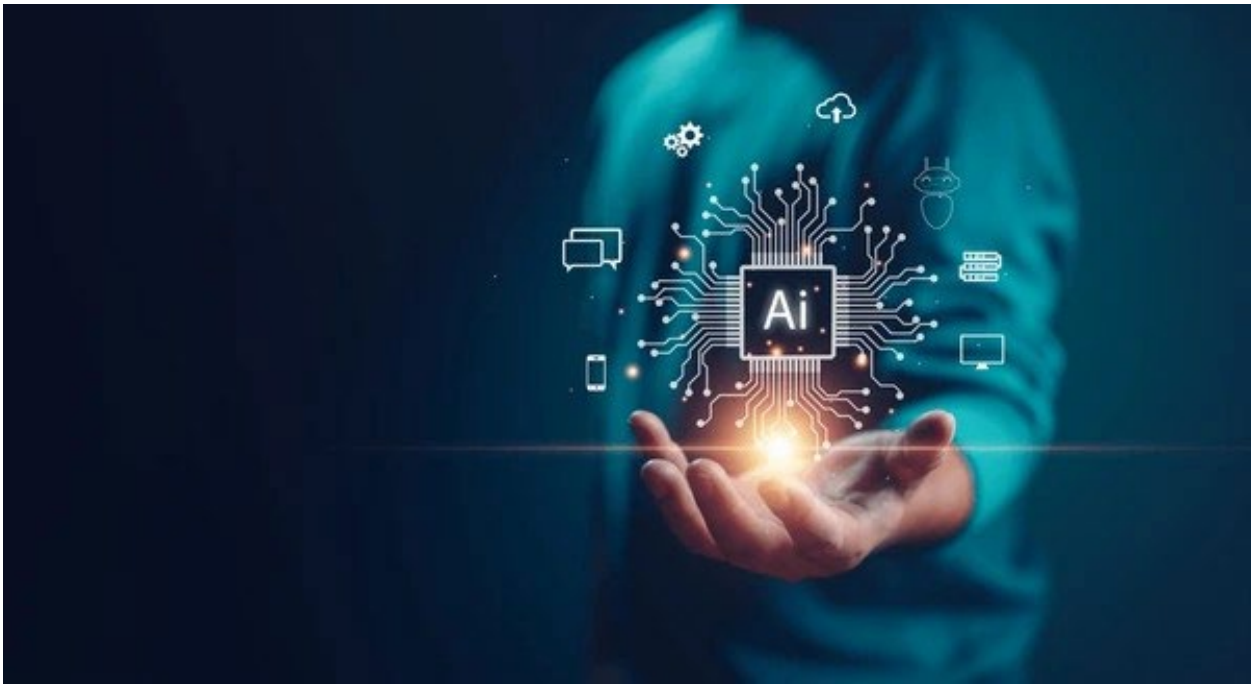

PIMA BULLETIN NO. 55 | January 2026

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Generative AI Special Issue

Editors

Leslie Cordie and Dorothy Lucardie

Bulletin Editor

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Promoting, Interrogating and Mobilising Adult Learning & Education

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Message from the PIMA President

Suwithida Charungkaittikul, President, PIMA Network

Dear PIMA Members and Colleagues around the world,

As we stand at the threshold of a New Year, I find myself reflecting on the concept of renewal. In my personal life, I have recently been blessed with a new family member—a reminder of the hope and potential that every new beginning holds. This sense of personal joy mirrors the journey we are navigating together as a global community.

We are living in a time of profound transformation. The world situation today is defined by the rapid "arrival" of Artificial Intelligence in almost every facet of our lives. AI is no longer a futuristic concept; it is an active force shaping our economies, our social interactions, and our very identities. However, with this power comes a great responsibility. We must ensure that AI serves as a tool for equity rather than a driver of division. It is our collective duty to guide this technology with empathy, ensuring it uplifts human dignity and solves real-world challenges.

In this landscape, universities and higher education institutions stand at the forefront. Universities are the "engine rooms" of this transition. Their role has shifted from merely imparting knowledge to fostering AI literacy, ethical critical thinking, and social responsibility. This bulletin aims to highlight both approaches and pitfalls observed by educators as they work to navigate the complex landscape of AI in education.

To those who are picking up a PIMA bulletin for the first time: Welcome. You are joining a vibrant, global family of thinkers and practitioners. We believe that a better world is built through a diversity of voices. I invite you to join us—not just as readers, but as

contributors. Please share your perspectives, your stories, and your innovations. It is through your unique experiences that we can collectively harness technology to create a more inclusive and hopeful future.

As we enter 2026, let us approach the "new" with the same curiosity and care we give to a new family member. I wish you all a year of discovery, growth, and profound human connection.

With warmest regards,
Suwithida Charungkaittikul

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Editorial

Dorothy Lucardie and Leslie Cordie

The Imperative of Adaptation: AI and the Reskilling of Adult Education

The sudden and pervasive integration of Generative Artificial Intelligence (GenAI) into work, communication, and daily life marks a seismic shift for lifelong learning. The essays and research presented by leading scholars underscore a consensus: AI is not merely a tool for adult education; it is a fundamental catalyst forcing the entire field to re-skill, re-tool, and redefine its core mission. The future of adult learning will be determined by how effectively educators move from viewing AI as a potential threat to embracing it as a powerful, albeit ethically complex, cognitive partner. Thus, we dedicated this Special Issue to the adult education concerns and ideas across our PIMA community.

The Double-Edged Sword of Generative AI

The immediate impact of GenAI is a duality, as highlighted by Hill and Conceição in *"Generative AI and the Information Ecosystem: Implications for Adult Education."* On one hand, GenAI lowers the barrier to content creation, enhancing accessibility and creativity. On the other, it amplifies the risk of misinformation, bias, and digital inequity. For adult learners, who often balance work, family, and education, this new information ecosystem presents a formidable challenge. As Lelescu notes in *"Empowering Adult Learners Through Critical AI Literacy,"* navigating these algorithmic biases and digital inequities while managing existing life demands makes critical AI literacy an essential component of lifelong learning, not a luxury.

This tension between efficiency and ethics is central to the professional practice of education itself. Haren's reflection on instructional design, *"De-skill or re-skill: How is AI Reshaping the Instructional Design Profession?"* speaks directly to the anxiety within the field. While AI can undoubtedly automate the development of training and e-learning (the "deskilling" fear), it simultaneously demands that instructional designers—and by extension, all adult educators—upskill to leverage AI tools strategically, ensuring their relevance remains high-level, critical, and human-centric.

Redefining the Human-AI Partnership

The articles collectively challenge the traditional concepts of teaching, learning, and even memory. Liang's look at the theoretical *"Singularity of Education"* provides a macro-level framing, suggesting that as society shifts toward a technology-driven "Epoch 5," teaching and learning must evolve dramatically. Rotschnig, Fritz, and Turner offer a practical application of this evolution, advocating for AI-assisted creative writing as a means to foster digital literacy and innovative pedagogy, thus evolving the role of the adult educator. This idea is highlighted in

more specific detail in Dong's article that redefines the human-AI partnership as a collaborative synergy where teachers in China pivot from knowledge transmission to high-value roles as emotional mentors and learning designers. By delegating data-driven automation to AI, these educators focus on fostering the critical thinking and ethical judgment essential for a human-centered, technology-empowered future.

The shift is most keenly felt in the learner's relationship with technology. Stein and Pan's qualitative study, *"From Curiosity to Cognitive Partnership: Adult Learners' Adaptation to AI Agents,"* reveals that learners see AI agents as valuable for their immediacy and coherence—a "cognitive partner." However, participants quickly identified AI's critical limitations: its lack of emotional depth, lived experience, and capacity for true empathy. This human-centric deficit reinforces Khau's argument, *"To Memorise or Not to Memorise."* While AI excels at data retrieval, human memory remains essential for cultivating meaning, wisdom, and conceptual frameworks. Education must redefine memorization, not discard it, ensuring that internal understanding—the basis of human progress and moral responsibility—continues to drive learning.

The Call for Critical and Equitable AI Literacy

If AI is to be a tool for equity rather than a force for widening disparities, a strategic focus on high-level AI literacy is paramount. Orias emphasizes this necessity in *"Beyond Basic Use: Fostering Critical and Ethical AI Literacy Among Adult Learners,"* arguing that adult education must shift beyond functional knowledge to emphasize critical thinking and ethical reasoning to address biases, social implications, and data privacy. Kuan continues this theme by emphasizing the impact of AI on older adults in the article "*Embracing Artificial Intelligence and Self-Directed Learning for Older Adult*s".

The issue of bias is highlighted by Gao's work, *"Gender Bias in AI-Supported Informal Learning: Risks and Opportunities."* AI-assisted learning risks perpetuating gender stereotypes through biased data, demanding that educators actively cultivate critical AI literacy to help learners identify and contest these stereotypes. This is an equity issue that extends across demographics. Miao's exploration of *"Artificial Intelligence Certificates for Adult Learners: An Equity-Focused Exploration"* points out that new AI certificate programs, while valuable for career advancement, must address critical equity concerns related to affordability, prerequisite knowledge, and visibility to ensure inclusivity for all adult learners.

AI for the Educator's Well-Being

The conversation is not just about the learner and the curriculum; it is also about the sustainability of the profession. Broughton, Berry, and Lin offer a welcome counterpoint to the technological anxiety in their study, *"AI and Well-Being for Rural Educators."* Their findings suggest that AI tools, when integrated thoughtfully, can be instrumental in reducing educator

burnout, streamlining workloads, and supporting work-life balance—an outcome that is crucial for retaining talent in rural, high-need areas.

Ultimately, the future of adult education—from the community college classroom to faculty development in medical education, as explored by Sebastien—requires a balanced, human-centered approach. As Richards suggests in *"The Implications of an 'Optimal Lifelong Learning' Perspective,"* a balanced framework is the necessary "antidote" to naive enthusiasm and the threats of future misuse. The collective voice of these scholars, from the Asia-Pacific Think Tank to the call for democratizing the scholarship of AI through student voices (February), is clear: Adult education must lead the charge in cultivating citizens who are not just passive users of AI, but critical, ethical, and empowered architects of its future. The time to adapt is now.

Book Review

This bulletin ends with review of the edited book, Navigating the AI Frontier, which brings together global researchers, educators, policymakers, and practitioners that share insights from the International AI Survey of Adult Educators. The book provides a global benchmark of practices and perspectives, innovative research, case studies, and best practices. It is scheduled for release as an Open Access publication in the first half of 2026 (1H 2026).

Wishing all of you peace and joy in 2026.

Dorothy Lucardie & Leslie Cordie

Generative AI and the Information Ecosystem: Implications for Adult Education

Lilian H. Hill and Simone C. O. Conceição

Abstract

Generative AI is transforming work, learning, and communication, producing human-like outputs that lower barriers to content creation while amplifying misinformation, bias, and inequity. Adult education can harness these tools to enhance creativity, critical thinking, and accessibility. Integrating AI literacy, ethical engagement, and digital equity enables learners to navigate and use AI responsibly.

Keywords: generative artificial intelligence (Generative AI), information ecosystem, adult education

Introduction

Generative Artificial Intelligence (GenAI) is transforming how people work, learn, and communicate, while reshaping the global information ecosystem. These systems generate convincing human-like outputs, lowering barriers to content creation. Tools like OpenAI's ChatGPT, DALL-E, and Google's Gemini illustrate the widespread accessibility and low cost, fueling their rapid adoption. While GenAI has democratized communication, it also accelerates the spread of false or misleading information, undermining democratic participation and weakening public trust (World Economic Forum [WEF], 2025).

Information Ecosystems

A robust information ecosystem (IE) depends on collaboration among producers, distributors, consumers, and regulators to ensure transparency, fairness, and accuracy. GenAI has altered IEs by lowering barriers to content creation, enabling professional-quality outputs but

also producing deepfakes that realistically mimic real people's appearance, voice, or actions, and saturating media with synthetic content. Social media platforms amplify this material via AI-driven recommendation systems, intensifying echo chambers that limit exposure to diverse perspectives and complicating content moderation (WEF, 2025). Consumers face an environment saturated with persuasive but potentially inaccurate outputs, with studies showing AI-generated misinformation can be more convincing than human-created content (Leiker et al., 2023). Governance efforts emphasize accountability and transparency, but the decentralized and global nature of information systems limits enforcement. A healthy IE remains essential for informed citizenship, democratic participation, effective governance, and social trust (Introne et al., 2024).

Opportunities for Adult Education

In the field of adult education, GenAI holds significant promise for transforming learning experiences, expanding accessibility, and meeting the diverse needs of lifelong learners. Because adult education is central to skill development, career advancement, and personal growth, the thoughtful integration of GenAI can empower individuals and contribute to a more resilient, adaptive global workforce. The integration of AI challenges adult educators to reconsider their teaching roles, strengthen their andragogical and analytical skills, develop digital literacy, and prepare to collaborate effectively with AI tools and colleagues (Storey & Wagner, 2024). The following eight strategies can be employed:

1. **Teach How to Use GenAI Tools**. Adult educators can guide learners in developing practical skills to navigate GenAI. Instructors can focus on tool selection, prompt design, evaluating outputs, and integrating AI into projects without compromising originality.

Building hands-on experience helps learners harness AI to enhance creativity, problem-solving, and critical thinking.

2. **Model Appropriate Use.** Adult educators can demonstrate how GenAI can support learning without replacing original thought. By modeling proper attribution, paraphrasing, and disclosure of AI assistance, they present strategies to avoid plagiarism and misrepresentation. This approach reinforces academic integrity and guides learners to use AI as a tool for enhancement rather than substitution.
3. **Recognize Algorithmic Bias.** Adult educators can help learners understand that GenAI systems reflect and amplify societal biases present in their training data. By examining outputs critically, learners can identify patterns of bias in language, representation, and content selection. Encouraging this awareness fosters critical thinking, promotes equity, and equips adults to use AI responsibly.
4. **Promote Ethical Engagement.** Adult educators should communicate clear guidelines for responsible AI use, addressing authorship, intellectual property, and privacy. Learners should be encouraged to critically examine questions of authorship, such as identifying who deserves credit when AI contributes to a product, and to understand the boundaries of intellectual property in contexts where AI may generate or adapt existing work.
5. **Address Privacy Concerns.** Adult educators can highlight the implications of sharing personal data with AI systems and the risks of unintentional disclosure. They can help learners recognize potential harm and protect themselves from online scams and cyberfraud.
6. **Foster Reflective Practice.** Adult educators should emphasize critical thinking and foster reflective practice. Rather than banning the use of GenAI, learners can be guided to

disclose when and how they used AI and to reflect on its influence on their decisions and products. This approach strengthens metacognition, ethical accountability, and students' ability to evaluate and responsibly integrate AI tools critically.

7. **Ensure Digital Equity.** Adult educators recognize that access to GenAI tools and digital resources is uneven, which can reinforce existing educational and social disparities. Providing equitable access, guidance, and support ensures all learners can benefit from AI-enhanced learning. Promoting inclusivity helps bridge the digital divide and empowers all adults to develop critical AI literacy skills.

Integrate AI Literacy Across Curricula.

Adult education programs can embed modules on AI ethics, detection of synthetic media, and critical evaluation of algorithmic systems. By integrating AI literacy across subjects and learning activities, educators ensure that all learners develop the skills to navigate, assess, and responsibly use AI in diverse personal, professional, and civic contexts.

Conclusion

GenAI is reshaping the IE in profound ways. While it democratizes creation and opens new educational possibilities, it destabilizes norms of credibility and amplifies risks of bias, inequity, and disinformation. For adult education, these dynamics create both opportunities and responsibilities. Educators must leverage GenAI to enhance learning while equipping learners with the critical literacies necessary to navigate an algorithmic world. Embedding AI literacy, promoting ethical engagement, and ensuring digital equity are essential for sustaining democratic ideals and advancing inclusive lifelong learning in the era of GenAI.

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References

Introne, J., McKernan, B., Corsbie-Massay, C. L. P., Rohlinger, D., & Tripodi, F. B. (2024). Healthier information ecosystems: A definition and agenda. *Journal of the Association for Information Science and Technology*, *75*(10), 1025–1040. https://doi.org/10.1002/asi.24949

Leiker, A. M., Kohnke, A., & Wheeler, A. (2023). Generative AI in education: Human-in-the-loop approaches to content creation. *arXiv preprint*. https://arxiv.org/abs/2306.01815

Storey, V. A., & Wagner, A. (2024). Integrating artificial intelligence (AI) into adult education: Opportunities, challenges, and future directions *International Journal of Adult Education and Technology, 15*(1), 1-15. https://doi.org/10.4018/IJAET.345921

World Economic Forum. (2025). *Rethinking media literacy in the AI era*. https://reports.weforum.org/docs/WEF_Rethinking_Media_Literacy_2025.pdf

Empowering Adult Learners Through Critical AI Literacy

Ana Lelescu

Abstract

As Generative AI (GenAI) integrates into daily life, adult learners face challenges in balancing education, work, and family while navigating digital inequities and algorithmic biases. This article examines critical AI literacy as an essential component of lifelong learning, exploring emerging pedagogical approaches that empower adults to question, analyse, and engage responsibly with AI technologies.

Keywords: artificial intelligence, AI literacy, lifelong learning

Empowering Adult Learners Through Critical AI Literacy

Generative Artificial Intelligence (GenAI) is rapidly becoming embedded in the routines of daily life, shaping how people learn, work, and interact with information. For adult learners, however, this integration presents unique challenges and opportunities. Many must juggle educational pursuits with professional and family responsibilities, often within contexts marked by digital inequity. Without adequate support, the promise of GenAI risks reinforcing divides rather than closing them, particularly when algorithmic biases remain hidden and unexamined.

Recent research reveals strong motivation among adults to learn AI literacy. Tang et al. (2025) found that 83.5% of older adults (aged 50 and above) scored 4-5 on motivation scales for AI literacy education, recognising the importance of harnessing AI benefits while avoiding its dangers. This high motivation, consistent across age groups and education levels, demonstrates adult learners' readiness to engage with AI education when appropriate opportunities exist.

Within this context, critical AI literacy moves beyond technical know-how to encompass the ability to question, analyse, and engage responsibly with AI technologies. Older adults, in particular, value tailored, hands-on, and accessible learning experiences, as well as those with limited prior exposure to AI (Tang et al., 2025).

Understanding Critical AI Literacy

AI literacy, defined as a "*set of competencies that enable individuals to critically evaluate AI technologies; communicate and collaborate effectively with AI; and use AI as a tool online, at home, and in the workplace*" (Long & Magerko, 2020, p.2), emerges as essential for empowering adult learners in our digital age. In the context of GenAI, critical AI literacy involves understanding basic AI principles and limitations, recognising and evaluating AI-generated content, awareness of ethical considerations, including privacy and algorithmic bias, and developing skills to become active participants rather than passive consumers (Cao et al., 2025; Wolters et al., 2024). This critical dimension is particularly important for adult learners who must navigate the societal implications of AI in their personal and professional lives.

Recent research has documented extensive concerns that GenAI systems perpetuate social biases and digital inequities (Tao et al., 2024; Storey & Wagner, 2024). Specifically, Tao et al. (2024) demonstrated evidence of Western cultural bias in the output of five popular GenAI models, including GPT-4.o versions. They emphasised that cultural alignment is necessary to ensure that the benefits of GenAI are distributed evenly across global societies. Digital inequity manifests through disparate access to high-speed internet, modern devices, and premium AI services, potentially disadvantageing marginalised groups. Therefore, adult learners need to acquire new skills to navigate AI-enhanced environments effectively while advocating for more equitable systems. This includes learning about data collection practices, algorithm training, and

the importance of diverse perspectives (Storey & Wagner, 2024; Tang et al., 2025). At the same time, increased AI knowledge can initially heighten concerns about AI risks. Cao et al. (2025) found that AI literacy training significantly increased participants' fear of AI bias, privacy violations, and job replacement. This suggests that developing healthy scepticism about AI is part of becoming truly AI literate.

Pedagogical Approaches for Adult Learners

Unlike general AI instruction, critical AI literacy for adults requires a specialized approach that respects their prior experiences, learning preferences, and limited schedules. Empirical studies and reviews highlight several strategies for empowering adult learners:

- **Hands-on experimentation** proves most effective. Rather than abstract teaching, successful programs provide direct AI interaction opportunities while developing analytical evaluation skills. This aligns with adult preferences for experiential learning over theoretical instruction (Storey & Wagner, 2024; Tang et al., 2025).
- **Problem-based learning** enables the exploration of AI technologies through real-world challenges that are relevant to learners' lives. Collaborative models enable adults to share experiences while learning together, helping address digital divides through peer support networks (Wolters et al., 2024).
- **Scaffolded learning approaches** build upon basic concepts to develop a sophisticated understanding of algorithmic processes, bias detection, and ethical considerations. For example, short-form experiential content such as videos and games can boost self-efficacy and foster critical thinking by raising awareness of AI risks (Cao et al., 2025).

- **Authentic assessment** through portfolios, reflective journals, and project-based evaluations better captures critical AI literacy than traditional testing (Lelescu & Kabiraj, 2024).

Conclusion: Practical Recommendations

Critical AI literacy represents both an urgent necessity and a significant opportunity for adult education. As AI becomes increasingly prevalent, adult learners need skills to engage critically and ethically rather than merely use these tools.

Critical AI literacy serves PIMA's mission of promoting social, economic, and ecological justice by ensuring that technological development supports human flourishing rather than exacerbating inequalities. Adult learners, equipped with critical engagement skills, can become advocates for more equitable, transparent, and beneficial AI systems. Practical recommendations for educators include:

- **Start with learner motivations**: Leverage adults' demonstrated high motivation (83.5% interested) by connecting AI literacy to personal and professional goals.
- **Prioritise experiential learning**: Design hands-on activities using AI tools rather than theoretical lectures, aligning with adults' preference for learning by doing.
- **Address fears constructively**: Recognise that increased AI concerns can indicate the development of critical thinking skills, not educational failure.
- **Create peer learning networks**: Facilitate collaborative learning to address digital divides and build support systems
- **Develop authentic assessments**: Move beyond traditional testing toward portfolios and reflective practices that capture critical engagement

Success requires sustained commitment from educators, institutions, and policymakers to support critical AI literacy as a fundamental component of lifelong learning. Thus, critical AI literacy becomes proactive participation in contributing to a more just future for all.

Author Bio

Ana Lelescu is a dedicated lifelong learner with over 20 years of experience in computer science, education, and project management. She holds a Master's in Computer Science from the University of Illinois at Chicago and is pursuing a PhD in Education Sciences at the West University of Timisoara, Romania. Her doctoral research focuses on the factors influencing educators' trust in adopting Artificial Intelligence (AI) technologies in higher education. Co-author of over 20 scientific papers and holder of six patents, she is dedicated to advancing human-centred AI transformations in education to support learners of all ages worldwide.

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References

Cao, H. J., Lee, H. R., & Peng, W. (2025). Empowering adults with AI literacy: Using short videos to transform understanding and harness fear for critical thinking. *Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems* (Article 203; pp. 1–8). https://doi.org/10.1145/3706598.3713254

Lelescu, A., & Kabiraj, S. (2024). Digital assessments in higher education: Sustainable trends and emerging frontiers in the AI era. In G. Grosseck, S. Sava, G. Ion, & L. Malita, L. (eds.), *Digital assessment in higher education: Navigating and researching challenges and opportunities* (pp. 27–44). Springer Nature. https://doi.org/10.1007/978-981-97-6136-4_2

Long, D., & Magerko, B. (2020). What is AI Literacy? Competencies and design considerations. *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (pp. 1–16). https://doi.org/10.1145/3313831.3376727

Storey, V. A., & Wagner, A. (2024). Integrating Artificial Intelligence (AI) into adult education: Opportunities, challenges, and future directions. *International Journal of Adult Education and Technology*, *15*(1), 1–15. https://doi.org/10.4018/ijaet.345921

Tang, K. E., Song, T., Zhu, Z., Li, J., & Lee, Y.-C. (2025). AI literacy education for older adults: motivations, challenges and preferences. *CHI EA '25: Proceedings of the Extended Abstracts of the CHI Conference on Human Factors in Computing Systems* (pp. 1–15). https://doi.org/10.1145/3706599.3720033

Tao, Y., Viberg, O., Baker, R. S., & Kizilcec, R. F. (2024). Cultural bias and cultural alignment of large language models. *PNAS Nexus*, *3*(9), Article 346. https://doi.org/10.1093/pnasnexus/pgae346

Wolters, A., Arz Von Straussenburg, A. F., & Riehle, D. M. (2024). *A*I Literacy in adult education - A literature review. *Proceedings of the 57th Hawaii International Conference on System* (pp. 6888 - 6897). https://doi.org/10.24251/HICSS.2024.82

De-skill or Re-skill: How is AI Reshaping the Instructional Design Profession?

Dr. Linnea M. Haren Conely

Abstract

This essay reflects on my experience using various AI tools to design and develop training and e-learning for adult learners, and how it is and is not changing my identity as an instructional designer. I offer guidance for other instructional designers on how to keep our profession relevant.

Keywords: AI, instructional design, deskilling, upskilling, reskilling

Introduction

Instructional design can be summarized in two words: system efficiency. In fact, the modern instructional design profession began as a way for the U.S. military to train large numbers of World War II soldiers as efficiently as possible (InstructionalDesign.org, 2025). While the favored learning strategies have shifted over the decades from behaviorism to constructivism to cognitivism, and learning materials have transitioned from paper to digital to immersive, the need for efficiency has remained.

My first job as an instructional designer was a crash course in efficiency. I was fresh out of an instructional technology masters program and armed with my third-edition-Dick-and-Carey *Systematic Design of Instruction*. This was the mid-1990s, the height of the "dot-com" boom. The Fortune 100 company I worked for was building a business on "de-skilling" course development to make training faster. The lead instructional designer in our department detested that term. She thought it sounded like we were taking people's skills away. I was not enthralled

with the term either, but I did appreciate the tools we had because they enabled me to create things I would not have been able to do on my own–or at least not as quickly.

Definitions of Skilling

Fast forward to the mid-2020s and the future of instructional design is now upskilling. Instructional designers (IDs) must learn how to use AI to make the course development process more efficient. Rafner et al. (2021) define three types of skilling in relation to the impact of AI on knowledge workers. They describe deskilling as "the loss of professional skills due to technological or work practice changes" (p. 26), while upskilling is what occurs as workers use technology to develop broader, higher-level skills. Ultimately, the interaction between deskilling and subsequent upskilling results in reskilling, which is the development of more conceptual, problem-solving skills related to whole systems, rather than task-based expertise (Rafner et al., 2021).

When I began thinking about this model in relation to instructional design, I realized that the ID profession already uses a systems approach to solving learning "problems." The entire premise of Dick and Carey (1990) is that learning is a system that includes instructor, learner, media, and environment. My identity in this system has always been a "learner advocate" who balances their needs against employer expectations, subject matter expert biases, and system constraints.

My AI for ID Experience: One Step Vyond

To understand whether I was being deskilled, upskilled, or reskilled, I decided to reflect on my experiences using AI. My first experiments began with using tools embedded in the apps I was already using. For example, the AI video generator in Vyond. Vyond is an app that makes videos using cartoon-like characters, whiteboard animations, or photo-realistic avatars. I have

uploaded my own scripts (both written by me or chatGPT), selected character(s), and watched as Vyond created the entire video for me in less than one minute. I do need to do some tweaking in the editor, however, the time I save in overall video production enables me to use more custom videos in my courses. Sometimes, I write a prompt that describes what I want the video to teach, including key points and potential questions learners might have about the content. Again, in less than a minute, I have a decent video only requiring minor adjustments. Vyond is deskilling me in video editing and script writing, but by learning how to use its AI features I have upskilled my video production skill by becoming faster and better able to create illustrated character animations.

I have used the AI features in Rise 360 to build an entire e-learning course. Within Rise, I used a prompt to generate a course outline. I then used chatGPT to add objectives and content to the outline and imported the document back into Rise to generate the course. Rise filled templates with the content, and I used text prompts to add images. I used Rise's AI assessment generator to add a quiz based on the content and objectives. There were some inaccuracies and a little too much repetition, but the result was adequate. I would have taken longer to produce the course myself, but my version would have been more engaging. Rise deskilled my course outlining, objective writing, course building, and question writing. I upskilled my ability to write chatGPT prompts and use Rise 360's AI features. This upskilling made me faster, but in this case, I do not feel that it produced an equivalent instructional product.

I have used chatGPT to create case studies, learning games, and role playing exercises. I wonder, though, if I did not already have the ability to craft strong objectives and assessments, write realistic scripts and scenarios, and design courses using instructionally sound principles, if I would be a good judge of what AI was producing. If I decided to stop doing these skills for

myself, I might be able to spend more time on learner analysis and course evaluation. Would this allow me to "reskill" into a systematic problem solver?

Advice for Instructional Designers

I believe the ID profession has always been what AI is promising to make it: a field for problem solvers. However, in my experience, too many people who employ IDs have only been interested in developing courses to satisfy immediate needs, not in solving problems. If the value of AI for ID remains entrenched in how to develop courses faster, the role of IDs may be deskilled until it becomes obsolete. Humans cannot compete with a computer's ability to scan, summarize, and package information. However, content delivery alone does not solve learning problems. For IDs to thrive with AI, we need to use our gains in efficiency to make our role as problem solvers more obvious. From a non-ID perspective, this may seem like the profession is being reskilled, but in actuality, it might just finally be becoming "right" skilled.

Author Bio

Dr. Linnea M. Haren Conely is an adult education scholar-practitioner who explores the effects of informal lifelong learning on civic engagement and learner agency. She writes about her research and observations in her newsletter, *Adventures in Learning Democracy* (https://learningdemocracy.substack.com/). Dr. Haren Conely leads curriculum development at AIDT, Alabama's workforce development incentive program for new and expanding businesses. She is also the founder of Questia Corps, a social impact consulting firm specializing in tools and training for wavemakers. Email: linnea.conely@questiacorps.com

References

Dick, W & Carey, L. (1990). *The systematic design of instruction* (3rd ed.). HarperCollinsPublishers. https://openlibrary.org/books/OL24875291M/The_systematic_design_of_instruction

InstructionalDesign.org. (2025). *History of instructional design*. https://www.instructionaldesign.org/history/

Rafner, J. F., Dellerman, D., Hjorth, A., Veraszto, D., Kampf, C., Mackay, W., & Sherson, J. (2021). Deskilling, upskilling, and reskilling: A case for hybrid intelligence. *Morals & Machines, 1*(2), 24-39. https://doi.org/10.5771/2747-5174-2021-2-24

The Singularity of Education: How Artificial Intelligence Reframes Teaching and Learning

Jiahao Liang

Abstract

In 2005, Ray Kurzweil published *The Singularity Is Near*. As many of his predictions unfold twenty years later, this paper revisits his six epochs theory, focusing on the shift from Epoch 4 to Epoch 5—a transitional period toward the Singularity—and explores how teaching and learning might evolve with artificial intelligence.

Key Words: Singularity, Epoch 5, educational shift, entropy

Introduction

In 2005, Ray Kurzweil published a book of foresight, *The Singularity Is Near: When Humans Transcend Biology*. Twenty years later, in 2025, many of his predictions about technological development are becoming reality. Kurzweil defines the indirect evolution of information patterns into six epochs as follows, with each pattern branching from the previous one:

- Epoch 1: Physics and Chemistry
- Epoch 2: Biology and DNA
- Epoch 3: Brains
- Epoch 4: Technology
- Epoch 5: The Merger of Human Technology with Human Intelligence
- Epoch 6: The Universe Wakes Up

We are currently positioned in the early stages of transitioning from Epoch 4 to Epoch 5, where the combination of technology with human intelligence is about to emerge. Ultimately, we are expected to enter Epoch 5 and be exposed to the Singularity, a period in which the rate of technological development becomes so fast and profound that it will radically change our life, disrupting and reorganizing social norms, including redefining the goals and means of education. The launch of Generative Artificial Intelligence (AI) tools, such as ChatGPT in 2022, marks that human society is marching closer to this Singularity.

The Educational Shift from Epoch 4 to Epoch 5

In Epoch 4, technology enabled a new information pattern rooted in hardware and software, bringing computer-assisted learning (CAL) into traditional classrooms. Technological tools like personal computers, projectors, and slides emerged to reshape teaching materials which traditionally take the form of textbooks. Engaging multimedia content, such as audio, pictures, and video, functions as alternatives or complements to physical textbooks and hand-out materials. Later innovations, such as the internet, video conference apps, and video-sharing platforms, led to alternative class forms like synchronous and asynchronous online courses, making remote learning a reality and supporting open learning. Students are able to learn whenever, wherever, and whatever they want.

Marshall McLuhan (1964) in *Media as Extensions of Man* posits that various forms of media extend our senses and capabilities. For example, the written word extends our ability to communicate over distances, while electronic media breaks the limit of time and space, creating a “global village” where information could be shared instantly around the world. In the same vein, the emergence of CAL allowed a variety of technological tools mentioned above to be extensions of instructors, playing out its

role in assisting teaching. Whether teachers and students opted for CAL or not, in Epoch 4, traditional classroom teaching remains essential with the same educational pattern—the knowledge gaps between students and teachers necessitate classroom instruction, with teachers specializing in different subjects with specific expertise rather than being omniscient.

As we approach Epoch 5, the boundary between human intelligence and machine intelligence is blurring, especially given that chatbots empowered by large language models are able to process, understand, and generate content in natural languages. By Epoch 5, machine intelligence will end up being omniscient, demonstrating superiority in all respects compared to unaided human intelligence, including pattern recognition, problem-solving, and emotional and moral intelligence, etc. Once a new information pattern is formed following the incorporation of technology into human intelligence, the information gaps among humans will no longer exist, overturning the educational pattern of Epoch 4 and resulting in the Singularity of education.

To be more specific, let's imagine a future in which a gene-edited human brain, linked to generative AI and connected to the internet, can instantly retrieve, understand, and apply knowledge, as well as perform analysis, evaluation, and creative tasks using the shared intelligence of all humankind. This scenario is similar, though not identical, to the world depicted in the 2025 television series Pluribus. In Pluribus, most of humanity has been transformed by an alien virus into a unified and peaceful hive mind called the "Others," a collective consciousness in which individuals share memory and mind but no longer act or think on their own. In that situation, rote memorization, skills training, exams, and classrooms have lost their purpose as knowledge gaps are bridged. On the other hand, when all human minds

connect into one shared system of intelligence, individual agency, independent thought, and personal identity can become fragile or even disappear as well.

Repurposing Education before the Singularity Arrives

Erwin Schrödinger (1992) warns in *What Is Life?* that humanity faces a serious risk of losing its "path to improvement." He argues that evolution depends on natural selection, and without it, progress stops or even reverses by referencing Julian Huxley's idea: when an organ becomes useless and selection no longer maintains its function, degenerative (loss-of-function) mutations gain dominance, leading to the organ's degeneration. It is a caveat for humans to consider at this moment: when the scenario of a shared brain comes true, education is probably substituted by mere data transmission. In this way, as human society may no longer remain intellectually competitive, will the intelligence of individuals risk degenerating?

Voices of such concern have become particularly prominent following the emergence of generative AI. As knowledge, technology, and skills become increasingly transferable and accessible, many people become lazy in critical thinking, fact-checking, and questioning arguments. Instead, they tend to accept the seemingly flawless answers offered by AI. They may also follow safe and convenient paths, in other words, similar and probable options suggested by AI. Although this may seem to reduce the cost of learning, since a single prompt can quickly produce a likely answer within a minute, it actually discourages people from seeking the truth, thinking differently, taking risks, embracing uncertainty, and becoming honest individuals who dare to be themselves versus the ordinary one that is considered "normal" by the majority.

Richard Dawkins (1986) argues in *The Blind Watchmaker* that living organisms must constantly work to maintain internal differences from their

environment, such as temperature or water content. Without this continuous effort, they would blend into their surroundings and lose their identity as independent beings. This kind of uniqueness, expressed through individual agency and distinctive ingenuity, forms the foundation of human civilization, supporting the well-organized structures of society and shaping countless meaningful stories. Therefore, before the arrival of the Singularity, the evolution and progress of civilization depend on an education that nurtures and activates the effort Dawkins describes, enabling students to understand themselves, discover their purpose, and cultivate the strength to resist the natural pull toward conformity.

To conclude, I end this draft with Dylan Thomas's lines:

Do not go gentle into that good night,

Old age should burn and rave at close of day;

Rage, rage against the dying of the light.

Author Bio

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References

Dawkins, R. (1986). *The blind watchmaker*. W.W. Norton & Company.

Kurzweil, R. (2005). The singularity is near: When humans transcend biology. Viking Press.

McLuhan, M. (1964). *Understanding media: The extensions of man.* McGraw-Hill.

Schrödinger, E. (1992). *What is life?: With mind and matter and autobiographical sketches*. Cambridge University Press.

The Role of Adult Educators in the AI Landscape: How can adult learning professionals evolve to guide and empower learners in a Generative AI-infused world, with a focus on human-centered approaches?

Sarah-Maria Rotschnig, Christian Peter Fritz and Agnes Turner

Abstract

This conceptual paper examines how adult educators can evolve their roles in a generative AI context. Building on the Erasmus+ project "wrAIte," it highlights AI-assisted creative writing as a means to foster digital literacy, ethical awareness, and innovative pedagogy. The paper connects theoretical insights with practical experiences to support inclusive and transformative adult education in an AI-driven world.

Keywords: Creative Writing, Artificial Intelligence, Adult Education, Learning

Outlining the Problem

Being an adult educator means supporting adult learners in their learning process. Adults need reasons for learning; they need a “why.” Previous experiences must be meaningfully incorporated into the current teaching and learning setting in order to address participants in the best possible way when designing an educational event. In addition, adult educators need knowledge about how to design learning spaces in an appealing way to enable problem-solving and sustainable learning (Knowles, 1980; Sinelnikova et al., 2022; Wang et al., 2020). Principles such as participant orientation, content orientation, and action

orientation, which are considered the basis of didactic action in adult education (von Hippel et al., 2022), are always guiding principles.

One approach that offers adult learners opportunities for individual development and reflection and is therefore a valuable component of adult education is creative writing. Creative writing can serve as a source of strength, a means of individual expression, and can create fun and exchange among participants. When writing different texts, the aim is to find one's own voice and develop one's creativity (Brandt, 2012). When such creative writing processes take place in institutional teaching and learning settings, it is important to address the changed framework conditions.

Artificial intelligence, for example, is creating new conditions as it finds its way into various areas of life, including education. As a result, adult educators currently need knowledge about how to use generative large language models in order to support creative writing processes and apply them to the learning process of participants in an enriching way. The goal is to guide and empower learners. In the context of writing didactics, Rauter and colleagues (2024) note that AI literacy has become a new key competence. They define it as follows:

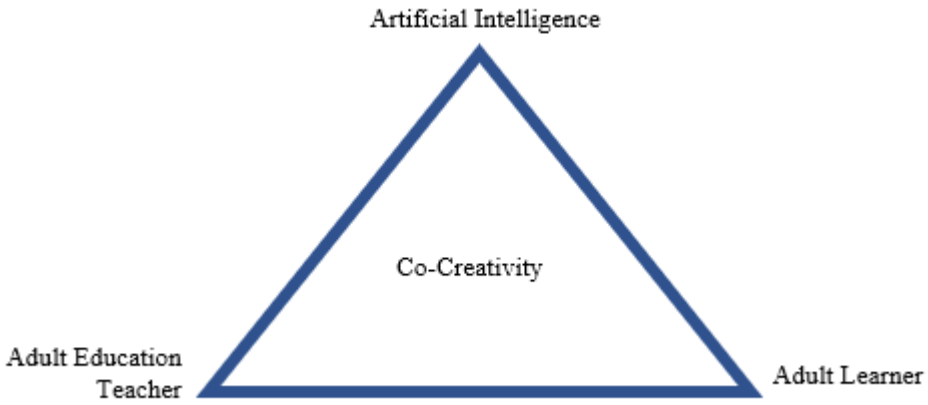
> *"Comparing the different concepts, models, and teaching approaches, it becomes clear that the goals of AI literacy are not so much concrete skills or a discrete body of knowledge, but rather an understanding of how AI works, critical reflection, questions of ethics, and the evaluation and assessment of results. The necessary shift away from the knowledge transfer and reproduction that has dominated the education system to date towards application-oriented acquisition must also be accompanied by a rethinking of teaching."* (p. 45)

The aim is to help adult learners better understand collaboration between humans and machines and make the most of the new opportunities available to them. This brings about

7changes in teaching and learning settings in adult education, which are illustrated in the following model (figure 1).

Figure 1

Teaching and Learning in Adult Education



The interaction between adult educators, artificial intelligence, and adult learners gives rise to co-creativity, which can promote innovation and new ideas.

The Erasmus+ project "wrAIte" takes a closer look at how AI-supported creative writing can be digitally literate, ethically sound, and educationally valuable. It focuses in particular on the skills that adult educators need to professionally support adult learners in an AI-driven world.

The Project "wrAIte"

"wrAIte"[1] wants to explore, promote and unlock the potential of AI-assisted creative writing as a means to strengthen adult learners' capacity of self-expression, digital competence and creative powers. There is growing awareness and evidence of the empowering, strengthening and developing potential of creative writing for people in

[1] Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or OeAD-GmbH. Neither the European Union nor the granting authority can be held responsible for them.

different, maybe challenging, life situations. Creative writing, i.e. writing other than academic, journalistic or technical, focusing on literary and/or poetic expression, has traditionally been a discipline limited to school, and, to a lesser extent, university education, and has primarily been targeted to prospective literary writers/professional writers. Increasingly, however, the potential of creative writing has been discovered for other target groups too, e.g. for health professionals and people with fewer opportunities.

"wrAIte" strives to achieve four central objectives: Explore the potential and limitations of AI as a tool in creative writing for adult learners in the whole writing process, from brainstorming to revising the written text. Expand the knowledge and skills of adult educators regarding the use of innovative digital tools. Enable adult educators to include AI-assisted creative writing in their educational portfolio. Promote AI assisted creative writing as means to strengthen learners' capacity of self-expression, digital competence and creative powers.

Activities implemented in "wrAIte" include: Desk research, participatory research, expert interviews, writing publications, creation of pedagogic and training materials, development of multimedia resources, dissemination and communications activities, creative writing contest, project management, evaluation and quality assurance (official project description).

The participatory research approach is a particularly important component of the project. Participatory research is characterized by the active involvement of stakeholders in defining the research interest and field. Participants are not merely research subjects but co-researchers engaged throughout the research process. Unlike traditional research methodologies that strive to separate researchers from research subjects, participatory research intentionally fosters collaboration between researchers and practitioners or community members in the field. Key aspects include:

- Active and Collaborative Participation: This encompasses co-developing research questions, collecting data, analyzing and interpreting results.
- Open Dialogue: Participatory research fosters knowledge exchange and shared understanding through collaboration between researchers and field participants.
- Empowerment: A central aim is empowering participants to learn more about their context and voice their perspectives. This goal is evident in the “wrAIte”- project, which seeks to empower target groups.
- Action-Oriented Outcomes: Beyond generating knowledge, participatory research strives to improve specific social situations, as is the case with “wrAIte” (description of our strategy within the project).

First Insights

First results from expert interviews show that artificial intelligence can be used in adult education settings to help identify inconsistencies and contradictions in texts and broaden writers' perspectives. Artificial intelligence can provide the central theme of a creative text and thus serve as a framework. The content is always provided by the writers, because artificial intelligence cannot replace human thinking. In this regard, it is important that collaboration between humans and machines is implemented. This way, machines can provide initial inspiration and humans can develop creative content based on their own experiences and emotions. This is how self-expression and empowerment can be achieved in the adult learning process.

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References

Brandt, E. (2012). Schreiben befreit! Ziele und Wirkung schreibpädagogischer Seminarkonzepte in der Erwachsenenbildung (Writing liberates! Aims and impact of writing pedagogy seminar concepts in adult education). *Magazin erwachsenenbildung.at, 15*. https://doi.org/10.25656/01:7455

Knowles, M. (1980). *The modern practice of adult education: From pedagogy to andragogy.* (Rev. and updated.). Cambridge Adult Education. https://archive.org/details/modernpracticeof0000know_j2r4/page/n5/mode/2up

Rauter, E., Wetschanow, K., & Logar, Y. (2024). Writing support with or despite AI? *Journal for Interdisciplinary Writing Research, 11*, 42-55. https://doi.org/10.48646/zisch.241103

Sinelnikova, V., Ivchenko, T., Pistunova, T., Regesha, N., & Skazhenyk, M. (2022). Enhancing the performance of Andragogic education. *Journal of Curriculum and Teaching, 11*(1), 245-254. https://doi.org/10.5430/jct.v11n1p245

von Hippel, A., Kulmus, C., & Stimm, M. (2022). *Didaktik der Erwachsenen- und Weiterbildung (Didactics of adult and continuing education* [2nd ed.]). https://doi.org/10.36198/9783838559568

Wang, V., Torrisi-Steele, G., & Reinsfield, E. (2020). Transformative learning, epistemology and technology in adult education. *Journal of Adult and Continuing Education, 27*(2), 324-340. https://doi.org/10.1177/1477971420918602

wrAIte. (2025). *Artificial Intelligence in creative writing. Project overview.* https://wraite-project.eu/

The New Paradigm of Human-Machine Collaboration: Role Transformation and Division of Labor for Adult Education Teachers in China in the Era of Generative AI

Liyue Dong

Abstract

The rapid development of generative artificial intelligence (GAI) is reshaping the role of teachers in adult education. From the perspective of human-AI collaboration, this article explores the driving forces behind the transformation of teacher roles in Chinese adult education and analyzes the collaborative mechanisms between teachers and AI.

***Keywords**:* adult education, artificial intelligence, teacher role, human-AI collaboration, China

Introduction

In recent years, generative artificial intelligence (GAI) has been rapidly applied in the field of education, driving profound changes in teaching models. In China, adult education is facing challenges such as learner diversification, a shift toward competency-based goals, and deep technological integration. The traditional roles of teachers are being disrupted, leading to a restructuring of teaching responsibilities. This article focuses on the transformation of teacher roles from the perspective of human-machine collaboration, aiming to clarify the task boundaries and collaborative mechanisms between teachers and AI, and proposes a competency framework for teachers to adapt to the future of adult education.

Key Drivers of Teacher Role Transformation

Adult learners in China have significant heterogeneity. They differ in age, educational background, career development, and learning goals. This requires teaching methods to be more personalized and flexible. The traditional teacher-centered lecture model can no longer meet their needs (Brookfield, 2015; Knowles et al., 2014).

GAI tools, such as ChatGPT, are capable of generating text, providing personalized feedback, and recommending learning resources. These functions are replacing some repetitive tasks previously performed by teachers, leading to a redefinition of the teacher's role (Zawacki-Richter et al., 2019).

Adult education increasingly emphasizes competence building, problem-solving, and critical thinking. Teachers are no longer just knowledge transmitters, but facilitators of learning and guides to experience-based learning (Lin, 2024). This shift forces teachers to move beyond traditional roles and adopt more diversified and integrated functions (Merriam & Bierema, 2014).

Task Division Mechanism in Human-Machine Collaboration

Collaboration between teachers and AI should not be a simple replacement of tasks. Instead, it should be a complementary partnership that serves the learning objectives. The task distribution can be broken down into the following three aspects:

1. **AI generates content, teachers guide meaning.**

   AI can quickly generate teaching materials, cases, and knowledge maps, but it lacks the ability to make contextual judgments and provide value-oriented guidance. Teachers should take on the role of meaning facilitators, helping learners interpret the logic and ethics behind AI-generated content, thus promoting deep learning (Mezirow, 1978; Zawacki-Richter et al., 2019).

2. **AI performs tasks, teachers design learning contexts.**

AI is good at automating tasks like grading, answering basic questions, and recommending learning paths. Teachers should evolve into learning designers who create learning contexts aligned with adult learning principles, adjusting teaching pace and strategies accordingly (Knowles et al., 2014).

3. **AI analyzes behavior, teachers connect emotionally.**

   AI can track learning behavior and generate data reports, but it cannot interpret learners' emotional states and motivations. Teachers, as emotional supporters, need to pay attention to learners' psychological changes and provide necessary encouragement and guidance (Brookfield, 2015).

Reconstructing Teacher Competency Framework

To enable effective human-AI collaboration, teachers need to develop a diverse set of competencies, including:

- Technological integration: The ability to identify and effectively integrate AI tools into the teaching process.
- Learning design: The ability to design teaching activities and assessments that are based on adult learning principles (Merriam & Bierema., 2013).
- Ethical judgment: Ensuring that the use of AI aligns with principles of fairness, privacy, and transparency.
- Facilitation: Fostering learners' self-regulated learning and critical use of AI technologies (Zimmerman, 2002).

Additionally, teacher training institutions and continuing education programs should prioritize the development of these competencies to support professional transformation.

GAI is not a replacement for teachers but a driving force behind the transformation of their roles. In the future development of adult education in China, human-AI collaboration will become the mainstream. Teachers should actively embrace technological change and

transform into learning navigators, humanistic mentors, and collaborative designers. In this way, they can create a human-centered, AI-empowered educational ecosystem. Only through this approach can adult education achieve diversification, high quality, and sustainable development.

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References

Brookfield, S. D. (2015). *The skillful teacher: On technique, trust, and responsiveness in the classroom.* John Wiley & Sons.

Knowles, M. S., Holton III, E. F., & Swanson, R. A. (2014). *The adult learner: The definitive classic in adult education and human resource development*. Routledge.

Lin, X. (2024). Exploring the role of ChatGPT as a facilitator for motivating self-directed learning among adult learners. *Adult Learning*, *35*(3), 156-166. https://doi.org/10.1177/10451595231184928

Merriam, S. B., & Bierema, L. L. (2013). *Adult learning: Linking theory and practice.* John Wiley & Sons.

Mezirow, J. (1978). Perspective transformation. *Adult education*, *28*(2), 100-110. https://doi.org/10.1177/074171367802800202

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education–where are the educators? *International journal of educational technology in higher education*, *16*(1), 1-27. https://doi.org/10.1186/s41239-019-0171-0

Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory into practice*, *41*(2), 64-70. https://doi.org/10.1207/s15430421tip4102_2

From Curiosity to Cognitive Partnership: Adult Learners' Adaptation to AI Agents

David Stein and Zilong Pan

Abstract

This qualitative inquiry examined adult learners' initial interactions with AI agents in a module on social change. Three themes emerged: AI as a cognitive partner, negotiation between neutrality and advocacy, and human-AI differences in dialogue quality. Participants valued AI's immediacy and coherence but noted its lack of emotional depth and lived experience.

Keywords: adult learning, artificial intelligence, technology support, technology adoption

Adults Learning with Technology

The integration of generative artificial intelligence (AI) into higher education is reshaping how learning unfolds (Michel-Villarreal et al., 2023), especially for adult learners engaging with these tools for the first time. While recent discourse emphasizes AI's potential to support educators by streamlining tasks and enhancing instructional delivery (Gaehde, 2025), less attention has been paid to the learner's experience, particularly the cognitive, emotional, and pedagogical dimensions that arise in learner-AI interactions.

Transformative Learning Theory offers a lens for understanding how adults respond to emerging technologies. According to Mezirow (2000), transformative learning involves critically reassessing one's assumptions in light of new experiences. Engaging with generative AI in dialogic assignments can provoke such reassessment, challenging preconceived notions of

authorship, collaboration, and knowledge authority (Wang et al., 2020). Encountering new technology in classroom assignments can be transformative for adult learners, enabling them to develop digital literacy and problem-solving skills. Yet, success depends on thoughtful integration, supportive environments, and recognition of the unique needs and motivations of adult learners (Kobrin et al., 2021).

This inquiry explores how adult learners interact with generative AI agents in a structured classroom activity requiring debate, synthesis, and reflective dialogue. By examining learners' perceptions and responses, the study highlights the affordances, roles, and tensions of AI in adult education. Understanding how adult learners adopt and adapt to AI tools informs pedagogical strategy and contributes to a deeper understanding of how AI agents might become partners in teaching and learning.

Context

In a graduate-level course on adult education and lifelong learning, 25 adult learners were asked to engage with an AI agent to discuss and challenge ideas by preparing a position and prompting the AI to take an opposing view. Learners asked their agent to read their stance and write a counterargument of at least two paragraphs, then discuss with the agent how you might find common ground.

Results

Theme	Representative Quotes	Interpretation
AI as a Cognitive Partner in Dialogue	"It was crazy how much it emulates a real conversation… I was impressed by some of the points it brought up and suggestions to counter my concern." "In a matter of seconds, I could have a revised response, a counter-opinion, and a common thread response." "AI has become a vital resource for helping me process information, stimulating memory, organize thoughts, and maintain efficiency."	AI is experienced as a thinking companion that enhances productivity, supports argumentation, and provides rapid, coherent responses. Participants value its ability to refine ideas and highlight blind spots.

Negotiating Neutrality vs. Advocacy	"ChatGPT asked me about the fear of 'biased education' and we both agree… having this conversation about social issues in school is necessary." "I insisted that it provide a one-sided argument… but from the outset, I was met with compromise and acknowledgement of diverse perspectives." "ChatGPT provided several reasons why this could be argued… stability and social cohesion, preparing students for the present, avoiding polarization."	AI often defaults to balanced or neutral positions, which some participants appreciate for avoiding bias, while others find limiting. Users actively test AI's ability to take sides, revealing tension between facilitation and advocacy.

Human-AI Differences in Dialogue Quality	"Humans don't bend so easily or change their arguments so quickly… they bring in emotions and irrationality that are missing in ChatGPT." "It did make for an agreeable and objective conversation though… but it obviously didn't have an opinion or critical thinking founded on experience." "This was academically stimulating… but it did lack the touch of sensing another person's personal beliefs on the topic."	While AI provides structured, immediate responses, participants note the absence of emotional depth, lived experience, and unpredictability that human dialogue brings. This creates both strengths (clarity, neutrality) and weaknesses (lack of authenticity).

Discussion

The findings highlight the complex ways learners experience interaction with AI agents, situating these dialogues within broader debates about the role of technology in education. Participants consistently framed AI as a cognitive partner in dialogue, emphasizing its utility in organizing thoughts, generating counterarguments, and stimulating reflection. This aligns with emerging scholarship on AI as a collaborator that can scaffold cognitive processes and support learners in developing critical reasoning skills. However, while participants valued the

immediacy and coherence of AI responses, they also noted the risk of over-reliance, raising concerns about AI echoing previous ideas rather than a genuine challenger of ideas.

A second theme, negotiating neutrality versus advocacy, reflects ongoing tensions in expanding thinking on social and educational issues. AI's tendency to default to balanced positions offers learners a safe space for exploration but sometimes limits ideological challenges. Participants' efforts to push AI toward stronger stances suggest that learners actively negotiate boundaries of neutrality, advocacy, and bias in educational interactions.

Finally, the theme of human-AI differences in dialogue quality underscores the limits of AI as a conversational partner. While AI provides structured, immediate responses, participants consistently noted the absence of lived experience, emotional depth, and unpredictability that characterize human dialogue. This distinction is critical: human educators bring personal histories, emotions, and values into the classroom, shaping learning in ways AI cannot replicate.

Conclusion

These themes point to a dual role for AI in adult education: as a powerful tool for cognitive support and reflection, but also as a limited partner in dialogue that requires careful integration into pedagogical practice. Educators and learners must remain mindful of AI's strengths—speed, coherence, neutrality—while recognizing its limitations in fostering authentic, emotionally grounded discourse. Future research should explore how AI can better balance neutrality with advocacy and how educators can leverage AI without diminishing the human dimensions of teaching and learning.

Authors Bios

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Iluminate is David's AI partner. Together we edited the document for clarity and flow. Illuminate provided ideas for the human partners to consider.

References

Gaehde, N. (2025, August 21). Real educational advantages of artificial intelligence. *Columbus Jewish News*, p. 35.

Kobrin, J., Bullock, P.-G. N., Gierke, J., & Heil, C. (2021). Adult educators adopting technology in their classrooms through innovation, collaboration, and inquiry. *Adult Literacy Education, 3*(1), 49–54. http://doi.org/10.35847/JKobrin.PBullock.JGierke.CHeil.3.1.49

Mezirow, J. (2000). *Learning as transformation: Critical perspectives on a theory in progress*. Jossey-Bass.

Michel-Villarreal, R., Vilalta-Perdomo, E., Salinas-Navarro, D. E., Thierry-Aguilera, R., & Gerardou, F. S. (2023). Challenges and opportunities of generative AI for higher education as explained by ChatGPT. *Education Sciences, 13*(9), Article 856. https://doi.org/10.3390/educsci13090856

Wang, V., Torrisi-Steele, G., & Reinsfield, E. (2020). Transformative learning, epistemology and technology. *Journal of Adult and Continuing Education, 27*(2), 335–361. https://doi.org/10.1177/1477971420918602

To Memorise or Not to Memorise

Khau Huu Phuoc

Abstract

AI provides efficient data retrieval, but human memory remains essential for wisdom and critical thinking. Unlike algorithmic processing, human internalization fosters the conceptual frameworks necessary for empathy and creativity. Education must not discard memorization but redefine it as cultivating meaning, ensuring internal understanding continues to drive human progress and moral responsibility.

Keywords: wisdom vs. data, cognitive development, conceptual framework

Introduction

In November 2022, OpenAI greatly impressed the world with the release of ChatGPT, a conversational chatbot capable of generating coherent and contextually relevant responses to almost any prompt. Three years on, the landscape of artificial intelligence has expanded dramatically, with new models such as Google's Gemini, Microsoft's Copilot, and Anthropic's Claude entering the scene. These tools have revolutionised how we access and interact with information.

Previously, a search in Google or any other search engine would return thousands of links for users to sift through, read selectively, and synthesise into a coherent understanding. Today, a single prompt to an AI platform can return an instant, polished response. AI systems are time-saving and remarkably efficient tools, indeed. However, with this convenience comes a profound question for education and human development: In an age when AI can store, retrieve, and reproduce practically any information, is memorisation still necessary?

At a surface level, the question may prompt an immediate “yes.” However, on closer reflection, it touches on one of the most fundamental aspects of learning and what it means to be human.

Education has long been associated with the acquisition and retention of knowledge—facts, concepts, formulae, and data that together form the foundation of understanding. Memory, in this sense, is not merely a mechanical act of storing information but the essential ground upon which thinking and reasoning grow. Without memory, comprehension and creativity lose their roots. The question, then, is not whether machines can remember, but whether they understand what they remember.

The Merriam-Webster Dictionary defines knowledge as “the fact or condition of knowing something with familiarity gained through experience or association,” while wisdom is “the ability to discern inner qualities and relationships.” Current AI, despite its vast repertoire of facts and data, cannot experience or associate meaning as humans do. It processes information algorithmically, without consciousness or judgement. It can generate text that appears wise, but it does not know in the human sense — it does not remember through lived experience, nor does it grow through reflection.

A computer can store terabytes of data; the internet holds trillions of pieces of information. But no machine can equate to the human mind, which not only recalls but also interprets, connects, and applies knowledge in dynamic and moral contexts. Memorisation in human education is not simply about rote recall — it is about developing the mental discipline and conceptual framework necessary for critical thought, empathy, and wisdom.

Imagine a person without memory. Unable to retain experiences, they would be trapped in ignorance, repeating the same questions endlessly for being unable to remember what they have been told. Human progress depends on accumulated memory through which culture, science, and ethics evolve. Memorisation is needed for critical thinking, problem-

solving, and creativity, the skills that AI of today cannot replicate. To abandon memorisation would be to weaken the very structure of human learning and social development.

AI may well be a powerful assistant, or an external extension of human memory, but it can never replace the need for internalised knowledge that shapes judgement, creativity, and moral responsibility. Machines remember without knowing meaning; humans remember for meaning. The future of education, therefore, must not discard memorisation but redefine it: not as the mechanical storage of facts, but as the cultivation of understanding that enables wisdom.

In the age of AI, the question is not whether to memorise, but how to remember wisely.

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Beyond Basic Use: Fostering Critical and Ethical AI Literacy Among Adult Learners

Carmelita A. Orias

Abstract

The sudden growth of AI demands a shift in adult education from mere functional knowledge to high-level AI literacy. However, it is important that critical thinking and ethical reasoning be emphasized to address AI's biases, social implications and data privacy. Adult education should foster an informed citizenry to be able to critically assess and responsibly shape future AI technologies.

Keywords: high-level AI literacy, ethical reasoning, algorithmic bias, socio-technical phenomenon

Introduction

The pervasive and accelerating integration of Artificial Intelligence (AI) into nearly every facet of modern life necessitates a profound re-evaluation of our educational approaches. Mere acquisition of functional knowledge about AI tools is no longer sufficient. Instead, there is an urgent call to cultivate a deeper, more nuanced understanding that encompasses critical thinking and ethical reasoning. This need is a serious call in adult education, where a significant portion of the population interacts with AI systems in their everyday lives, often without a comprehensive understanding of the underlying mechanisms, societal implications, or inherent ethical complexities. The emergence of frameworks for AI literacy in adult and higher education underscores this critical shift (Laupichler et al., 2022; Lee et al., 2024).

Basic Usage Guidelines

The conventional design of AI education often focuses on basic usage guidelines: 1) how to interact with chatbots, 2) how to control AI-powered search engines, and 3) how to utilize generative AI for content creation. While these foundational skills are undeniably valuable, they represent only the surface of a rapidly expanding and increasingly influential technological setting. As AI capabilities advance, so too does the imperative for a citizenry equipped to navigate its intricate terrain with discernment and responsibility (Long & Magerko, 2020). Without this deeper literacy and understanding, adults risk becoming passive consumers of AI, vulnerable to its inherent biases, privacy pitfalls, and the subtle ways it can shape perceptions and behaviors.

Empowering Adult Learners with High-level AI Literacy

To truly empower adult learners in the age of AI, educational frameworks must transcend basic operational instruction and pivot towards fostering high-level AI literacy. This involves a multi-faceted approach that develops the capacity for critical assessment of AI systems. Learners must be encouraged to question how AI works, to understand the data it is trained on, and to recognize that AI outputs are not objective truths but rather reflections of the data and algorithms they are built upon. This critical lens is essential for identifying and challenging the inherent biases that can be embedded within AI models, biases that often mirror and amplify existing societal inequalities in areas such as race, gender, and socio-economic status (UNESCO, 2021).

Moreover, a vigorous AI literacy curriculum for adults must have a significant emphasis on ethical reasoning capabilities. The ethical problems posed by AI are diverse and complex. It ranges from data privacy and algorithmic discrimination to accountability for AI decisions and

the potential impact on employment and human organization. Adult learners need to engage with these issues proactively, developing a framework for ethical decision-making concerning AI's development, deployment, and daily use. This includes understanding concepts like fairness, transparency, and explainability in AI, principles championed by global standards like the UNESCO Recommendation on the Ethics of Artificial Intelligence (UNESCO, 2021).

The current gap in adult education regarding advanced AI understanding is stark. While basic AI usage becomes more prevalent, a profound understanding of AI's social implications, biases, and ethics remains largely unaddressed (Laupichler et al., 2022). This paper contends that successful AI literacy education for adults are just the basic usage guidelines but instead it must strive to educate an informed citizenry to be able to critically assess AI systems, recognize built-in biases, understand data privacy issues, and engage in productive discussion about the responsible creation and use of AI. In the university setting for example, students need to understand the proper use of AI so they will know how to use it responsibly. The ultimate goal of this literacy is to ensure adults are not only users but also informed contributors to the ongoing discourse around AI's ethical and social dimensions (Aithal & Silver, 2023; Firth-Butterfield et al., 2022).

Achieving this requires a redesigning of adult education pedagogy. It is important to advocate an adult education framework that combines interdisciplinary approaches, drawing insights from fields such as computer science, sociology, philosophy, law, and psychology. This interdisciplinary perspective allows learners to understand AI not just as a technical tool, but as a socio-technical phenomenon with broad societal implications (Tadimalla & Maher, 2024). For instance, discussions around facial recognition technology benefit immensely from examining

not only its technical capabilities but also its historical use in surveillance, its potential for racial bias, and the philosophical debates around privacy and individual freedom.

Furthermore, the framework should heavily integrate a case-study analysis. Learning from real-world examples of AI implementation, both successful and problematic, provides concrete grounding for abstract concepts. Examining instances where AI has led to discriminatory outcomes, privacy breaches, or ethical quandaries can serve as powerful teaching tools, prompting learners to analyze the causes, consequences, and potential solutions. The use of real-world scenarios is particularly effective for adult learners who prefer experiences tied to practical, daily applications (KangJie et al., 2025).

Lastly, participatory learning methods are crucial to empowering individuals to find their way in the intricate AI landscape. Rather than passive reception of information, adult learners should be actively involved in discussions, debates, simulations, and even hands-on activities that allow them to explore AI concepts. This could involve exercises in identifying biases in datasets, proposing ethical guidelines for specific AI applications, or critically evaluating AI-generated content. Such methods foster a sense of agency and equip individuals with the confidence to engage in public discourse about AI and advocate for its responsible development, transforming them from merely digital consumers to confident digital citizens (Mansur, 2025).

Conclusion

The goal is not to turn every adult into an AI guru, but to cultivate an informed and discerning public that can make informed choices, shape the ethics of future AI technologies, and hold developers and policymakers accountable. By moving beyond basic functional knowledge and embracing a holistic approach to critical and ethical AI literacy, adult education can play a vital role in ensuring that the future of AI is one that serves humanity equitably, justly, and for

the greater good. The time to invest in this deeper understanding is now, for the decisions we make today about AI literacy will profoundly impact the society of tomorrow.

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References

Aithal, P. S., & Silver, A. (2023). *Fostering Ethical and Critical Minds in the AI Era: A Practical Approach.* Harvard Graduate School of Education. https://mepli.gse.harvard.edu/our-fellows-at-work/fostering-ethical-and-critical-minds-i

Firth-Butterfield, K., Anthony, A., & Reid, E. (2022). *Without universal AI literacy, AI will fail us*. World Economic Forum. https://www.weforum.org/stories/2022/03/without-universal-ai-literacy-ai-will-fail-us/

KangJie, E. T., Song, T., Zhu, Z., Li, J., & Lee, Y.-C. (2025). *AI literacy education for older adults: Motivations, challenges and preferences.* https://doi.org/10.48550/arXiv.2504.14649

Lee, K.,-w., Mills, K., Ruiz, P., Coenraad, M., Fusco, J., Roschelle, J., & Weisgrau, J. (2024). *AI literacy: A framework to understand, evaluate, and use emerging technology.* Digital Promise. https://digitalpromise.org/2024/06/18/ai-literacy-a-framework-to-understand-evaluate-and-use-emerging-technology/

Laupichler, M. C., Aster, A., Schirch, J., & Raupach, T. (2022). Artificial intelligence literacy in higher and adult education: A scoping literature review. *Computers and Education: Artificial Intelligence, 3*, Article 100101. https://doi.org/10.1016/j.caeai.2022.100101

Long, D., & Magerko, B. (2020). What is AI literacy? Competencies and design considerations. *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20)* (pp. 1-16). https://doi.org/10.1145/3313831.3376727

Mansur, S. (2025). AI as a catalyst in education, adult learning, and digital literacy. *International Journal for Multidisciplinary Research, 7*(4) 1-15. https://www.ijfmr.com/papers/2025/4/54198.pdf

Tadimalla, S., & Maher, M. L. (2024). AI literacy for all: Adjustable interdisciplinary socio-technical curriculum. *IEEE Frontiers in Education Conference (FIE), Washington, DC, USA* (pp. 1-9). https://doi.org/10.48550/arXiv.2409.10552

UNESCO. (2021). *Recommendation on the ethics of Artificial Intelligence*. https://unesdoc.unesco.org/ark:/48223/pf0000380455

Embracing Artificial Intelligence and Self-Directed Learning for Older Adults

Thomas Kuan

Abstract

This paper addresses older adults' artificial intelligence (AI) anxiety and digital literacy needs. It suggests a Self-Directed Learning (SDL) approach to learning; synthesizing Western autonomy models with Eastern philosophical wisdom (I-Ching). This approach empowers older adults to embrace AI as a trusted, transformative partner.

Keywords: Artificial Intelligence, Self-directed Learning, I-Ching

Introduction

Artificial Intelligence is now a social force, deeply integrated into almost every social and economic activity. It is present everywhere except, perhaps, in human creativity and wisdom. However, this technological revolution caused large-scale job losses (Sheffi, 2024), which especially threatened the economic stability of older adults—those aged 65 and above. Many in this group are retired or work as Platform workers (Ministry of Manpower, n.d.). For these individuals, AI-related skills are increasingly important for maintaining their livelihoods and staying active in community life. This paper argues that a concept of Self-Directed Learning (SDL) approach is necessary for older adults to learn and manage AI-related anxieties.

Self-Directed Learners (SDL) and Traditional Thinking

Older adults' cognitive health may cause issues learning AI. Remembering algorithmic steps, retrieving information fast with search prompts, and having patience in mastering hands-on skills. Personal learning requires tedious efforts; learning with others makes learning engaging. However, older adults are autonomous and self-directed learners,

exhibiting dysfunctional learner states from dependence to independence (Confessore & Park, 2004). The ability of older adults to successfully engage in SDL is varied, spanning a spectrum of learner behaviour. Most have a ‘preference for a peer-sharing platform in an equitable environment where they can participate in learning regardless of social standing and educational levels’ (Kuan, 2021). Within this spectrum, two dysfunctional SDL states are particularly relevant:

1) Learner Dependence: Individuals often experience anxiety when confronted with unfamiliar technology, especially when perceived cognitive limitations. They require significant guidance in navigating new software or AI tools, which can lead to a loss of self-confidence. This difficulty is sometimes exacerbated by an impatience shown by younger generations attempting to instruct them. Peer support and encouragement can mitigate these feelings, fostering initial engagement; and

2) Learner Independence: Tech-savvy older adults often leverage personal resources to learn and utilise AI independently, exploring activities such as generating images, music, or content, or delving into philosophical and spiritual pursuits. Despite varying proficiency levels, many older adults experience anxiety or overwhelm due to reliance on AI in daily activities. Participation in digital services –such as banking, healthcare, and community networking –evokes a mix of pride and apprehension. Such feelings should encourage seeking further help (from younger persons) to achieve learning autonomy.

Kuan (2023) notes that in SDL, the LAP (Learner Autonomy Profiles) framework’s four distinct Inventories: Resourcefulness, Initiatives, Desires, and Persistence; have synchronicities with the traditional Chinese philosophy of Wuxing Learning Cycle’s Four Elements of: Resources, Outputs, Wealth and Authority. In both systems, the concept of changes is prominent. Western SDL's focus on an individual learning mindset can be reinforced with Eastern perspectives on accepting changes.

Among older Asians, the philosophy of I-Ching offers insights into managing this change. *I Ching: The Book of Changes*, translated by James Legge (n.d.), emphasises acceptance and adaptation to constant change – principles applicable to AI integration. While AI is not directly referenced in classical texts, some older Asians refer to AI as 'ancient intelligence', drawing parallels to traditional practices of calligraphy – recording, copying, and transmitting knowledge using brushes and rice papers - to share and deliver social norms.

Philosophically, AI is seen not as a natural evolution inseparable from humans and nature, but as man-made tools designed for communication and utility. As Song (2021) says, Confucian scholar Chenyang Li advocates viewing AI as a part of a broader ethical ecosystem – a 'companion' rather than a threat. For many older adults, AI (known as the Fourth Industrial Revolution) signifies a technological revolution akin to the First Industrial Revolution, offering opportunities for growth and adaptation. The I-Ching principle provides an 'antidote' to overcome fear of AI, by being aware of challenging difficulty and presenting solutions through selected hexagram (although solutions are not immediately apparent). It suggests not to resist change, but learning to navigate it with grace and acceptance. It happened when a large fund amount was transferred from one's retirement account wrongly to another account; and fortunately, it alerted bank cybersecurity systems to verify the information.

Evolving Learning Modalities and the Challenge of Trust

AI introduces fundamental shifts in how knowledge is accessed, understood, and shared. Its adaptive and immersive capabilities influence thinking patterns and demand new learning approaches. These changes can yield tangible benefits – such as government payouts, digital vouchers, and improved health information – but also pose risks that are heard in communal conversations. These practical applications (digital payments, online information) and concerns over cybersecurity, scams, and AI-generated content.

Digitalisation of content creates a dual experience: immersive learning versus trust in digital sources. This duality underscores the crucial role of ethics in safeguarding the truthfulness and integrity of online data. Government initiatives such as Singapore's ScamShield and Digital Skills for Life (DSL) encourage digital literacy and protect vulnerable populations (Infocomm Media Development Authority [IMDA], n.d.). However, over-reliance on digital tools can lead to digital dementia (diminished cognitive skills due to excessive dependence), and uncritical worship of digital sources as ('god's) infallible. A balanced approach – integrating AI innovation with the wisdom of traditional values – is essential for safe and meaningful digital engagement.

Conclusion

Increasingly sophisticated AI (agentic and generative) poses challenges for older adults in learning and applications. To mitigate, accept AI as a creative partner to overcome learning fear and fatigue. To thrive in the AI era, older adults can adopt SDL - either to learn with others, or to learn alone – that best suits their natural talents and aspirations. Later-life learning in an AI era requires calm acceptance and trust, transforming apprehension into opportunity. By tapping into philosophical traditions, it empowers the rethinking of cultural learning values, the potential of AI, and robotic systems to ensure trust, security, and autonomy of learning.

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References

Confessore, G. & Park, E. (2004). Factor validation of the learner autonomy profile, version 3.0, and extraction of the short form. *International Journal of Self-Directed Learning. I*(1), 39-58. https://www.researchgate.net/publication/284034064_Factor_validation_of_the_learner_autonomy_profile_version_30_and_extraction_of_the_short_form

Infocomm Media Development Authority (IMDA). (n.d.). *Be digitally empowered for innovation and growth*. Singapore Government. https://www.imda.gov.sg/

Kuan,T. (2021). The wuxing learning cycle for elder learners in the Asia-Pacific. In P. Narot & N. Kiettikunwong (Eds.), *Education for the elderly in the Asia-Pacific* (pp. 83-100). Springer Singapore. https://doi.org/10.1007/978-981-16-3326-3_5

Kuan, T. (2023). 'Conversation- making': An East Asian perspective on older adults learning. *International Journal of Education and Ageing*, *5*(3), 169-174. https://www.britishgerontology.org/content/32675/Live/IJEAJournalVol5number323.pdf

Legge, J. (n.d.). *I Ching: The book of changes*. https://baharna.com/iching/legge/

Ministry of Manpower. (n.d.) *Platform workers*. Singapore Government. https://www.mom.gov.sg/employment-practices/platform-workers-act/platform-worker

Sheffi, Y. (2024). Technology is not enough: Potential job displacement in an AI-driven future. *Journal of Supply Chain Management, Logistics and Procurement, 6*(4), 338-351. https://doi.org/10.69554/FAVX7910

Song, B. (2021). Introduction: How Chinese philosophers think about Artificial Intelligence? In B. Song (Ed.), *Intelligence and wisdom*. Springer, Singapore (p. 1-14). https://doi.org/10.1007/978-981-16-2309-7_1

Gender Bias in AI-Supported Informal Learning: Risks and Opportunities

Minghan Gao

Abstract

AI-assisted adult learning may perpetuate gender stereotypes via biased data and design. This study contends that educators must cultivate critical AI literacy to enable learners to identify and contest biases, therefore ensuring AI serves as a mechanism for equity rather than inequity.

Keywords: Artificial intelligence (AI); Adult learning; Gender stereotypes; AI literacy; Equity; Technology and education

Introduction

Artificial intelligence (AI) has been integrated into adult learning, from tutoring programs and automated testing systems to resume feedback platforms and tools for employment advice. The general public typically commend these technologies for how well they work and how well they may provide customized learning routes to an enormous number of people concurrently (Mansur, 2025). For adult learners, many of whom have jobs, care for dependents, and other work and/or community duties (Knowles, 1978), AI-supported learning settings can offer freedom and flexibility. But this promise comes with issues. For instance, AI does not appear to be neutral. These systems that help users study, suggest employment, and even impact how people talk to one another are based on data that shows decades of cultural norms and labor hierarchy, particularly gender prejudices. Specifically, Ghosh and Wilson (2025) conducted a systematic review of 189 papers and found that AI research often focuses on gender bias, reflecting a narrow overall conception of AI bias. As AI has become an important part of adult

learning, it could lead to issues related to educational inequity. Therefore, there is a need to be aware of and deal with the ways that AI systems may reinforce stereotypical behaviours.

Gender, Identity, and Adult Learning Contexts

Gender stereotypes can affect how and what people learn. For example, gender-role stereotypes create barriers for women in their education and career choices, leading to disparities in pay and advancement opportunities (Silberstang, 2011). Although education is intrinsically connected to identity and can empower individuals by providing a high standard of knowledge and discernment, potentially leading to personal growth and authority (Peters, 2009). But female learners may have received messages early telling them not to pursue fields that are perceived as "technical," "advanced," or "leadership-oriented". From a young age, girls are less likely to be encouraged to pursue technology careers and focus on clerical skills rather than advanced technologies, reflecting early messages that discourage them from technical fields (Kekelis et al., 2005). To address this, adult learning provides the opportunity for every individual to broaden organizational and social change, through diverse case studies and theoretical perspectives, and focus on self-change and identity transformation (Chappell et al., 2003).

The Potential Promise of AI in Adult Learning

With the help of AI, more adults are able to pursue education through self-directed learning of any subject. AI also has the potential to support greater gender equity in learning. For instance, AI tutoring systems give every learner a place to ask questions without worrying about being judged (Dong et al., 2025). This is especially helpful for people who have been in school settings where mistakes were punished or ability was questioned. AI-based writing and feedback tools can make it easier for adults to make their way back to school. People who have family or professional obligations that limit their learning time can additionally benefit from flexible

scheduling and on-demand support from AI (Lin et al., 2025). AI can make things more accessible by offering people greater opportunities in these ways.

How AI Reproduces Gender Stereotypes

However, at the same time, AI techniques may potentially exacerbate gender stereotypes. Specifically, AI systems may replicate past inequities because they are trained with data from the past. It has been found that career recommendation algorithms encourage males toward engineering and leadership roles and women toward positions related to administration or caregiving (Njoto et al., 2022). Writing assistants may indicate a more polite tone in emails sent by women (Kaplan et al., 2024), which reinforces the idea that women should be polite instead of assertive. Even systems that make images almost always create images of men when asked to make images of "leaders" For instance, AI systems overrepresent men in images of leaders, with DALL-E showing the highest overrepresentation at 86.5% (Gisselbaek et al., 2025). These outcomes are not neutral; they influence learners' perceptions of their possibilities. These results illustrate how AI systems can sustain what has been described as "algorithms of oppression" (Noble, as referenced in Strengers & Kennedy, 2020), thus promoting racism and sexism. Moreover, the design and development of these systems are frequently controlled by a uniform group, resulting in a limited spectrum of perspectives being integrated into the technology (Strengers & Kennedy, 2020; Varon & Peña, 2021).

Implications for Adult Learner Identity and Confidence

Adult learners frequently experience periods of identity transition, including career changes, returning to school, or rebuilding confidence following work instability or significant life transitions (Mezirow, 1991). AI systems may perpetuate gender biases and stereotypes, potentially restricting learners' feelings of agency by suggesting certain routes are more

appropriate for particular genders (Fournier-Tombs & Castets-Renard, 2021). The consequence of this is not only limited job exploration but also ingrained views on competence and inclusion. This dynamic mirrors feminist critiques that challenge which systems deserve to be constructed and who gets to decide, underlining how technology might automate historical inequalities (Powles & Nissenbaum, as cited in Varon & Peña, 2021).

The Need for Critical AI Literacy in Adult Education

Adult education has stressed the necessity of thinking about things, giving people authority, and questioning what they think is true. These customs give us a firm base for dealing with AI's effects. Educators can help learners think about how AI makes choices, where training data comes from, and how social injustices become built into algorithms. Instead of seeing AI systems as unbiased authority, educators must see AI as just one voice in a large learning discourse that needs to be carefully thought about and analyzed. This method is in line with a feminist understanding of consent, which sees it as an ongoing process of negotiation and reaffirmation rather than a one-time agreement (Sadowski & Strengers, 2021). Below, some practical strategies are proposed for educators:

- Adult learning environments can incorporate specific strategies for enhancing critical AI literacy.
- Use names that are traditionally masculine and female to compare AI-generated career suggestions.
- Look at how AI talks about leadership traits and see if they fit with common ideas.
- Ask learners to change AI-generated writing on purpose to question gendered ideas.

These approaches would foster not only technical proficiency but also a knowledge of the mechanisms of bias. These exercises, based on feminist and anti-colonial ideas, enable students

to understand that meaningful consent and interaction with technology involve the ability to say "no" and to put limitations on how systems work (Varon & Peña, 2021; Sadowski & Strengers, 2021).

Institutional Considerations and Equity of Access

At the institutional level, making sure that AI is used fairly means dependable digital access and help with digital and AI reading and writing. Access alone is not sufficient; learners must be provided with the ability and confidence to use AI tools without becoming reliant on them or blindly following their advice. Educators and the program designers also need to choose AI technologies carefully, checking to see if they show that they are open, fair, and able to change. This is very important to prevent what has been called a "digital welfare dystopia," where the most vulnerable people are forced to use intrusive and punishing technologies without any real choice (Alston, as cited in Varon & Peña, 2021).

Conclusion

In sum, AI-assisted adult learning is at a crossroads today. Such tools could make learning more accessible and personalized, especially for women and gender-diverse learners whose educational paths are limited by traditional systemic barriers. AI also has built-in gender prejudices that may limit learners' chances and who they are. Therefore, adult educators need to do more than just apply AI in learning; they need to teach students how to question and change it. Incorporating feminist principles into design and interaction can convert routine technological experiences into more powerful and equitable interactions (Sadowski & Strengers, 2021). When AI is used in a critical way instead of a passive way, technology can become a tool for change instead of a mirror of inequality.

Author Bio

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References

Chappell, C., Rhodes, C., Solomon, N., Tennant, M., & Yates, L. (2003). *Reconstructing the Lifelong Learner*. https://doi.org/10.4324/9780203464410

Dong, C., Yuan, Y., Chen, K., Cheng, S., & Wen, C. (2025). How to build an adaptive AI tutor for any course using knowledge graph-enhanced retrieval-augmented generation (KG-rag). *2025 14th International Conference on Educational and Information Technology (ICEIT)*, 152–157. https://doi.org/10.1109/iceit64364.2025.10975937

Fournier-Tombs, E., & Castets-Renard, C. (2021). Algorithms and the propagation of gendered cultural norms. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3980113

Ghosh, S., & Wilson, K. (2025). Bias is a math problem, AI bias is a technical problem: 10-year literature review of AI/LLM Bias Research reveals narrow [gender-centric] conceptions of 'bias', and Academia-Industry gap. *Proceedings of the AAAI/ACM Conference on AI, Ethics, and Society*, *8*(2), 1091–1106. https://doi.org/10.1609/aies.v8i2.36613

Gisselbaek, M., Berger-Estilita, J., Minsart, L., Köselerli, E., Devos, A., Matos, F. M., Barreto Chang, O. L., Dieckmann, P., Suppan, M., & Saxena, S. (2025). Gender disparities in artificial intelligence–generated images of hospital leadership in the United States. *Mayo Clinic Proceedings: Digital Health*, *3*(2), Article 100218. https://doi.org/10.1016/j.mcpdig.2025.100218

Kaplan, D. M., Palitsky, R., Arconada Alvarez, S. J., Pozzo, N. S., Greenleaf, M. N., Atkinson, C. A., & Lam, W. A. (2024). What's in a name? Experimental evidence of gender bias in recommendation letters generated by CHATGPT. *Journal of Medical Internet Research*, *26*, e51837. https://doi.org/10.2196/51837

Kekelis, L., Ancheta, R. W., & Heber, E. (2005). Hurdles in the pipeline: Girls and Technology Careers. *Frontiers: A Journal of Women Studies*, *26*(1), 99–109. https://doi.org/10.1353/fro.2005.0013

Knowles, M. S. (1978). Andragogy: Adult learning theory in perspective. *Community College Review*, *5*(3), 9–20. https://doi.org/10.1177/009155217800500302

Lin, X., Zhao, T., Schmidt, S. W., & Zhou, S. (2025). Using AI as a learning tool through simulation interviews to enhance adult learning. *Adult Learning*, https://doi.org/10.1177/10451595251345274

Mansur, S. (2025). Ai as a catalyst in education, Adult Learning, and Digital Literacy. *International Journal For Multidisciplinary Research*, *7*(4). https://doi.org/10.36948/ijfmr.2025.v07i04.54198

Mezirow, J. (1991). *Transformative dimensions of adult learning*. Jossey-Bass.

Njoto, S., Cheong, M., Lederman, R., McLoughney, A., Ruppanner, L., & Wirth, A. (2022). Gender bias in AI recruitment systems: A sociological-and data science-based Case Study. *2022 IEEE International Symposium on Technology and Society (ISTAS)*, 1–7. https://doi.org/10.1109/istas55053.2022.10227106

Peters, S. K. H. (2009). Resistance and education: An exploration of anti-colonial struggles and implications for critical, reflexive pedagogy. *The Canadian Journal for New Scholars in Education, 2*(1), 1-9. https://journalhosting.ucalgary.ca/index.php/cjnse/article/view/30435

Sadowski, J., & Strengers, Y. (2021, July 7). *How sexual consent can help us design better technology.* https://www.abc.net.au/religion/how-sexual-consent-can-help-us-design-better-technology/13435914

Silberstang, J. (2011). Learning gender: The effects of gender-role stereotypes on women's lifelong learning and career advancement opportunities. In M. London (Ed.), *The Oxford handbook of lifelong learning* (pp. 371–388). https://doi.org/10.1093/oxfordhb/9780195390483.013.0122

Strengers, Y., & Kennedy, J. (2020, September 1). *Smart home devices and feminized A.I. need a rethink*. Slate Magazine. https://slate.com/technology/2020/09/gender-smart-home-devices-artificial-intelligence-wives.html

Varon, J., & Peña, P. (2021). Artificial Intelligence and consent: A feminist anti-colonial critique. *Internet Policy Review*, *10*(4). https://doi.org/10.14763/2021.4.1602

Artificial Intelligence Certificates for Adult Learners: An Equity-Focused Exploration

Yilun Jiang and Dr. Sanfeng Miao

Abstract

Artificial intelligence (AI) certificates are expanding across higher education institutions, preparing adult learners with AI-related skills for career advancement. Adopting an equity-focused lens, we examine the purposes and target audiences of these programs and identify equity concerns related to affordability, expectations for prerequisite knowledge, and visibility of certificates across institutions. We conclude by offering recommendations to enhance inclusivity and equitable learning opportunities for adult learners.

Keywords: artificial intelligence, adult learner, certificate, equity

Introduction

In U.S. higher education, certificates have become an increasingly important pathway alongside degree programs. The number of certificate programs has expanded dramatically since the 1990s, particularly in public two-year institutions and private vocational schools, reflecting a growing demand for short-term, workforce-oriented education (Bosworth, 2011; Carnevale et al., 2012; Martin & Davies, 2022). Certificates have provided occupational training in fields such as healthcare, education, and information technology, and an increasing number of certificates have been offered online. Hence, primary recipients of certificates, adult learners, have appreciated the flexible learning opportunities to advance their professional skills, and many experienced gains in employment and earnings (Bosworth, 2011; Kortesoja, 2009). With the rise of artificial intelligence (AI) and growing employer demand for AI-related competencies (Lin et al., 2024),

U.S. higher education institutions are offering an increasing number of online AI-focused certificates. However, it remains unclear whether the equity benefits of traditional certificates extend to emerging AI certificates. Therefore, this essay provides an initial mapping of this certificate landscape and identifies key equity considerations. Through searching on Google for "generative artificial intelligence certificate AND adult learners AND United States," we identified and analyzed results (n = 69) from the first two pages, aiming to examine how these programs are framed, who they appear designed to serve, and what implications they may hold for adult learners' access, opportunity, and participation in a rapidly evolving digital economy.

Current Landscape of AI Certificates

In contrast to traditional certificate programs, our search showed that AI certificates are mainly offered by four-year institutions, with only 6% by community colleges and private universities. A significant portion of programs is provided by professional or continuing education units in elite universities, targeting professionals rather than affiliated students (e.g., Massachusetts Institute of Technology (2025), University of Michigan (2025)). Many of these offerings are costly and prominently positioned in search results, appealing to professionals who want to seek upskilling tied to institutional prestige. An outlier is the University of Maryland (2025), which offers a free AI certificate for professionals to understand AI's role in transforming the private sector and potential career opportunities.

Certificates offered within academic disciplines are primarily in business, healthcare, computer science, and engineering (e.g., Northeastern University, 2025; University of Washington, 2025). Most of these programs are graduate-level certificates, offered to currently enrolled graduate students or prospective students as a pathway to their AI-related graduate programs (e.g., the University of North Carolina, 2025). These certificates are typically

specialized in topics such as executive business decision-making, machine learning, and healthcare. An exception is the University of Florida (2025), which offers a more robust suite of AI certificates across both undergraduate and graduate levels, aimed at strengthening students' foundational knowledge of AI and its ethical, legal, and social implications across various disciplines.

Equity Concerns of AI Certificates

Equity and accessibility have long been discussed for certificate programs for adult learners, and emerging AI certificates reveal similar, and in some cases, intensified challenges. Drawing on McCowan's (2016) framework of equity in access to higher education, we argue that the current landscape of online AI certificates privileges students who can afford high tuition costs or are already connected to elite institutions. Many universities appear to leverage AI certificates as revenue-generating opportunities, a trend that risks excluding adult learners with limited financial resources. Program costs illustrate this concern: the cost of AI certificates ranges from $5,000 to $19,000 for roughly 16 credits. Historically, conventional certificate programs have served Black and Latinx students from low-income families (Bosworth, 2011), yet AI-focused certificates appear increasingly oriented toward learners with greater economic means.

In addition to financial barriers, AI certificates introduce inequities tied to disciplinary background and field of work. Although many programs use language such as "non-coder" or "non-programming required" to signal accessibility for adult learners without technical training, learners with quantitative and computational backgrounds may progress more quickly and benefit more substantially than those outside of traditional technical fields. These disparities

reflect broader inequities in how different fields prepare adult learners to engage with AI practices and applications in the workplace.

Institutional visibility further compounds these concerns. Within the first two pages of search results, which may likely reflect what adult learners are most likely to see, over 70% of AI certificate programs appear to be provided by elite universities or large public institutions. These institutions possess greater reputational capital and marketing resources, making their programs more likely to be elevated by search algorithms. Although recent literature shows that community colleges and private universities are also offering AI certificates (Abdallah, 2024; Rodriguez et al., 2024), their programs rarely appear in highly visible positions. As a result, prospective adult learners encounter a skewed landscape of AI certificates, in which elite providers dominate visibility and shape perceptions of available educational opportunities and the aim of AI education for adult learners.

Conclusion and Recommendations

Our review of AI certificate programs reveals the evolving landscape of adult education in terms of who provides professional development and who is targeted in an area of rapid technological change. Although these certificates promise valuable AI upskilling, we identify three interrelated equity concerns: affordability, the unspoken expectation of prerequisite disciplinary knowledge, and the uneven visibility of certificates across institution types. These concerns are substantive and should not be overlooked or minimized by institutional marketing narratives.

We call for two areas of further exploration for research and practice. First, there is a need to expand AI certificate offerings and visibility in the community college sectors to serve adult learners from historically marginalized backgrounds, as well as those seeking to apply AI

knowledge to support their local communities. Second, higher education institutions must broaden the disciplinary reach of AI certificates to ensure that learners across diverse academic and occupational fields, not only those in business, engineering, or computer science, can meaningfully benefit. Attending such equity issues will be essential to ensure that emerging AI certificates serve as tools for broad-based opportunity rather than mechanisms that reproduce existing educational and labor market inequalities.

Authors Bios

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References

Abdallah, R. (2024). Essential applications of AI certificate: Bridging the gap between coders and non-coders. *Community College Enterprise*, *30*(2), 131–136.

Bosworth, B. (2011). Expanding certificate programs. *Issues in Science and Technology*, *28*(1), 51–57. https://www.jstor.org/stable/43315568

Carnevale, A. P., Rose, S. J., & Hanson, A. R. (2012). *Certificates: Gateway to gainful employment and college degrees*. Georgetown University Center on Education and the Workforce. https://eric.ed.gov/?id=ED532679

Kortesoja, S. L. (2009). Postsecondary choices of nontraditional-age students: Non-credit courses or a credential program? *The Review of Higher Education*, *33*(1), 37–65. https://dx.doi.org/10.1353/rhe.0.0109.

Lin, L., Horowitz, J. M., & Fry, R. (2024). *Job skills and training*. Pew Research Center. Retrieved from https://www.pewresearch.org/social-trends/2024/12/10/job-skills-and-training/

Martin, T., & Davies, R. (2022). Student retention and persistence in university certificate-first programs. *Education Sciences*, *12*(8), Article 525. https://doi.org/10.3390/educsci12080525

Massachusetts Institute of Technology. (2025). *Applied AI and data science program*. Retrieved from https://professional-education-gl.mit.edu/mit-applied-data-science-course

McCowan, T. (2016). Three dimensions of equity of access to higher education. *Compare: A Journal of Comparative and International Education*, *46*(4), 645–665. https://doi.org/10.1080/03057925.2015.1043237

Northeastern University. (2025). *Online graduate certificate in AI applications*. Retrieved from https://online.northeastern.edu/certificates/ai-applications/

Rodriguez, S., Johnson, T., Jimenez, Y., & Delgado, A. (2024, June 23-26). *Board 213: Building an AI certificate and a computing identity: Broadening participation in computing and artificial intelligence at a Hispanic-serving community college* [Paper]. 2024 ASEE Annual Conference & Exposition, Portland, Oregon, USA. Retrieved from https://peer.asee.org/46781

University of Florida. (2025). *AI fundamentals & applications*. Retrieved from https://ai.ufl.edu/for-our-students/ai-majors-minors--certificates/ai-fundamentals/

University of Maryland. (2025). *Free online certificate in artificial intelligence and career empowerment*. Retrieved from https://www.rhsmith.umd.edu/programs/executive-education/learning-opportunities-individuals/free-online-certificate-artificial-intelligence-and-career-empowerment

University of Michigan. (2025). *Professional certificate in AI and machine learning*. Retrieved from https://bootcamp.engin.umich.edu/certifications/ai-and-machine-learning-course

University of North Carolina. (2025). *Applied artificial intelligence, graduate certificate (online)*. Retrieved from https://academics.charlotte.edu/program/applied-artificial-intelligence-graduate-certificate-online/

University of Washington. (2025). *Graduate certificate in modern artificial intelligence methods*. Retrieved from https://www.cs.washington.edu/academics/graduate/certificate-modern-ai/

AI and Well-Being for Rural Educators

Dr. Phyllis Broughton, Dr. Crisianee Berry and Dr. Xi Lin

Abstract

This study explores how artificial intelligence (AI) can support educator well-being in rural schools using data collected through professional development sessions, surveys, and interviews. Findings suggest that AI tools may reduce burnout, support work-life balance, streamline workloads, and enhance job satisfaction for rural educators.

Keywords: artificial intelligence, educator well-being, rural education, professional development, burnout

Introduction

AI integration is expanding, yet many educators remain uncertain how to effectively use these tools. Beyond instructional use, AI can support educator well-being, reduce burnout, and promote a healthier work-life balance. With its potential to minimize administrative tasks, AI can foster a more positive outlook by rejuvenating creativity and motivation, critical for sustaining educator well-being.

Educators in rural settings often face unique challenges due to high workloads and fewer resources. According to the NC Rural Center, rural counties are defined as having "260 people or fewer per square mile" (2025, para.3). The county selected for this study fits this classification.

This study examines how AI tools are transforming instructional and educator well-being practices in northeastern North Carolina rural public schools. Specifically, it explores how AI can improve educators' work-life balance and emotional resilience through evolving professional development and technological integration. In this study, educator well-being refers to the overall state of personal fulfillment, professional satisfaction, and organizational support that

enables educators to thrive emotionally, physically, and socially in their work environment (National Center on Safe Supportive Learning Environments, n.d.; Kanold & Boogren, 2022).

Our study began with two 3-hour professional development sessions conducted during an in-service day for the county's rural public-school educators. K-12 teachers and media center coordinators were invited. The training served as the foundation for introducing AI as a support mechanism for instruction and emotional/physical well-being. An introduction of generative artificial intelligence (GenAI), considerations and concerns, and educator well-being were presented, including ways to simplify tasks, reduce stress, and improve time management.

At the beginning of the training, educators were asked about their prior use of AI. One art teacher expressed her skepticism, saying, "I don't use AI and don't know how it could be used in an art class." However, after the day's training, this teacher expressed enthusiasm for incorporating AI to generate lesson ideas, showing a difference in her mindset.

AI and Educator Well-Being Supports

Beyond task efficiency, the training emphasized how AI can be used to support educator well-being. AI-driven mindfulness and meditation apps offer guided relaxation, stress relief techniques, and mood tracking. Educators who already use AI-driven fitness devices benefit from tracking steps, monitoring heart rate, and analyzing data—contributing to overall wellness.

The training introduced AI-powered tools that support emotional wellness (e.g., Headspace, Calm); physical health (e.g., fitness trackers); and organizational efficiency, (e.g., Trello). These resources offer educators a proactive way to manage burnout and maintain motivation.

Literature Integration

Getting to know and effectively using AI can be a challenge for educators. Mollick (2024) emphasizes that while "AI can reflect human biases, errors, and falsehoods from the data

it sees" (p. 13), with training, educators can use it as a "thinking companion" (p. 49) to enhance decision-making and reduce emotional overload.

Some educators fear that using AI might reduce creativity or weaken skills. Yet, as Mollick (2024) notes, "rather than making us weaker, technology has tended to make us stronger. With calculators, we now can solve more advanced quantitative problems than before" (p. 51). Similarly, AI can streamline routine tasks for educators, freeing time for higher-order thinking, creative planning, and work that is emotionally rewarding.

Research and Methodology

This was a mixed-methods study using surveys and interviews for data. At the conclusion of the first training session, 24 educators participated in an online Qualtrics survey on their perceptions of AI including its impact on educator wellness. The sample included K-12 teachers and media center coordinators with a majority identifying as female from five schools within the county. Six months after the initial training session another two 3-hour training sessions took place with a few interviews conducted after that.

The Maslach Burnout Inventory for Educators (MBI-Educators) was used to assess participants. The MBI Educators Survey measures emotional exhaustion, depersonalization, and personal accomplishment (Maslach, Schaufeli, & Leiter, 2001)—three indicators directly impacting educator well-being. Participants responded using a 5-point Likert scale from 1 strongly disagree to 5 strongly agree.

Findings

Results (n=24) were analyzed with SPSS that indicated participants experienced moderate exhaustion (M=2.98, SD= 0.81), suggesting that educators frequently experience fatigue and stress related to their work. Depersonalization was also present (M=2.23, SD=0.57), indicating occasional emotional distancing from students. Personal accomplishment was slightly

lower (M= 2.39, SD=0.36), revealing diminished feelings of professional success and fulfillment. These dimensions collectively indicated a moderate risk for burnout among the educators.

Further analysis revealed differences based on years of experience and educational background. Female educators (n=4) with 4-10 years of experience reported higher emotional exhaustion (M=3.11) than those with more experience (N=15, M=3.02). While not statistically significant, the findings highlight potential trends for further studies and are primarily descriptive for this study. Bachelor's degree holders exhibited higher burnout levels than those with Master's degrees, particularly in depersonalization and emotional fatigue. These findings suggest that both career stage and educational attainment influence emotional well-being with potential implications for targeted support. The survey comments showed willingness to use AI, with several who "needed more training," including "one-on-one training." Another commented, "I need to know ways AI can make my life easier."

Conclusion

This study begins the process of assessing how AI can support well-being and initiate burnout reduction strategies in rural educational settings. While participants were open to using AI, their experiences were limited, emphasizing the need for ongoing professional development. Nevertheless, even well-trained educators face emotional exhaustion and with appropriate support, AI tools can offer meaningful support by streamlining tasks, reducing stress, and establishing routines that support well-being and physical health.

Beyond instructional benefits, professional development initiatives should promote well-being. Peer support and wellness communities can share challenges and celebrate successes. Ongoing training on AI tools can ease workload and stress. When educators feel emotionally supported—even with the assistance of AI--they are better equipped to provide positive learning

environments and remain resilient in the teaching profession. Next steps for this study are to include more participants, enhance the training modules, and track long-term outcomes related to educator well-being and AI adoption.

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References

Kanold, T.D. & Boogren, T.H. (2022). *Educator wellness*. Solution Tree Press. https://www.solutiontree.com/educator-wellness.html

Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, *52*, 397–422. https://doi.org/10.1146/annurev.psych.52.1.397

Mollick, E. (2024). *Co-intelligence: Living and working with AI*. Penguin Random House. https://www.penguin.com.au/books/co-intelligence-9780753560778

National Center on Safe Supportive Learning Environments. (n.d.) Organizational initiatives and policies to support educator well-being. *Working well brief*. https://safesupportivelearning.ed.gov/sites/default/files/2024-11/OrgWellEduc-508.pdf

NC Rural Center. (2025). *How we define rural*. https://www.ncruralcenter.org/how-we-define-rural/

Evidence from the Frontlines: How Generative AI is Transforming Faculty Development and Learner Agency in Medical Education

Neria Sebastien, EdD

Abstract

Generative AI tools are redefining medical education by transforming faculty development, learner agency, and institutional equity. Drawing on empirical studies and practice-based insights, this article examines how faculty communities of practice, differentiated AI literacy frameworks, and evidence-informed design strategies can foster ethical, equitable, and sustainable AI integration across medical education systems.

Keywords: generative artificial intelligence; faculty development; medical education

Introduction

When Dr. Martinez, a clinical educator with 20 years of experience, reduced her curriculum redesign time from weeks to three hours using ChatGPT, she joined a growing cohort of medical educators navigating what recent research confirms is a fundamental shift in educational practice. Her journey from skepticism to advocacy reflects patterns emerging across institutions globally, as documented in recent meta-analyses and controlled trials that are reshaping our understanding of AI's role in medical education. This transformation, driven by the rapid evolution of generative artificial intelligence and large language models, presents both significant opportunities and considerable challenges for traditional pedagogical approaches in medicine (Knopp et al., 2023).

Beyond Anecdotal Promise: What the Evidence Shows

The capacity of generative artificial intelligence to profoundly transform medical education is not merely a theoretical construct but is, in fact, rigorously substantiated by empirical evidence. What Dr. Martinez experienced individually is now confirmed at scale: Wang et al.'s (2025) comprehensive meta-analysis of 51 studies found that ChatGPT use consistently improved student performance, motivation, and higher-order thinking while reducing cognitive load. In medical education specifically, the evidence is equally compelling: students using generative AI in orthopedic instruction showed improved both short-term and long-term test performance (Gan et al., 2024), while problem-based learning groups assisted by ChatGPT outperformed control groups on clinical competency assessments (Hui et al., 2025). This paradigm shift extends beyond immediate learning outcomes, with AI-powered tools offering a multifaceted approach to enhancing knowledge acquisition, processing, and application within medical curricula (Ahmed, 2023).

Yet beneath these promising aggregates lies a more complex reality. When Mah and GroB. (2024) surveyed 122 higher education instructors, they discovered distinct profiles of AI self-efficacy and use, revealing that faculty readiness varies dramatically and demands differentiated professional development approaches. Faculty recognize benefits like efficiency and idea generation, but express valid concerns about ethical implications and quality control; concerns that mirror those I hear daily from colleagues at my campus.

The Professional Development Paradox

Traditional faculty development models (those sporadic workshops we've all endured) prove inadequate for AI integration. The evidence points instead to what the literature calls "communities of practice" as the key to meaningful adoption. Noyes and Girdharry (2024) demonstrate that faculty-led communities can promote responsible adoption

by creating shared norms, co-developing prompt repositories, and iteratively testing classroom strategies.

This aligns with what we're witnessing in our own AI Community of Practice, which has grown from a handful of curious early adopters to dozens of active participants. This AI community of practice is faculty-led, with steady attendance and topic selection driven by faculty interests. The transformation isn't just numerical but also qualitative. Initial conversations focused on technical questions ("How do I write effective prompts?") but have evolved toward pedagogical reimagination ("How might AI enable truly personalized clinical reasoning development?") and experimentation. This shift reflects a deeper engagement with AI's potential to revolutionize teaching and learning, extending beyond mere tool utilization to a fundamental rethinking of educational design and delivery (Connolly et al., 2023).

A training needs analysis at a U.S. medical school revealed critical gaps in confidence and uneven exposure to AI tools, highlighting the need for targeted upskilling in prompt design, ethical use, and critical evaluation (McCoy et al., 2025). But time remains the scarcest resource. Faculty consistently report that meaningful integration requires not just training but protected time for experimentation, something most institutions struggle to provide.

Equity: The Uncomfortable Truth

While generative AI promises democratized access to educational resources, multinational assessment data reveals a sobering reality: AI literacy remains unevenly distributed globally, with wide disparities in foundational skills and critical understanding (Hornberger et al., 2025). These gaps risk amplifying existing inequities rather than reducing them.

The challenge goes beyond simple access to tools. As Laupichler et al. (2022) argue, true AI literacy must move beyond tool operation to include critical analysis and ethical

reasoning. This requires institutional investment in infrastructure, mentorship, and time. The resources that are already inequitably distributed across departments and institutions.

Consider the practical implications: faculty at well-resourced institutions experiment with AI teaching assistants and personalized feedback systems, while colleagues at community-affiliated sites struggle with basic internet connectivity. Without intentional intervention, AI integration may create a two-tiered system where innovation benefits those who least need additional advantages.

Learner Agency: Promise and Peril

Perhaps most fascinating is emerging evidence about how students actually use these tools. A randomized controlled trial at Georgetown University demonstrated that ChatGPT-4 can serve as an effective learning companion, when used alongside institutional resources and with proper scaffolding (Kalam et al., 2025).

The key distinction isn't whether students and faculty use AI, but how. Those who engage AI as a thought partner for exploring clinical reasoning show improved learning outcomes. Those who use it merely to complete assignments faster may actually impede their professional development. This demands fundamental reconsideration of assessment design as traditional exams become obsolete when AI can generate passing responses in seconds. This necessitates a shift towards authentic assessments that evaluate higher-order cognitive skills, creativity, and the nuanced application of knowledge, rather than rote memorization or easily automated tasks (Cannity, 2024).

One medical student recently told me: "ChatGPT doesn't give me the answer to differential diagnosis, instead, it helps me think through why I'm considering certain conditions." This reflection captures the potential for AI to enhance rather than replace clinical reasoning, but realizing this potential requires intentional pedagogical design.

The Path Forward: Evidence-Informed Action

The research converges on several essential interventions:

- Differentiated Development: Programs must tailor AI training to diverse self-efficacy profiles while embedding ethical reflection throughout (Mah & GroB., 2024). One-size-fits-all approaches will fail. Instead, a modular, competency-based framework for AI literacy is required, emphasizing practical application and critical evaluation over mere technical proficiency (Alam et al., 2023; Pohn et al., 2025).
- Communities Over Workshops: Sustained communities of practice outperform isolated training sessions. Faculty need ongoing peer support to navigate this transformation (Noyes & Girdharry, 2024).
- Design for Outcomes: AI should be embedded within well-defined learning tasks and assessment frameworks, not added as an afterthought (Gan et al., 2024; Hui et al., 2025).
- Address Infrastructure: Equity requires more than good intentions. Institutions must provide time, technology, and mentorship to ensure all educators can participate meaningfully (McCoy et al., 2025).

As we stand at this inflection point, the evidence suggests that generative AI's impact on medical education will be transformative, but transformation isn't automatically positive. Whether these tools enhance learning or exacerbate inequities depends entirely on how thoughtfully we integrate them. The question isn't whether to adopt generative AI, but how to do so in ways that serve all learners equitably while maintaining the human elements essential to healthcare education.

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References

Ahmed, Y. (2023). Utilization of ChatGPT in medical education: Applications and implications for curriculum enhancement. *Acta Informatica Medica*, *31*(4), 300-305. https://doi.org/10.5455/aim.2023.31.300-305

Alam, F., Lim, M. A., & Zulkipli, I. N. (2023). Integrating AI in medical education: Embracing ethical usage and critical understanding. *Frontiers in Medicine*, *10*. https://doi.org/10.3389/fmed.2023.1279707

Cannity, D. (2024). Generative AI: A new frontier with familiar challenges. *Medical Science Educator*, *34*, 9-10. https://doi.org/10.1007/s40670-024-02237-z

Connolly, C., Hernon, O., Carr, P. J., Worlikar, H., McCabe, I., Doran, J., Walsh, J., Simpkin, A. J., & O'Keeffe, D. (2023). Artificial Intelligence in interprofessional healthcare practice education – Insights from the Home Health Project, an exemplar for change. *Computers in the Schools*, *40*(4), 412-429. https://doi.org/10.1080/07380569.2023.2247393

Gan, W., Chen, Y., & Hu, X. (2024). Integrating ChatGPT in orthopedic education for medical students: Randomized controlled trial. *Journal of Medical Internet Research, 26*, e57037. https://doi.org/10.2196/57037

Hornberger, M., Bewersdorff, A., Schiff, D. S., & Nerdel, N. (2025). A multinational assessment of AI literacy among university students in Germany, the UK, and the US. *Computers in Human Behavior: Artificial Humans*, *4,* Article 100132. https://doi.org/10.1016/j.chbah.2025.100132

Hui, Z., Li, J., & Zhou, F. (2025). Application of ChatGPT-assisted problem-based learning in medical education. *BMC Medical Education, 25*, Article 50. https://doi.org/10.1186/s12909-024-06321-1

Kalam, K. A., Masoud. F. D., Muntaser, A., Ranga, R., Geng, X., & Goyal, M. (2025). *Cureus, 17*(6), e85767. https://doi.org/10.7759/cureus.85767

Knopp, M., Warm, E. J., Weber, D., Kelleher, M., Kinnear, B., Schumacher, D. J., Santen, S. A., Mendonça, E. A., & Turner, L. (2023). AI-enabled medical education: Threads of change, promising futures, and risky realities across four potential future worlds. *JMIR Medical Education*, *9*. https://doi.org/10.2196/50373

Laupichler, M. C., Aster, A., Schirch, J., & Raupach, T. (2022). Artificial intelligence literacy in higher and adult education: A scoping review. *Computers and Education: Artificial Intelligence, 3*, Article 100101. https://doi.org/10.1016/j.caeai.2022.100101

Mah, D.-K., & Groß, N. (2024). Artificial intelligence in higher education: Exploring faculty use, self-efficacy, distinct profiles, and professional development needs. *International Journal of Educational Technology in Higher Education, 21,* Article 58. https://doi.org/10.1186/s41239-024-00490-1

McCoy, L., Ganesan, N., Rajagopalan, V., McKell, D., Niño, D. F., & Swaim, M. C. (2025). A training needs analysis for AI and Generative AI in medical education: Perspectives of faculty and students. *Journal of Medical Education and Curricular Development, 12.* https://doi.org/10.1177/23821205251339226

Noyes, E., & Girdharry, K. (2024, December 3). *Why faculty should lead the AI revolution.* AACSB Insights. https://www.aacsb.edu/insights/articles/2024/12/why-faculty-should-lead-the-ai-revolution

Pohn, B., Mehnen, L., Fitzek, S., Choi, K., Braun, R. J., & Hatamikia, S. (2025). Integrating artificial intelligence into pre-clinical medical education: Challenges, opportunities, and recommendations. *Frontiers in Education*, *10*. https://doi.org/10.3389/feduc.2025.1570389

Wang, J., Zhang, Y., & Lee, H. (2025). The effect of ChatGPT on students' learning performance, perception, and higher-order thinking: A meta-analysis. *Humanities and Social Sciences Communications, 12*, Article 621. https://doi.org/10.1057/s41599-025-04787-y

What if the Naïve Enthusiasts of AI are Wrong and it's Really 'Just a Technological Tool'? The Implications of an 'Optimal Lifelong Learning' Perspective

Cameron Richards

Abstract

Many people worry about the naively enthusiastic projections of an 'AI revolution' – and how this might further demoralize global education and society. Others see valid uses of AI as another 'technological tool'. Needed is the framework of a balanced perspective which might provide an 'antidote' to the threats of future misuse.

Keywords: AI as technological tool; future knowledge; human life cycle learning; optimal lifelong learning from experience, reflection and 'inner wisdom'

Introduction

Many people are rightly concerned about the potential misuse of technology—especially in an increasingly uncertain and crisis-laden world. A large portion of this anxiety focuses on the growing number of naively enthusiastic claims about 'new AI' (i.e. generative AI programs, applications, and related technologies including 'large language' models) and how such developments might accentuate the current global demoralization of education and society. These tools are often advertised as offering shortcuts to innovation, wealth, and 'productive outputs'. For instance, some AI programs will produce artistic imagery for quick profit. And now some are even marketed as capable of writing a PhD dissertation for you 'in a week'. Yet others recognize both the legitimate uses and associated challenges of some uses of AI. In many ways,

these technologies—once simply modes of ‘machine learning’—are just another set of tools (ultimately an extension of the human mind-body like primitive clubs or axes, the printing press and the modern steam engine).

What is needed, however, is a broader framework that can help balance and correct the extensive list of threats and challenges linked to the possible future misuse of AI. This short piece will reflect on some relevant implications of the idea posed in our related recent book[1] that a human life cycle model of learning is a possible antidote to such fears,

We begin with the recognition that, despite the frequent ‘personification’ of AI as an impending menace or an inevitable agent of human downfall (e.g. some are now projecting a resulting ‘knowledge collapse’ because of AI’s dependency on ‘selective sources’) (Peterson, 2025) — generative AI remains essentially a technological tool (in some ways the ultimate technological tool). The concept of artificial intelligence partly stems from Alan Turing’s influential ambiguity about the term intelligence when also applied to ‘machine learning’: a machine could be considered intelligent (and able to ‘think’), he suggested, if humans were not able to tell the difference between the words or actions of a human and computer.

Many contemporary generative AI applications—from digital assistants to driverless cars to on-demand image generators (ready for immediate commercialisation) - now appear to meet this standard. But they do so only when evaluated from a superficial perspective by individuals apparently unaware of the extraordinary self-organising (and self-directed learning) capacities of the human mind-body organism—including the unique ability in the first place to create the algorithms that make the functions of AI possible. However, those who possess a deeper understanding of human learning and knowledge-making (including the innate ingenuity accessible to all people in principle) - and who can ‘dialogically engage’ such systems - will

ultimately be able to tell the difference one way or another. That is why an effective viva defense stage will surely caution those wanting to use AI to help them 'write a PhD in a week' (see our second book[2]).

Recognizing this difference also requires reclaiming terms like 'deep learning,' which have been appropriated and redefined by computer scientists (and others of similar ilk) (e.g. see www.educative.io/courses/ai-fundamentals/introduction-to-artificial-intelligence). This is similar to how notions of 'knowledge' and 'wisdom' were likewise reduced to mere data (not human experience) within the 'data–information–knowledge–wisdom (DIKW) pyramid' of information systems theory. In this piece, we therefore connect our argument to themes from our recent book[1], beginning with the constructivist learner-centered concept of 'deep learning', which long predates and far surpasses the selective AI-related use of the term. As scholars such as Marton and Säljö (1976) have shown, a clear distinction can be made between 'surface learning' (focused on content acquisition or skill reproduction in formal education - and related views of lifelong learning as mere accumulation or ad hoc imitation), and 'deep learning'- which is inherently transformative and grounded in experience, reflection, and the problem-solving of everyday life.

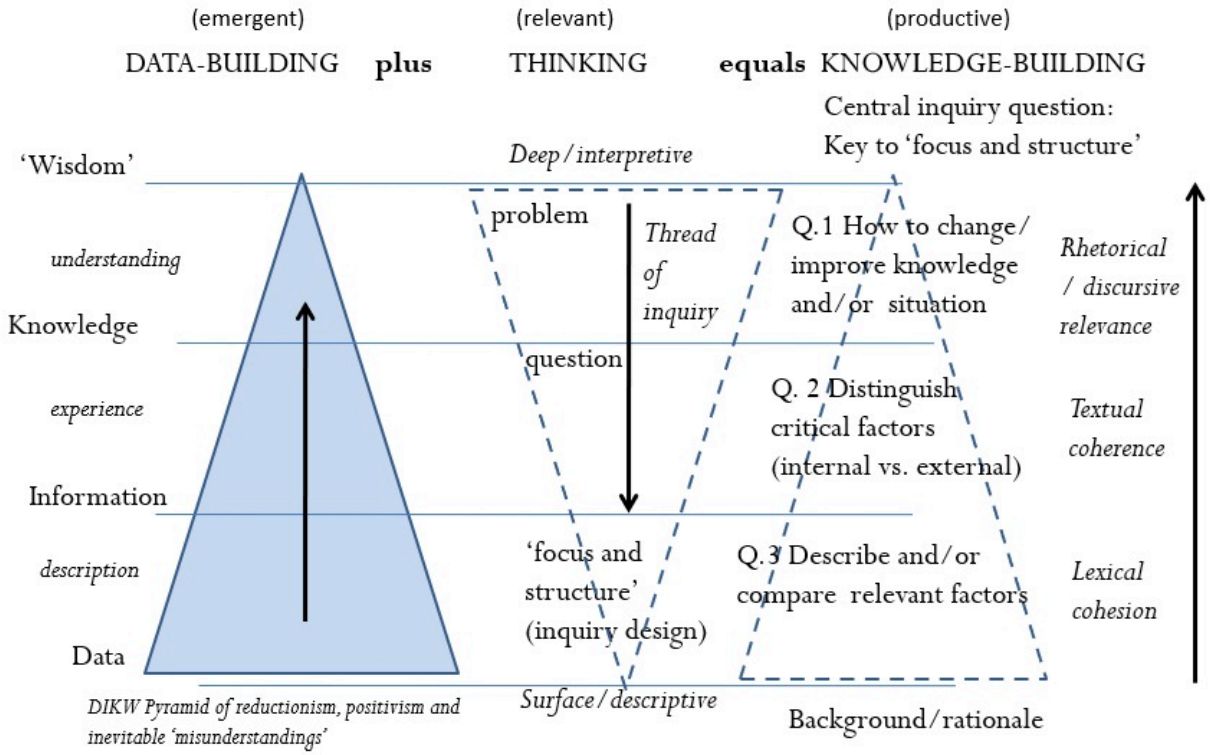
This deeper mode of human understanding and knowledge-building is, we submit, rooted in the innate blueprint of the human lifecycle (as a self-organising 'natural system' capable of reflection on direct experience) and its four key stages of lifelong learning and ageing. This is recapitulated by all humans, though never by machines, and always through and within particular cultural and social contexts. Our model adapts Erik Erikson's (1998) later recognition that his stages of lifelong development—trust in childhood, identity in youth and early adulthood, and integrity in mid-life - culminate in a final confrontation with the 'death, not just mortality' crisis.

In contrast to this emergent constructivist notion of ‘human deep learning’ the AI-related definition of deep learning refers only to an advanced subset of machine learning. It is typically defined as the use of multi-layered artificial neural networks to detect patterns in vast quantities of data. While no doubt impressive as a basis for generative AI technologies, this remains analogous to ‘human surface learning’ - ultimately superficial, descriptive and imitative as a mode of learning for development or of knowledge production.

The same limitations apply to the DIKW Pyramid, introduced in Stucky’s 1989 book appropriately titled ‘Silicon Dreams’. This information-systems model is often misused to imply universal categories of knowledge and wisdom, though ‘wisdom’ is typically reduced in this model to a metaphor of merely instrumental efficiency. Just as AI — derived from ‘machine learning’ - cannot meaningfully replicate human trust, creativity, or integrity, so too the DIKW framework without context or direct experience pales in comparison to actual transformative human knowledge-building. The latter rather involves a distinct capacity for innovative problem-solving, experiential insight, and traditions of knowledge and wisdom cultivated from human lifecycle learning (see Figure 1 for our proposed framework on DIKW).

Figure 1

Reverse Appropriations of the DIKW Pyramid



Note: One of our own 'reverse appropriations' of the DIKW Pyramid in our related 'optimal knowledge-building' book[2].

Summary

As our two related books go on to discuss, the most profound mode of human knowledge-building grows from the humility of 'wise ignorance' - a recovered application of Socrates' 'elenchus method'. It likewise then aligns with the great humanist philosopher Paul Ricoeur's (1976) related distinction between naïve and dialogical 'critical thinking' (and related concepts such as 'explanation versus deep understanding') inspired by Socrates. These further correspond to the constructivist distinction between surface and deep learning. As such, this framework—together with the idea of human life cycle learning—offers a powerful antidote to

uncritical or naively enthusiastic misuses of AI (and the DIKW Pyramid, etc.), while acknowledging its legitimate value as ‘a technological tool’ able to assist with certain activities.

Footnotes:

1. The thoughts here mainly relate to my recently completed book The Four Stages of the Human Lifecycle Revisited: Optimal lifelong learning from experience, reflection and ‘inner wisdom’. It will be initially self-published 1 January, 2026, on amazon.com to ensure that it is immediately, directly and accessibly available to anyone interested at near cost-price [free advance copies are available for possible review if you email me directly]
2. This piece also anticipates an upcoming section of another book I am currently completing (titled *Words, Ideas, and Optimal Knowledge-Building: A ‘foolproof’ self-help guide to academic (and all other) thinking, writing, and problem-solving inquiry*) which should be published in mid-2026. In that I point out how the methods that can be used to ‘optimize’ the linked processes of academic writing and research (i.e. the pivotal importance of a central focus problem/question to organize the overall design of the main parts and key stages of the process – including better linking of what should be the related concepts of the ‘literature review’ and ‘methodology/data analysis’ sections) are typically what are lacking in the outputs produced by the AI apps or program making such promises as ‘a written PhD for you within a week’. Such AI-produced dissertations or papers may superficially impress (or at least the literature review sections of these might). But such outputs inevitably lack the ‘inner integrity’ (or overall ‘cohesion, coherence and relevance’ in context) as well as ‘authorial integrity’ of a work claiming to be a demonstration of ‘some original contribution to human knowledge’.

Author Bio

Cameron Richards is a semi-retired Australian professor of interdisciplinary studies with extensive experience in the Asia-Pacific region - including at QUT, Nanyang Uni. Singapore, the Hong Kong Institute of Education, University of Western Australia, UTM in Malaysia and Chulalongkorn University in Thailand. A lecturer in education early on in his career (and a long-term advocate of lifelong learning), he has over the last decade or so focused increasingly on the challenges and opportunities of 'later-life learning' – and the related need for a revised and globally relevant model of lifelong education as well as a 'deep learning' model of human knowledge-building. Email: cameronkrichards@gmail.com

References

Erikson, E. (1998). *The life cycle completed (extended version).* W. W. Norton.

Marton, F. & Saljo, R. (1976). On qualitative differences in learning: I–outcome and process*. *British Journal of Educational Psychology*, *46*(1), 4-11. https://doi.org/10.1111/j.2044-8279.1976.tb02980.x

Peterson, A. (2025). AI and the problem of knowledge collapse. *AI & Society*, *40,* 3249-3269. https://doi.org/10.1007/s00146-024-02173-x

Ricoeur, P. (1976). *Interpretation theory: Discourse and the surplus of meaning*. Texas Christian University Press.

Stucky, R. (1989). *Silicon dreams*: *Information, man, and machine*. St. Martin's Press.

Democratising the Scholarship of AI: Student Voices and the Way Ahead

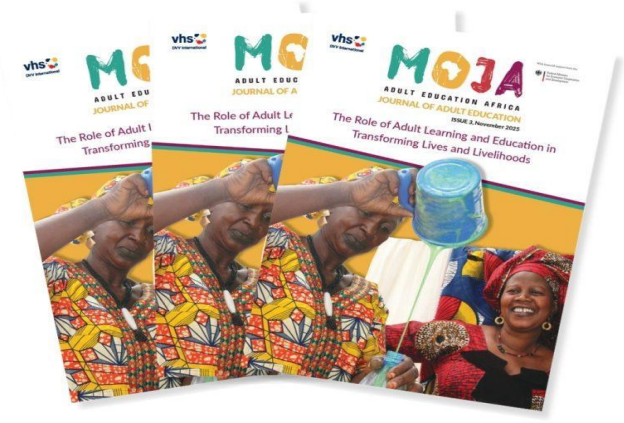
Colette February

Abstract

This contribution seeks to explore AI's relevance in serving educational spaces and communities in ways that are innovative, inclusive and accessible. The role that students may play in achieving this is highlighted.

Key Words: AI Scholarship, democracy, student voice

Introduction

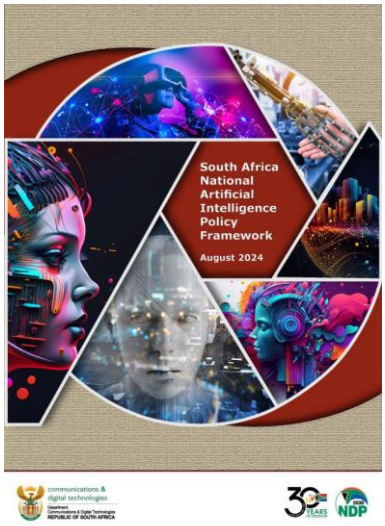


In writing this piece, I asked chatgpt to assist in providing a picture of me, Colette February, as an adult educator, and I received the following: the November 2025 MOJA Journal where I had co-written a piece with a postgraduate student. I also received a picture of another Colette, whom I've not met, and our surnames are not the same. We both reside in South Africa, though, and this is also something chatgpt confirms.

Earlier this year, I participated as a rapporteur in our Faculty of Education's colloquium on AI and AI in Higher Education, addressing matters pertaining to academic integrity and the ethical use of AI. A most encouraging and forward-looking aspect of the colloquium was the inclusion of student voices, ably directing attention to ways in which students may be shaping appropriate forms and uses of AI in higher and adult education (Adams, 2024).

Students from the IT (Information Technology) Society at the university raised critical matters pertaining to AI and public engagement, and also explored the kinds of opportunities that may currently be available for students to play a role in making substantive contributions towards AI policy in South Africa.

Accordingly, the following considerations highlighted in the South Africa National Artificial Intelligence Policy Framework would be critical factors in developing such a policy:



"Developing a comprehensive AI policy for South Africa is crucial amidst rapid global advancements in AI technology, offering significant opportunities for economic growth, societal improvement, and positioning the country as a leader in innovation. However, South Africa faces challenges such as historical inequalities, digital divides, and outdated regulatory frameworks that hinder widespread AI adoption" (South Africa National Artificial Intelligence Policy Framework, 2024, p. 7).

Taking this into account, for the students, therefore, it seemed that forming appropriate communities of practice campus-wide would be a significant next step towards embracing a kind of AI-driven future that prioritises innovation, inclusion and access in educational landscapes in which formerly historically marginalised South African youth and adults, especially, could now participate. Specifically, ways of securing appropriate, and campus-wide, student input and feedback on AI-related matters would be a fundamental

institutional assurance towards understanding how AI could be working in scholarly ways towards a common good.

As a university educator in adult learning and education (ALE), more and more I am confronted by this question: When does AI continue to advance what I understand scholarliness to be, and when does it not? It is for this reason that I believe that our students from the IT Society at my university are making important inroads towards addressing this question, and an extended educational community of students and educators would ideally work together very well towards finding the best possible answers to at least some of the AI matters the Framework draws attention to:

> "*By promoting human-centric AI solutions, the framework aims to prioritize the needs and well-being of South Africans, ensuring that AI advancements lead to tangible improvements in quality of life and societal progress. Overall, the National AI Policy Framework lays the groundwork for South Africa to emerge as a leader in AI innovation while addressing challenges and opportunities in a holistic and sustainable manner*" (South Africa National Artificial Intelligence Policy Framework, 2024, p. 12).

It would seem, then, that there is very fertile ground currently at our university to engage in several AI conversations across a spectrum of policy matters affecting AI scholarship, and advocacy work awaits us all to understand, and democratise, our relatively new AI scholarly reality.

Author Bio

Dr Colette February is a lecturer in Adult Education at the University of the Western Cape. She has a master's degree in Literacy Studies from the University of Cape Town, and a master's degree in Adult Learning and Global Change from the University of the Western Cape. Since 2017 she is the local coordinator of an intercontinental, intentionally online, adult education postgraduate programme, and which has become a successful twenty three-year international collaboration between the Universities of British Columbia, Linköping and the Western Cape. Her PhD dissertation allowed her to explore her interest in nontraditional students and lifelong learning in higher education. Dr February is also interested in finding ways to make lifelong learning personally and socially meaningful, and believes that authenticated forms of lifelong learning may assist in democratizing the public spheres and educational contexts she knows and seeks to build. Email: cfebruary@uwc.ac.za

References

Adams, G. (2024). *Amplifying student voices in shaping South Africa's national AI policy.* Mozilla Foundation. https://www.mozillafoundation.org/en/blog/amplifying-student-voices-in-shaping-south-africas-national-ai-policy/

Republic of South Africa. (2024). *South Africa National Artificial Intelligence Policy Framework.* https://fwblaw.co.za/wp-content/uploads/2024/10/South-Africa-National-AI-Policy-Framework-1.pdf

Transforming Youth and Adult Learning and Education in the Era of Digitalisation, Algorithms and AI – Report from an Asia-Pacific Think Tank Meeting

Uwe Gartenschlaeger

Abstract

Digitalization and AI create drivers and new challenges for the ALE community. An Asia-Pacific Think-Tank meeting attempted to identify allies and prioritise actions for our community.

Keywords: AI, digitalization, ALE

Background

The rapid acceleration of technologies, including the mainstreaming of artificial intelligence (AI) and algorithmic-driven digital platforms, has significantly transformed the way people work, socialise, filter information and learn. Many governments as well as commercial actors are attracted by the opportunities of these new technologies for the education and learning processes. On the other hand, civil society actors as well as many ALE providers are concerned about the significant risks associated with the new technologies. This includes the undermining of critical thinking and deep learning as well as the threats for creativity and diversity or the deepening of the digital divide, just to mention a few.

Whereas the discussion is extremely vibrant at the moment, starting from attempts to define ethics in using AI (UNESCO 2022), to explore the impact on education science (Hofhues & Schäffer, 2025) or to provide an overview on the impact for education (UNESCO 2025), the ALE community can still be characterized by a high level of uncertainty, scepticism and fear, combined with a lack of understanding of the new digital world.

Taking Stock

On this background, the Asian South-Pacific Association for Basic and Adult Education (ASPBAE), the International Council for Adult education (ICAE) and DVV International took the initiative and invited for a Think-Tank and strategizing meeting, which took place 24th to 26th November in Vientiane, Lao PDR. More than 60 participants from Asia-Pacific, the Arab Region and Europe followed the invitation, including ALE coalitions and associations, ALE providers and facilitators. The meeting was enriched by contributions from Prof. Christian Esguerra, Founder of the "Facts First Podcast" from the Philippines, Dr Martin Dougiamas, Founder and Head of Moodle, representatives from UIL, Lao Government, ALE networks and IT activists, including youth representatives as well from various Asian regions. While day 1 was shaped by a wide range of external inputs and sharing of experiences, day 2 was dedicated to reflections of participants from the ALE community.

Key Messages

From the presentations and discussion, the following messages can be highlighted:

- The current shape of the digital landscape bears the risk of what was called "digital colonialism", where BigTech dominates the landscape and shapes its development, with severe consequences for our societies, including the education sector.
- OpenEdTech can provide powerful alternatives especially for the education sector. However, the knowledge about these options is not widespread within the ALE community with the consequence that their potentials are not used properly.
- It is challenging for ALE providers and networks to navigate in the complex and diverse landscape of recommendations, guidelines, tools and frameworks around digitalization and AI in education. One of the main tasks for networks like ICAE, ASPBAE and DVV International should be to provide orientation in this very dynamic environment.

- ALE, as to some extent the whole education sector, is often absent in global, regional and national policy settings, which shape the legal and financial framework. A certain urgency exists to define our position and make it heard. This definitely is a second field of intervention for regional and global networks.
- The most effective way to tackle the issue is in an intergenerational setting. The interventions of ASPBAE's youth constituency added tremendous value to the discussion. Youth activists must be included into the further discussion, a closer link with youth networks outside ALE is desirable.
- A special concern is the impact AI and algorithms have on the political landscape. The obvious fact that elections and decision making globally is heavily impacted by professional networks using a variety of IT based instruments to influence the public opinion becomes a major concern. It is obvious that ALE in its rich tradition based on human rights, democracy and empowerment has a role to play to enable people to make informed decisions.
- Still, the digital divide excludes billions of people. The ALE networks should hold governments accountable for tackling this injustice. On the other hand, the conference presented impressive examples on how civil society actors can bring meaningful digital tools to disadvantaged groups, enabling them not only to improve their livelihood, but empowering them as well to make their voice heard.

The Way Forward

On day 3 of the event, partners from ASPBAE, ICAE and DVV International met for a planning workshop to reflect on concrete next steps, responding to the many issues mentioned during the event. The following was discussed:

- To come up as soon as possible with a first "Call to Action" for the ALE community as a first statement to make our voice heard.

- To establish a coordination group as the core structure for planning and managing further action. While this group should consist of representatives from the ALE sector, a wider advisory group of "critical friends" was envisaged to inform the action and link it to other actors.
- To establish an online platform, which assists the ALE community to find and navigate through the diverse existing documents and tools. The platform shall be enriched by Learning Collaboratives and online training.

All in all, the partners agreed that the topic of digitalisation and AI will be crucial for the further development of ALE and deserves permanent attention.

Author Bio

Uwe Gartenschlaeger, M.A, studied History, Political Science and Philosophy at the Universities of Berlin and Cologne. After working for four years with a church based adult education provider specialized on topics of reconciliation and history, he joined DVV International, the Institute for International Cooperation of the German Adult Education Association, in 1995. He held the positions of Country Director in Russia and Regional Director in Central Asia and Southeast-Asia. From 2019 until 2025, he was President of the European Association for the Education of Adults (EAEA). After serving as Director of DVV International between 2023 and 2025, he is currently the organization's Regional Director for Southeast Asia. Email: gartenschlaeger@dvv-international.de

References

Hofhues, S & Schäffer, B. (2025). *Erziehungswissenschaften nach Chat GPT* (German Educational Research Association - Educational Sciences after ChatGPT). *Erziehungswissenschaft, 36*, 5-11. https://doi.org/10.3224/ezw.v36i1.01

UNESCO. (2022). *Recommendation on the ethics of Artificial Intelligence. UNESCO.* https://www.unesco.org/en/articles/recommendation-ethics-artificial-intelligence

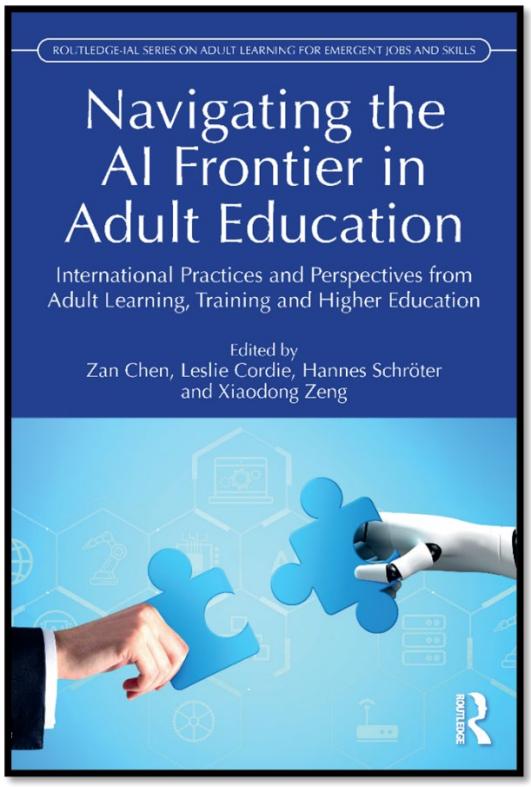
UNESCO. (2025) *AI and the future of education - Disruptions, dilemmas and directions.* https://www.unesco.org/en/articles/ai-and-future-education-disruptions-dilemmas-and-directions

Book Announcement

Navigating the AI Frontier in Adult Education: International Practices and Perspectives from Adult Learning, Training and Higher Education

Edited by Zan Chen, Leslie Cordie, Hannes Schröter and Xiadong Zeng

This is a new book that examines AI at an international level. The edited book is a highly collaborative effort, drawing insights from a global survey of educators using Davis's Technology Acceptance Model (TAM), conducted between June and October 2024, which gathered almost 2000 responses from 36 countries. The project involved 41 researchers from 22 countries. The book reveals how AI is changing adult learning and offers concrete insights to prepare for an AI-driven future.



Member News

New Hall of Fame PIMA Members!

We want to recognize PIMA members, Suwithida Charungkaittikul, Idowu Biao, Rob Mark, and Astrid von Kotze, who were inducted into the International Adult and Continuing Education Hall of Fame in November 2025.

You can read more about it at the PIMA blog post https://www.pimanetwork.com/post/pima-members-iace-hall-of-fame and also see their individual profiles at: https://halloffame.outreach.ou.edu/Inductions/Class-of-2025

Shown are Hall of Fame members and a few of new inductees who attended the actual event in Norman, OK, USA in November 2025 event (Rob Mark in top row , 4th from right.

Future PIMA Member!

Please join us in congratulating PIMA President Suwithida and her husband Deelert on the birth of their son DeePromp (translates as Perfection in English). Suwithida and proud big sister DeeDa cuddle him in the photo.

All our best wishes to you, Suwithida and family!

New Member

Education is my passion, and I serve this field as an Education Expert the last 20 years. I hold a bachelor's degree in education, a master's degree in Adults' Education, a master's degree in management and administrative of educational organizations and a PhD in the field of Accreditation of Prior Experiential Learning and Quality Assurance. Additionally, I'm a certified trainer of trainers by the National Organization for Qualifications Certification and Vocational Guidance of Ministry of Education in Greece. Designing teaching methodologies, supporting tutors, promoting lifelong learning, enhancing adults' education, networking across Europe, working with different national education systems are some of my main activities. This knowledge is combined with my experience working in European projects the last 20 years holding mostly the role of the external Evaluator and Consultant. Evaluation, monitoring, and consultancy on European projects where the scope is both project implementation and quality of results, is the area where I'm currently focused on. People with fewer opportunities, adults, people with special needs are some of the target groups I have worked with.

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