Unlearning for Transformative Education towards Sustainable Futures

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Abstract

*We are at a juncture in history marked by intensifying poly-crises, underscoring the vital role of transformative education (TE). At the heart of this challenge lies an often overlooked yet urgent imperative: unlearning. This paper argues that without unlearning, we risk reproducing knowledge systems that undermine the sustainability of our future. It explores how intentional unlearning can enhance TE to cultivate flourishing futures, particularly in the context of adult education. The paper introduces three core capabilities grounded in the Unlearning Mandala—a comprehensive theory of unlearning developed through Constructivist Grounded Theory and synthesised from interdisciplinary insights of transformative educators. The Mandala serves as a meta-framework that maps the ways, conditions, contexts, levels, layers, types, and outcomes of unlearning. Building on these dimensions, the Q-EA framework is proposed: **Questioning Critically**, **Engaging Difference**, and **Activating Alternative Futures**—capabilities that foster agency for both individual and systemic transformation.Grounded in scholarly research and lived experience in adult education for social change, intercultural leadership, and interdisciplinary learning, this paper demonstrates how intentional unlearning can be activated through curriculum design, educator development, and policy innovation—preparing us for more just, adaptive, and regenerative futures.*

Keywords: *Unlearning, Adult Education, Transformative, Sustainability, Social Change*

1   Introduction

We are living through a moment of profound disruption—ecological, social, and epistemic. From intensifying climate crises to widening inequalities and the rapid advancement of artificial intelligence (AI), the systems shaping our lives are undergoing seismic shifts. Addressing global sustainability challenges requires transformative approaches to education with new ways of thinking, relating, and acting to co-create regenerative futures (United Nations, 2015; UNESCO, 2021).

As both educator and learner across geographies and disciplines, I have come to see that meaningful transformation is not possible without intentional unlearning. It is a critical yet overlooked dimension of TE, a necessary capacity to navigate the poly-crises, complexity and uncertainty of our interconnected world towards a sustainable future (Laininen, 2019; Luksha, 2017; Van Oers, 2023). Unlearning can be adaptive or adverse and thus requires intentional awareness (Puntawe, 2025).

This became especially clear when the COVID-19 pandemic exposed structural inequities, including access to devices, data, and digital competence (Matsieli & Mutula, 2024). As a wellness educator transitioning online, I witnessed first-hand how learners in developing contexts were further marginalised from struggles with time-zones to internet infrastructure and data. Today, generative AI presents parallel challenges. It has raised urgent pedagogical, ethical, and epistemological questions around what it means to teach and learn while destabilising our notions of authorship and assessment (Harry & Sayudin, 2023; Selwyn et al., 2023). These disruptions require not just human-machine learning, but more unlearning—especially as AI systems have yet to unlearn encoded biases, epistemological errors, and unrealised harms, as they reshape our educational realities.

In this paper, I argue that unlearning plays a crucial role in enabling us with the capabilities to shape a sustainable future. Building on my earlier work on the Unlearning Mandala (Puntawe, 2024), a comprehensive framework developed through Constructivist Grounded Theory, I explore how this can

be applied to enhance TE through curriculum, educator development, and policy innovation. I position intentional unlearning as a meta-capability that enables more adaptive, equitable, and sustainable responses to complexity.

2   Challenges with Transformative Education

Transformative education (TE) plays a central role to our global efforts towards sustainable futures in response to ensuring our collective well-being (United Nations, 2015), which demands releasing what perpetuates unsustainable norms with shifts in our worldviews (Laininen, 2019). Yet, despite its growing appeal, TE faces conceptual and practical gaps in advancing sustainability. There is evidence of persistent misalignment between its espoused goals and actual practice, along with reproducing dominant paradigms and harmful hegemonies (Boehnert & Dewberry, 2023). From my experience with higher education and community-based learning settings, I have observed the overemphasis on acquisition of new knowledge or competencies—while overlooking the equally vital role of unlearning what is not working in order to create the conditions for true transformation (Van Oers et al., 2023).

A further limitation to TE is its foundational theory: Mezirow's (1991) transformative learning. While valuable, it has been criticised for its linear process orientation that inadequately addresses how individual transformation translates to broader systemic transformation (Taylor, 2007; VanWynsberghe, 2022). Typically framing transformation as a response to "disorienting dilemmas" does not necessarily align with the nonlinear, relational, and emergent nature of change in a complex, interconnected world (Lange, 2012; VanWynsberghe, 2022). My journey as a mature learner returning to academia and navigating multiple cultural contexts has shown me that transformation is anything but linear or reducible from a singular dramatic event. Rather, it unfolds iteratively in interconnected and power-laden spaces—through recursive conversations, contradictions, tensions, subtle shifts in identity and perception that are conscious, unconscious, and ubiquitous. These resonate with calls for education that embraces decolonial and relational ways of knowing situated contextually with intersectionality of power and privilege as well as interconnectedness across socio-ecological systems (Burns, 2024; Mikulewicz et al., 2023; Stein et al., 2020; Sterling, 2021).

In addition, the field of TE remains fragmented across disciplinary silos lacking a universal taxonomy for its diverse approaches, with a shared framework for practitioners and policymakers (Arbeiter and Bučar, 2021). This results in navigating overlapping and disconnected frameworks—a fragmentation that weakens efforts to scale TE for sustainability transitions in ways that are cohesive, culturally responsive and systemically aligned.

In what follows, I propose that **intentional unlearning** can help bridge these gaps. As we attend to the unexamined assumptions, conditioning and habits that perpetuate unsustainability, unlearning offers us a generative pathway to tackle these with greater clarity, humility, and agency.

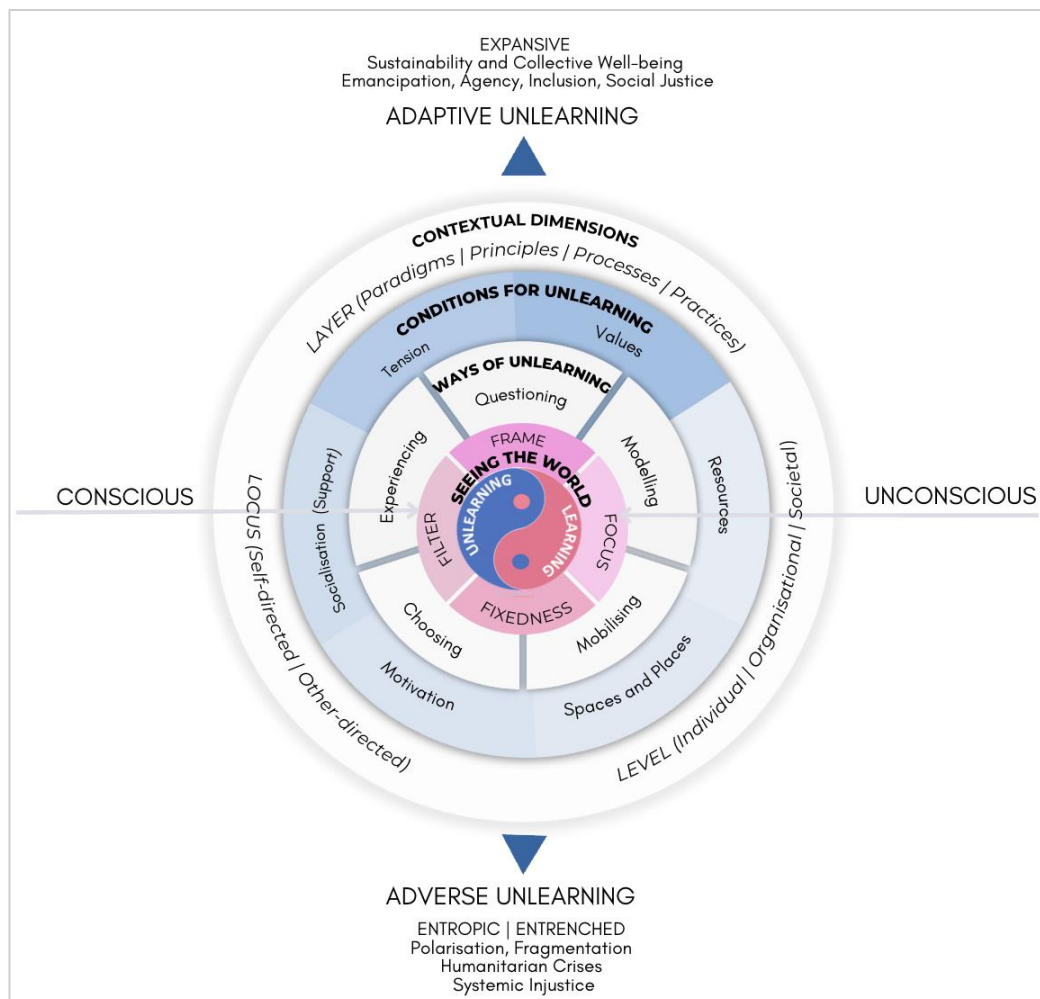## 3   Unlearning to Advance Transformative Education for Sustainable Futures

Across diverse educational, personal, and professional landscapes, I came to a powerful realisation: that intentional unlearning is indispensable for sustainable futures. This realisation emerged not only through academic research but also from lived experience encountering plural pedagogical traditions, often requiring me to question assumptions I inherited from dominant ways of knowing. If TE is to meaningfully address today's complex crises, we must develop the capability to recognise, interrogate, and release what no longer serves. This includes colonial legacies, Western-centric epistemologies, and binary logics that limit our imagination and reinforce systemic injustice (Burns, 2024; Liuzzo, 2025).

My Erasmus Scholarship with International Master in Adult Education for Social Change (IMAESC) is illustrative. Across diverse spaces of learning in Glasgow, Malta and Estonia—university, community, and workplace—I observed how transformation rarely occurs through knowledge acquisition alone. Instead, it arises when both learners and educators confront dissonance, immerse themselves in different worldviews, challenge *what* they know, *how* they know it, and what they choose to *act* on. These brought my attention to the importance of unlearning which led me to develop the Unlearning Mandala in Figure 1 (Puntawe, 2025). It extends, rather than replaces, existing TE frameworks by

offering a meta-theoretical lens that invites a deeper engagement with the invisible systems and structures that shape thought and action. It is designed to illuminate the often-unseen drivers of educational practices to support more intentional, relational, and context-sensitive transformation.

In the next section, I outline the Unlearning Mandala in more detail.

Figure 1. The Unlearning Mandala

This illustration captures the multidimensional and contextual nature of unlearning, representing layers of seeing the world—Filters, Frames, Focus, and Fixedness—across ways, conditions, and contextual dimensions—levels, layers, loci—of unlearning. From *The Unlearning Mandala: A Comprehensive Theory of Unlearning and Meta-Framework for Transformative Change* by R. Puntawe (2025). *Zenodo.* Licensed under CC BY-NC-ND 4.0.

4   Conceptual Framework - The Unlearning Mandala

The Unlearning Mandala in Figure 1 is a comprehensive theory of unlearning and meta-framework for transformative change, developed through interdisciplinary[1] research using constructivist grounded theory. It visualises unlearning as a complex adaptive process, rooted in relationality and systems change (Burns, 2024). At its heart, is the symbolic Yin-Yang representation of the dynamic co-existence between unlearning and learning. Unlike learning which typically focuses on acquisition, unlearning is a "*recalibration, release, reconfiguration, and/or reconstruction of what is adopted,*

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[1] Transformative educators and thought leaders were interviewed coming from diverse sectors (e.g. government, business, non-profit, academia) and domains of expertise (e.g. psychotherapy, entrepreneurship, knowledge management, political science, education, history, linguistics, urban planning, migration and human rights).

internalised, or normalised" (Puntawe, 2025).   It transpires with a shift in the four interdependent systems of how we see the world:

- **Frame** – our underlying epistemological assumptions and worldview
- **Filter** – what we attend to or exclude from our awareness
- **Focus** – our intentional direction and orientation of energy
- **Fixedness** – our attachments to certainty, identity, or habitual patterns

These often-invisible forces influence how we know what we know driving our choices and actions. Unlearning occurs when these dimensions are questioned, loosened, and reconfigured—enabling new perspectives, relationships, and actions to emerge. The Mandala is not prescriptive, but rather a tool that can be flexibly adapted across diverse contexts of formal, informal, non-formal education; organisational and community change; and leadership development. Its layered, circular, and multidimensional design reflects the complexity of real-world transformation processes (Stein, 2020).

The strength of the Mandala lies in its adaptable function as a diagnostic and generative tool. Unlike rigid competency frameworks or behaviourist models, it invites educators, learners, and leaders to locate ourselves in the transformative unlearning process to explore how and where it can be unlocked across its multiple dimensions. It is designed not as a curriculum template, but as a living system of inquiry as we attend to context, complexity and emergence—cultivating humility, reflexivity, and plurality needed to support sustainable and regenerative futures (Laininen, 2019; Stein, 2020).

Translating the Unlearning Mandala into pedagogical practice, I introduce in the next section the Q-EA framework: three interrelated capabilities of unlearning that offer a pragmatic way to embed adaptive learning into TE systems.

5   Q-EA Model: Three Unlearning Capabilities for Transformative Education

Building on the Unlearning Mandala, I propose three interrelated capabilities that can guide how to practically integrate unlearning into TE: Questioning Critically, Engaging Difference, and Activating Alternative Futures – together forming the Q-EA framework.

These are not abstract ideals, but practices I have seen emerge—and repeatedly surface—across diverse educational, intercultural, and leadership settings. The systemic and iterative nature of these three capabilities echoes the relational and recursive approaches found in indigenous epistemologies, expansive, and dialogical theories of learning (Engestrom & Sannino, 2010; Freire, 2020; Hermans & Hermans, 2010). This alignment enhances its epistemological and ontological flexibility as well as applicability across diverse settings in response to real-world demands for change.

Capability 1: Questioning Critically

This capability involves questioning internalised norms, assumptions, dominant narratives, and inherited worldviews that often remain invisible in driving educational agenda (Liuzzo, 2025). This allows diving beneath surface-level critique into deeper levels of epistemology and ontology that underpin knowledge production (Laininen, 2019; Sterling, 2021). It asks—*What are we teaching? Why? How? To whose benefit?*—exposing what is considered valuable and valid knowledge (Liuzzo, 2025; Sterling, 2021). More than just a critique, unlearning through questioning makes visible the structures and power dynamics that frame, filter, focus, and fix what is normalised as 'truth'.   The Unlearning Mandala provides a scaffold for this interrogation, inviting reflection across:

- **Locus** – Is unlearning self-directed or externally imposed?
- **Layer** – Are we questioning practices, processes, policies, or paradigms?
- **Level** – Are shifts needed at the individual, organisational, or societal scale?

- **Outcomes** – Is the unlearning directed towards harmful or useful consequences, and from whose perspective?

While this capability shows the limits of our perceptions and constructs of reality, transformative unlearning also demands embracing the unfamiliar – what I articulate as *Engaging Difference.*

Capability 2: Engaging Difference

This capability involves intentionally encountering epistemological, cultural, and ontological difference—not simply as exposure, but as an ethical and embodied engagement with "otherness." It means choosing to stay with discomfort, contradiction, and complexity rather than reverting to the familiar (Stein et al., 2020). As a migrant from the Global South studying and working in Eurocentric institutions, I often found unlearning expected of me—while dominant norms remained unexamined. This asymmetry echoes critiques from decolonial scholars, who argue that encountering difference must be accompanied by reflexivity, power analysis, and ethical reciprocity (Andreotti, 2021).

In my work facilitating organisational change, I have referred to this as seeking the "difference that makes the difference"—those lever points that catalyse transformation, akin to Meadows' (1999) concept of leverage in complex systems.

Capability 3: Activating Alternative Futures

This final capability centres on moving from reflection to experimentation and embodiment. It involves bringing to life alternative futures by making different choices, modelling new ways of being, and mobilising those choices in action. It is not simply about envisioning alternatives—it is about living them. The generative power of unlearning lies in its ability to not only deconstruct harmful patterns and paradigms, but to mobilise new realities through iterative, collective, and emergent practice (Sterling, 2021; Stein et al., 2020). This includes prototyping possibilities without being attached to success or certainty—letting transformation unfold through experimentation and relational alignment. Together, these three capabilities form a recursive continuum and living dynamic:

- **Questioning** surfaces blind spots and paradigms
- **Engaging Difference** stretches perception and disrupts habitual knowing
- **Activating Alternatives** grounds new insights into lived, embodied change

In the next section, I explore how these capabilities can be integrated into curriculum, educator development, and policy to operationalise unlearning for sustainable futures.

6   Applying Q-EA to Integrate Unlearning for Transformative Education

The three Q-EA capabilities reinforce each other. Critical questioning often surfaces the need for deeper experiential engagement. Engaging difference stretches boundaries of perception and identity that provokes further questions and urgency for new alternatives. Activating alternatives in turn generates fresh experiences with emergent possibilities that feed back into critical reflection. Together they foster the capacity to recalibrate **Frames, Filters, Focus, and Fixedness**— the four systems of seeing the world outlined in the mandala. We now explore how these capabilities can be practically applied to curriculum design, educator development, and policy innovation in service of TE for sustainable futures.

Curriculum Design: Embedding Adaptive Unlearning Capabilities

Embedding unlearning in curriculum design entails moving beyond static repositories of knowledge toward dynamic, living systems that foster reimagining. Ways the Q-EA capabilities can be embedded to cultivate transformative capacities:

- *Prompting Critical Questioning*: Interrogate together what is normalised, standardised, and habituated (focus), where they come from and how learning is framed and filtered. Examine and surface internalised paradigms (Sterling, 2021) with consideration for psychological safety.
- *Infusing Diverse Perspectives*: With a culture of trust and openness, integrate intercultural, interdisciplinary, and community-based knowledge systems that stretch habitual ways of thinking and knowing. Explore different places and spaces for learning and unlearning.
- *Mobilising Community Engagement*: Enable self-directed, place-based, or networked learning that allows learners to prototype regenerative futures grounded in lived realities.

My experience in the *Cross-Pollination for Social Wellbeing* community education project (Puntawe et al., 2024) was an illustrative case. The approach emphasised co-creation between facilitators and participants from diverse disciplines (*Engaging Difference*). Rather than defining rigid learning outcomes, the design allowed for emergent, thematic exploration of "edges". Situated outdoors, the learning environment itself disrupted conventional classroom norms and opened new sensory and relational possibilities. Participants engaged in reflexive dialogue (*Questioning Critically*) following immersive experiences with nature and creative expression (*Engaging Difference*) with art. These interactions sparked shifts in perception and inspired new artistic practices and community contributions (*Activating Alternative Futures*), reflecting an embodied, relational experience of the unlearning process.

Educator Development: Becoming Unlearning Facilitators

As educators we must also unlearn—especially dominant roles, scripts and identities—in order to facilitate transformation. Applying the Q-EA, practices include:

- *Multidimensional Reflexivity*: Interrogating positionalities with humility, curiosity, and openness to feedback, recognising impact across levels and layers of the learning-unlearning ecosystem.
- *Immersive Co-creation*: Participating in intercultural, indigenous, and interdisciplinary learning, we may experience difference as generative force, ethically and responsively.
- *Pedagogical Experimentation*: Moving from transmission to emergence, test new modalities, from dialogical reflections to somatic practices, improvisation, meditative, and 'know-nothing' spaces that invite vulnerability and presence.

In a recent *Intercultural Leadership Program* I participated, facilitators explicitly stated their ABCD (asset-based community development) and human-centric design approach yet defaulted to expert transmission in practice. Constant feedback from participating community leaders, myself included, helped the facilitators unlearn this habit and embraced **co-creation**—shifting toward alignment between practice and principle. Such transformation is increasingly critical in the era of AI, where educators are no longer gatekeepers of content. As algorithms take on more of the cognitive load, educators must evolve into **co-learners, ethical stewards, and unlearning guides**, helping students navigate the algorithmic architectures of knowledge itself.

Policy Innovation: Unlearning Ecosystems

To enable transformation, applying the Q-EA can help shape policies that foster unlearning ecosystems that are regenerative:

- *Questioning Critically - Auditing the Performative:* Go beyond symbolic reforms. Enable paradigm shifts, such as degrowth and decolonisation (Boehnert and Dewberry, 2023; Liuzzo, 2025). Use the Unlearning Mandala to evaluate depth and systemic alignment of reforms. Are the conditions for unlearning supported? Do strategies reinforce adverse or adaptive unlearning? For instance, while many AI policies address regulation and safety, few interrogate their embedded epistemologies: Whose knowledge is encoded? Whose worldviews are centred or excluded? Is there alignment across levels and layers?

- *Engaging Difference – Fostering Pluralism:* Loosen rigid compliance structures to allow for epistemic diversity. Resist one-size-fits-all global "best practices" that marginalise Indigenous and

community-based knowledges. Support decentralised, open-source, rhizomatic learning networks that honour plural ways of knowing (Andreotti et al., 2021; Liuzzo, 2025).

- *Activating Alternatives–Enabling Prototypes:* Legitimise and resource experimental approaches that test new forms of assessment, engagement, and co-learning where communities can co-create flourishing futures such as through art, narrative, systems thinking, and embodied practices (Andreotti, 2021; Burns, 2024). Evaluate not only output, but also ethical development, collaborative capacities, and human-machine interaction. Create policy environments where educational actors can **fail safely**, learn, adapt, and flourish.

These shifts align with global movements calling for a new social contract for education—one that reimagines learning as a collective act of becoming in a world marked by uncertainty and interdependence (UNESCO, 2021).

In the following section, I share briefly the limitations and opportunities for future research and practice—acknowledging the conceptual scope of this framework and inviting continued co-creation across contexts.

7   Limitations And Future Directions

This paper introduces a conceptual framework grounded in practitioner experience and emergent theory rather than large-scale empirical testing. As such, while the Unlearning Mandala is an interdisciplinary meta-theory of unlearning, it is still evolving and its application across diverse contexts requires further examination. The Q-EA framework—introduced here as a heuristic for embedding unlearning—has broader and deeper applications than this paper could fully explore. The examples provided are intended to be illustrative, not exhaustive. Additional inquiry is needed to expand its utility and test its adaptability across contexts. Future research could include

- Comparative studies examining how unlearning manifests across education modalities (e.g., formal vs. community-based, analogue vs. digital).
- Action research with educators, policymakers, and learners to test the Q-EA framework in real-world curricula and learning ecosystems.
- Investigations into AI and unlearning, including how digital tools may either reinforce adverse patterns or enable more ethical, decentralised, and reflective learning practices.
- Diagnostic tools that can be developed—such as a readiness or reflexivity scale—to support educators and institutions in recognising where unlearning is needed and how to cultivate it systematically.

These are offered as a reflective scaffold and an open invitation—a language, framework, and set of principles to help navigate the profound complexity of learning and unlearning in our time.

8   Conclusion

I conclude with the simple but radical proposition that is at the heart of this paper: what we unlearn is as vital as what we learn. In the face of escalating global crises—ecological, technological, social, and epistemic—transformative education must go beyond adding new knowledge. It must foster the capacity to release inherited constraints and open space for regeneration. Unlearning is not an optional supplement to learning—it is a core pedagogical orientation for building flourishing futures. Through the Unlearning Mandala, I have offered a map for understanding unlearning as a dynamic, multidimensional process. The Q-EA framework—*Questioning Critically, Engaging Difference,* and *Activating Alternative Futures*—translates this theory into a practical guide for integrating unlearning into curriculum, educator practice, and policy design. These capabilities support the development of a vital meta-competency: the ability to recalibrate the Frames, Filters, Focus, and Fixedness that shape our worldviews and actions. When cultivated intentionally, these enable individuals and systems to respond to complexity not with rigidity or fear, but with humility, relational awareness, and creative agency.

Ultimately, unlearning is an invitation: To pause. To question. To let go. And to reimagine what is possible—together. In this era of uncertainty, unlearning may be one of the most courageous, systemic, and hopeful acts we can undertake in education—and in life.

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