Online Education and Innovation in Digital Learning

(Meeting the Moment)

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Executive Summary

AI-driven transformation: Generative AI personalizes learning, automates content and prompts new learning models but raises ethical and technical concerns.

Pedagogical challenge: Early research suggests over-reliance on AI can reduce learners' cognitive engagement; policies and assignments must maintain integrity and creativity.

Equity imperative: Usage divides across disciplines and demographics demand equitable access, literacy training and inclusive policies.

Strategic priority: Build an online ecosystem that is equitable, engaging and ethically aligned with the College's mission, supported by clear guidelines, redesigned courses, robust infrastructure and community practice.

[1] [2] [3] [4]

Who am I?

Interdisciplinary

- Physics BA
- Humanities PhD
- co-taught with GEOG, PLAN, ENG, PSYC, NCSI
- CHaT affiliate
- Empirical research on loneliness w/ BIOL, EVNE, Nursing

Tech-Nerd

- Network & Database Engineer
- Tech support
- Website construction
- Conference backend management
- Taught online since 2013
- Code for Fun

Leadership Experience

- Editor-in-Chief: PhilSci-Archive (like arXiv, SSRN)
- VP, President, & PP: *HOPOS*
- Head, Network Operations & Tech Support (~20 emp), *Graphnet*

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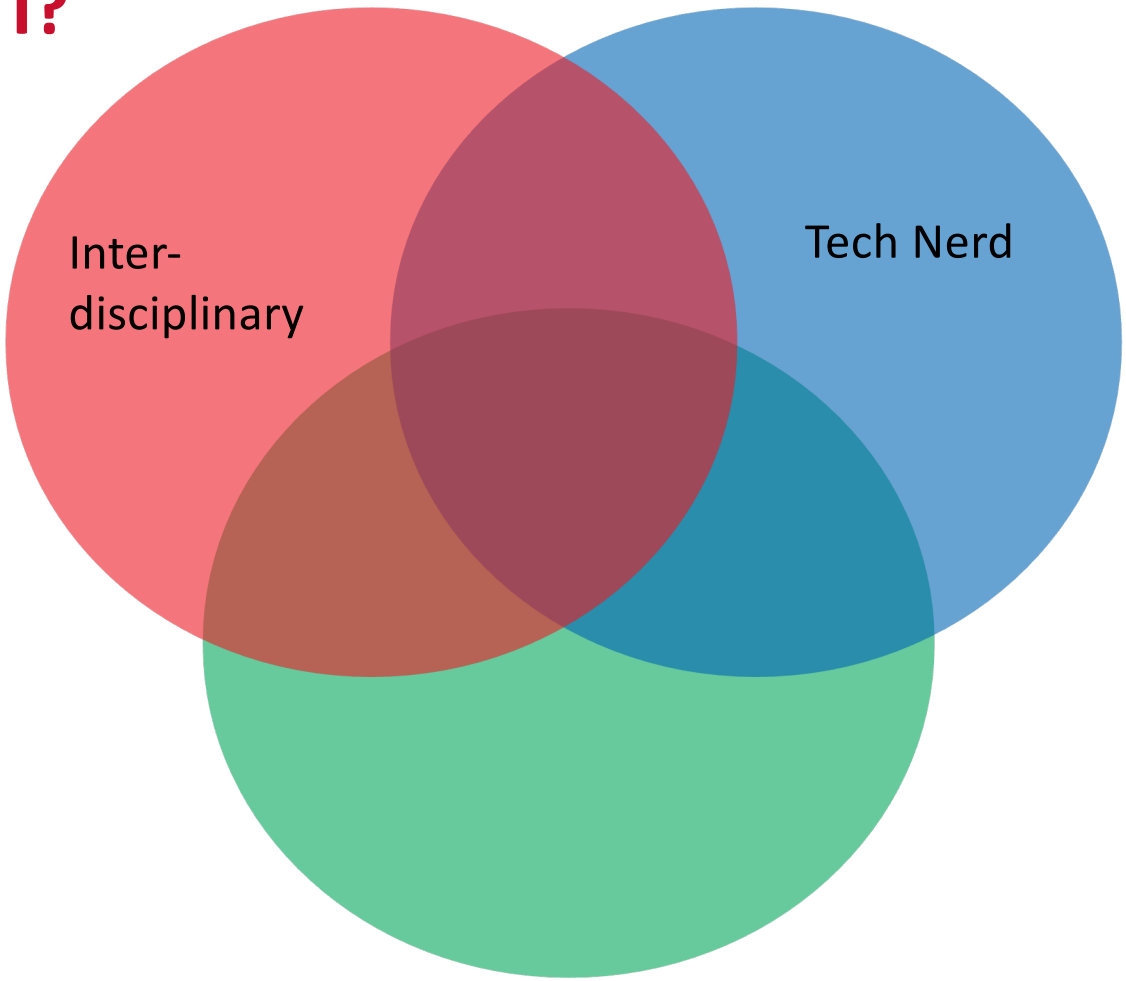
Who am I?



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Problem & Opportunity

A paradigm shift

The release of LLMs like ChatGPT (late 2022) accelerated AI research and adaptive tutoring systems, creating unprecedented opportunities to personalize learning.

Digital divides

Usage of generative AI is still uneven; STEM students and males adopt AI more readily than non-STEM students and women, creating equity challenges.

Policy vacuum

Faculty worry about academic integrity and deep learning while students enjoy AI tools. Clear guidelines and ethical frameworks are urgently needed.

Opportunity to lead

By embracing AI and digital tools responsibly, the College can expand access, elevate quality and differentiate UC's programs in a competitive landscape.

Set the bar for integrity

Creating discipline-specific guidelines, inclusive policies and innovative pedagogy positions A&S as a model for ethical digital learning.

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Principles & AI Literacy

Core principles

- Integrity & trust between faculty and students
- Responsible experimentation and academic freedom
- Centrality of faculty judgment
- Responsiveness to student needs & heterogeneity
- Alignment with the university's mission

AI literacy & ethics

- Explain how large language models generate text & hallucinate
- Evaluate outputs for bias, accuracy and transparency
- Understand privacy, equity & accessibility implications
- Design assignments that require human creativity & reflection

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Student & Faculty Attitudes

	Students	Faculty
Usage frequency	Often infrequent; ~70% use AI <1×/week	Very infrequent
Motivation	Ease, enjoyment, perceived performance benefits	Skeptical; concerned about over-reliance
Discipline divide	STEM & male students use AI more	Less variation by discipline
Policy needs	Desire clarity on acceptable use	Need guidance to maintain integrity & adapt teaching

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Critical Priority

Policy & Literacy
Define discipline-specific AI guidelines and embed AI literacy modules for all students and faculty.

Course Redesign
Design assignments that integrate AI feedback but require analysis, reflection and originality.

Infrastructure & Access
Invest in secure AI tools, digital devices and connectivity to narrow divides.

Community of Practice
Establish a cross-disciplinary working group to share innovations and evaluate pilots.

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First-Year Plan

1. Inventory & needs assessment
Survey programs, faculty and students; map digital resources and gaps.

2. Draft AI guidelines & training
Co-create discipline-specific policies; build AI literacy modules for orientation and professional development.

3. Pilot AI-enhanced courses
Select high-enrollment courses across disciplines to test AI tutoring and feedback; evaluate learning outcomes.

4. Launch innovation hub & partnerships
Create a digital hub for faculty; fund mini-grants; partner with local industry and community for applied projects.

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Innovations Beyond Coursework

AI Tutoring & Advising
Adaptive chatbots provide personalized feedback and free staff to focus on complex advising.

Mixed-Reality Labs
Virtual & augmented reality simulate labs and fieldwork for experiential learning.

Digital Humanities & Analytics
Data sets and tools enable analysis of texts, images & social data.

Learning Analytics
Dashboards flag at-risk students; transparent AI models guide interventions.

Micro-credentials
Stackable certificates in AI ethics, coding or storytelling build flexible pathways.

Open Educational Resources
Curate & create OER with AI-assisted study aids, reviewed by faculty.

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Risks & Mitigation

Cognitive Off-loading
Over-reliance on AI may reduce student brain activity and retention.

Academic Integrity
Undisclosed AI use can undermine assessment validity and erode trust.

Equity & Bias
Unequal access and biased algorithms could deepen existing divides.

Privacy & Transparency
Black-box AI and unregulated data use pose privacy and accountability risks.

Mitigation strategies:
Embed AI literacy, design authentic assessments, provide equitable access, adopt transparent models and continuously monitor outcomes.

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Recommendations & Next Steps

- **Center equity & access:** Provide devices, connectivity and inclusive design to narrow divides.
- **Invest in faculty:** Offer training and support for AI integration and encourage scholarly research on digital pedagogy.
- **Foster partnerships:** Collaborate with Ohio universities, industry and community to co-create digital experiences and share resources.
- **Govern ethically:** Establish transparent data practices, monitor AI tools for bias, and involve diverse stakeholders in decision-making.
- **Iterate & share:** Measure learning outcomes, publish results and update policies to stay ahead of evolving technologies.

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