reflected. In this way, the intent was to develop guidance 'by teachers for teachers'.

The guidance includes examples of the ways in which teachers might use generative AI in the classroom, specifically for computing, and some background definitions and tips that teachers might find useful. The guidance document was published online in July 2024.



Extracts from the published guidance

Themes identified

Students and teachers need to understand how GenAI works

"… introducing the foundations of what it [AI/LLM] is … and giving the basics … should support secondary students so they have that little bit of understanding, that building block."

GenAI can be used to teach computing more effectively

"… can be used to create narratives that involve coding adventures or scenarios- connecting coding and storytelling."

GenAI can be used to teach any subject more effectively

"… this is an opportunity to teach students to be more critical of computer output and to think and to reflect on it."

GenAI can be used by teachers for productivity and to reduce workload

"Use LLMs to complement lesson planning about a subject that you are confident about - for example, generating examples and similar questions."

Action is needed at the school level to support professional development, revised policies and guidance for teachers on the use of GenAI

"I'm less concerned about it failing and about people's using it for assessment … I think that for me it's more the GDPR issues and the age restrictions associated with certain models over others.

Conclusion

As recent research indicates that teachers may become more comfortable with using GenAI the more they use it [3], we hope this project will support teachers' engagement and familiarity with this important technological advancement. Further work will investigate how the guidance is utilised in practice.

Acknowledgements

We would like to thank all members of the working group for their participation and enthusiasm.

References

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