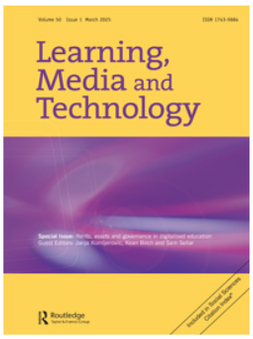

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Generative artificial intelligence in education: (what) are we thinking?

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ABSTRACT

Debates linking generative artificial intelligence (Gen-AI) to knowledge work have become increasingly popular, with discussions of technological innovation and information production efficiency central to the justification of its integration in education contexts. Questions are however raised about the intellectual capacities that these technologies appear to replace or provide, with a special emphasis placed on the activity of thinking, an element so essential to a contemplative life. Inspired by Arendt's preoccupation with society's state of 'thoughtlessness' and Freire's critical pedagogy, this article explores how the role of thinking is impacted by the introduction of Gen-AI in education. Via these theoretical engagements, we argue that the presence of Gen-AI in education can have serious consequences for the intellectual development of individuals and that working towards a culture of learning that responsibilises thinking, also as a form of intellectual honesty, is key to preserving individuals' thinking agency.

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Introduction

Debates linking generative artificial intelligence[1] (Gen-AI) to education have taken on a whole new dimension since the official release of ChatGPT at the end of 2022. ChatGPT and related chatbots, such as Deepseek, are a type of Gen-AI trained on language patterns with the purpose of producing linguistically coherent narratives. This gives the illusion that Gen-AI technology is endowed with the capacities of thinking and reasoning so essential to the original production of knowledge. The power of Gen-AI lies in the synthesis of comprehensive information openly available online, a much faster process compared to any normal human processing.

Perspectives regarding the impact of Gen-AI in the field of education have highlighted the pros and cons of technological developments with little space for the development of more complex stances about the role of technology and education. On the one hand, Gen-AI is championed for its speculative potential for promoting thinking and creativity (Vinchon et al. 2023), notwithstanding the current lack of evidence in this regard. On the other hand, the debate is linked to ongoing concerns about academic plagiarism, renewing the moral panic surrounding academic misconduct in graduate and postgraduate study, and increasingly also in published work (Martin 2013). These concerns build on the effects of contract cheating services, such as essay mills (Lancaster 2020), and its impact on unsupervised assessment formats such as

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essays and reports, that are used as key indicators of students' learning performance and success (Macfarlane 2015).

While those enthusiastic about Gen-AI portray these technologies as inevitable innovations for societal progress (Baidoo-Anu and Owusu Ansah 2023), more sceptical commentators are worried about how it will affect intellectual autonomy and human activity within and beyond education (Lo 2023). These concerns are valid and invite questions such as whether Gen-AI can pose as a bastion of information freedom or provide the next level of knowledge domination. This is a pertinent inquiry, not least given the increased effects of digital capitalism on society, also exemplified by the growth of misinformation and conspiracy theories that threaten to impose an infocratic regime (Han 2022).

Inspired by Hannah Arendt's phenomenological approach (1958) and her preoccupation with society's increased state of 'thoughtlessness', we set off to explore how the role of thinking is impacted by the introduction of Gen-AI in education. This in turn invites reflections on the motivations behind the fast acceptance of Gen-AI in education, when the field is known for responding slowly to change (Selwyn 2016), and the implications for educational provision, including how the activity of thinking is considered in education. A critical stance is overdue regarding the implications of Gen-AI on current understandings of education, its agents' practices as well as contemporary (democratic) societies. Central to this analysis is the question of whether thinking can, or should, be automated. Following this line of inquiry, this paper points towards the essentiality of linking thinking with an educational culture that recognise students' learning processes.

Pairing the concepts of thinking discussed in Arendt's work (1958) with a critical conception of learning as an engaged practice, this article provides a critique regarding the uneasy match of Gen-AI with education practices that are centred on forms of intellectual empowerment and democratic participation (see Freire 2001). The article starts by providing an overview of the rapid integration of Gen-AI in education. It then moves on to situate Gen-AI information abilities in the context of critical pedagogical traditions. This argument is further extended through discussions regarding the importance of thinking and learning cultures to the processes of meaning making. Akin to Freire's conception of critical consciousness (2005), this approach places onus on students as active agents in their own learning, while emphasising the role of educators in engendering meaningful learning. The paper finishes with a discussion on the practice of intellectual honesty in the context of enabling responsible thinking, i.e., thinking derived from one's own contemplative activity.

GEN-AI and its rapid acceptance in education

Schools and higher education institutions around the globe, including the UK Higher Education elite group[2], have started to declare their commitment towards Gen-AI technological advancements. Although understandable in the aftermath of Covid-19 experiences that tested education institutions' technological agility (Costa and Li 2023), the underlying message suggested by these education directives is evident: change is afoot. This is also made clear by the little to no resistance to its effects, as big tech companies start to insert Gen-AI into their search engines and tools.

This lack of resistance is manifested in particular, troubling, ways. For example, while education labour unions have considered the ways in which Gen-AI can be employed in education and have shown concerns over the environmental and intellectual property impacts of Gen-AI (Preton 2021), thus far there has been little resistance regarding Gen-AI in education, especially as governments start to publish their AI strategies and investment plans (see Watermeyer et al. 2024). This is unlike the creative industries that have strongly protested the threats of Gen-AI to their workers' livelihoods (Walton 2024). This is somewhat surprising given the questions Gen-AI raise for education and knowledge work in general. Even more concerning from a pedagogical perspective, the integration of Gen-AI in education is often aligned with a rhetoric of effective teaching (Mishra, Warr, and Islam 2023) and curriculum adaptation to technology, not pedagogy, as well as a growing

emphasis on personalised learning experiences. These are increasingly popular marketing slogans used in the selling of automated services for educational institutions.

The reconfiguration of education to promote varied student activity and teaching and learning as an experience of dialogic learning and plurality of ideas has received far less emphasis (see Costa et al. 2023). A technicist perspective is thus triumphing in education, a perspective that gained considerable traction during the Covid-19 pandemic and the digital capitalist ventures it enabled (Patil 2021). This is so in spite of critical educators' decades-long warnings concerning the nefarious effects of education ideologies that rely on technical approaches (see for example, Apple 2012; Paraskeva 2017; amongst others), for fear it will reduce opportunities for critical consciousness[3] (Freire 1970; 2018) and learning autonomy (Freire 2001), via its instrumentalisation. This concern is now materialised via the digitisation of a global public sphere, where the apparent democratisation of learning – as enacted via an open knowledge approach accessed and co-produced by the masses – is also used and manipulated by Gen-AI.

More generally, the lack of a considered thoughtful debate on the potential educational impacts of Gen-AI brings into question the usefulness of formal education as a respectable knowledge gatekeeper and the culture of learning that it aims to instil. The impact of this reality is a distortion of public opinion regarding what role is given to education and the purpose of pedagogical practices that assist it. The confusion lies in assuming that the role of education is primarily one of function, of delivering technical skills for employability which inevitably marginalises 'impractical' talk of critical knowledge and democratisation. This is also a perspective increasingly endorsed by the student body, who, once faced with a more performative side of education, is likely to be inclined to perceive these technologies as a convenient solution to the demands of learning productivity, study efficiency (Chan and Lee 2023) and the pressures derived from it. This instrumental and consumerist stance towards education is a world away from Freire's critical conception of education (Freire 1983, p.5), one in which education is geared towards ' … being in the world and knowing and comprehending the world' (Babu 2024, p.14).

What format Gen-AI motivated changes will take is decisive for the future social role of education. Education can submit itself to technological domination, rationalising AI skill development as the latest educational and ethical need, as suggested by the Russell group consortium, or instead channel energy into promoting students' intellectual agency. This latter aspect seems to have acquired less relevance in current debates that are predominantly focused on discourses of innovation and the tailoring of curriculum to suit Gen-AI integration (see for example, Karpouzis et al. 2024). Less space has thus been made to discuss how education will be impacted and/or restored for the development of a learning culture that relies on individuals' own cognitive and collective actions.

To this end, we contend that Gen-AI and digital platforms in general are ripe for instigating an educational crisis. This can be a good thing. It is an opportunity to rethink what culture(s) of learning are possible when responding to the effects of Gen-AI on one's capacity of thinking not only critically but independently. In this regard, a key challenge for education in times of Gen-AI is to distinguish itself from what Gen-AI can currently offer, which is curated information (Costa and Murphy 2025). This is where attention to education approaches and curriculum designs can be given, approaches and designs that promote meaning in and for learning and render visible the actions of students as valued activities and respected participation.

GEN-AI and critical education: uneasy bedfellows

How do Gen-AI and critical education speak to each other, especially given the latter's focus on democratisation and social transformation? A super-efficient form of information technology[4], Gen-AI has the potential to unleash rapid social transformation. Given its implications for knowledge work, it is not only expected that Gen-AI will revolutionise citizens' interactions with information but also make numerous human activities redundant in the world of (knowledge) work.

This type of social transformation sits uneasily alongside the exercise of intellectual engagement, a cornerstone of critical pedagogical work. Education as an engaged practice emphasises teaching and learning processes as creative acts of knowing (Shor and Freire 1987). Acts of knowing are enabled by the interlinked critical education elements of problematization (often translated into English as problem-posing), reflection and critical dialogue. Together, these elements are wrapped into a practice of critical thinking (Freire 1970, 56) crucial to the development of an individual's intellectual autonomy.

At a pedagogical level, this is where things become problematic in a Gen-AI world. Intellectual autonomy includes the capacity to ponder and question the conditions under which information is provided and the ability to make ethical judgements about the issues under examination. This is distinct from an aptitude for consuming information as a main form of knowledge acquisition. Intellectual autonomy is therefore associated with the activity of thinking reflectively, a process of (self) formation (*Bildung* in the German tradition) that is built in dialogue with oneself and others. It is an *untransferable* activity that is contingent on the involvement of the knowing individual in the cultivation of thinking as a pathway for opinion formation. A key role of critical education is then of linking the knowing individual with key knowing processes, so that they can perceive the intrinsic value of knowledge cultivation; otherwise knowledge activity becomes reified, estranging the knower from the production of knowledge (see Lukács 1923).

The technical ability of Gen-AI, however, enables the separation of knowledge production from the activity of knowing, thus leaving those in charge of knowing with a meaningless task. This separation is a problem, because 'human beings have a deep-seated need for meaningfulness in everything they do (…)' (Honneth 2024, 12), including in education, a world embedded at it best in meaning making. When education is viewed as merely performative, students and educators are more likely to approach learning as an objectification of educational qualifications, thus privileging learning outcomes over learning processes. The fissure between an understanding of education as an engaged practice (hooks 2010) and education as a product can thus be exacerbated. Whereas the former approach fights for intellectual autonomy, the latter is likely to lower the demands on intellectual work (Lingard 2007).

This is why, in times of Gen-AI, the principle of a critical pedagogy remains as relevant and as radical as it was during Freire's plight against the intellectual enslavement (1970) of individuals whom he had in mind when developing the foundations of the *Pedagogy of the Oppressed*. While the contexts of education have changed via globalising imperatives and technological developments, the pursuit of intellectual liberation has never been more relevant, nor has the scepticism over the influence of technology on modern life. The key difference between now and then is that instead of focusing on the oppressions of low educated classes and rural reforms (Grollios et al. 2015, 113), the gaze is turned to the (re)formulation of education by Gen-AI technologies and the struggles of teachers and students as digital users. These struggles relate in part to the optimisation of information that deify machine learning and which in turn minimises the importance of fundamental intellectual practices – those of listening and reading, thinking and reasoning as well as communicative and discursive practices (see hooks 2010) – that are crucial to the development of an informed mind (Han 2022).

Individuals' active engagement in mental work is fundamental to their intellectual development and to processes of meaning making. This activity is best not outsourced to third parties, because it also has repercussions regarding one's intellectual autonomy (Costa and Murphy 2025). More concretely, a culture of learning that encourages critical intellectual engagement sits in opposition to a banking education approach, which as an instrument of oppression relies on transfers of information (see Freire 1970). Intellectual work on the other hand rests on activities of 'critical reflection, curiosity, demanding questioning, uneasiness, uncertainty (…)' (Shor and Freire 1987, 8) that cannot be achieved by reducing mental activities to accessing Gen-AI produced information. Rather, what Gen-AI produced information can more easily do, when controlled by groups with vested interests, is encourage intellectual sedentarism and help propagate misinformation.

Here, Gen-AI promotes the utilitarian value of easy access to information (Brinkmann 2024). In performative focused educational systems this is a dangerous temptation, giving in to the pressures derived from impersonal, measurable forms of assessment that count as the main form of learning recognition (McArthur 2016). In this way, Gen-AI supported education helps strengthen instrumentalist views of education processes. Another contribution of Gen-AI technologies to education seems to be one of encouraging learning avoidance by making the detection of plagiarism harder (Chomsky 2023). More worringly, a ripple effect of these technologies may well encourage unthinking through authorised digital processes, with evidence starting to suggest a growing dependency on such tools (Fan et al. 2025) as well as reduced analytical skills in individuals due to a high level of trust in AI (Lee et al. 2025). This is projected to deepen educational disparities (Bulathwela et al. 2024), especially in settings of cultural deprivation and/or for individuals who objectively conceive of education as a qualification instead of an intellectual experience. In short, while Gen-AI technologies can be easily reconciled with education systems that appeal to a performative culture, Gen-AI technologies sit uncomfortably alongside more critical education approaches as they seek to circumvent essential steps linked to the processes essential to critical thinking.

Gen-AI and the capacity of thinking

A key objective of critical education is to expose students to a culture of learning that fosters their intellectual autonomy (see Costa and Murphy 2025), with which the search for meaning as a reflective action is intrinsically associated. This speaks to Freire's (1970) maxim that education is something one works for rather than is given to i.e., that there is hard and challenging work involved. These analytical practices require prompts for thinking that Gen-AI appear to bypass through the provision of direct answers, while inevitably raising questions regarding the foundational basis, intent and algorithmic nature of the knowledge source provided.

This invisibility of thinking can easily be deemed inefficient, especially in contexts that aim to optimise time-consuming activities as is the case of intellectual work. This is a dilemma for education with regards to the imperatives of a fast-paced society, but which may well justify the excitement for AI literacy (Ng et al. 2021). While proposals of AI literacy place emphasis on skill development and ethics, these debates, as well as existing guidelines (See Russell Group or UNESCO, for example) remain general, somewhat abstract, and lacking considerations regarding the activity of thinking as an essential part of cultivating one's intellectual life. These debates are often framed from a corporate perspective (Dubber et al. 2020), aligned with external imperatives of consumption, time-saving and efficiency; imperatives that are at odds with the laborious task of thinking.

This observation is not alien to Arendt's work (1958) regarding the interface between technology and the human condition, work that can act as a useful guide in exploring the relation between education and Gen-AI from a critical view-point. In particular, her writings on 'thoughtlessness', on the relation between thinking and understanding, and her musings on the importance of stillness, have a great deal to contribute to this current discussion.

First of all, Arendt's expressed a lifelong interest in the question of 'thoughtlessness' which in her view can result in a propensity for 'evildoing' (Arendt 1963). She relates evildoing to the inability to think for oneself and from the perspective of others, or being able to imagine the world outside of what is taken for granted. In the context of Arendt's work focused on the holocaust, evil is encountered in the absence of the exercise of consciousness (Hartouni 2012), in a state of unthinking. The idea of thoughtlessness points towards one's propensity for complacency, risking one's inconsiderate submission to ideology (Schiff 2014). Furthermore, in the context of Arendt's work, thoughtlessness involves a trade-off: critical thinking for propaganda.

Linked to this is Arendt's perspective on the distinction between thinking and understanding – *Vernunft* and *Verstand* in German. Thinking and understanding are in her view two central human faculties for the development of mental activity and intellectual engagement with oneself, others

and the world (see Arendt 1971). For Arendt thinking is the gateway to understanding whereas understanding is concerned with a mental conception of truth (see Arendt 1971) that can eventually be materialised in the production of knowledge. With this Arendt 'problematizes the sciences for indexing thinking to the truth' (Gaffney 2024, 4). In so doing, she places thinking at the service of meaning making. Meaning making in her view is different from the goal of knowledge production.

What is more, from Arendt's (1971) perspective, thinking is regarded as an invisible action whose only productive effect is reflexivity. Thinking is conceptualised as a quest for the meaning of things rather than the tangible production of knowledge. Thinking starts and ends with the individuals' exercise of reasoning. As a result, it is a personal endeavour that cannot be relegated to others (or machines). Understanding, on the other hand, is related to the capacity of making sense of what the mind encounters in reflection; it is the intellectualisation of thinking capable of producing something more concrete, i.e., knowledge. Thinking and understanding are separate yet interrelated steps in the development of mental activity which once overridden by artificial means can compromise the course of intellectual work and its plurality.

This emphasis on avoiding unthinking and the conflation of thinking with understanding, are joined by a focus on the state of thinking in Arendt's analysis. Thinking is in Arendt's view (1958) a dialogue with oneself. It is predicated on a state of stillness (1958, 70). Implicated in this is an individual's withdrawal from the physical world in favour of inner activity. To think is thus to embrace a contemplative life that serves the sole purpose of fulfilling one's 'reason's need' (ibid).

What do these elements of a theory of thinking add to the current discussion? First of all, determined efforts to avoid thoughtlessness sits awkwardly with what Gen-AI can enable which is immediate access to selected information at the request of the user. This offering diverges from the purpose of engendering a culture of learning that aims to prompt intellectual action. This intellectual action entails more than working through content knowledge. Following a critical tradition, it also inspires questions regarding who we are and what we stand for in relation to what is being learnt and the information that is available. Related to it is the lack of transparency surrounding the type of information Gen-AI tools draw on and the intent they aim to serve: who are these technologies truly benefitting? Questions can also be raised as to what other forms of information are excluded and why.

In the context of Gen-AI the exchange that is being proposed is one of curtailing the processes of meaning making for the automation of information, which can pass as one's knowledge. Thinking skills thus run the risk of being devalued by the automation of information. The benefit of ready-made information weighs in against the inhibition of creative thinking, i.e., of the ability to generate new ideas. Arendt's work on thinking is in this regard of great educational value in that it can expose the qualities of Gen-AI as potentially encouraging 'non-thinking'; a practice at odds with any education system that aims to promote a critical version of an individual's independent action. In other words, positioning Gen-AI as a potential instrumentalisation of non-thinking 'is not only a threat to the development of the capacity for critical thought but also to the development of autonomy and the capacity for moral judgement' (Morgan 2016, 173).

The question then is not so much whether Gen-AI can emulate thinking, but what impact it can have on the thinking capability of humans. This is where the relation to understanding becomes ever more significant. Gen-AI features may give the impression that understanding can happen without thinking, via the production of quick answers. This concern is at first not that different from the expressed scepticism towards technology that is seen to replace basic educational activities, as for example, calculators. Calculators have been both praised and argued against aiding simple mathematical skills and problem-solving (Jiang et al. 2023). The difference with Gen-AI is that it valorises the notion that thinking can be an effortless task, one that sits outside individuals' actions. Moreover, Gen-AI casts thinking through a problem-solving approach by quickly formulating answers to the questions users input onto the system. Thinking, especially of a critical kind,

however, is invested in problem-posing (Freire 1970), which requires a complex process of contemplation that is personal and which only the individual can perform (Bruner 1986).

Finally, when it comes to the state of thinking itself, Arendt's commentary suggests that the oncoming force of Gen-AI is far removed from any reasonable notion of stillness: Instead, Gen-AI is tasked with creating responses. Its current state is monological at best, although there are indications this may change to become more interactive. Regardless, Gen-AI main contribution is the externalisation of information via the automation of comprehensive text. Remarkably, this commotion of productivity contrasts with the exercise of thoughtfulness that does not strive for visibility, i.e., productive effect, but which neither aims to avoid intellectual work. This is a key issue in the hidden curriculum of Gen-AI, in that it gives the impression that it can think. What it can and does well is to automate the process of information compilation. It can thus be argued that a possible Gen-AI outcome where individuals' thinking abilities are concerned is cognitive dependency. In short, the automated ability of creating comprehensive narratives is indeed an impressive and seductive feature of information productivity (Costa and Murphy 2025). Yet it is one that alienates intellectual activity, especially processes of meaning making to which the inward activity of thinking is crucial.

Towards a culture of learning that responsibilises thinking

With the above we have sketched out some of the ramifications of Arendt's ideas for critical educative approaches to Gen-AI. But to enhance this connection, it is important to also embrace Arendt's views on the politics of thinking, a politics witnessed in her view on reponsible thinking. For Arendt (2005), responsibility towards the activity of thinking is essential for democratic education as well as democratic life. Arendt (2005) works with the idea of responsibility to encourage the principle of human progress, giving it a much-needed positive spin (Schwartz 2016) instead of leveraging it to point out possible causes of regression. Responsibility is, in this sense, better aligned with an understanding of proactive response rather than liability. Concerning the use of Gen-AI in education this means that instead of pointing the finger at such technological developments as the possible demise of education, we centre the responsibility on the initiatives education can undertake to respond to any potential harmful effects. In this context, the idea and practice of responsibility is interlaced with the activity of thinking, aiming to link experiences to the meanings that are achieved within and outside the individual (Arendt 2005). The purpose, much like that of critical education and the culture of learning it aims to instigate, is to encourage a plurality of perspectives, '… a frame of mind in which the self, instead of being enwrapped in itself as if it were the whole world, regards itself as a citizen of the world' (ibid, p.131).

Responsibility is then conceived from a perspective of how to act in the world, an act that gives the individual the possibility to affect and be affected by others (and things). The principle of responsibility is in this way associated with the ability to address questions of (in)justice, (dis/em)power(ment) and/or (in)equality, including in learning, and how students are prompted to make sense of themselves and the social world, what influences them as well as the technology they use. Responsible activity becomes a key step towards autonomous learning, not only in fostering the ability to think independently but also in understanding the influence of information sources individuals draw upon to inform their opinions. In an Arendtian perspective, de-responsibilisation of action is therefore not a possibility, given that responsibility presupposes active decision making, one that is informed by thinking and judgement (Arendt 2005). Compliance and convenience do not correspond to the intent of critical thinking needed to empower individuals' intellectual autonomy within and outside the educational sphere.

Arendt's take on responsibility further invites us to question the role education plays in and for society (1954/2006), a society that is increasingly vulnerable to information technology domination. The struggle with intellectual responsibility is then expected, a struggle regarding the sort of commitment essential to the pursuit of a 'full autonomous independence of reason' (Arendt 1971, 95).

That said, the concept of responsibility is not centred on the moralisation of Gen-AI and the actions associated with it, as otherwise we risk falling into the polarisation of such important debates (see Costa, Hammond, and Younie 2019). Rather, responsibility is seen as a reflective action that evidences one's own judging capacity as a sign of 'enlarged mentality' (Arendt 1971, 94), i.e., of thinking through the consequences of such actions for oneself and others. Responsibility is an act of thoughtful response that requires honest action where one's intellectual endeavours are concerned.

In this regard, a main challenge for education is how to encourage a culture of responsible learning that recognises the activity of thinking (with oneself and others) as holding prime value for both educational experiences and society at large. The development of individuals as responsible thinking beings is thus also a response to the mechanism of intellectual oppression and inequality that technologies such as Gen-AI potentially bring to education. In a digitally mediated world, this also entails exploring the effects Gen-AI can have on oneself and others. Given the prevalence of Gen-AI in day-to-day work productivity tools and social life applications, it is unlikely it can be avoided altogether. The onus then falls on educators to engender a culture of learning that is responsible and critical of the effects of these technologies.

Intellectual honesty: awakening the responsible learner

This alignment of pedagogy and politics, via the ideas of Arendt, can find a suitable foundation in what we refer to as intellectual honesty, an honesty for which this type of responsible thinking is indispensable. Indeed, Arendt's conception of responsibility is completely opposed to the absence of thinking. Instead, it defends the centrality of independent thinking to the thriving of a just society and freedom from technological tyranny (Costa and Murphy 2025). Additionally, the act of thinking critically is the binding pedagogical principle of an education that aims to galvanise learning and the cultivation of the mind, as proposed by Freire and his associates. Criticality demands intellectual discipline from knowing individuals who do not take information at face value and instead compel themselves to question what is given and assumed (Shor and Freire 1987). Criticality in this formation is a kind of intellectual honesty that can act as a guiding principle for an engaged and reflective approach to education.

The pursuit of intellectual honesty can encourage in the individual a strong commitment to the learning process, one that rests on an understanding of responsibility (Moser 2017) as an active commitment to learning. It is equally a form of respect towards oneself and the other, in that individuals can find meaning and fulfilment in the practices of knowledge production as well as in the stretching of their mental capacities. Knowledge production as an internal creative process is thus a representation of one's investment in the world of ideas and engagement with others and their worlds.

Starting from the perspective that knowledge needs to be worked for (hooks 2010), critical education finds it hard to fully support 'Gen-AI as a gift of information' (Costa and Murphy 2025). This stance also works as resistance against the suffocation of a digital 'market ethics' (Freire 2001, 25) that places technical progress above the benefits of intellectual development. Intellectual honesty as an approach to learning can only accommodate so much of what Gen-AI technologies can offer.

This understanding of Gen-AI technologies is key to the pathologizing of the current crisis of education, one that is enmeshed in an ideology of digital function and the loss of scholarly authority. The emphasis on fast, tailor-made information speaks to a rationality of convenience and efficiency instead of equipping individuals with learning principles (Arendt 1954/2006) that can lead them towards a path of responsible learning. The outcome is not that of participation in meaningful knowledge processes, but of access to curated narratives from which the individual can remain detached, cognitively speaking. When intellectual honesty – and the agency that assists it – is conveyed as non-essential, the way students position themselves and are positioned in education is likely to be impacted.

The commitment towards intellectual honesty is a reflection of a deontological approach that education is not an isolated act, but one that is best developed through a pedagogy that demands

active input. Intellectual honesty is established through a strong pledge to ethics and a commitment to democratic life and education. The authorship of one's knowledge work becomes a direct reflection of one's engaged learning and where thinking autonomy reigns over self-interest, despite the magnetism of 'fast information' in what Rosa calls an accelerated society (2013).

This is an issue of how education reformulates learning engagement and participation to recognise students' contributions to one's own and others learning as key to a responsible learning culture. In opposition, an individualistic culture of learning is likely to lead to more customisable technological solutions. These innovations cannot, and will not, be stopped, as they are seeped into the background of knowledge work productivity tools. However, there is space to think about which Gen-AI features are not detrimental to one's mental work and which ones may affect individuals' intellectual autonomy. How education responds to this via the cultures of learning it aims to instil will be critical to the future of education.

Some concluding remarks

The originality of this essay lies in linking critical pedagogical thought with Arendt's work on thinking as a way of positioning Gen-AI as a potential threat to intellectual work and responsible action. We argue that effects arising from the presence of Gen-AI technologies in education can have serious consequences for the intellectual development of individuals. The implications are profound in a so-called digitised knowledge society, including the sidelining of the activities of thinking and reasoning in favour of the automation of information.

For all the positive stories, the simplification of learning processes as imparted by Gen-AI are therefore likely to alienate one's participation in learning via the promotion of thoughtlessness and lack of meaning, especially if cultures of learning are not developed to counteract it. This represents an ethical concern for education, an attack on individuals' academic capacities as well as intellectual integrity. At the crux of this is the preservation of individuals' autonomy and agency as a form of responsible action.

Critical approaches to education can be cast as interventions (see Freire 2001, 90), operating on the premises of an active commitment to intellectual honesty. This speaks to an approach that does not see Gen-AI technologies as the new master of knowledge nor does it assume that students as citizens can be regarded as mere recipients of information. Rather, such dualistic approaches are contested in this paper in acknowledgement of a much more dynamic proposal of education. This is one where actors are made responsibile for the learning processes they adopt and from which individuals can practise intellectual honesty and also extract meaning from such experiences, as a collective effort.

What is more, education that is critical does not erase the role or action of the individual in learning; it rather renders them visible as key to one's sense of worth when engaged with the complexity of the world. This observation places great emphasis on education as an engaged practice, which has been deemed a key imperative of critical pedagogy and which now can work as a counter response to the dependence and/or possible surrender to machine learning.

Notes

1. While we acknowledge that there are many types of Generative AI (Gen-AI), including generative adversarial networks (GANs), variational autoencoders (VAEs), recurrent neural networks (RNNs), or neural radiance fields (NeRFs), to name a few, this paper focuses on large language AI models that generate human-like text based on prompts. In the world of education, tools like ChatGPT and Deepseek are increasingly popular in knowledge work contexts.
2. In July 4th, 2023 the Russell Group consortium of Universities in the UK published the 'Russell Group principles on the use of generative AI tools in education' paper https://russellgroup.ac.uk/media/6137/rg_ai_principles-final.pdf . While the guidelines outline that AI tools may not respond to ethical codes, it is postulated that 'incorporating the use of generative AI tools into teaching methods and assessments has the

potential to enhance the student learning experience, improve critical reasoning skills and prepare students for the real-world applications of the generative AI technologies they will encounter beyond university'.

3. 'Critical consciousness', i.e., conscientização, is a pedagogical tool of intellectual freedom emancipation. It *is a form of deep learning that requires a critical reading of one's reality. It is also a form of education that cannot simply be given or received; it needs to be developed by the self.*
4. The aspect of efficiency denoted in this statement relates to Gen-AI's capacity to create information much faster than is humanly possible. This should not detract from the concerns regarding environmental impact or energy waste produced by the computing infrastructure necessary to accommodate these technologies, a topic that sits outside the scope of this article.

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References

Apple, M. W. 2012. *Can Education Change Society?* 1st ed. New York: Routledge.
Arendt, H. 1954. "The Crisis of Education." In *Between Past and Future: Eight Exercises in Political Thought (Annotated Edition)*, edited by J. Kohn, 170–193. New York: Penguin Publishing Group.
Arendt, H. 1958. *The Human Condition*. Translated by M. Canovan. 2nd ed. New York: University of Chicago Press.
Arendt, H. 1963. *Eichmann in Jerusalem: A Report on the Banality of Evil*. 1st ed. New York: Penguin Classics.
Arendt, H. 1971. *The Life of the Mind*. San Diego: Harcourt Brace & Company.
Arendt, H. 2005. *Responsibility and Judgment (Reprint Edition)*. New York: Schocken Books.
Babu, S. 2024. "Cultures of Learning: Mapping the New Spaces of Critical Pedagogy in India." In *Cultures of Learning: Mapping the New Spaces of Critical Pedagogy in India*, edited by S. Babu and N. Arunima, 13–24. Oxford: Taylor & Francis Group. https://ebookcentral.proquest.com/lib/durham/detail.action?docID = 31362751.
Baidoo-Anu, D., and L. Owusu Ansah. 2023. *Education in the Era of Generative Artificial Intelligence (AI): Understanding the Potential Benefits of ChatGPT in Promoting Teaching and Learning* (SSRN Scholarly Paper 4337484). https://doi.org/10.2139/ssrn.4337484.
Brinkmann, S. 2024. *Think: In Defence of a Thoughtful Life*. 1st ed. Medford: Polity.
Bruner, J. 1986. *A Study of Thinking*. 2nd ed. New York: Routledge. https://doi.org/10.4324/9781315083223.
Bulathwela, S., M. Pérez-Ortiz, C. Holloway, M. Cukurova, and J. Shawe-Taylor. 2024. "Artificial Intelligence Alone Will Not Democratise Education: On Educational Inequality, Techno-Solutionism and Inclusive Tools." *Sustainability* 16 (2): Article 2. https://doi.org/10.3390/su16020781.
Chan, C. K. Y., and K. K. W. Lee. 2023. "The AI Generation gap: Are Gen Z Students More Interested in Adopting Generative AI Such as ChatGPT in Teaching and Learning than Their Gen X and Millennial Generation Teachers?" *Smart Learning Environments* 10 (1): 60. https://doi.org/10.1186/s40561-023-00269-3.
Chomsky. 2023. *Chomsky on ChatGPT, Education, Russia and the unvaccinated* . https://www.youtube.com/watch?v = IgxzcOugvEI.
Costa, C., P. Bhatia, M. Murphy, and A. L. Pereira. 2023. "Digital Education Colonized by Design: Curriculum Reimagined." *Education Sciences* 13 (9): 9. https://doi.org/10.3390/educsci13090895.
Costa, C., M. Hammond, and S. Younie. 2019. "Theorising Technology in Education: An Introduction." *Technology, Pedagogy and Education* 28 (4): 395–399. https://doi.org/10.1080/1475939X.2019.1660089.
Costa, C., and H. Li. 2023. "Digital Cultural Knowledge and Curriculum: The Experiences of International Students as They Moved from on-Campus to on-Line Education during the Pandemic." *Learning, Media and Technology* 0 (0): 1–13. https://doi.org/10.1080/17439884.2023.2218097.
Costa, C., and M. Murphy. 2025, in press. "Critical Education, Generative Artificial Intelligence and the Tyranny of Freedom: A Critique of Modern 'Technocracy'." *Technology, Pedagogy and Education*. https://durhamrepository.worktribe.com/output/3936936.

Dubber, M. D., F. Pasquale, and S. Das. 2020. *The Oxford Handbook of Ethics of AI*. Oxford University Press.
Fan, Y., L. Tang, H. Le, K. Shen, S. Tan, Y. Zhao, Y. Shen, X. Li, and D. Gašević. 2025. "Beware of Metacognitive Laziness: Effects of Generative Artificial Intelligence on Learning Motivation, Processes, and Performance." *British Journal of Educational Technology* 56 (2): 489–530. https://doi.org/10.1111/bjet.13544.
Freire, P. 1970. *Pedagogy of the Oppressed*. Penguin Classics.
Freire, P. 1983. "The Importance of the Act of Reading." *Journal of Education* 165 (1): 5–11. https://doi.org/10.1177/002205748316500103.
Freire, P. 2001. *Pedagogy of Freedom: Ethics, Democracy and Civic Courage*. New ed. Lanham: Rowman & Littlefield Publishers.
Freire, P. 2005. *Education for Critical Consciousness*. Boulder, CO: A&C Black.
Freire, P. 2018. "Conscientização." Translated by T. J. R. Leme, 1st edition. Cortez Editora.
Gaffney, J. 2024. "Thinking, Meaning, and Truth: Arendt on Heidegger and the Possibility of Critique." *Constellations (Oxford, England)* 31 (1): 3–17. https://doi.org/10.1111/1467-8675.12647.
Grollios, G., H. A. Giroux, P. Gounari, and D. Macedo. 2015. *Paulo Freire and the Curriculum*. London and New York: Routledge.
Han, B.-C. 2022. *Infocracy: Digitization and the Crisis of Democracy*. Translated by D. Steuer. 1st ed. Medford: Polity.
Hartouni, V. 2012. "Thoughtlessness and Evil." In *Visualizing Atrocity: Arendt, Evil, and the Optics of Thoughtlessness*, edited by V. Hartouni, 64–91. New York: NYU Press. https://doi.org/10.18574/nyu/9780814738498.003.0003.
Honneth, A. 2024. *The Working Sovereign: Labour and Democratic Citizenship*. Translated by D. Steuer. 1st ed. Cambridge: Polity.
hooks, bell. 2010. *Teaching Critical Thinking Practical Wisdom*. 1st ed. New York: Routledge.
Jiang, Y., G. A. Cayton-Hodges, L. Nabors Oláh, and I. Minchuk. 2023. "Using Sequence Mining to Study Students' Calculator use, Problem Solving, and Mathematics Achievement in the National Assessment of Educational Progress (NAEP)." *Computers & Education* 193:104680. https://doi.org/10.1016/j.compedu.2022.104680.
Karpouzis, K., D. Pantazatos, J. Taouki, and K. Meli. 2024. *Tailoring Education with GenAI: A New Horizon in Lesson Planning* (arXiv:2403.12071). arXiv. https://doi.org/10.48550/arXiv.2403.12071.
Lancaster, T. 2020. "Academic Discipline Integration by Contract Cheating Services and Essay Mills." *Journal of Academic Ethics* 18 (2): 115–127. https://doi.org/10.1007/s10805-019-09357-x.
Lee, H.-P. (Hank), A. Sarkar, L. Tankelevitch, I. Drosos, S. Rintel, R. Banks, and N. Wilson. 2025, April 1. *The Impact of Generative AI on Critical Thinking: Self-reported Reductions in Cognitive Effort and Confidence Effects From a Survey of Knowledge Workers*. Proceedings of the ACM CHI Conference on Human Factors in Computing Systems. https://www.microsoft.com/en-Us/research/publication/the-impact-of-generative-ai-on-critical-thinking-self-reported-reductions-in-cognitive-effort-and-confidence-effects-from-a-survey-of-knowledge-workers/.
Lingard, B. 2007. "Pedagogies of Indifference." *International Journal of Inclusive Education* 11 (3): 245–266. https://doi.org/10.1080/13603110701237498.
Lo, C. K. 2023. "What Is the Impact of ChatGPT on Education?" *A Rapid Review of the Literature. Education Sciences* 13 (4): Article 4. https://doi.org/10.3390/educsci13040410.
Lukács, G. 1923. "Reification and the Consciousness of the Proletariat." In *Cultural Theory: An Anthology*, edited by I. Szeman and T. Kaposy, 172–187. John Wiley & Sons.
Macfarlane, B. 2015. "Student Performativity in Higher Education: Converting Learning as a Private Space into a Public Performance." *Higher Education Research & Development* 34 (2): 338–350. https://doi.org/10.1080/07294360.2014.956697.
Martin, B. R. 2013. "Whither Research Integrity? Plagiarism, Self-plagiarism and Coercive Citation in an age of Research Assessment." *Research Policy* 42 (5): 1005–1014. https://doi.org/10.1016/j.respol.2013.03.011.
McArthur, J. 2016. "Assessment for Social Justice: The Role of Assessment in Achieving Social Justice." *Assessment & Evaluation in Higher Education* 41 (7): 967–981. https://doi.org/10.1080/02602938.2015.1053429.
Mishra, P., M. Warr, and R. Islam. 2023. "TPACK in the age of ChatGPT and Generative AI." *Journal of Digital Learning in Teacher Education* 39 (4): 235–251. https://doi.org/10.1080/21532974.2023.2247480.
Morgan, M. 2016. "Hannah Arendt and the 'Freedom' to Think." *Journal of Educational Administration and History* 48 (2): 173–182. https://doi.org/10.1080/00220620.2016.1144579.
Moser, A. 2017. "Honestidade Intelectual: Ética e responsabilidade do pesquisador." *Revista Do NESEF* 5 (1). https://doi.org/10.5380/nesef.v5i1.56500.
Ng, D. T. K., J. K. L. Leung, S. K. W. Chu, and M. S. Qiao. 2021. "Conceptualizing AI Literacy: An Exploratory Review." *Computers and Education: Artificial Intelligence* 2:100041. https://doi.org/10.1016/j.caeai.2021.100041.
Paraskeva, J. M. 2017. *Towards a Just Curriculum Theory: The Epistemicide*. 1st ed. New York: Routledge.
Patil, L. 2021. "Disaster Philanthropy: Exploring the Power and Influence of for-Profit Philanthropy in Education Development during Pandemic Times." *International Journal of Educational Development* 81:102332. https://doi.org/10.1016/j.ijedudev.2020.102332.
Preton, J. 2021. *Artificial Intelligence in the Capitalist University: Academic Labour, Commodification, and Value*. 1st ed. New York and London: Routledge.

Rosa, H. 2013. *Social Acceleration: A New Theory of Modernity*. New York: Columbia University Press.
Schiff, J. L. 2014. "Thoughtlessness." In *Burdens of Political Responsibility: Narrative and the Cultivation of Responsiveness*, edited by Jade Larissa Schiff, 50–84. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781107300439.004.
Schwartz, J. P. 2016. *Arendt's Judgment: Freedom, Responsibility, Citizenship*. Philadelphia: University of Pennsylvania Press.
Selwyn, N. 2016. *Education and Technology: Key Issues and Debates*. Bloomsbury Publishing.
Shor, I., and P. Freire. 1987. *A Pedagogy for Liberation: Dialogues on Transforming Education*. London: Bloomsbury Academic.
Vinchon, F., T. Lubart, S. Bartolotta, V. Gironnay, M. Botella, S. Bourgeois-Bougrine, J.-M. Burkhardt, et al. 2023. "Artificial Intelligence & Creativity: A Manifesto for Collaboration." *The Journal of Creative Behavior* 57 (4): 472–484. https://doi.org/10.1002/jocb.597.
Walton, A. 2024. *Creative Workers Say Livelihoods Threatened by Generative AI | Computer Weekly*. ComputerWeekly.Com. https://www.computerweekly.com/feature/The-threat-of-generative-AI-to-creative-work-and-workers.
Watermeyer, R., D. Lanclos, L. Phipps, H. Shapiro, D. Guizzo, and C. Knight. 2024. "Academics' Weak(Ening) Resistance to Generative AI: The Cause and Cost of Prestige?" *Postdigital Science and Education*, 1–21. https://doi.org/10.1007/s42438-024-00524-x.