Preparing Faculty for a Human-AI Future:

A Literature Review

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The term artificial intelligence (AI) was first coined by John McCarthy in 1955 and was described as the "science and engineering of making intelligent machines". It was originally described in the foundational works of Alan Turing (1950) as Turing proposed the Turing Test as a way to evaluate machine intelligence. It has remained a theoretical construct until very recently.

Early forms of AI were rolled out in everyday programs from weather apps to voice activated assistants like Apple's Siri in the early 2000s. These early forms were extremely good at narrow, well-defined tasks such as speech recognition, pattern matching, and basic predicative analytics, but lacked generalizability and contextual understanding.

Huge advances from these early models were made in the 2010's and culminated with the release of ChatGPT by Open AI in November 2022. This new model was based on large language models (LLMs) that used machine learning coupled with natural language processing to make an extremely accessible and powerful tool. ChatGPT was trained on large data sets and refined in a way that it would predict the next word in a sentence with high accuracy. Almost anyone, regardless of computer science training, can utilize the tool to query the system on anything from writing emails to analyzing operational strategic gaps. (Russel 2021)

ChatGPT and its contemporaries, Claude, Gemini, Perplexity AI, Microsoft Copilot. Notebook LM, etc., transformed what was thought about AI, its usage, and impact. These LLMs have been disruptors in so many industries and this couldn't be more true than in the field of education. (Kasnecci 2023)

Education has had many novel forays into technology, including the use of iPads in primary schools and the use of learning management systems in a variety of education levels. Each new technology changes the way that students interact with the material, their peers, and the instructor. (Selwyn 2016)

However, in the case of AI, the entire concept of what is education is being challenged. How do teachers test competency when AI can complete essays and answer quizzes in a matter of seconds? How do students learn to write and analyze information when AI can do it for them? Is memorization or learning a new language still important when AI can pull facts and translate any text or verbal language in real time? (Freiburg 2024)

These questions become especially pressing in the secondary school environment where colleges and universities are charging tens of thousands of dollars per year to teach students. They must provide meaningful degrees and paths to employment as well as students with the ability to think and learn continuously.

Where does AI fit into the student- professor didactic teaching model. If the professor is no longer the sole proprietor of information, the sage on the stage, how does he or she provide value? How can professors retrain and grow their professional skills to adapt and capitalize on this AI age. What new competencies will students need to learn to be the best human in the human-AI equation?

This review will focus on the work currently being done to answer these questions. Indeed, it is an exciting time to rethink education to self-empower students and professors alike. Welcome to the brave new world!

Keys to AI Adoption by Faculty: Change Readiness, Leadership and AI Literacy

For faculty in the AI era to be successful, their professional development will need to move beyond learning individual EdTech tools and toward developing a new mindset of teaching. The faculty will start to become the guides and directors, designing the overall curriculum and checking-in at large milestones, while the AI will be doing the heavy lifting.

Change Readiness

The first step for faculty on their AI professional development journey begins in understanding their readiness to change. How ready are they to incorporate AI into their teaching strategy and mindset? What supports would help them move through the change curve?

Corporate change management has a number of models depicting the stages of change and also specific conditions needed to successfully incorporate change and move through the change curve. (Kotter 1996) Work by Robinson et. Al (2025) indicates that AI adoption by faculty is strongly influenced by faculty attitudes. If faculty attitudes towards AI are positive then the intention to use AI will be increased.

In the technology adoption model, attitude is a significant important contributor when technology adoption is voluntary and encouraged. Coincidentally, positive attitude building is really a hallmark of successful movement through the change management curve. Thus, suggesting that there is a positive feedback loop, where faculty who are able to transverse this curve, will have a positive attitude toward AI and increase their intention to use it. (Buele 2025, Liu 2025) There are a number of factors that support the movement through the change curve, including:

- Creating a sense of urgency
- Community Volunteer Pilot Initiatives

- Strong Leadership and Governance
- Eliminating obstacles to use
- Training in AI usage
- Celebrating and encouraging wins

Faculty Leadership

Ericson et al. (2026) found that faculty leadership had a significant impact on many of these factors. Leaders who encouraged pilots, community testing, and celebrated wins were more likely to garner long term faculty buy-in. In contrast to leaders who required adoption with the potential for punitive repercussions where they were not able to sustain long term faculty buy-in.

Faculty AI Literacy and Training

Many faculty report not feeling competent with technology and lacking in the training needed to help them get up to speed with using AI. Training in AI competencies has been shown to be effective in supporting faculty adoption of AI, when measures are targeted and specific. (Liu 2025)

Putting AI into practice: Teaching Support and Workforce Competencies

Ways Faculty can Leverage AI in the Classroom:

Faculty and students will benefit from incorporating AI into their classes in a number of ways. Students can receive feedback on their written work from AI and then use this to create iterations and improvements. Assessments can be automated and individualized feedback can be tailored, saving the faculty time and standardizing grading. It can also open up the cap on class sizes by removing the large amount of cognitive load that faculty have grading assignments. (Kurtz 2024, Bowen 2024, Cain 2024, McPhee 2025)

Some examples of readily accessible AI usage in the classroom:

- Virtual reality simulations
- Tutoring platforms to support remediation
- Facilitation support to allow for large groups in online classrooms
- Feedback and assessments to improve grading standards and capacity
- Learning analytics to identify where students are struggling and how to improve the experience
- Learning objectives, content and strategy building

Human-AI Competencies in the Workplace:

Not only will faculty themselves need to adapt and develop professionally, but faculty will also need to be aware of and incorporate professional competencies related to AI use in the workplace.

Babashahi et.al. (2024) and others found some overlapping workforce needs across a variety of industries. Many of the needs identified were surrounding how to be the human in the human-AI relationship. These skills were a combination of soft and digital skills. (Chee 2025, Bobitan 2024).

Some highlighted skills:

- Critical thinking
- Adaptability
- Creativity
- Decision-Making
- Communication

- Growth Mindset or Lifelong Learning
- Data Analytics
- Data Visualization
- Data Verification

Student AI Literacy

Additional skills will be needed to integrate AI usage in the context of the workforce member's job or industry. These skills could range from basic prompt engineering to interacting with an AI based robot.

AI literacy has been defined as, "the essential ability to critically understand, evaluate, and responsibly use artificial intelligence (AI) tools in daily life and work."

AI Literacy encompasses a number of domains:

- Evaluation of AI Tools
- Using AI tools in a variety of contexts
- Ethics & Impact
- Digital Communication & Expression
- Data Privacy & Security
- Data Analysis & Inference
- Misinformation Awareness

Being AI literate means not only being able to build and iterate on prompts but to understand the larger context of AI usage and to apply that knowledge in thoughtful and informed ways. (Mills K 2024, Chee 2025, Ng 2021)

Ultimately, the class concept will look much different in an AI integrated world with students and faculty working together to optimize and collaborate on becoming proficient humans in the human-AI relationship.

Conclusions and Gaps in the Literature

Faculty Development:

Faculty growth and development really starts with faculty and institute leadership. The way that governance approaches AI at each institution will significantly impact the perspective of faculty and ultimately their buy-in and ability to adapt and grow. Leaders who emphasize trial and error or over punitive enforcement will ultimately have an easier time engaging the community. Volunteer pilot work and celebrating wins will encourage more adoption and positive perspectives. Finally, leadership need to take the ethical implications seriously and work closely with faculty to develop standards and guidelines for use.

Strong leadership will ultimately result in a more positive perspective from faculty, which will help them work through the change curve to adapt successfully to the use of AI in their classrooms.

Training will play a key role for faculty as long as training is specific and targeted to their needs. If faculty can see the utility of the tool right away, as a time saving measure for example, they will be more open to continuing to grow and learn in their use of AI.

Finally, faculty will need to practice using AI to improve the education experience for students and will also need to build AI competencies into their curriculum to support workforce needs and ultimately student success. Faculty need to stay connected to workforce trends and

research coming out about how AI is being used in the workplace, as competencies will continue to shift as AI develops.

Gaps in the Literature:

As of writing this review in May 2026, there are significant gaps in the peer-reviewed literature in the area of faculty professional development in the use of AI and workforce member AI competencies. This is to be expected as the release of the game-changing ChatGPT version occurred in November 2022 and AI development is occurring rapidly. Additionally, publications that are more than a year old are essentially obsolete considering the rapid growth and expansion of AI capabilities. Most work in this area is either speculative, written to drive policy development or give broad context to future AI growth and integration, qualitative surveys of faculty perception, or conference proceedings. There is a dearth of publications that are based on robust quantitative or qualitative research.

Human-AI Workforce Competencies:

Many of the workforce skills identified are generalizable across a large number of positions and disciplines and will be familiar to faculty generally. Faculty will be able to make the case for broad skill development both with and without the use of AI, but ultimately the goal would be how to develop these skills in conjunction with AI. For example, a visual slide presentation can be generated by AI with some key points highlighted, but a student will need to be able to deliver this presentation with clarity and engagement in-person. The words will need to reflect their own viewpoint, personality, and understanding or they will fall flat as a vanilla AI-generated constructs without any value added. How the student or workforce member adds value will be the main question to be answered.

Gaps in the Literature:

Most of the publications related to workforce competencies are specific for certain positions or industries. The results of these end up being highly focused and less generalizable to the general workforce. A few literature reviews have attempted to look across these publications for common skills and have been somewhat successful, but there is a lack of empirical research looking at the utility of general Human-AI competency based skills in the workplace.

Underrepresented Faculty:

There is a lack of empirical research on the adoption of AI by underrepresented faculty in the United States. There are a variety of studies taking place in institutes around the globe, but those seem more focused on general faculty competency. One study, explored the use of AI by women faculty in Asia, but this is less relevant to the United States where faculty demographics are somewhat equivalent by gender if not overrepresented by women. (Kalim 2025)

Recommendations for Future research:

1) Quantitative research into the proposed general Human-AI workplace competencies to see how well these translate to success in the workplace across industries.
2) Qualitative research into the adoption of AI by underrepresented faculty in the United States and any factors that influence adoption levels.
3) Mixed methods research into the success of faculty and students as they begin to utilize specific AI driven techniques or processes in both teaching and learning in the United States and beyond.

Positionally Statement:

When approaching a review or any research endeavor it is important to reflect on your position in relation to the audience being studied. In many ways, I am both an insider and outsider member of the faculty community that this review addresses and I will attempt to identify my identity attributes in terms of culture, ethnicity, and gender.

I could be classified as an insider researcher as the majority of liberal arts faculty in the United States are white and lean liberal politically, and I am also white and lean liberal politically. I also have a PhD from a University in the United States, which is often a requirement to be a member of the faculty. I have taught as a visiting professor at a community college and state University in Massachusetts and I have spent much of my working career in academia. I've worked closely with faculty as a graduate student apprentice and as an instructional designer who supports faculty course development. While my main degrees are in the sciences, I do also have minors in Italian and Archaeological studies and have an interest in and a high regard for the humanities, which are often a backbone of liberal arts colleges.

I could be classified as an outsider researcher as I have not worked as a full time tenured faculty member at a liberal arts college. I have not attended a liberal arts college as a student nor have I been a staff member at a liberal arts college. I attended a science and engineering undergraduate institute, and have undergraduate and graduate degrees that focused on the neuropathology of disease. My most recent position is in an academic healthcare environment.

While I have taught at secondary institution, it has been over 10 years since I have done so and I am not as familiar with the current political and social landscape that the faculty encounter on a daily basis. I am a woman, which neither qualifies me as an insider nor outsider as faculty demographics are somewhat evenly distributed. However, male faculty members hold the majority of leadership positions and thus my gender status would put me as an outsider in the

faculty leadership community. I also have a background working in educational technology and IS training, which has made me potentially more ready than faculty to work and think in the AI space. Indeed, I use AI regularly as an instructional designer to design learning objectives and assessments, etc.

I have a unique opportunity to occupy the space between a researcher and a member of the faculty community. I have a strong familiarity with the faculty community, but I am not a complete member of the community. My peripheral insider status will allow me to connect with the faculty in certain ways, but to remain open and neutral to the information I may obtain from the community. This may create some boundaries where the community may not see me as legitimate or confide in me fully, but would also allow me to identify patterns and opportunities more easily.

As I continue my research, I will need to be more aware of the areas in which I align more fully with the majority of the faculty. Particularly, in my status as a white liberal leaning person. There may be many areas that I may implicitly agree with the majority without thinking to question further how this could impact other community members, particularly those who are non-white or conservative on the political spectrum. I will need to be very intentional about asking questions that may open these areas of inquiry.

I will also need to be thoughtful about approaching the topic of AI with faculty as many of them may be earlier in the change curve than I am and will be in the midst of processing this enormous change and what it means for them and their careers.

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