AI Goes Rural enhances student and teacher experiences in rural Indiana

By Catherine Winkler | Tuesday, July 11, 2023

A week-long day camp over the summer taught middle-school students all about artificial intelligence - and helped IU School of Education faculty continue their mission to introduce AI in rural communities.

Two students work together during AI For Good Summer Camp.

The camp is part of a three-year project, AI Goes Rural, funded by the National Defense Education Program. The project aims to develop curricula about AI in collaboration with middle school STEM teachers, emphasize the importance of visualization and representation with computers and how they perceive data and provide opportunities for students to apply AI concepts to real-world applications and consider the ethical implications of AI.

"Early exposure to AI education has the potential to transform students' interests, shape their course selections, and even steer their career paths. However, regrettably, not all students are granted equal learning opportunities," said Kyungbin Kwon, the principal investigator for the project. "One of the primary challenges faced by students in rural areas is their limited access to quality education. The scarcity of resources, such as AI curricula embedded in various subjects and advanced learning tools, puts these students at a disadvantage.

Moreover, the absence of knowledgeable teachers with expertise in AI further compounds the problem. To address these disparities head-on, the project focuses on enhancing both student and teacher experiences in rural Indiana."

Left: Kyungbin Kwon works with a student during AI For Good Summer Camp in June; top right: AI For Good Summer Camp group photo; bottom right: Triton Central High School teacher Sara Roberts helps two students with an activity

Part of the project included AI For Good, a summer camp in June, where students successfully acquired fundamental AI concepts and showcased their ingenuity by crafting a practical solution as a culminating project. Throughout the program, participants delved into the concepts of machine learning, natural language processing (NLP) and computer vision. The research team thoughtfully selected cutting-edge AI learning tools and devised engaging activities, including developing AI models adept at comprehending emergency voice messages generated by the students. Kwon explained this practical application not only reinforced their understanding of AI but also showcased the potential for integrating AI into their everyday lives. Ultimately, the students showcased their proficiency by designing a

smart home and identifying specific AI functions that effectively addressed various household challenges, including energy conservation, maintaining optimal living conditions and ensuring security against intruders.

"This project recognizes the vital role that teachers play in fostering a conducive learning environment. Therefore, it aims to empower educators in rural areas with the necessary skills and resources to effectively teach AI concepts. Professional development programs, co-design experiences, and mentorship opportunities are designed to equip teachers with the expertise needed to deliver high-quality AI education," Kwon added. "To accomplish these objectives, a team of experts from diverse fields is actively engaged. This team comprises an NSWC Crane K-12 STEM Coordinator, faculty members from the School of Education and Computer Science, as well as exceptional graduate students."

The project has positively impacted classrooms around the state. Sara Roberts, a science and computer science teacher as well as a robotics coach at Triton Central High School in Shelby County, Indiana, was introduced to AI Goes Rural two years ago. Since then, she's been involved because computer science education is one of her passions.

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"I think it is essential for students to not just be users of artificial intelligence but also creators and understanders of what artificial intelligence is and how it impacts their daily lives," Roberts said. "When Dr. Leftwich presented this program, I was immediately drawn to the idea of creating relevant connections between artificial intelligence and rural communities."

"As educators, one of our most important jobs is to open up career pathways to our students. Learning what AI is and how it works on a deeper level has allowed me to integrate AI into my science classroom. We have developed an understanding of how artificial intelligence impacts the careers in our community from agriculture to manufacturing to medicine," she added. "Working with the graduate students, professors, and other educators throughout this experience has positively impacted my experience as an educator. I'm proud of the work that we have done to not only integrate artificial intelligence in the classroom, but also create meaningful learning experiences for students to take into their future studies and careers."

Besides gaining skills working with AI, Kwon hopes students and teachers who participated in the camp open their eyes to the potential of AI technologies and develop a positive attitude towards them.

"By understanding the capabilities and applications of AI, they can become informed and responsible users of these technologies," he said. "I hope the participating teachers will become mentors to their colleagues in their local schools. By sharing their knowledge and experiences, they can extend the impact of the project beyond the camp and inspire other teachers to incorporate AI education into their own classrooms. This ripple effect can lead to a broader integration of AI education in the local schools and enhance the learning opportunities for all students."

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