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Abstract. This study explores the integration of artificial intelligence (AI) into interdisciplinary education through a project-based learning model centered on the Dunhuang murals. Bridging art history, computer science, and engineering, the project involved 28 students in collaborative tasks such as digital restoration, neural style transfer, and metadata visualization. Results indicate significant improvement in students' technical competencies, cultural understanding, and ethical awareness. By embedding AI tools in culturally meaningful contexts, the initiative fostered deep engagement and critical reflection on issues such as historical authenticity, authorship, and cultural appropriation. The modular framework proposed in this research demonstrates strong potential for adaptation in STEAM education, emphasizing the importance of combining technical innovation with responsible cultural inquiry. Informed by the increasing relevance of technology in the arts, this research draws on the historical and cultural significance of the Dunhuang fresco to propose new educational paradigms. It further investigates AI-driven methodologies—such as generative adversarial networks and visual analytics—can offer students immersive access to fragile heritage materials while encouraging interdisciplinary collaboration and ethical reflection. The study provides empirical evidence supporting the development of scalable educational models and contributes to the broader discourse on the responsible use of AI in cultural heritage education.

Keywords: Artificial Intelligence, Interactive Learning, Dunhuang Murals