

Empowering Future Teachers with Generative AI Education: Understanding Applications, Risks, and Limits



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MICHIGAN STATE

U N I V E R S I T Y

Exploring Pre-Service Teachers' Perspectives on Generative AI in Education

As generative AI reshapes the landscape of teaching and learning, preparing future educators to navigate its opportunities and limitations has become essential. Yet, there's still much to uncover about how pre-service teachers—those in training—view and engage with AI in educational settings. Our recent study, conducted with teacher education students at a Midwestern U.S. university, sheds light on these emerging perspectives. Through surveys, interviews, and design challenges, we explored pre-service teachers' attitudes toward generative AI. Here's what we found:

- A. **Positive Outlook on AI's Potential:** Many future teachers see generative AI as a powerful tool for enhancing lesson planning, creating resources, and managing workloads. This enthusiasm suggested a readiness to integrate AI thoughtfully in the classroom.
- B. **Lack of Practical AI Instruction.** Our study reveals a significant gap in AI training for pre-service teachers, many of whom feel underprepared to navigate the challenges and opportunities generative AI presents in today's classrooms. Pre-service teachers expressed frustration over the vague instruction related to AI in their teacher education courses.
- C. **Concerns About Over-Reliance:** Despite their optimism, pre-service teachers worry that excessive reliance on AI could undermine crucial teacher-student interactions. And suggested that striking the right balance would be key.
- D. **Critical Engagement with AI:** When tasked with redesigning lessons using ChatGPT, these teachers-in-training showed a keen ability to both leverage AI creatively and critique its limitations. This critical engagement is a promising step toward fostering responsible AI use in education. While there was enthusiasm for using ChatGPT for lesson re-design, pre-service teachers felt that ChatGPT's outputs lacked the nuanced understanding that only a teacher's domain-specific knowledge provides.

As we prepare the next generation of teachers, understanding these early insights is invaluable. By fostering a balanced and critical AI literacy, we can empower educators to harness AI's strengths while safeguarding the human connections at the heart of teaching.