A framework for the Learning and Teaching of Critical AI Literacy skills

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Background/OU context

> AI is distinct from other digital technologies due to its potential to profoundly reshape societies, economies and education systems. Unlike conventional information and communication technologies (ICTs), AI poses unique ethical and social challenges, such as issues of fairness, transparency, privacy and accountability. Additionally, AI's unique ability to mimic human behavior directly impacts human agency. These challenges require dedicated competencies beyond the scope of traditional digital literacy. (UNESCO)

Such dedicated competencies are not only required regarding the challenges artificial intelligence (AI) poses but also in relation to the unique opportunities it provides. The OU's Teaching and Learning Plan (2022–2027) Principle 1 – *A high-quality, supported distance learning experience is enabled through innovative teaching and assessment* – states that we will ensure that the use of new learning systems and technological innovation such as AI enhance our efficient delivery of high-quality teaching and assessment. Staff **need to develop their AI literacy** so that they can safely and effectively employ AI, and GenAI in particular, to support students' learning and achievement of their individual goals.

AI literacy differs from how we currently teach digital literacy. It involves 'a set of competencies that enables individuals to critically evaluate AI technologies; communicate and collaborate effectively with AI; and use AI as a tool online, at home, school, and in the workplace' (Long & Magerko, 2020, p2). These skills help staff and students gain essential transferable abilities in the field of AI.

As educators, we need to keep up with the evolving nature of AI and encourage students to use iterative interactions rather than a simple input–output approach where users instruct it (input) and copy, paste and edit what it generates (output). Engaging with AI-enabled applications that act as assistants will become a way of complementing learning rather than replacing it (Darvishi et al., 2024).

With rapid advancements in the AI space, staff and students must adapt current ways of working with technology and adopt new approaches to keep up with the pace of change, emphasising the importance of 'learning agility.' Metacognitive skills, particularly awareness of one's role in the learning process, will become increasingly important. Individuals must dedicate time to reflection, engagement with feedback, and the acquisition of new knowledge. Many jobs will require a different skillset, making it vital for students to learn and practise AI competencies. Developing Critical AI Literacy is essential, especially in contexts with many learners from widening participation backgrounds.

What is Critical AI Literacy?

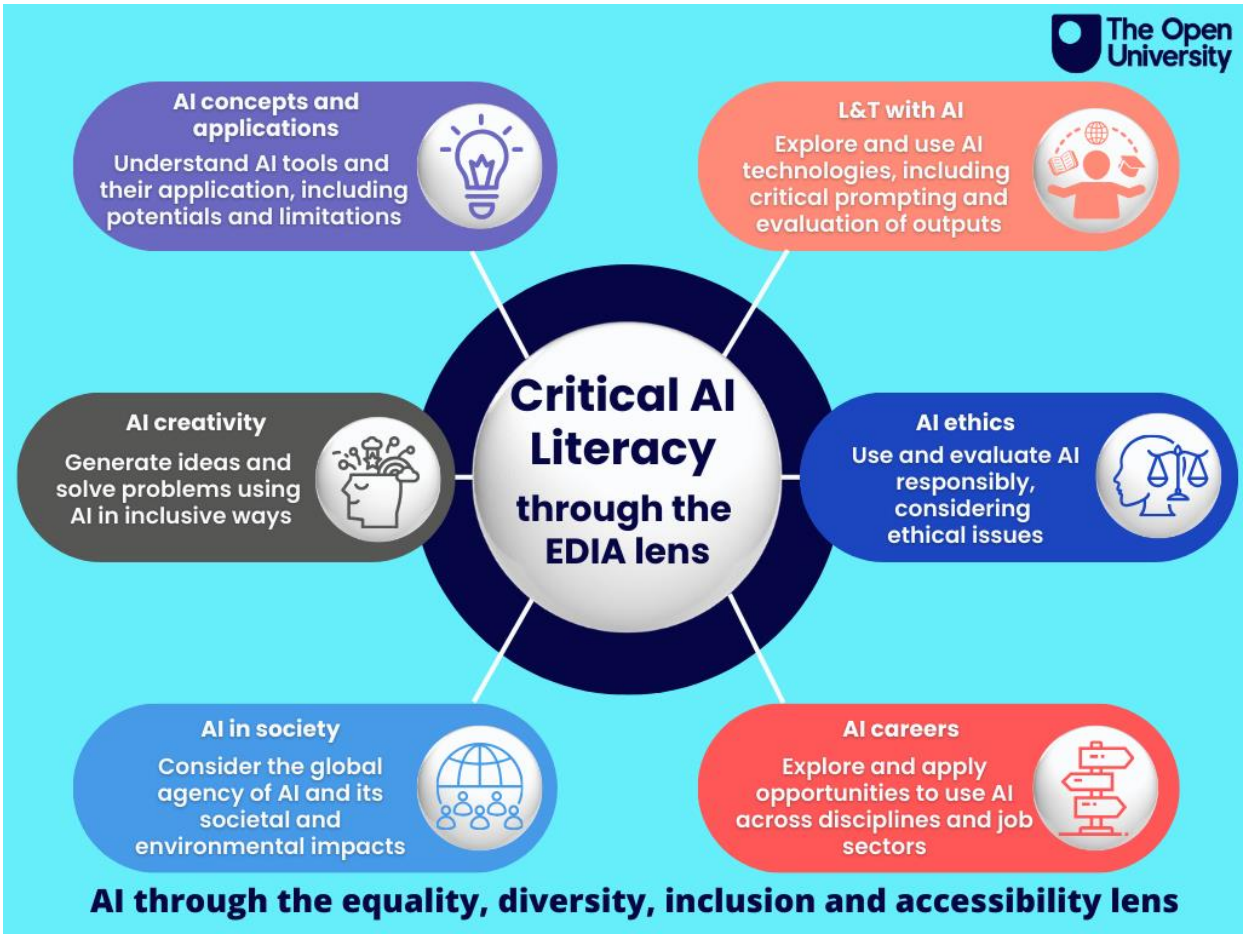
Critical AI Literacy serves as the foundation for this framework, which **expands the *critical thinking and critical evaluation* dimensions of AI literacy** described in definitions such as Long and Magerko's (2020) above. Critical AI Literacy shares common ground with Critical Digital Literacy, which highlights the **influence of power in digital spaces**. It explores how **knowledge, identities and relationships are shaped to privilege some while marginalising others** (Darvin, 2017). Digital literacy, in this critical sense, equips individuals with tools and strategies to analyse both linguistic and non-linguistic features of digital media and helps them to identify embedded biases and assumptions (Darvin, 2017).

Critical AI Literacy examines how Large Language Models (LLMs) – AI tools which generate human-like responses – contribute to ongoing epistemic injustices. These injustices can lead to significant social and personal harm by undermining an individual's ability to fully participate in knowledge-sharing and decision-making processes.

Critical AI Literacy applies the lens of equality, diversity, inclusion and accessibility (EDIA) to the use of AI. It is essential for fostering a more inclusive and diverse AI education. Being AI-literate in this critical sense means having the tools and strategies to critically evaluate AI-generated outputs using EDIA principles and being able to engage in equitable and inclusive prompting when required. Like Critical Digital Literacy, Critical AI Literacy is **context-specific** and treats **'literacy' as a 'social practice'**, i.e. something individuals do rather than possess.

Critical AI Literacy requires 'self-reflective mindsets' (Chiu et al., 2024), which educators increasingly view as essential for lifelong learning about emerging AI technology. Consequently, the latest AI competency definitions emphasise learners' 'confidence and ability to self-reflect on their AI understanding for further learning' and focus on 'how well individuals use AI in beneficial ways' including for the social or greater good (Chiu et al., 2024, n.p.). **It is in this spirit that educators should apply this framework in learning and teaching across the curriculum and at all levels.**

The framework



AI concepts and applications

- Understand the difference between AI and Generative AI (GenAI).
- Know types of AI products: text, image, video, code, music generators; AI embedded in tools such as search engines; AI analytics and predictive analytics.
- Explore how AI tools are used and applied in various contexts, such as studying, working and leisure.
- Use basic AI terminology (e.g. algorithm, LLMs, machine learning, neural networks, hallucinations, bias).
- Know basic principles for assessing the robustness and reliability of AI applications.
- Explore different AI applications and their potentials and limitations (e.g. JISC AI demos) applying EDIA principles.

Learning and teaching with AI

General

- Identify the key skills required in operating and managing AI.
- Enhance career opportunities by including real-world AI applications and understanding their impact on the job market.
- Engage in authentic assessment activities that foster critical evaluation of AI tools and facilitate the recognition of personal skill development in using AI.
- Use AI as a study buddy, a motivator, and/or as a dynamic assessor and evaluate the associated benefits and limitations.

EDIA-specific

- Use AI to enhance and diversify learning and teaching and to make it more inclusive.

- Explore AI case studies informed by EDIA principles, such as the OU's Digital Assistant, which supports students' accessibility needs, or Hull College's AI-powered translation tools that enhance inclusivity.
- Use AI to explore new and test existing knowledge through an EDIA lens.
- Conceptualise and verbalise (prompting) topics through an EDIA lens.
- Critically evaluate AI-generated output(s) and dialogues applying EDIA principles.
- Cross-reference with other on- and offline sources to confirm the reliability of the output(s) and to identify potential bias.

AI creativity

- Use AI tools to generate new and original ideas, content or solutions, such as visual art, music, writing or AI-generated inclusive storytelling, while applying an EDIA lens.
- Use the same/different prompt(s) several times with the same/different tool(s) and compare the outputs to identify and mitigate potential (cultural) bias.
- Critique AI materials and take appropriate action to manipulate and edit the outputs.
- Engage in a conversation with AI to challenge detected biases.

AI ethics

- Use key criteria to evaluate AI tools (e.g. functionality, accessibility, privacy, security, copyright).
- Engage with ethical issues related to AI, such as bias, deepfakes, copyright infringement, data security and privacy, with a focus on AI-based creativity.
- Consciously take account of ethical issues by acting in a way that promotes responsible use of AI, e.g. asking for consent before using personal data, refraining from spreading misinformation.

AI in society

- Consider the environmental impact of using AI and apply relevant sustainability competencies, e.g. the carbon footprint created through over reliance/excessive use, and the exploitation of labour in the Global South.
- Consider the social, educational and EDIA impact of different AI models and tools (closed/open source, country of origin, ownership).
- Evaluate the societal impact of AI in terms of both workforce exploitation and the impact of the digital divide on users.
- Explore the agency of AI with consideration of control and power across the globe.
- Be mindful of biases in AI outputs, such as gender, cultural, disability, racial or cultural bias, and address them by analysing outputs, cross-referencing sources, and prompting for inclusivity.

AI careers

- Explore how AI is used in specific disciplines and job sectors, such as Health and Social Care, Banking and Finance, and Transport and Distribution, while applying EDIA principles.
- Apply relevant human skills, e.g. creativity, curiosity, decision-making, empathy and openness when interacting with AI.
- Apply relevant employability skills, e.g., problem-solving, communication and collaboration when interacting with AI.
- Consider opportunities to use AI to enhance employability prospects in a responsible and ethical manner.

Working with the framework

The framework's structure is based on insights from Sharples' (2024) *What to Teach About AI*. Individual colleagues and module teams should draw on

relevant sections of the framework to upskill themselves in Critical AI Literacy. They should also **embed Critical AI Literacy skills development into materials and content whenever opportunities arise, across the curriculum and at all levels.**

The process will be iterative rather than linear, fostering greater awareness of how AI developments affect education and life, both positively and negatively, especially in the context of EDIA-related challenges.

The aim is to develop a bank of concrete implementation examples from all subject areas and levels as they become available. Your feedback is welcome, and your collaboration is essential to ensure rigorous quality assurance.

We are also interested in exploring and capturing the experiences of individuals who are committed to engaging more actively with the framework. Contact me, please, if you are willing to share your experience(s): mirjam.hauck@open.ac.uk

What staff/educators can do

The following suggestions are structured to match the sections of the framework.

AI concepts and applications

- Identify key opportunities to introduce or discuss AI concepts and applications, using case studies and examples to illustrate them.
- Introduce GenAI-related activities in a scaffolded way, ensuring that students can practise necessary skills before assessments.
- Provide context and explanations related to disciplines and employability to highlight AI's significance.

- Provide guidance on resources for finding information about AI.
- Know where to find information on the latest developments in AI and education such as the JISC Website on Artificial Intelligence and the AdvanceHE Garage Overview.

Learning and teaching with AI

- Embed AI competencies into module material and signpost to institutional guidance on Teaching and Learning, and on responsible use.
- Develop student activities that require identifying and addressing AI challenges.
- Promote activities that encourage students to critically evaluate AI content through communicative and reflective exercises.
- Support students in crafting effective prompts and refining AI content to improve their final output.
- Develop online resources (e.g., readings, videos, tutorials) on AI topics.

AI creativity

- Create opportunities for students to practise AI-related skills with an EDIA perspective.
- Offer guidance and examples on prompt creation and adaptation with a focus on EDIA principles.
- Contextualise AI activities to highlight the importance of human skills.
- Invite AI experts to contribute to modules or offer guest lectures.

AI ethics

- Offer activities which explore opportunities and challenges of AI, e.g. forum activities on ethical implications.
- Encourage students to identify and address potential biases in AI-related tasks.
- Help students to consider AI's ethical, societal and environmental impacts.

- Encourage students to evaluate the credibility and reliability of online sources.
- Emphasise the importance of copyright and intellectual property compliance.
- Survey and take account of student attitudes to their engagement with AI-enhanced tools and activities.
- Empower students to make informed individual and collective decisions about using AI in their education and working life.

AI in society

- Offer activities that consider the environmental impact of using AI (e.g. the carbon footprint due to over reliance; the exploitation of labour in the Global South) and encourage engagement with sustainability competencies.
- Encourage students to examine AI's societal impact, such as workforce exploitation and the digital divide, and explore ways to address these issues.
- Offer opportunities to consider the agency of AI (e.g. control and power across the globe).
- Take steps to address the non-inclusive nature of AI outputs.

AI careers

- Provide examples of AI applications in specific disciplines and job sectors, emphasising EDIA principles.
- Provide opportunities for students to use human skills such as creativity, empathy and decision-making when using AI.
- Offer opportunities for students to apply relevant, sector-specific employability skills when interacting with AI.
- Offer activities which explore ways of harnessing AI tools to enhance career prospects, e.g. creation of CVs, portfolios and evidence.

- Apply AI knowledge to real-world challenges, showcasing its workplace importance and practical use through employer-informed activities.
- Explore how employers use (or don't use) AI in the recruitment process.

At a more advanced stage of AI use

Get students to explore benefits and limitations of AI – with a particular focus on EDIA principles – through a design process that involves ideation, planning and drafting, expanding, revising, critiquing, polishing, presenting, evaluating and reflecting.

Levels of Critical AI Literacy

At an advanced level, Critical Digital Literacy (CDL) leverages digital technologies for social justice-oriented action and change (Jiang & Gu, 2022; Mirra & Garcia, 2020). Similarly, advanced Critical AI Literacy examines the potential of AI to shift power. Power relationships are the root cause of inequality in our societies, both in real and material terms. Advanced Critical AI Literacy explores how AI contributes to those inequalities and considers ways in which it could help redress power balances. Advanced Critical AI Literacy is for colleagues and teams seeking to align their teaching approach with the OU's social justice agenda.

Teaching and learning Critical AI Literacy skills at an introductory level aligns with the OU's mission and its Learn and Live strategy, particularly the goals of societal impact, equity and greater diversity, and social sustainability.

The framework aligns with the OU's Enabling Principles for GenAI in Learning, Teaching and Assessment, particularly Principle 2: 'As far as is possible, the use of

Generative AI in Learning, Teaching and Assessment is anti-racist, anti-discriminatory, accessible and inclusive'. More specifically, the framework embodies actions and ambitions 2–4 associated with Principle 2 (Inclusive):

1. Ensure our learning and teaching processes enable students to benefit from this technology wherever and whenever possible.

2. Ensure Equality, Diversity & Inclusion (EDI) and Accessibility are central to our use of Generative AI, addressing issues around fair access to technology and digital inclusion as a priority.

3. Actively educate and deploy tools and techniques to circumvent the inherent biases which exist (or may exist) in Generative AI, particularly those that reinforce existing entrenched colonial perspectives and ways of thinking.

4. Emphasise ethics and trust with absolute transparency, including discussions around existing and emerging risks to security and intellectual property as well as long-term impacts on society.

The framework also speaks to Strategic Priority 1 of the OU's University People Plan, namely, Develop an Inclusive and Empowering Culture and Working Environment.

Finally, the framework also takes account of the five principles agreed on by the Russell Group universities in 2023 created to help universities ensure students and staff are 'AI literate' so they can capitalise on the opportunities that technological breakthroughs provide for teaching and learning. The framework reflects the first three principles in particular:

1. Universities will support students and staff to become AI-literate.
2. Staff should be equipped to support students to use Generative AI tools effectively and appropriately in their learning experience.
3. Universities will adapt teaching and assessment to incorporate the ethical use of Generative AI and support equal access.
4. Universities will ensure academic rigour and integrity is upheld.
5. Universities will work collaboratively to share best practice as the technology and its application in education evolves.

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