

Artificial intelligence in education: The three paradigms

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With the development of computing and information processing techniques, artificial intelligence (AI) has been extensively applied in education. Artificial intelligence in education (AIEd) opens new opportunities, potentials, and challenges in educational practices. In its short history, AIEd has been undergoing several paradigmatic shifts, which are characterized into three paradigms in this position paper: AI-directed, learner-as-recipient, AI-supported, learner-as-collaborator, and AI-empowered, learner-as-leader. In three paradigms, AI techniques are used to address educational and learning issues in varied ways. AI is used to represent knowledge models and direct cognitive learning while learners are recipients of AI service in Paradigm One; AI is used to support learning while learners work as collaborators with AI in Paradigm Two; AI is used to empower learning while learners take agency to learn in Paradigm Three. Overall, the development trend of AIEd has been developing to empower learner agency and personalization, enable learners to reflect on learning and inform AI systems to adapt accordingly, and lead to an iterative development of the learner-centered, data-driven, personalized learning.

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