

## ***Bridging the AI Gap: Micro-videos for Transforming Faculty Teaching***

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### **Abstract**

This work-in-progress study presents an innovative approach to faculty AI literacy through targeted micro-learning videos. The initiative addresses the growing need for practical AI training in higher education through a library of 110 two-minute videos designed to make AI integration accessible and manageable. Recent data shows that while 65% of students believe AI training should be integrated into coursework and 62% of employers value AI knowledge, only 40% of faculty are familiar with AI tools. This project aims to bridge this gap through bite-sized, on-demand learning experiences. The study employs a mixed-methods approach to evaluate the effectiveness of micro-learning interventions in developing faculty AI literacy and implementation skills. Initial pilot feedback indicates reduced preparation time, enhanced personalization of learning experiences, and increased confidence in AI tool usage among faculty participants.

Keywords: Artificial Intelligence, Faculty Development, Micro-learning, Higher Education, Educational Technology

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## **Introduction**

The integration of artificial intelligence (AI) tools in higher education presents both opportunities and challenges for faculty development. AI's potential to transform teaching and learning is significant, yet its successful implementation hinges on faculty readiness and willingness to adopt these new technologies. Recent data from Inside Higher Education (2024) reveals a significant disconnect between stakeholder expectations and faculty readiness: while 65% of students believe AI training should be integrated into coursework and 62% of employers value AI knowledge in graduates, only 40% of faculty report familiarity with AI tools. More concerning, 42% of faculty currently prohibit AI use in their classrooms, highlighting an urgent need for accessible professional development solutions.

Several factors contribute to this hesitancy and lack of preparedness. Faculty members often face information overload, struggling to keep pace with the rapidly evolving landscape of AI tools and applications (Zawacki-Richter et al., 2019). Time constraints, technical knowledge gaps, infrastructure limitations, and cost considerations further exacerbate the challenges of AI integration in higher education. As noted by McNeill (2025), many faculty members express concerns about the ethical implications of AI, including issues of plagiarism, data privacy, and algorithmic bias.

To address these challenges, this study examines an innovative approach: targeted microlearning videos designed to make AI integration accessible and manageable for faculty across disciplines. The University of Alabama Teaching Academy developed an on-demand AI learning library that contains bite-sized courses to fit faculty's busy schedules. The goal is really AI literacy and how to use AI ethically and effectively in our courses. This initiative aims to provide faculty with the knowledge, skills, and confidence necessary to effectively leverage AI tools in their teaching practices, ultimately enhancing student learning outcomes and preparing graduates for the AI-driven workforce.

## **Literature Review**

Microlearning, defined as short, focused learning units, has gained traction as an effective strategy for professional development, particularly in rapidly changing fields like AI (Hug, 2007). The principles of microlearning align well with the needs of busy faculty members who require flexible and accessible learning opportunities. Microlearning, particularly within personalized learning environments, offers opportunities to adapt learning to individual needs, potentially enhancing knowledge retention, engagement, and application of new skills (Brusilovsky et al., 2018).

Recent research highlights the potential of AI in various aspects of higher education. For example, AI-powered writing assistants can provide draft feedback and suggestions to help students improve writing skills, especially in large classes. In art history, AI can be used to generate images and analyze art and historical context. In world languages, AI can be very valuable in translating language and assisting students in learning and communication. In a biology class, AI can power lab report analysis and streamline grading and feedback.

Psychology classes can use data analysis automation to enhance the processing and interpretation of research. Computer science can use code review automation to help identify and address issues in student assignments more efficiently. Furthermore, the ethical considerations surrounding AI in education have become a focal point of discussion.

Ensuring fairness, transparency, and accountability in AI applications is crucial to prevent bias and promote equitable learning opportunities for all students (Holmes et al., 2022).

## **Methodology**

This research employs a mixed methods design to examine the effectiveness of micro-learning interventions in developing faculty AI literacy and implementation skills. The intervention consists of 110 two-minute videos organized into seven distinct learning tracks covering foundational concepts, practical applications, and ethical considerations. Each video focuses on immediate, practical application while maintaining flexibility through 24/7 access and self-paced learning. The seven learning tracks are: AI History & Foundations, Basics of Using AI, Instructor Support, Classroom Activities, AI for Creating Assessments & Rubrics, AI for Grading & Feedback, and Teaching Students about AI. There's no set way to approach any of the learning tracks. You can skip around. You can start anywhere you like.

The study will recruit 100 faculty participants for a four-week intervention period, with data collection planned from February to August 2025. A subset of 20 participants will engage in focus group discussions to provide deeper insights into the intervention's impact. Data collection methods include pre/post surveys measuring knowledge, attitudes, and self-efficacy; platform usage analytics; focus group interviews; and a six-month follow-up assessment to evaluate long-term impact and sustainability.

The pre and post faculty surveys will include knowledge, attitude changes and improvements in self-efficacy. Platform usage will be analyzed to assess if the platform is effective in the focus group. In depth feedback and insights will be collected based on our survey results. The six-month follow-up assessment focuses on long-term impact and sustainability, implementation tracking, student learning outcomes, faculty adoption rates, and challenges encountered.

## **Implementation Strategy**

The project follows a phased implementation approach, launching with 40 initial videos in December 2024 before expanding to the complete library in early 2025. The video content emphasizes real-world classroom examples across various disciplines, from English composition to computer science. Each learning track addresses specific faculty needs, from basic AI literacy to advanced applications in assessment and feedback.

The intervention design acknowledges the diverse needs of faculty members through multiple entry points and flexible learning pathways. Videos incorporate practical demonstrations of AI applications in large enrollment courses, including automated grading assistance, discussion monitoring, and personalized feedback at scale.

This approach aims to address common faculty concerns while showcasing the potential benefits of AI integration. The automated grading assistance can free up instructor time and ensure consistency, discussion monitoring and moderation can deploy algorithms to monitor those online discussions and moderate the content, personalized feedback at scale provide tailored feedback to students addressing individual needs and supporting their learning, and group project management can use AI to facilitate collaboration, decide on tasks and track projects for group projects, track project progress for group projects.

## **Preliminary Findings**

Early feedback from faculty accessing the initial video content indicates several positive outcomes. Participants report reduced course preparation time, enhanced ability to create personalized learning experiences, and increased confidence in implementing AI tools. These preliminary results suggest the effectiveness of the micro-learning format in addressing faculty needs while accommodating busy schedules. Faculty who have reviewed initial videos have reported greater confidence in using AI tools and integrating tools in their professional and teaching practices.

## **Discussion and Future Directions**

While initial results are promising, several considerations emerge for future development. The rapidly evolving nature of AI technology necessitates regular content updates and expansions. Additionally, varying levels of faculty readiness and potential resistance to AI adoption require careful attention to change management and support structures.

The research will continue through 2025-2026 with ongoing assessment and iteration based on faculty feedback. Future development will focus on expanding resources to address emerging needs, evaluating long-term impact, and developing additional support mechanisms for faculty implementation. Specifically, future research should investigate the impact of micro-learning videos on student learning outcomes and explore the potential for scaling up the intervention to reach a wider audience of faculty members.

This project contributes to the growing body of knowledge on effective faculty development strategies for AI integration in higher education. By providing accessible, practical, and engaging learning experiences, this initiative aims to empower faculty members to embrace AI as a tool for enhancing teaching and learning in the 21st century.

## **Conclusion**

The AI Microlearning Video Initiative offers a promising approach to bridging the AI gap in higher education. By providing faculty with accessible and relevant training, this project has the potential to transform teaching practices and prepare students for the AI-driven workforce. The ongoing research and development efforts will continue to refine and expand the initiative, ensuring its long-term impact and sustainability.

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