

Artificial Intelligence; Rethinking- Learning in an Era of Human-Made Technology and Capitalist Mechanism

Srija Chakraborty
Academic Researcher

Former M.Phil. Scholar, University of Calcutta, Alumnus of Former Presidency College under CU, later M.A. from Presidency University, Kolkata. Alumnus of CUES, University of Calcutta and IR Dept. of Jadavpur University too.

Abstract

Artificial Intelligence (AI) and Generative Artificial Intelligence (GenAI) have revolutionised the interaction between humans, knowledge and technology. What once needed years of formal education, years of institutional access or specialist's help is now obtained, translated, explained, reorganised in seconds. This unprecedented accessibility can help to minimize some of the age disadvantages in learning and provide lifelong education. Meanwhile, it asks the essential question: With the ready availability of answers, and analyses the decisions through own judgement, curiosity, critical understanding and intellectual independence.

This paper critically discusses the overlaps between AI, Age, Education, Automation and Capitalism. But it's not necessarily the democratisation of education, it says, arguing that the democratisation of access to AI shouldn't be equated with the democratisation of education. While it can overturn the notion that technological skills are predominantly the purview of younger people, the potential for age disparities leading compounded differences in access to these tools, algorithmic bias, and confidence gaps and differences in digital and AI literacy. At the same time, the increasing machine-like nature of the educational activities threatening to change the purpose of education from learning and human development to efficiency, productivity and measurable outcome is awaited niche.

Literature-based analysis is carried out by reference to the UNESCO, OECD, Stanford AI Index, IMF, ILO, and peer-reviewed scholarship along with the theoretical approaches of critical pedagogy, digital ageism and technological capitalism. Based on secondary data, the use of AI by students is already prevalent and evidence about the impacts on learning is mixed, and largely dependent on the context of use. This paper suggests neither technological rejection nor unconditional adoption. Rather, a human-centred approach should be pursued where AI is a tool for intellectual work and not an intellectual replacement in education systems. AI literacy, critical thinking, intergenerational learning, teacher agency, and transparent assessment and equitable access, therefore, should be central to modern education.

Keywords:

Artificial Intelligence, Generative AI, Digital Divide, AI Literacy, Automation, Critical Thinking, Human Agency, Digital Education.

1. Introduction

Artificial intelligence has become a commonplace term in the daily life of human beings. Generative Artificial Intelligence systems have the capability of generating text, translating languages, summarizing documents, writing computer code, creating images, explaining scientific concepts, and providing increasingly advanced reasoning. Beyond technology, this development is important

because it is a sign of modernism in society. It's about the basic connection between man and information.

Education has been organized in large part around the lack of information for centuries. Libraries, Universities, books and professional experts were some of the important gateways through which knowledge could be acquired by the teachers. This lack was hugely curtailed by the digital revolution. The rise of search engines and ed-tech websites made information more accessible, and AI has taken another step to provide conversational and personalised assistance.

The OECD has called generative AI as a "general purpose technology" that can transform traditional teaching, assessment and learning approaches. Can enable the democratisation of autonomous learning, while at the same time raising concerns about cheating, skills attrition, privacy, algorithmic bias and the loss of learning due to excessive cognitive offloading (OECD, 2023). This results in a paradox. AI has the potential to make education more accessible, but may diminish the meaning of some educational activities. No longer does a learner have to learn to search through dozens of books to find information. A person can ask an AI system to explain the information in simpler language, provide examples, translate it into another language or adapt it to a particular level of understanding.

This means the challenge is not just about getting access to information for humans. But more important is whether humans are still developing the ability to independently assess, question, context and use that information. This becomes even more relevant if viewed within the parameters of age, automation and capitalism.

1.1 AI and the Question of Age

As with most things, technology has been linked to generations. Younger people are frequently thought to be more techno literate than older people, and older people are frequently depicted as techno literate or tech resistance. These are assumptions that could lead to 'digital ageism'.

But AI might challenge this traditional and familiar correlation between age and technological ability. Advanced programming skills are not always required to communicate with a conversational AI. Natural-language interfaces enable people to interact with technology in natural language.

This can lead to new opportunities for older people and life-long learners. An investigation with 207 adults aged 60 years and older revealed that there is significant variability in the level of AI literacy, yet older adults have shown great interest in learning more about AI to make informed choices about AI-enabled products and services (Kaur & Chen, 2023).

But having an accessible interface doesn't remove age inequality. The results of "AI ageism" research reveal that age-related bias can manifest in several ways: within datasets and algorithms; among those designing the technology; in public discourse; through discriminatory technological effects; and by excluding older people from being users of the technology (Stypinska, 2024; 2022).

Hence, AI has the potential to simultaneously alleviate one type of age inequality and generate another.

1.2 Education Beyond the Transfer of Information

The second is the issue of the meaning of education itself--- Learning is never limited to a transfer of information from teacher to student. Education is an interpretive, dialogical, reflective, intellectual struggle, socialization, ethical deliberation and process of autonomy building. In this context it is important to remember Paulo Freire's concept of "banking" versus "problem-posing" education. In the banking model, knowledge is viewed as something that can be put into students. For the problem-posing education, the learners look at the problems and get involved in the production of knowledge. The latter opens the learning process by putting inquiry and agency at the core of education (Freire, 1970).

Generative AI is a unique new tech opportunity: that the machine itself can be an extremely effective "depositor". A pupil may ask for an explanation, and will be provided with one promptly. An essay can be created without the mental exertion that is usually required to make an argument. Mathematical problem may be solved prior to learner knowing the reasoning. But the potential of AI giving wrong answers is not the only danger. The real problem is that the correct answers can be provided with no accompanying intellectual growth.

1.3 From Automation to Educational Automation

The initial period of automation has been dedicated to the automation of routine and physical work. AI extends automation to tasks traditionally thought of as cognitive.

The field of writing and translation is steadily gaining momentum with partial automation, as is coding, while research support and administrative decision-making are also being increasingly incorporated into the processes. The revolution cannot happen without education.

But UNESCO's Global Education Monitoring Report warns that technological progress does not always imply educational success. It contends that assessment of educational technology should be based on its suitability, fairness, evidence-based development, and sustainability; and that technology should enhance, not replace, quality and relevant human engagement (UNESCO, 2023).

- The distinction between **AI-assisted education** and **AI-automated education** is therefore crucial.
- AI-assisted education preserves human agency: technology helps a learner think, explore and practise.
- AI-automated education risks making the learner increasingly passive: technology thinks, writes, solves and produces on the learner's behalf.

2. Objectives of the Study

The study has five principal objectives:

- 1.To examine how the emergence of AI is transforming access to knowledge across different age groups.
- 2.To investigate whether AI can reduce or reproduce age-related inequalities in learning and technology use.
- 3.To analyse the potential consequences of AI-driven automation for the traditional purposes of education.
- 4.To examine the relationship between educational automation, productivity-oriented thinking and capitalist economic structures.
- 5.To propose a human-centred educational framework in which AI strengthens rather than substitutes human learning and agency.

3. Research Questions

The paper addresses the following questions:

RQ1: Does the accessibility of AI reduce age-related barriers to learning?

RQ2: Can universal access to AI be distinguished from genuine educational empowerment?

RQ3: How does generative AI affect critical thinking, independent learning and traditional educational practices?

RQ4: Does increasing automation risk transforming education from a human-development institution into an efficiency-oriented production system?

RQ5: What educational policies and practices can preserve human learning while benefiting from AI?

4. Literature Review

4.1 Artificial Intelligence as a General-Purpose Technology

This body of literature increasingly considers AI as not just a certain software but a technology with applications in a wide range of areas.

The OECD (2023) notes that generative AI has the potential to transform education, and that it could impact teaching, learning, assessment, and the organisation of educational work. It's also because of its versatility: unlike educational software that is focused on a specific subject, generative AI can support writing, explaining, translation, programming, research and creative work.

The economic realm also has a concept of AI that replaces labour and AI that complements labour. Brynjolfsson and others (NBER, 2024) have pointed out that the distributional impacts of AI are partly the result of whether technology is augmenting human capabilities or replacing human tasks.

Rather than replacing workers, AI could be a chance to share their expertise with more people, argues Autor (2024). In the education sector, such a view holds promise for making explanations and expertise more accessible to more learners than is currently the case, typically, in institutions or with specialists.

It is therefore difficult to find any support for a naïve "AI will take over human jobs" reading in the literature. Rather, the focus is on the direction of technological design and institutional use.

4.2 AI and the Democratisation of Learning

AI has a lot of potential to democratise learning. The learner has the opportunity to ask the same question over and over without being embarrassed. Translation can help to minimize language barriers. Any complicated idea is easy to break down. Explanations can be produced on a personal level at various educational levels.

Researchers at the OECD focus on the need for learners and teachers to assess and adapt AI-generated content, alongside the promise of personalised and autonomous learning with AI. At the OECD, studies highlight the potential of personalised learning and autonomous learning facilitated by generative AI, as well as the need for learners and teachers to adapt and assess generative AI-generated content (OECD, 2023).

This has particular importance for lifelong learning.

Someone who has not gone back to school for years may be able to learn new things without attending schools. Parents have access to explanations to help their child. There is potential for workers to develop new digital skills. For older learners, there's the chance to learn about technology without feeling like there's a limit to their age.

But, the democratisation of access should not equate the democratisation of educational outcomes. Electricity, connectivity, devices, language, digital literacy, and financial resources and confidence are still factors in access to AI. The report from UNESCO 2023 highlights that disadvantaged groups are less likely to have access to educational technologies and there is uneven evidence of their effectiveness.

4.3 AI Ageism and the Persistence of Age Bias

It's essential to understand digital ageism to understand the interplay of AI and age. An understanding of digital ageism is essential to understanding the dynamics of AI and age. Understanding digital ageism is a critical component to understanding the dynamics between AI and age.

Chu et al. 2022 proposed that age-related bias was not given as much attention as racial and gender bias in AI research. They appreciate opportunities for the use of AI systems that exacerbate social inequalities with respect to older people.

Stypinska (2022) looks at "AI ageism" by describing 5 dimensions of ageism in the context of AI: technical bias, individual stereotypes, discursive invisibility, discriminatory group effects, and user exclusion.

This literature poses a question to the idea that AI can entirely eliminate the age barrier.

For instance, whilst an older student might have access to an AI tool, they may not feel comfortable using it. The system based on the AI algorithm can also produce stereotyped pictures of the elderly, because it could be the cultural preconceptions existing in the training set that are age-stereotyped. Technological accessibility is a necessary, but insufficient condition, for age inclusive education.

4.4 AI Literacy as the New Form of Literacy

Literacy was the ability to read and write: a traditional form. Digital literacy extended this to the capacity to utilize digital tools. AI has ushered in a new era that requires a new type of literacy. Today, with the rise of AI, a new kind of literacy is needed.

AI literacy includes:

- understanding what AI can and cannot do;
- recognising hallucinations and inaccurate outputs;
- evaluating sources;
- identifying bias;
- protecting personal information;
- understanding how prompts influence outputs;
- recognising when human judgement is necessary; and
- using AI ethically.

In a study on 128 senior secondary students, project-based AI literacy education was shown to enhance students' problem-solving skills and ethical awareness about AI boundaries, as well as their metacognitive strategies (Computers and Education: Artificial Intelligence, 2024). What is important here is that it indicates that the teaching of education should not only be about using AI. It needs to help them think when they are using AI

4.5 Cognitive Offloading and the Meaning of Learning

One of the most important theoretical concerns is cognitive offloading.

- External devices are used regularly by humans to lower cognitive load. Calculators lower the cognitive requirement of arithmetic, search engines lessen the cognitive need for memory, navigation systems lessen the cognitive need for spatial memory.
- The phenomenon may be expanded to higher-order cognitive functions with the use of Generative AI.
- The OECD explicitly considers that skill attrition could occur when specific human skills are not used as much due to the impact of the cognitive offloading of those skills (OECD, 2023).
- This gives rise to a contradiction:
- Generating an answer becomes easier, and one might not feel a need to learn how to generate or evaluate that answer.
- But what is largely valued in education is just those very processes.
- The learning process of writing an essay is more than the essay itself. Develops argumentation, organisation, selection and expression of evidence.
- The solution of a mathematical problem does more than give the number answer. It develops reasoning.
- One cannot learn more from a difficult text than information. It develops interpretation.
- The use of process for the product is one of the key learning challenges of generative AI.

4.6 Education and the Logic of Capitalism

The relationship between technology and capitalism is complex.

- In capitalist economies, productivity, efficiency, scalability and cost reduction typically are rewarded. AI is a natural fit for these incentives since software can execute some of these activities at very low marginal cost.
- According to the IMF, some 40% of employment worldwide is vulnerable to AI, and exposure is significantly greater in advanced economies. AI is also a risk for increasing income and wealth inequality, depending on whether the technology complements or substitutes for labor (Cazzaniga et al., 2024).
- Similarly, the ILO reports that exposure to generative AI is unevenly distributed between countries, with greater exposure in high-income countries, and between occupations, with greater exposure for those in higher-value occupations. More importantly, exposure does not necessarily equal job elimination; many occupations have a greater risk of task transformation than automation.

Education operates within this economic environment.

As more and more educational institutions start to measure success by employability, productivity, and labour-market competitiveness, AI could look more appealing as a way to get more outputs at a faster and lower cost.

The risk is that education becomes a manufacturing process:

input → training → assessment → credential → labour-market output.

Critically, this can result in a narrowing of the broader purpose of education, that of citizenship, culture, self-understanding, ethical thinking, creativity and intellectual freedom.

Here, Freire's problem-posing approach is applicable, which takes the view of education as a process of human agency and not just knowledge transfer.

5. Research Methodology

This paper adopts a **qualitative secondary-research and interpretive analytical methodology**.

The evidence base consists of:

1. peer-reviewed academic literature;
 2. international institutional reports;
 3. large-scale educational assessments;
 4. labour-market research;
 5. research concerning AI literacy and ageism; and
 6. theoretical literature on education and technological change.
7. It is not a new primary survey, but rather an analysis. Rather, quantitative results are published and then compared and interpreted to find the broader patterns.

The main dimensions of analysis are:

Dimension	Indicator
AI penetration	Student and worker use of AI
Educational impact	Learning outcomes and AI-assisted learning
Age inclusion	AI literacy and age-related barriers
Teacher preparedness	Capacity to integrate AI
Inequality	Socioeconomic and geographic differences
Automation	Exposure of cognitive and educational tasks
Human agency	Critical evaluation and independent learning

This approach is suitable given that it does not aim to measure one institution but to gain an understanding of a phenomenon which is rapidly becoming global in scope, through triangulation of existing evidence.

6. Data Analysis and Interpretation

6.1 Rapid Expansion of AI use

The widespread use of AI shows that it cannot be viewed as an external phenomenon that only impacts particular technological communities.

In an NBER study of nationally representative U.S. surveys, by late 2024, nearly 40% of all respondents aged 18 to 64 had used generative AI, and 23% of the employed respondents had done so for work in the past seven days, and 9% used it on every working day (Bick et al., 2024/2025).

It is a fast diffusion that has educational significance because students are exposed to AI not only as an educational tool, but also as part of their everyday social and professional life. The distinction between "learning technology" and "ordinary technology" is thus increasingly blurring.

6.2 AI use among Students

The new OECD PISA evidence gives very important information. According to the PISA 2025 report, around 46% of students in OECD countries use AI chatbots once a week or more to support their learning. But the correlation between the use of AI and performance is complex. While moderate and purposeful use for learning does not have the same negative association, the lower performance of students who use AI for specific tasks like summarizing or drafting schoolwork may be due to the fact that the students lack domain expertise for the task.

The interpretation is critical.

- There is no evidence that AI leads to poorer academic performance. Students who are not doing well in school might just be more inclined to use AI. However, the pattern indicates that access is not sufficient for learning.
- More significantly, PISA data indicates that students who have exposure to evaluating AI-generated information in school experience a small improvement in their use of AI for learning. However, these opportunities are more likely to be available to socioeconomically advantaged students.
- This creates an emerging inequality:
- **AI access gap → AI literacy gap → critical-use gap → potential educational outcome gap.**

Thus, the future digital divide may not simply concern who has AI. It may concern **who knows how to question AI**.

6.3 Teacher Preparedness

Technology cannot transform education effectively if educators are not prepared to use it.

- According to the 2025 Stanford AI Index, 81% of U.S. computer-science teachers surveyed stated that AI use and AI learning should be part of the core computer-science curriculum, but less than half felt prepared to teach AI.
- The OECD also has identified high priority teacher training needs and highlighted the need to keep teachers at the heart of AI implementation.
- This indicates that the primary thrust of educational AI policy shouldn't be on buying software.
- Investment is also required in:
 - teacher training;
 - curriculum redesign;
 - assessment reform;
 - AI ethics;
 - digital infrastructure;
 - data protection; and
 - professional autonomy.

6.4 Technology Does Not Automatically Produce Better Education

Technological optimism is counterbalanced by UNESCO's evidence. The Global Education Monitoring Report 2023 finds mixed evidence on educational technology. It also recognises that technology is changing at a rate that is greater than the ability to rigorously assess it and that disadvantaged groups are less able to benefit from technology.

This supports a central proposition of the present study:

The technological capacity to automate an educational activity does not prove that automating that activity improves education.

- For instance, if a student does not practice the ability to write, then he/she may be more productive in writing with automated essay generation, but less developed in writing.
- While automated feedback can help teachers save time, if students become accustomed to such feedback as an algorithmic judgement, it can be troublesome.
- While AI tutoring can provide access to explanations, it cannot necessarily capture the social, emotional and ethical aspects of human teaching.

7. Discussion

7.1 AI can Challenge Age-Based Educational Boundaries

The traditional relationship between age and education is increasingly becoming unstable. In the past, education had a life-stage approach, that is, childhood schooling, university education and professional trainings and retirement. AI plays a role in the creation of a more continuous learning model.

- Even an older adult can learn to program.
- Advanced philosophy can be learnt by a young.
- It's never too late to learn a new language, even for a working professional.
- The parent can explore a scientific idea.
- A retired person can delve into a new area of learning.
- It's a step forward in the direction of lifelong learning.
- It's important to note, however, that it would be wrong to say that AI has eradicated ageism. Earlier studies have shown that algorithmic systems can perpetuate stereotypes of the elderly and exclude them. So, AI needs to be made accessible for people of all ages and not just younger users, who are the technological norm.

7.2 From Information Equality to Epistemic Equality

A conceptual difference that is important to draw out of this analysis is between information equality and epistemic equality.

- Information equality is that people have the ability to access information.
- Epistemic equality is the capacity of individuals to assess, understand and utilize knowledge responsibly.
- AI can significantly enhance information equality.
- It does not provide 'epistemic equality' automatically.
- AI, in fact, could aggravate epistemic inequality.
- Two individuals can use the same AI system. Can be challenged on assumptions, checked for citations, compared sources, and look for hallucinations. The latter may take the former's output for granted as the truth.
- The technology used is the same.
- The educational capacity is not.
- The importance of AI literacy in education is undeniable, which is why it should be integrated into the educational curriculum.

7.3 The Risk of Replacing Learning with Performance

Modern education already contains a tension between learning and performance.

- Examinations, assignments, grades and credentials are common ways for students to be assessed.
- Generative AI opens the door to creating evidence of learning without engaging in learning.
- This is a big challenge to assessment.
- A conventional assignment assumes:
 - **student effort → intellectual process → written product.**
- Generative AI can disrupt this sequence:
 - **prompt → AI output → submitted product.**
- The student exhibits good product competence and little evidence of his or her own intellectual growth.

Thus, educational systems must shift towards assessments that reward:

- oral explanation;
- project work;
- iterative drafting;
- reflection;
- practical demonstration;
- source verification;
- collaborative problem-solving;
- personalised reasoning; and
- transparent documentation of AI use.
- The answer is not just to prohibit AI. As AI becomes a common part of everyday work, a ban may become more and more impractical. The goal that is more desirable is to make the use of AI educationally transparent and intellectually responsible.

7.4 Human-Made Automation and the Capitalist Incentive

AI is not an autonomous historical force detached from society.

- Humans design it.
 - Companies finance it.
 - Institutions adopt it.
 - Governments regulate it.
 - Consumers use it.
 - So, the social impact of AI will greatly depend upon the circumstances under which it expands.
- However, if the primary focus is about cutting cost, then AI can be developed to take the place of employees. If the objective is to save money, it is possible to get the AI to replace labour. What if the

aim is to enhance the capabilities of human beings, then AI can be designed to cooperate with humans. This distinction also exists in the economic literature. Although the concept of "labour saving technology" driving "shared prosperity" is a natural one, Acemoglu and Johnson (2024) argue that this connection is not necessarily direct; it requires the creation of new jobs and complementary opportunities

This distinction is particularly important for education.

- Technology is a substitute to labour when it's used to let one teacher teach two classes.
- If teachers can leverage AI to save time on repetitive administrative work, they can dedicate more of their time to mentoring, discussing and supporting learners, making AI a tool to augment humans.
- This technology can then generate very different social outcomes as a result of institutional priorities.

8. The Central Paradox

This central paradox in the use of AI and education can be stated as:

AI can help in getting knowledge easily and provide easier way to avoid true learning. It is the paradox that neither technology enthusiasm nor rejection is sufficient.

The potential of AI is unparalleled:

- personalised explanations;
- language accessibility;
- lifelong learning;
- disability support;
- tutoring;
- research assistance;
- teacher productivity;
- access to expertise;
- creative experimentation.
- At the same time, it introduces serious risks:
- cognitive offloading;
- academic dishonesty;
- misinformation;
- algorithmic bias;
- privacy concerns;
- digital exclusion;
- ageism;
- reduced teacher autonomy;
- concentration of technological power;
- overdependence on automated systems.
- UNESCO therefore proposes a "human centered" approach that focuses on human rights, respect for privacy, age-appropriate use, equity and education-relevant usage.

9. Recommendations

9.1 Establish AI Literacy as a Foundational Educational Competency

- AI literacy should be made similar to digital literacy.
- Not just how to call upon AI, but learn about how AI works conceptually, how errors can occur within this process, how bias can be incorporated, how information should be verified.

9.2 Protect the Human Purpose of Education

Learning outcomes need to be clearly stated and need to be specific to something that can't be automated and can't be mistaken for automated production of education systems.

These include:

- judgement;
- empathy;
- curiosity;
- ethical reasoning;

- creativity;
- communication;
- collaboration;
- critical thinking;
- civic responsibility.
- Technology should support these capabilities rather than displace them.

9.3 Redesign Assessment

- Assessment should be of the learning process rather than the end product.
- Oral examination, project-based assessment, reflective journals, demonstrations and supervised problem-solving should be included in the range of assessment methods used by institutions.
- The use of AI must be made known if relevant, not concealed.

9.4 Make AI Intergenerationally Inclusive

- AI education shouldn't be confined to the younger generation's knowledge of technology.
- There should be lifelong AI-literacy programmes for adults of all ages in Universities, schools, libraries, workplaces and community institutions of all kinds.
- The older adult is not the passive recipient of "assistive" technology, but is treated as an active learner and participant in technology.

9.5 Strengthen Teacher Agency

- Teachers must continue to be the main decision makers in the use of AI for learning.
- Where possible, AI should alleviate repetitive administrative tasks so that teachers have more time to dedicate to teaching, mentoring and human interaction.

9.6 Prevent the Commercialisation of Learning From Becoming the Purpose of Learning

Avoid technology just because it is the latest fad or product on the market.

Institutions should ask:

- What is the problem being solved with this educational technology?
- Does it have evidence to support it improving learning?
- Who benefits?
- Who could be left out?
- What human ability could be affected?
- What data are collected?
- Who is responsible for those data?
- Is the technology appropriate for supporting or supplanting human educational interactions?
- The principle of 'learning for life' is well supported by evidence-based approach of UNESCO.

Conclusion: Access to answers is not the same as education.

AI is one of the most significant shifts in human/knowledge relationship in today's world. It is also very accessible, which can challenge the conventional notions of age, expertise and educational participation. We are not anymore, a certain generation, a certain institution, a certain profession, etc., to be able to get explanations, learn about subjects, experiment with ideas. Despite this democratisation, however, there is an underlying paradox in it.

Education is not of any value of its own as it is a transfer of information. Its higher reason is to produce human beings who are capable of asking questions on information, comprehend the complexity and make judgements, and communicate their ideas and act responsibly in society.

The emergence of generative AI makes this distinction more important than ever.

The evidence available so far suggests learning effects from the use of AI depend on the context. The use of AI amongst students is reflected by PISA 2025, yet the connection between AI and achievement is complicated. Purposeful use can co-exist with positive learning outcomes, and the use for specific learning purposes is associated with lower performance, which can be explained by education in AI-literacy. Likewise, an AI does not imply that there will not be inequalities of age. The

research on AI ageism shows that while technology provides new opportunities, it can also perpetuate stereotypes and exclusion. The true problem, of course, is not to try to "fight an enemy, protect a victim," as it were, but rather to make sure that technology is not used against education. Wisdom is not to be the servant of technology.

AI is supposed to be a tool that will help people learn, not a system that will learn on their behalf. It should augment the teacher's capacity, not replace the teacher. It ought to facilitate learning throughout life, not to make it superfluous. It should not exacerbate the divide among generations, but bridge it. Most importantly, education should not become another industrialized manufacturing operation where students are seen as raw material, knowledge as the information disseminated and learning as the measurable product.

"What kind of human beings should education help us become in a world where AI can increasingly do what humans once had to learn to do?"

- Whether AI will be a tool for human intellectual liberation, or a new way to perpetuate old inequalities, commercial interests and types of automation, will depend on the answer to that question.
- Its goal shouldn't be to have humans race with a machine on all things a machine can do.
- It should be to allow humans, even if machines can do more, to understand why, when and whom it should be done to.

References

- Acemoglu, D., & Johnson, S. (2024). *Learning from Ricardo and Thompson: Machinery and labour in the early Industrial Revolution, and in the age of AI* (NBER Working Paper No. 32416). National Bureau of Economic Research. <https://doi.org/10.3386/w32416>
- Autor, D. (2024). *Applying AI to rebuild middle class jobs* (NBER Working Paper No. 32140). National Bureau of Economic Research. <https://doi.org/10.3386/w32140>
- Bick, A., Blandin, A., & Deming, D. J. (2024/2025). *The rapid adoption of generative AI* (NBER Working Paper No. 32966). National Bureau of Economic Research. <https://doi.org/10.3386/w32966>
- Chu, C. H., Nyrup, R., Leslie, K., Shi, J., Bianchi, A., Lyn, A., & others. (2022). Digital ageism: Challenges and opportunities in artificial intelligence for older adults. *The Gerontologist*, 62(8), 1138–1146.
- Cazzaniga, M., Jaumotte, F., Li, L., Melina, G., Panton, A. J., Pizzinelli, C., Rockall, E., & Tavares, M. M. (2024). *Gen-AI: Artificial intelligence and the future of work* (IMF Staff Discussion Note 2024/001). International Monetary Fund. <https://doi.org/10.5089/9798400262548.006>
- Freire, P. (1970). *Pedagogy of the oppressed*. Continuum.
- International Labour Organization. (2024). *What is the possible effect of generative AI on employment?* International Labour Organization.
- Kaur, A., & Chen, W. (2023). Exploring AI literacy among older adults. *Assistive Technology: Shaping a Sustainable and Inclusive World*. <https://doi.org/10.3233/SHTI230589>
- Korinek, A. (2024). *Economic policy challenges for the age of AI* (NBER Working Paper No. 32980). National Bureau of Economic Research. <https://doi.org/10.3386/w32980>
- OECD. (2023). *OECD digital education outlook 2023: Towards an effective digital education ecosystem*. OECD Publishing. <https://doi.org/10.1787/c74f03de-en>
- OECD. (2026). *PISA 2025 results, Volume I: Future-ready students*. OECD Publishing. <https://doi.org/10.1787/73451bc5-en>
- Stypinska, J. (2022). AI ageism: A critical roadmap for studying age discrimination and exclusion in digitalized societies. *AI & Society*. <https://doi.org/10.1007/s00146-022-01553-5>
- Stypinska, J. (2024). AI ageism: A roadmap for studying ageism in the era of algorithms. *Innovation in Aging*, 8(Supplement_1), 442. <https://doi.org/10.1093/geroni/igae098.1437>
- UNESCO. (2023). *Global education monitoring report 2023: Technology in education—A tool on whose terms?* UNESCO.
- UNESCO. (2023). *Guidance for generative AI in education and research*. UNESCO.
- Voinea, C., Wangmo, T., & Vică, C. (2024). Paternalistic AI: The case of aged care. *Humanities and Social Sciences Communications*, 11, 824. <https://doi.org/10.1057/s41599-024-03282-0>