

Principles for AI Education for Elementary Grades Students

Anne Ottenbreit-Leftwich
aleftwic@iu.edu
Indiana University
Bloomington, IN, USA

Krista Glazewski
Indiana University
Bloomington, IN, USA

Minji Jeon
Indiana University
Bloomington, IN, USA

Katie Jantaraweragul
Indiana University
Bloomington, IN, USA

Cindy Hmelo-Silver
Indiana University
Bloomington, IN, USA

Adam Scribner
Indiana University
Bloomington, IN, USA

Seung Lee
North Carolina State University
Raleigh, NC, USA

Bradford Mott
North Carolina State University
Raleigh, NC, USA

James Lester
North Carolina State University
Raleigh, NC, USA

ABSTRACT

AI is beginning to transform every aspect of society. With dramatic and accelerating advances in AI, it has become clear that introducing K-12 students to AI is essential. To succeed as the workers, creators, and innovators of the future, students must be introduced to core concepts of AI as early as elementary school. However, building a curriculum that introduces AI content to K-12 students present significant challenges, such as connecting to prior knowledge, and developing curricula that are meaningful for students and possible for teachers to teach. To lay the groundwork for elementary AI education, we conducted a qualitative study into the design of AI curricular approaches with elementary teachers and students. Interviews with elementary teachers and students suggests four design principles for creating an effective elementary AI curriculum to promote uptake by teachers. This example will present the co-designed curriculum with teachers (PRIMARYAI) and describe how these four elements were incorporated into real-world problem-based learning scenarios.

CCS CONCEPTS

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

KEYWORDS

K-12 AI education, AI ethics, elementary education, teacher co-design

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1 PRINCIPLES FOR ELEMENTARY AI EDUCATION

We will share the students' perceptions and the teachers' design considerations for elementary AI education. Students' conceptions of AI tended to focus on programming and robotics, as well as demonstrated misconceptions around how AI is designed and implemented. Students described examples of AI that included robotic vacuums, Siri/Alexa, YouTube, and search engines. Finally, students also described different ethical implications of AI, focusing on both positive and negative aspects of AI that could help or harm people.

Results showed that teachers were generally surprised with the range of students' examples. They also described being impressed with the level of detail in the student examples. As teachers reviewed students' conceptions of AI, the teachers suggested that while students did not have clear understandings of how to define AI, they understood how deeply prevalent and relevant AI was to their lives and to society. Finally, with regards to AI ethics, teachers suggested it would be important to build on students' ideas about positive or negative impacts of AI, but also promote more specific nuanced discussions regarding ethical uses of AI.

The poster will review these design considerations and present examples from the PrimaryAI curriculum, showcasing how it aligns with the students' and teachers' perspectives.

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