

Exploring Computing Teachers' Readiness to Teach AI in Secondary Schools

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Abstract

Artificial intelligence (AI) is significantly impacting how we live, and the increased capabilities of generative AI applications have positioned AI firmly in the public domain. There is a growing interest in what AI might look like as a subject within the K-12 curriculum, whilst research on teachers' readiness for teaching AI is as yet limited. This paper describes a qualitative study investigating teachers' readiness to teach AI in secondary education. The interview study involved eight computing teachers with varying teaching experiences. We used reflexive thematic analysis for themes development. Findings suggest several indicators of teachers' readiness, including attitudes, prior AI experience, professional development, and access to quality resources. This paper contributes to ongoing debates about how to best support teachers to be ready to teach AI effectively at the school level.

CCS Concepts

• **Social and professional topics** → **K-12 education**.

Keywords

artificial intelligence, computing education, K-12 education, teacher readiness

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1 Introduction and Background

The compelling capabilities of modern AI technologies, especially those based on large language models such as ChatGPT cannot be overlooked. While researchers and educators around the world are developing resources for the teaching and learning of AI in K-12 settings, there has not yet been a consensual agreement about when to introduce students to AI concepts, which aspects of AI are to be taught across the levels in K-12 and how teachers are to teach AI concepts equitably. Existing research shows that computing teachers in the UK are intrinsically motivated to teach AI in schools [1]; however, little is known about their readiness. Researchers in other parts of the world have explored teachers' readiness to teach

AI in schools, finding that AI relevance strongly predicts teachers' readiness to teach AI [2] and that some teachers do not have a firm grasp of technological, pedagogical, content knowledge (TPACK) [4] to effectively teach about AI. In this study we explore computing teachers' readiness to teach AI in schools by asking the question: How do teachers describe their readiness to teach AI concepts at the K-12 level?

2 Methods

A qualitative interview study was conducted in 2023 with eight (8) secondary school computing teachers in England. The primary data for this study were collected via 30-45 minute semi-structured interviews on Microsoft Teams. We followed Braun and Clarke's six phases of doing reflexive thematic analyses [3].

3 Results and Conclusion

Four (4) themes were developed during our analysis: a) Teachers' enthusiasm for AI education, b) Responsibility for resource development, and with whom it lies, c) The content of the AI curriculum and d) The need for AI to encompass a multidisciplinary approach.

The results of this study show that most teachers within our sample are not adequately ready to teach AI in schools due to insufficient professional development programs targeted at building their knowledge of AI and their confidence to teach in schools. Despite their enthusiasm about teaching AI in schools, they stressed the vital role teaching and learning resources play in the effective teaching of new concepts. They advised that authoritative bodies, such as government, oversee the resource development process to ensure the development of quality teaching resources to support computing teachers. This study contributes to work on teachers' voice and perspectives relating to AI education in schools.

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