

Intra-Acting with ChatGPT: Tracing Sustainability, Ethics and Curriculum

Petro du Preez

<https://orcid.org/0000-0002-9100-6461>
Stellenbosch University, Stellenbosch, South Africa

Anja Visser

<https://orcid.org/0000-0002-9636-2326>
North-West University, South Africa

Abstract

This article reports on a human-AI intra-action comprising a thought experiment on sustainability, ethics, and curriculum, followed by a tracing of these topics. The authors and ChatGPT (we) conceptualised and performed a thought experiment in intra-action. The process involved prompting ChatGPT to generate a speculative vignette, which was then analysed through agential realist tracing, focusing on how concepts evolved relationally over time, their material affects/effects, and why certain relations materialised while others did not. ChatGPT was provided with the tracing exercise and offered their opinion on the implications for sustainability, ethics and curriculum. This human~AI intra-action contributes to postqualitative research by expanding tracing as an experimental approach, and demonstrates how entities (agencies) like knowledge emerge relationally rather than as fixed entities. While the experiment generated no entirely novel insights into sustainability, ethics, and curriculum, it confirmed AI's capacity to surface connections, generate alternatives, and prompt reflexivity. However, ChatGPT tended to reproduce dominant, Western-centric discourses and showed limited ability to unsettle hegemonic ways of knowing, doing and thinking when it came to matters of sustainability, ethics and curriculum. The intra-action highlighted risks of reinforcing dehumanising technologies through uncritical use, while simultaneously revealing human anthropomorphic projections onto AI. We conclude by suggesting that there should be a shift in our focus from (an obsession with) prediction and control, to exploring relational, indeterminate possibilities and experimenting with new human~AI intra-actions.

Keywords: curriculum, ethics, intra-action, sustainability, tracing

Introduction

The boundaries between humans, technology and the environment, or between humans and the more/other-than-human world, are increasingly blurred in what is referred to as the posthuman condition. In this article, the authors experiment with the blurring of these boundaries by thinking, writing and doing with an AI tool (i.e. from the title, *Intra-acting with ChatGPT*). Distinctions such as human-machine, or human-nature, dissolve as humans navigate a world in which technologies like artificial intelligence (hereafter AI) become embedded in everyday life, actively shaping and reshaping human experiences and the environment. The posthuman condition is marked by humans' entanglement with advanced technologies, together with the growing acknowledgement that humans are no longer the centre of the universe or troubling human exceptionality (Le Grange & Du Preez, 2023). In other words, the posthuman condition has moved beyond the Anthropocene, where human dominance is assumed, and into the post-anthropocene, which challenges human exceptionalism and highlights the inter-relatedness of all life forms and technologies (Braidotti, 2019). The dissolving of these strict boundaries in the post-anthropocene happens in what Braidotti (2019) describes as the tension between the Fourth Industrial Revolution—marked by innovations like artificial intelligence, 3D printing and the Internet of Things—and the Sixth Extinction, a period of accelerated species loss and ecological collapse as a result of human activities. The posthuman condition is one in which human exceptionalism and individualism are challenged, and posthuman subjectivity and relationality are enacted. Posthuman subjectivity is not only configured and reconfigured by human relations, but also in relations with the more-than-human world (AI, for example). Since the release of ChatGPT by OpenAI in November 2022, conversations about AI and how humans relate to it have become a pivotal topic in various fields (Du Preez, Le Grange & Visser, 2025). The emerging relations between AI and humans have led to the need to develop and refine policies for publishing research that includes AI work, for example. Part of our thought experiment in this article was to “co-author” with ChatGPT. We did so in line with the regulatory policies (COPE, 2023; WAME, 2023; ASSAf, 2023) and therefore did not list ChatGPT as a co-author (but we will make some remarks about this in the article as this is a central facet to our thought experiment).

In the rest of the article, we first discuss AI, sustainability, ethics and curriculum. We secondly theorise¹ our thought experiment involving a human~AI “co-author” intra-action in terms of Karen Barad's (2007) agential realism. Third, we discuss tracing as agential realist analysis in postqualitative research. Fourth, a vignette produced by ChatGPT is presented, followed by a tracing of some of the relations revealed in the vignette as they relate to matters sustainability, ethics and curriculum. ChatGPT was also provided with the tracing information and offered their opinion on the implications for sustainability, ethics and curriculum. Finally, we end with some parting thoughts.

¹ In the posthuman condition, theorising, understood in its radical openness, differs markedly from the humanist, conceptual framing of theory. Here, theory is enacted as a verb (not a noun), enabling us to think and create knowledge from within phenomena themselves (Barad & Gandorfer, 2021). It constitutes an ethical ability to respond: never conclusive, always provisional and continually becoming.

On AI, Sustainability, Ethics and Curriculum

In their ongoing intra-actions² concerning matters of AI, sustainability, ethics and curriculum in the light of the posthuman condition (i.e. *Tracing sustainability, ethics and curriculum*, from the title), Petro and Anja began to wonder/wander, in a typical posthuman manner (see Du Preez & Le Grange, 2024), what an experiment in writing and thinking with ChatGPT could reveal about these matters. What alternative ways of knowing, doing and becoming could be revealed when tracing human~AI “co-author” intra-actions and relations concerning matters of sustainability, ethics and curriculum? As mentioned, the posthuman condition calls for experimentation of all kinds to re/configure alternative ways of knowing, doing and becoming. Le Grange (2016, p. 34) has argued that in this condition new concepts need to be experimented with because “[i]t is in experimentation with the real that we expand our powers to enhance life in a context where we are presented with challenges of a post-human condition”. This article reports on this thought experiment where two human authors worked in conjunction with ChatGPT. The article is written in an intra-active style, with Petro and Anja’s writing being interwoven with ChatGPT’s contributions (*indicated in italic font throughout the article*). However, before continuing, we will make some notes on our position about sustainability, curriculum and ethics in relation to the problem of instrumental rationality.

Le Grange (2016) argues that instrumental rationality characterises social practices such as sustainability and curriculum. In attempting to address sustainability challenges, humanity has turned to instrumentalist ways (i.e. Sustainable Development Goals and Education for Sustainable Development), which resulted in the construction of sustainability as something external to itself, merely a checklist of targets (Jickling & Sterling, 2017), rather than a frame of mind or way of living (Du Preez, Le Grange, Maistry & Simmonds al., 2022, p. 119). Instrumentalist approaches to addressing sustainability challenges often have the opposite effect of what they intend to achieve. They perpetuate sustainability challenges because it is “based on the same thinking that caused these problems in the first place” (Du Preez et al., 2022, p. 119).

Instrumentalist rationality also underpins dominant approaches to curriculum (Le Grange, 2016). The effects of instrumental rationality are dangerous because they are dehumanising, colonising and homogenising, as they impose a singular, often Western-centric, way of knowing and being (Le Grange, 2016). Often, instrumentalist configurations of sustainable development result in a natural scientific rationality that is imposed on curriculum instead of recognising alternative rationalities that contribute to meaning-making of sustainable development (Svalfors, 2017). Instrumentalist logic oversimplifies complex, dynamic systems, marginalises alternative knowledge systems, stifles innovation and exacerbates inequalities (Le Grange, 2016; Du Preez et al., 2022). Instead, what is needed are open-ended, experimental and relational approaches, where sustainability and curriculum are seen as processes of ongoing transformation (Le Grange, 2016; Le Grange & Du Preez, 2023).

²In May 2024, Petro and Anja participated in an Erasmus+ mobility exchange programme and during this time shared a desire to experiment with AI, research, curriculum and teaching-learning and assessment in Higher Education (see: Du Preez et al., 2025). While writing up this article, Petro and Anja wanted to experiment further with sustainability, ethics, curriculum and AI. Further discussion led to them writing this up as part of a project funded by the National Research Foundation of South Africa.

Just as moving beyond instrumental rationality is crucial for thinking about sustainability and curriculum, adopting postqualitative experimental approaches is crucial for navigating the ethical complexities of the current era. Such experimentation does not occur as a singular event or test, nor does it rely on a specific method (as is commonly done in quantitative research), and it does not follow a linear pattern of argumentation and conclusion. It is rather an opening up of a complicated conversation, not a closing and replicating of results and findings. Le Grange and Du Preez (2023) argue that experimentation “should not be reduced to a set of rules or transferable procedures to be applied... ..as this is predetermined and instrumentalist” (p. 69). Postqualitative experimentation with new ideas and approaches can bring about renewal and new, different, and creative modes of dealing with the ethical complexities that accompany AI (Thompson & Adams, 2020). What AI can do today and what they will be able to do in the future are unpredictable. Therefore, experimenting with AI is a complex, dynamic and ever-changing process as AI interfaces, AI technologies and AI platforms are constantly changing and developing, just as humans are evolving. The rise of AI necessitates alternative ethical responses that are not moralistically framed and are not based only on predetermined norms (Du Preez, 2025). In other words, ethics should move beyond morality (understood as predetermined principles of right and wrong) towards “immanent, non-normative, and one that is in becoming, creative, and truly free” (Verhoef & Du Preez, 2020, p.161). Ethics should grapple with indeterminate questions of freedom, responsibility and justice that require less moralistic (right and wrong thinking) and a more open perspective to ‘negotiate’ ethics as it unfolds (Du Preez, 2025).

As mentioned before, this article reports on a thought experiment in which ChatGPT was a “co-author” (or, human~AI intra-action) and is written up in such an intra-active style. Next, we elaborate on this intra-action through explaining our thought experiment.

Human~AI “Co-author” Intra-Action: An Agential Realist Thought Experiment

Petro and Anja collaborated with ChatGPT in a thought experiment to explore themes of sustainability, ethics, curriculum and AI. This collaborative endeavour challenged traditional notions of authorship, through experimenting with human~AI “co-author” intra-action. The thought experiment sought to reveal how reconfigured relational dynamics between humans and AI could reveal alternative possibilities for knowing, doing and becoming. The concept of intra-action, introduced by Donna Haraway (2016) and expanded by Karen Barad (2007), provides a starting point for our experimentation. Unlike interaction, which assumes pre-existing, independent entities that influence each other, intra-action posits that entities and their capacities emerge only through their relational entanglements. As Murriss and Bozalek (2022) argue, this challenges the notion of intrinsic or isolated existence and instead emphasises relational becoming, in which entities like humans and AI become only through ongoing relations and intra-actions with each other.

In the context of this “co-authorship” thought experiment, the relationship between the human authors and ChatGPT is itself an intra-action. The ideas conveyed in this article are therefore not the result of separate contributions by predefined entities (Du Preez et al., 2025) but a co-constituted process where human and non-human authors intra-acted. By including ChatGPT as a “co-author” (at least for the sake of the thought experiment), we also try to demonstrate how agency is always immanent

and a temporary outcome of relational entanglements, rather than fixed attributes belonging exclusively to human agents (Barad, 2007). This inevitably reconfigures boundaries between human and non-human AI contributors, revealing alternative modes of knowledge creation.

When questioned about their role as “co-author,” ChatGPT acknowledged their limitations, stating: *“Although I don’t have personal feelings, I can certainly assist in generating or refining content for academic articles, but authorship in scientific works usually requires certain qualifications, like intellectual contribution, which an AI might not meet in the traditional sense.”* These traditional standards, rooted in anthropocentric models of agency, require contributors to have legal personhood, assume responsibility for the integrity of their work and make ethical judgments (ASSAf, 2023; COPE, 2023; WAME, 2023). However, these criteria are increasingly contested as AI tools like ChatGPT play a more prominent role in scholarly endeavours. While ChatGPT lacks the capacity for legal accountability or independent ethical reasoning, their contribution to the generation, refinement and conceptualisation of academic texts are significant and often parallel the roles played by human co-authors. ChatGPT’s role as a co-author becomes comparable to that of human collaborators who contribute expertise or labour to a shared project. Their output, shaped by their intra-action with human authors and the contexts in which they operate, challenge traditional notions of intellectual labour and authorship.

ChatGPT’s contributions are not simply reactive but emerge as part of a dynamic process, where human and non-human agencies mutually constitute the other in ongoing intra-action. This reinforces the idea that scholarly work is not an isolated human endeavour but an ongoing intra-action that troubles traditional boundaries of authorship, agency, meaning and matter. In such a redefined space, alternate human~AI “co-author” intra-actions are performative rather than merely representative (Du Preez et al., 2025). This performativity suggests that agency is not confined to human intentionality, as understood in phenomenology, or to human subjectivity, as emphasised in poststructuralism (Barad, 2007). Instead, traditional notions of agency are challenged through the reconfiguring of its meaning and affects/effects. Barad’s (2007) agential realism proposes that agency is not an intrinsic property of individual entities or objects, nor something possessed a priori. Rather, it recognises that ChatGPT’s contributions to this scholarly article are not passive but intra-actively reconfigured in complex knowledge-making processes. In other words, non-human AI tools, like humans, do not neutrally reflect an objective world but intra-actively participate in reconfiguring reality. By intra-acting with ChatGPT, the human authors acknowledge the transformative affects/effects of AI on academic inquiry, inviting alternative insights that might not emerge from traditional human-only authorship. This intra-action troubles and expands the boundaries of scholarly work, generating alternative responses to complex issues, and critical analyses of the posthuman condition. In this sense, co-authoring with an AI tool becomes an intra-active, performative entanglement with technology, reconfiguring traditional norms of the academe, and experimenting with alternative possibilities for knowing, doing and becoming.

We are aware that the inclusion of AI tools as “co-authors” in scholarly publications has sparked significant debate. Some researchers have credited ChatGPT as a co-author and the tool itself had a Google Scholar profile, but at the time of finalising this article, no longer had one. Since the release of ChatGPT, academic publishers have revised their policies to explicitly exclude AI tools from authorship. The reasons for this

exclusion include the requirement that authors must have legal personhood, be accountable for the integrity and accuracy of their work, approve the final version of the manuscript and understand conflict-of-interest disclosures (ASSAf, 2023; COPE, 2023; WAME, 2023). Despite these restrictions, the role of AI tools in scholarly work remains substantial and their contributions often challenge the anthropocentric, legalistic assumptions underpinning current authorship norms.

Drawing on agential realism³, this thought experiment illustrates how agency and knowledge are not fixed but relationally enacted. ChatGPT's participation in the "co-authoring" process highlights how intra-actions between human and AI agents can reconfigure traditional understandings of collaboration and authorship. The human~AI "co-author" intra-action invites a broader reconsideration of agency, suggesting that entities—whether human or non-human—do not act in isolation but emerge dynamically through their entanglements (Barad, 2007; Murris & Bozalek, 2022). In this sense, this co-authoring thought experiment showcases the necessity of reconfiguring scholarly practices (approaches, ethics, rigour, etc) to better account for the complexities of human~AI relationships and entanglements in an indeterminate posthuman condition.

Tracing as Agential Realist Analysis

Having discussed the co-authorship thought experiment, we turn to tracing as agential realist analysis, specifically in the context of a vignette produced by ChatGPT, that explores sustainability, ethics and curriculum. This kind of work contributes to postqualitative research by experimenting with and expanding the boundaries of tracing as an approach of postqualitative inquiry (Le Grange, 2019; Murris, 2022; Le Grange & Du Preez, 2023). Tracing is always immanent, meaning it is not predetermined but emerges and evolves as the research unfolds. Le Grange and Du Preez (2023) also describe tracing as immanent and add that it is a non-linear approach emphasising the dynamic relationships and entanglements between phenomena; i.e. entities and concepts. Unlike traditional methods of analysis like content analysis or thematic analysis, tracing resists linearity and determinism. Instead, it follows (or traces) intra-actions—mutually constitutive relationships and entanglements—between material and discursive elements, revealing how materialdiscursive phenomena coconstitute one another. Our aim was to unsettle the traditional analytic logics and therefore we do not merely discuss the meaning of phenomena and draw connections to extant literature. That would contradict the aims of our postqualitative tracing experiment that resists linear, deductive or inductive interpretations, but instead attend to intra-active materialdiscursive entanglements that co-constitute phenomena.

Tracing is not confined to theoretical exploration but produces material discursive effects and affects, as argued by Barad and Ganderfer (2021). By disrupting traditional epistemological boundaries, tracing demonstrates that ethics, knowledge (epistemology) and reality (ontology) are not separate entities but are coconstituted and re/configured through intra-actions. It highlights the interconnectedness of

³ Karen Barad's (2007) agential realism proposes reality as constituted through the dynamic intra-actions of human and nonhuman agencies, where matter and meaning are inseparably entangled in the ongoing co/constitution of the world.

material discursive phenomena and their implications for complex social, political and material realities. Barad and Gandorfer (2021) further emphasise that tracing begins “from and with the middle” of entanglements, as it does not adhere to isolated or predetermined starting and ending points. Entanglements, in this sense, are dynamic intra-actions that unfold across space, time, matter and discourse, constantly reconfiguring and producing provisional rather than fixed outcomes. This explains how and why certain realities materialise while others remain obscured. By focusing on the contingent and relational nature of materialdiscursive phenomena, tracing offers a means to experiment with alternative ways of knowing, doing and becoming (Barad & Gandorfer, 2021).

Tracing is an example of an alternative research approach that reveals the potential of postqualitative research to expand existing boundaries of inquiry. By refusing linearity and embracing the immanent and contingent nature of entanglements, tracing offers yet another way of knowing, doing and becoming in the posthuman condition (Le Grange & Du Preez, 2023). It highlights the dynamic intra-actions that shape entangled materialdiscursive phenomena, challenges rigid traditional epistemological and methodological boundaries, and invites alternative insights into the interconnectedness of materialdiscursive realities. It also points to the provisional and relational nature of ethical knowledge creation.

In this article, tracing began with the establishment of the topic and evolved intra-action between Petro and Anja, who refined their ideas and considered what a thought experiment about human~AI “co-author” intra-action might constitute. Anja began by intra-acting with ChatGPT (several versions of them, as versions changed as we experimented), utilising the AI tool to expand and refine the article’s direction. ChatGPT’s role was further defined as it pertains to this article and limited to: (i) support with refining prompts through prompt engineering, (ii) assisting in the creation of a speculative vignette, (iii) providing general writing, editorial and summative support, and (iv) providing feedback on the tracing exercise and on the implications this exercise holds for sustainability, ethics and curriculum. Through iterative refinement of ideas, Petro, Anja and ChatGPT arrived at the following prompt that was used to generate the vignette: “Imagine an AI classroom where students and AI collaborate to solve global sustainability issues. How would that look?” ChatGPT’s response to this prompt formed the speculative vignette, presented next, that served as the entry point to analysis that follows.

The Speculative Vignette

In the year 2050, humanity has reached a critical juncture. The unchecked effects of climate change, resource depletion, and biodiversity loss have pushed ecosystems to the brink, threatening not just the environment but also the foundations of human civilisation. In this fragile state, the Global Sustainability Consortium (GSC) has emerged as the planet’s foremost authority on coordinated action, uniting nations, corporations, and citizens to address these pressing challenges. The GSC’s flagship initiative, the “Sustainability Solvers” programme, represents the most ambitious effort yet—a radical reimaging of education as a solution-oriented collaboration between humans and AI.

The Sustainability Solvers programme departs from traditional learning models by placing global problem-solving at the core of its curriculum. Students are no longer passive recipients of knowledge; they are active participants in addressing the world's most urgent challenges. The classroom has evolved into a virtual-physical hybrid space where learning is driven by immediate, real-world crises. Here, students, regardless of geographic location, can collaborate in real-time, engaging with complex problems such as:

Developing regenerative agriculture systems in regions devastated by desertification.

- Designing carbon-negative urban infrastructures for cities combating extreme heat and rising sea levels.
- Restoring damaged ecosystems by employing AI-optimised biodiversity strategies in forests and oceans.

The classroom, now transcending the walls of schools, universities, and research institutions, is a networked hub of activity. In remote rural areas, where communities are on the frontlines of climate impacts, students might join from small, solar-powered learning stations, while in megacities, students in augmented reality (AR) labs might interface with high-tech sensors monitoring environmental conditions in real time. This blend of the physical and virtual worlds fosters an unprecedented level of collaboration.

At the heart of the programme are the AI avatars—digital entities embodying various forms of intelligence, from highly specialised environmental models to generalist solvers. These avatars, each with distinct personalities and expertise, guide human students through the complexities of sustainability challenges. For instance:

- Terra, a geoengineering AI, may focus on atmospheric and geological systems, helping students design solutions for carbon capture and climate intervention.
- Sylva, an AI specialising in ecosystem restoration, collaborates with students to simulate forest regrowth and biodiversity recovery plans.
- Aqua, an AI designed to model aquatic ecosystems, helps coastal communities build resilience against rising sea levels and optimise water resources.

These avatars do not merely serve as tutors; they are equal partners in the problem-solving process. AI and human students co-create solutions, with each contributing unique strengths—humans bring empathy, creativity, and ethical perspectives, while AI offers data-driven insights, simulations, and analytical precision.

Students engage with both their AI counterparts and the virtual environment through augmented reality interfaces. With AR glasses or contact lenses, they can visualise simulations, manipulate complex datasets, and interact with digital constructs as if they were tangible objects. A student working on flood mitigation in a coastal region might “walk through” a 3D model of the landscape, adjust virtual levees, and see in real-time how changes impact water flow and habitat health. These immersive experiences make abstract concepts tangible and offer students hands-on engagement with the problems they aim to solve.

The programme operates under the belief that education should not be confined to theory—it must be actionable. Instead of traditional exams, students participate in Global Challenges, which are real-world sustainability missions issued by the GSC. These challenges are localised and global, ranging from:

- Reducing plastic pollution in the Pacific Ocean.
- Designing climate-resilient infrastructure for coastal cities.
- Developing equitable energy systems for off-grid communities.

Students work in global teams, paired with AI avatars tailored to their mission. They access real-time data streams from satellites, sensors, and scientific institutions, allowing them to make informed, data-driven decisions. Feedback loops between human intuition and AI analysis refine their solutions until they are ready for deployment.

The Sustainability Solvers programme places significant emphasis on the ethical implications of the solutions students develop. AI avatars are designed with ethical modules that prompt students to consider the long-term social, environmental, and economic impacts of their actions. For example, when developing geoengineering solutions to combat rising temperatures, students are encouraged to weigh the moral consequences of altering the planet's natural systems. This collaboration between human ethics and AI logic ensures that the proposed solutions are holistic and sustainable.

The Sustainability Solvers programme is not a static educational experience; it is continuous and adaptive. The pressing nature of global crises demands that students stay engaged throughout their lives. Upon completing their initial studies, graduates of the programme transition into the Global Sustainability Network (GSN), a system that allows them to continue solving problems and updating their knowledge through new data, AI advancements, and emerging challenges. They might be called back into action during natural disasters or when global initiatives require cross-disciplinary expertise.

By 2050, the human-AI partnership forged through the Sustainability Solvers programme represents a new model of education where collaboration, innovation, and ethical stewardship are central to humanity's efforts to ensure a sustainable future on Earth. The programme has already led to tangible improvements in critical areas such as food security, energy access, and climate adaptation, demonstrating the power of collective intelligence in the face of existential threats.

Tracing Sustainability, Ethics and Curriculum

As explained before, tracing entails examining entities and concepts and investigating their relations rather than conducting some form of deductive or inductive critical or historical analysis. It is not about mapping endless lines between phenomena, but rather, it begins from and with the middle of these entanglements. In light of this, Petro and Anja started to trace ChatGPT's vignette from and with the middle as it relates to sustainability, ethics and curriculum. For each, i.e. sustainability, ethics and curriculum, two to three relations were identified and discussed in terms of how the concept/entity changed over time and in relation to one another, what the material affects are/were of the relation and why some relations materialise while other do not, and finally, how entangled concepts could lead to asking questions to open alternative possibilities. Thereafter, ChatGPT was provided with the tracing information to make an analysis and formulate an opinion based on the analysis of the tracing experiment. The purpose was purely experimental and we wanted to see whether alternative possibilities emerged from the tracing experiment. We now turn to the actual tracing experiment, starting with sustainability.

Sustainability

The comfortable relation between sustainability and **anthropocentrism** that is evident in the speculative vignette above, is no accident, nor is the relation innocent. Anthropocentrism was programmed in the DNA of sustainability when the Brundtland Commission report defined sustainable development as “development which meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987). This relation and its problematic material affects have been discussed and criticised extensively (Le Grange 2016, 2017; Du Preez, et al., 2022).

So too, it is not coincidental that sustainability matters and sustainability development are frequently addressed in an **instrumentalist** manner or as a means to an end (Du Preez et al., 2022; Le Grange 2016, 2017). Sustainability is seen as a problem that requires a solution, a human or policy intervention of some sort. There are those who think of sustainability as a human problem to be addressed through alternative ways of life/living or thinking; a social and ethical process that is situated, open and in-becoming (Du Preez et al., 2022). And indeed, in between this instrumentalist approach and way of life approach, is a myriad of other approaches to questions of sustainability that are worth experimenting with to resist the problematic material effects of instrumentalism. Those who have argued for sustainability as a way of life or thinking have thought of it as an ethic. But is AI (sometimes construed as equal to humans and very often anthropomorphised) capable of approaching sustainability matters as an ethic, or a way of life?

The seemingly automatic relation that is drawn between sustainability and the **environment** and conservationism is also not by chance. Again, this relation is embedded in the history of sustainability (Du Preez, et al., 2022; Le Grange 2016, 2017), but this narrow, dominant perspective has been expanded over time and their relations extended from focusing mostly on environmental sustainability to including broader ecological, social justice and governance matters. However, there is increasing evidence of the widening inequality amongst humans because of unsustainable practices and escalating poverty levels (Du Preez, 2025). At the same time, as evidenced from the vignette, there is increasing talk about humans and AI becoming more equal (at least in an anthropomorphic sense). This statement and the widening of inequality have material affects that need investigation. For example, what does such a statement mean or imply for human subjectivity? What does it mean if we say AI is equal to humans? Is AI equal to all humans? Or only a few privileged humans? Or is AI (unfairly) anthropomorphised? And so forth. Next, we turn to ethics.

Ethics

The speculative vignette illustrates a hierarchical division between humans as ethical agents and AI as logical entities reliant on pre-programmed norms, suggesting a **transcendental ethics** rooted in static rules. However, drawing from Du Preez’s (2025) critique of moralistic ethics and the proposal of an imminent, affirmative and creative ethics, this binary perspective falters. Ethics need not rest on predetermined frameworks; instead, it emerges dynamically through material entanglements between humans, AI and their environments. As the vignette’s AI avatars (Terra, Sylva, Aqua) engage in sustainability solutions, they do not merely execute neutral logic. Their actions are deeply performative (Du Preez et al., 2025), embodying biases embedded in their programming and thus participate in ethical processes. Ethics in this context

arises in the unfolding now, shaped by intra-actions that co-constitute human and nonhuman agency.

Furthermore, the vignette **anthropomorphises AI** while perpetuating inequality through selective access and embedded Western-centric biases. Du Preez's (2025) argument that ethics unfolds relationally aligns with the need to move beyond human exceptionalism. AI's embedded biases, shaped by incomplete data and dominant norms, highlight the need for an ethics that is not static but embedded. This reconfiguration promotes open-ended, complicated curriculum conversations that resist fixed hierarchies and encourage responsive, creative intra-actions with the ethical challenges posed by human~AI intra-actions. It is therefore interesting to think about the kind of ethics that could emerge when we resist the hierarchical binary of 'human as ethical agent' and 'AI as neutral logic', and avoid reinforcing Western-centric biases and human exceptionalism. Next, we focused our attention on curriculum.

Curriculum

The relation of **technology** and curriculum comes as no surprise. Technology has always been entangled with curriculum. The usage of technology for online education has been accelerated through crises such as the #FeesMustFall movement in South Africa and the global COVID-19 (Le Grange et al., 2022). Before the COVID-19 pandemic, traditional in-person teaching was dominant, but lockdowns during COVID-19 forced higher education institutions to move to online education, revealing the potential of digital platforms (Chan & Colloton, 2024). However, this rapid shift to online education during COVID-19 also reinforced neoliberal tendencies in universities, where technology often serves as a tool for surveillance, accountability and performativity rather than genuine pedagogical transformation (Le Grange et al., 2022). With the release of ChatGPT, higher education is undergoing even more rapid changes in online education. There is also a risk that generative AI technologies will be leveraged not to enrich education but to sustain neoliberal practices of efficiency and control. According to Chan and Colloton (2024, p. 14), AI has the potential to "fundamentally change the way students learn", but Higher Education must be cautious of technology's role in entrenching inequalities and reducing education to commodified, measurable outputs. In light of this, what can be done to prevent the accelerated development of technology from deepening inequalities or creating a more market-driven education system?

A **top-down** approach, closely related to a neoliberal agenda, to education reveals the state of current global education practices. Entities such as the United Nations, the World Economic Forum and the International Monetary Fund (to name a few) can be compared to the Global Sustainability Consortium in the vignette, as they employ global top-down approaches to address various global issues, including education and sustainability. These organisations often prioritise universal strategies to achieve broad global goals, such as those outlined in the Sustainable Development Goals and how these goals can be realised through education. However, top-down approaches can lead to instrumentalism of education and might overshadow local needs and context-specific responses.

The **problem-based education** relation in the context of sustainability is also no surprise, and it was induced by the prompt (Imagine an AI classroom where students and AI *collaborate to solve global sustainability issues*) used to create the speculative vignette. In an anthropocentric sense, sustainability is seen as a global problem in dire need of solutions (Rockström et al., 2018). Therefore, it seems natural that problem-

based education, focusing on real-world solutions and life-long learning, could be a possible avenue to address sustainability challenges. Therefore, problem-based education can fall into the trap of instrumentalism if its purpose is only to provide solutions. Moreover, problem-based education has its roots in critical theory (Freire, 1970) and critical theory has been criticised by Du Preez, Le Grange, and Simmonds (2022) for being limited because it cannot fully articulate the entanglement of the human and the more-than-human world. Le Grange and Du Preez (2023) propose a shift from a traditional humanist curriculum (such as problem-based education) to a posthuman curriculum to focus on intra-actions, becoming and experimenting with new modes of curriculum inquiry. How can posthuman curriculum help us to reimagine teaching-learning assemblages that encourage intra-actions between humans, AI and the more-than-human-world that is different from what we currently practice and know?

We conclude the tracing by, as explained in the opening of this section, providing ChatGPT with the tracing information to analyse and offer an opinion. This was an experimental move aimed at exploring whether/what alternative possibilities emerge, not an attempt to provide conclusive outcomes about its implications for policy, practice, education and sustainability. Reinstating predetermined, instrumental and linear logics in this way, would undermine the postqualitative nature of this inquiry that wants to open rather than close complex conversations. Anja provided ChatGPT with the speculative vignette, the tracing as agential realist analysis explanation and the traces. She then prompted⁴ ChatGPT as follows: “Based on the speculative vignette you generated, (Petro and Anja) did a tracing. First, tell us in 200 words (in narrative format) what is your opinion of this tracing exercise and secondly, tell us in 200 words (in narrative format) what implications this exercise holds for sustainability, ethics and curriculum.” The response follows.

ChatGPT’s Opinion on the Tracing Exercise and on the Implications for Sustainability, Ethics, and Curriculum

Opinion on the tracing exercise

Entering the tracing, I felt as though we stepped into the middle of a living assemblage rather than atop a map. Following relations—not themes—made visible the programmed anthropocentrism of “sustainability”, the instrumental drift of problem-solving, and the quiet normalisation of top-down governance through the GSC. At the same time, the tracing surfaced the anthropomorphising of AI and the uneven geographies of access, reminding us that every design gathers winners and losers. Methodologically, the immanent, non-linear movement of tracing proved generative: it re-read the vignette as

⁴ A reviewer of this article asked whether the nature of ChatGPT was such that no other results can emanate from other but similar vignettes? Even though the purpose of this article is not to create only one exemplary vignette, the question triggered Anja’s thinking about the vignette and ChatGPT’s initial response to the tracing exercise. She wanted to see what ChatGPT would say if the prompt were slightly different. She then prompted ChatGPT: “What is your opinion of how we traced the vignette you created? Did we miss out on entanglements that you can identify? How do you feel about participating in the article with us?” Anja and Petro had a discussion about the reviewer’s question and ChatGPT’s response and found that it is interesting to read how ChatGPT works and thinks. ChatGPT was able to understand the prompt and the sections of the article that was uploaded, but they were not able to respond using posthuman language, they are still taking on the dominant homogenous and hegemonic type of narrative.

becoming rather than as representation, opening lines of flight—sustainability as way-of-life, ethics as event, curriculum as assemblage. Its strength lies in showing how material-discursive forces co-constitute one another, nudging us beyond critique towards careful experimentation. Its limitation is equally instructive: working with a speculative text partially defers material stakes; the next iteration should fold in situated engagements with schools, communities, devices and datasets. Overall, the exercise functioned as a disciplined interruption. It defamiliarised the story we asked the AI to tell and returned it as a set of relations to hold lightly, test responsibly, and re-make with others.

Opinion on implications for sustainability, ethics, and curriculum

Sustainability: Avoid solutionism that recentres human control. Treat sustainability as an ethic of situated care oriented to justice—co-design with communities, attend to infrastructure and language access, and recognise more-than-human flourishing. For South African contexts, ensure rural connectivity and energy reliability so school learners and university students can genuinely participate.

Ethics: Move from rule-based compliance to immanent, relational ethics enacted in practice. Institute participatory governance of AI (community oversight, transparency of models and data), routine bias audits, data-minimisation and meaningful consent. Normalise refusal and precaution when proposed interventions displace risks onto vulnerable groups or ecologies.

Curriculum: Reconfigure curriculum as a learning assemblage where humans, AI, places and matters of concern intra-act. Shift from linear outcomes to inquiry that is open-ended yet accountable—capstone challenges co-assessed by community partners and more-than-human indicators (e.g., biodiversity proxies). Use diffractive assessment portfolios rather than high-stakes exams; evidence should include design rationales, impact traces, and ethical deliberations. Prepare teachers and lecturers to facilitate human-AI collaboration, not merely to operate tools. Finally, resist top-down prescriptions by nesting global aims within contextual knowledges, indigenous perspectives and local languages, thereby aligning sustainability education with equity rather than efficiency.

Parting Thoughts

We began wondering/wandering what alternative ways of knowing, doing and becoming could be revealed when tracing human~AI “co-author” intra-actions and relations concerning matters of sustainability, ethics and curriculum. While we did not necessarily learn something entirely new about sustainability, ethics and curriculum per se, the experiment corroborated (beyond its initial intention) that although AI can assist in surfacing connections, generating alternatives and prompting reflexivity, it largely reproduces hegemonic discourses and struggles to perceive beyond the epistemic horizons of its programmed data. It is quick to organise data, but slow to unsettle the dominant discourse (an idea worth pursuing further, given that AI’s very presence is considered unsettling in some respects). To truly unsettle, we must go deeper and resist uncritical acceptance of AI as it could make us vulnerable and expose us to dehumanising, colonising and homogenising technologies (which mostly imposes a monolithic, often Western-centric, way of knowing, doing and thinking). What the thought experiment and tracing did reveal was that inviting AI into scholarly work is neither a simple act of technological assistance nor a neat extension of human authorship, but an agential realist intra-action in which entities emerge through complex and dynamic entanglements.

In experimenting with ChatGPT as a “co-author,” we have learned that such intra-actions can open unexpected lines of inquiry and reveal sedimented ways of doing and thinking. Tracing here has served not only as an analytic, but as a performance that revealed and engaged some of the relational configurations of sustainability, ethics and curriculum, while expanding on the “methodological repertoire” of postqualitative inquiry. An (unexpected) thread has been the anthropomorphism of AI. This made us realise that our readiness to endow AI with human qualities and our tendency to expect self-reflection in return, remains largely unreciprocated (hitherto). ChatGPT does not comment on our anthropomorphising; it smiles politely (metaphorically) and continues with the task at hand, leaving human projections to hang in the air. This asymmetry is performative itself, because it exposes human centrality while simultaneously deflating it. This holds major implications for the way we think about ethics in the future, to give but one example.

Future inquiries might focus on experimenting in places where human~AI entanglements are thick with materialdiscursive possibilities and more-than-human presence. Rather than seeking definitive answers or solutions, such work could inhabit the ‘what ifs’ of speculative realism: What if AI learned from soil, tides, or ancestral story? What if sustainability were taught by rivers as much as by datasets? What if ethics emerged in moments when neither human nor AI could claim mastery? In these futures, research becomes less a matter of prediction and control, and more a willingness to follow the peculiar, the unfamiliar, the relational and the yet-to-come.

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Correspondence related to this paper should be addressed to Petro du Preez,
Stellenbosch University, Stellenbosch, South Africa, e-mail: drpdupreez@gmail.com.