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Leading Through Uncertainty: Inclusive and Ethical Postdigital Leadership for AI-Enabled Higher Education

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Abstract

Global education is being reshaped by converging disruptions, including climate pressures, geopolitical uncertainty, and rapid advances in generative artificial intelligence, aligned with international agendas for sustainable and inclusive development. These dynamics are transforming higher education into complex, datafied, and platformised ecosystems that are not only technological but also epistemic and ethical. This paper advances a conceptual leadership framework for AI-enabled higher education, grounded in postdigital and sociomaterial perspectives. It introduces an extended conceptual leadership framework for inclusive and ethical AI integration in higher education – the "Three Cs" leadership framework: Care, Curiosity, and Challenge – reinterpreted through the lens of human–AI co-agency and responsible AI governance, grounded in postdigital and sociomaterial perspectives. The Three Cs are presented as a model for navigating complexity and ensuring equity, accessibility, and human-centred values in AI-enabled environments. By integrating theoretical insights with practical implications, the framework offers guidance for inclusive and ethical AI implementation and helps bridge the gap between technological adoption and leadership practice. The contribution of this chapter is primarily conceptual, normative, and position-based, rather than empirically grounded.

Keywords: AI Governance, Digital Transformation, Education, Ethics, Glocalisation, Human–AI Co-agency, Human Flourishing, Inclusion, Leadership, Sustainability, Scalability

1. Introduction

Education is a human right and a driving force for sustainable development and peace (United Nations, 1948). This is affirmed in the UN UNESCO 2030 Agenda for sustainable and inclusive development (UNESCO, 2016). Every goal in the 2030 Agenda relies on education to empower people with the knowledge, skills, and values needed to live with dignity, build their lives, and contribute to their societies. Global education is being reshaped in line with the UNESCO 2030 Agenda for sustainable and inclusive development (UNESCO, 2016), as well as by converging disruptions, including climate pressures, demographic changes, geopolitical uncertainty, and rapid advances in digital transformation (Newman, McGill, & Knight, 2025) and development (Schwab, 2017; UNESCO, 2023a UNESCO, 2024d UNESCO 2025b), including generative artificial intelligence (AI), which is advancing faster than our capacity to govern it ethically. Higher education is undergoing a profound transformation driven by a convergence of global disruptions, including climate change, geopolitical instability, and the rapid evolution of artificial intelligence (AI). These developments align closely with international agendas promoted by UNESCO (2021a), the European Commission, (2021, 2023), the OECD (2023a, 2023b), the World Bank (2025), Schleicher A. (2020), the World Economic Forum (2024 2025 2026), and UNESCO, the International Labour Organization, and the World Bank (2025), who emphasise sustainability, inclusion, and lifelong learning as central to the future of education. The increasing adoption of generative and agentic AI systems in teaching, learning, and institutional decision-making introduces both unprecedented opportunities and significant risks. AI has the potential to enhance personalised learning, expand access, and improve institutional efficiency. However, it also raises critical ethical concerns, including algorithmic bias, inequitable access, data surveillance, and the erosion of human autonomy (Bozkurt et al., 2020; Floridi & Cowls, 2019; Selwyn, 2024). These tensions highlight a growing disconnect between the pace of technological innovation and the development of leadership frameworks capable of guiding such transformation responsibly. AI is reshaping teaching, learning, and governance while raising ethical concerns such as bias, inequity, and loss of human agency (European Commission, 2021, 2023; Floridi & Cowls, 2019; Selwyn, 2024; UNESCO, 2021). However, the integration of AI into higher education is not merely a technological shift; it represents a deeper epistemic and structural transformation that changes how knowledge is produced, shared, and evaluated.

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UNESCO's Education for Sustainable Development initiative identifies five pillars of education: learning to know, learning to do, learning to live together, learning to be, and learning to transform oneself and society. In its follow-up the Sustainable Development Goals Report 2025 (UNESCO, 2025) notes that, although progress is being made, it remains far too slow. The report finds that, while millions of lives have improved through advances in health, education, energy, and digital access, the pace of change is still insufficient to fully achieve the SDGs by 2030. Only 18% of SDGs are on track, with another 17% showing moderate progress. Nearly half are progressing too slowly, and close to a fifth are regressing in a volatile environment marked by conflict, climate change, geopolitical tension, and economic instability.

These global challenges and dynamics are transforming education, including higher education, into complex, datafied, and platformised ecosystems that are not only technological but also epistemic, human, and ethical. This transformation requires new leadership paradigms capable of navigating complexity, uncertainty, and socio-technical change, with governance that is adaptive, ethically grounded, and anticipatory. Globally, new questions are emerging for educational systems as AI – particularly GenAI – increasingly influences people's lives. As Marchick (2026), Dean of the Kogod School of Business at American University, states:

AI is going to change everything – how we work, how we learn, how we interact. It will not replace human talent, but those who understand AI will have a clear advantage. Our responsibility is to ensure every graduate is AI fluent, regardless of discipline.

The World Economic Forum (2026) states that the world of work is changing rapidly, and developing future-ready work models will be necessary to channel this change into the creation of stronger labour markets and adequate safeguards. In this Outlook from May 2026, they indicate that, despite limited evidence of immediate AI-driven labour disruption, organisations are prioritising structural workforce adaptation. The main challenge is no longer a shortage of talent, but a mismatch of skills. This is driving greater focus on job redesign, large-scale reskilling, and responsible AI deployment. Together, these shifts signal a move from reactive to proactive talent management, towards system-level workforce transformation. Thus, they are asking: AI is going to redesign work as we know it – are organisations ready?

In education, we must therefor ask ourselves the crucial ethical question: What should teachers teach and what should learners learn – for individuals, for the planet, and for the SDGs? This also requires brave, innovative leaders with the courage to lead through uncertainty with an agile and resilient approach. Furthermore, there is a greater need than ever to encourage and focus on humans and human flourishing, as humans are the only resources we can truly rely on. That is why human flourishing is crucial in our educational systems and ecosystems.

1.1 Purpose of the study

This study presents a conceptual leadership framework to support inclusive, ethical, and context-sensitive implementation of artificial intelligence in higher education. It examines how leadership can ensure that AI enhances, rather than undermines, equity, accessibility, and human-centred values. The paper's contribution is primarily conceptual, normative, and position-based, rather than empirically grounded. It introduces a theoretically integrated leadership framework that combines postdigital and sociomaterial perspectives with responsible AI governance, viewing education as a socio-technical assemblage shaped by both human and non-human agency, where humans and AI act as co-agents. The study addresses a critical gap between technological adoption and ethical leadership in AI-mediated education. It responds to the growing influence of generative and agentic AI in pedagogy, assessment, and institutional decision-making, while considering associated risks such as algorithmic bias, erosion of academic integrity, and challenges to human autonomy. The framework specifically focuses on inclusion and equity within responsible AI governance, addressing the gap between technological adoption and ethical leadership in AI-mediated education. It examines the increasing influence of generative and agentic AI in pedagogy, assessment, and institutional governance, while addressing risks such as algorithmic bias, erosion of academic integrity, and challenges to human autonomy. The paper advances leadership as responsible AI governance, human flourishing, and ethical stewardship, emphasising responsibility, transparency, and systemic reflexivity in AI-mediated environments. Rather than relying on empirical data, the study synthesises interdisciplinary research and professional practice to offer a forward-looking conceptual contribution. By operationalising the Leadership through Uncertainty framework, built on the "three Cs" (Care, Curiosity, Challenge) and through the lens of human–AI co-agency, it offers a scalable, glocalised framework that bridges policy, practice, and theory for sustainable and inclusive transformation in higher education.

The structure of this paper is as follows. After this brief introduction (1), the research questions and method are presented (2), followed by an overview of the conceptual framework and the paradigm shift in global education, including the role of open education for a better world and the implementation of UNESCO's Agenda 2030 with its SDG4—Quality Education for All, Leaving No One Behind. The discussion then turns to AI in education, its opportunities and challenges as well as human flourishing (3). AI in ethical leadership and the

existing gaps are examined next (4). The paper then explores the three Cs for ethical leadership and the journey through uncertainty towards sustainable, scalable, and inclusive education with care, curiosity, and challenge in the age of AI. This section also addresses the key challenges of AI in an ever-changing learning environment from a critical and forward-looking perspective (5), before discussing the prospects of AI in education and leadership as we move towards inclusive, ethical, and transformative

2. Method

A desktop research design was used to synthesise existing knowledge efficiently and transparently McCombes S. (2023). Secondary data from peer-reviewed journals, policy documents, industry reports, and credible grey literature published in the past five years were systematically analysed. Searches using key terms such as ethical leadership, sustainability, paradigm shift in global education, leading through uncertainty, and AI in education were conducted across major academic databases. Thematic analysis identified recurring patterns related to ethics, openness, sustainability, and AI, ensuring a comprehensive and credible understanding of leadership during times of uncertainty.

3. Findings

Postdigital and sociomaterial perspectives view education as socio-technical assemblages in which agency is distributed across human and non-human actors (Grint, 2005; Jandrić et al., 2018; Orlikowski, 2007). The postdigital perspective recognises that digital technologies are embedded within social and cultural systems, rather than functioning as external tools (Jandrić et al., 2018). Sociomateriality further emphasises that agency is distributed across human and non-human actors, including algorithms, platforms, and data infrastructures (Orlikowski, 2007). In this context, leadership must be understood as operating within socio-technical assemblages, requiring adaptive, relational, and ethically grounded approaches.

Below, AI in higher education is briefly summarised, followed by human flourishing as components of the conceptual framework.

3.1 AI in higher education

The OECD Digital Education Outlook 2023 (OECD, 2023a) examines the transformative potential of artificial intelligence in education systems. The report was developed in partnership with Education International, which represents teacher unions, to ensure that the adoption of new technologies aligns with pedagogical goals and teacher professionalism. It notes that, although digital tools have traditionally been adopted slowly, the advent of generative AI (GenAI) is prompting education systems to move from basic digitisation towards genuine digital transformation. Key findings and themes from the 2023 report include:

- From Digitisation to Transformation: Education systems must move beyond simply using technology (digitisation) to redesigning learning experiences, school management, and student assessment through AI.
- The Promise of Personalisation: AI offers significant potential for personalising education, providing tailored feedback to students, and supporting teachers to improve the quality and equity of learning.
- Need for Governance and Ethics: The rapid development of AI requires clear ethical guidelines and safeguards to protect student data privacy, avoid algorithmic bias, and prevent the reinforcement of existing social inequalities.
- Human-in-the-Loop: AI should complement, not replace, human judgement in education. Teachers remain central to the process, and AI should support their work rather than diminish it.
- AI Literacy as a Core Skill: The report emphasises that education systems must prepare students for a future in which they work alongside AI by fostering AI literacy and relevant skills.

Their key recommendations for policymakers are that education systems should:

- Develop coherent AI strategies: Integrate AI into national digital strategies, moving away from fragmented, ad hoc, or prohibited implementations.
- Invest in digital infrastructure: Ensure equitable access to high-quality digital resources to prevent worsening the digital divide.
- Empower educators: Provide teachers with professional development opportunities to understand, use, and evaluate AI systems, enabling them to be active participants in digital transformation rather than passive users.

According to UNESCO, Artificial Intelligence (AI) has the potential to address some of the greatest challenges in education today, innovate teaching and learning practices, and accelerate progress towards SDG 4 (Miao, Holmes & Ronghuai, 2021). UNESCO's mandate inherently calls for a human-centred approach to AI. It aims to shift the conversation to include AI's role in addressing current inequalities in access to knowledge, research, and the diversity of cultural expressions, and to ensure AI does not widen technological divides within and between countries.

The promise of "AI for all" is that everyone can benefit from the ongoing technological revolution and access its outcomes, particularly in innovation and knowledge (Bozkurt et al., 2023a, 2023b; Hambrock et al., 2025; Ossiannilsson et al., 2024; Open Education Global, 2024). However, rapid technological developments inevitably bring multiple risks and challenges, which have so far outpaced policy debates and regulatory frameworks. UNESCO emphasises that policies and strategies for using AI, as well as those from the OECD (2024), are essential to maximise its benefits and mitigate potential risks. It further argues that developing AI-ready policy-makers is the first step in the policy development process. UNESCO provides guidance to policy-makers on understanding AI and addressing the challenges and opportunities it presents in education. It focuses on the importance of introducing the fundamentals of AI, including its definition, techniques, technologies, capabilities, and limitations. Furthermore, it outlines emerging practices and benefit-risk assessments for leveraging AI to enhance education and learning, promote inclusion and equity, and highlights the reciprocal role of education in preparing people to live and work with AI.

To foster the readiness of education policy-makers in artificial intelligence, UNESCO has developed the frameworks for Artificial Intelligence and Education: Guidance for Policy-makers (Miao, F., Holmes, W., & Ronghuai, H., 2021), which aim to generate a shared understanding of the opportunities and challenges that AI presents for education, as well as its implications for the core competencies needed in the AI era. In addition, to guide countries in supporting students and teachers to understand both the potential and risks of AI, UNESCO has published the AI competency frameworks for students and teachers (UNESCO, 2024a, updated 2025; UNESCO, 2024b; UNESCO, 2024c). AI is distinct from other digital technologies because of its potential to profoundly reshape societies, economies, and education systems. Unlike conventional information and communication technologies (ICTs), AI presents unique ethical and social challenges, including issues of fairness, transparency, privacy, and accountability. Furthermore, AI's ability to mimic human behaviour directly affects human agency. These challenges require dedicated competencies beyond traditional digital literacy. While UNESCO has provided guidance on digital competencies for many years, the new AI competency frameworks address the specific nuances of AI. They emphasise a human-centred approach to AI education, promoting critical thinking, ethical considerations, and responsible use of AI technologies.

Zawacki-Richter et al. (2019) argue that AI technologies are increasingly influencing higher education. In line with both the OECD and UNESCO, Zawacki-Richter et al. (2019) and Williamson and Eynon (2020) state that AI enables personalisation and scalability but introduces risks such as algorithmic bias, inequity, and surveillance. Selwyn (2024) also highlights that opportunities include personalised learning and scalability, while risks include bias, inequity, and threats to academic integrity. However, AI systems may reinforce structural inequalities unless leaders prioritise inclusion, accessibility, and fairness in their implementation.

3.2 Human flourishing

In recent years, the OECD has worked extensively worldwide and has now released the framework Education for Human Flourishing. The next generation must be prepared to design and build the participative democracies and regenerative economies of the future. Education for Human Flourishing sets out new directions, particularly for primary and secondary education, to help young people flourish in life and work, and to contribute to the flourishing of themselves, their communities, societies, and the planet (planetism). However, it can also be applied to higher education. Three principles guide this initiative:

- Enabling young people to design new societal, economic, and organisational models for a century of unprecedented challenge.
- Developing their cognitive, creative, and caring capabilities.
- Helping them find purpose and meaning through learning.

Education for Human Flourishing develops five competencies: adaptive problem-solving, ethical competency and understanding, interpreting the world, appreciating the world, and acting in the world (see Figure 1). Each is rigorous and challenging, can be taught and assessed, and builds on mathematics, science, reading, and digital literacy. Education for Human Flourishing represents a major shift in the purpose, content, and methods of education, preparing the next generation for their future rather than our past. Maintaining the status quo will waste young people's talents, further harm their mental health, and fail to address the urgent challenges of our time. Marking a significant transformation in education, the framework promotes human meaning, agency, and security in the era of AI (OECD, 2025).

Figure 2 - Education for human flourishing architecture

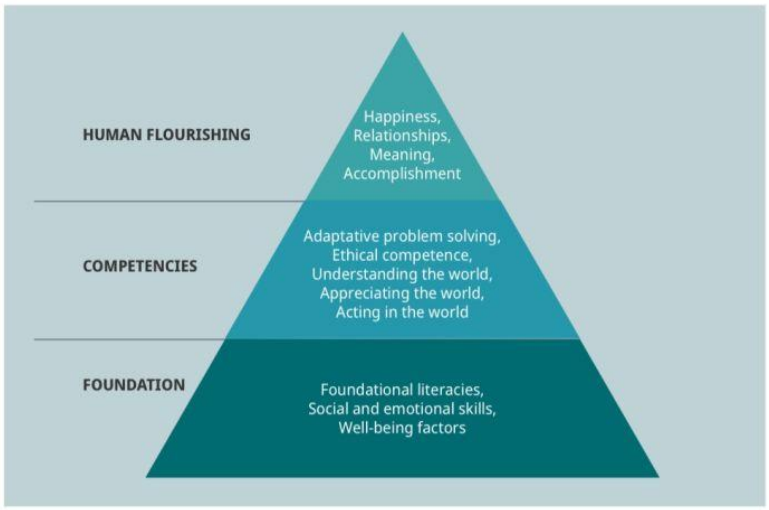

Figure 1. Education for Human Flourishing: A New Vision for Education Systems (OECD, 2025)

There are ten main takeaways from this framework:

- The ultimate purpose of education is flourishing, not just performance.
- Flourishing combines happiness, meaning, and social connection.
- Competencies such as ethical judgement, cultural intelligence, and adaptive problem-solving bridge learning and life.
- Foundational literacies remain vital, as do social and emotional skills.
- Ethical competence and empathy are now essential for future readiness.
- Adaptability is the new literacy.
- Flourishing is relational, not individualistic.
- Wellbeing is both a means and an end of learning.
- We need to measure what truly matters: belonging, purpose, and trust.

Schools are not merely teaching institutions; they are architects of human flourishing. This framework aligns with efforts to reimagine education around wellbeing, cultural competencies, ethical practices, and purpose, particularly in faith-based schools where community remains central to learning.

The next section will address leadership, as these new frameworks involving AI in education for all and human flourishing highlight the need to address leadership gaps, leadership for transformation, and the critical issues concerning the type of courage required to lead change at scale while ensuring that no student, teacher, or institution is left behind.

3.2 Leadership gap

Leadership frameworks have not kept pace with emerging technological change, such as developments in AI. Existing approaches often neglect ethical, socio-technical integration, and inclusive dimensions (Biesta, 2010; Fullan, 2001; Stratton-Maher, Ossiannilsson, 2024; Ossiannilsson, Manousou, and Arumugam (2026). This creates a gap in addressing not only AI-related challenges but also human flourishing and agency. Addressing this gap requires a reconceptualisation of leadership that integrates ethical, epistemic, and socio-technical dimensions (Karakose, Tülübaş, Papadakis, 2023). AI systems risk reinforcing structural inequities unless leadership explicitly prioritises inclusion, equity, accessibility, marginalised learners, diversity, and fairness in their design and implementation. At the same time, governance and leadership, strategy and ethics, and innovation and responsibilities should be addressed not as opposing parameters, but as part of the ecosystem and system change (ICDE, 2022, 2024a, 2024b, 2025; Ossiannilsson, 2025; Stratton-Maher, Ossiannilsson, Manousou, and Arumugam, 2026).

In the next section, the proposed Three Cs framework and leadership during uncertainty are explored.

3.3 The Three Cs framework

The main contribution of this paper is the theoretically grounded extension of the "Three Cs" leadership framework (Stratton-Maher, Ossiannilsson, Manousou, and Arumugam, 2026). The core principles of the Three Cs framework are inclusivity, scalability, and sustainability, which are inherently multifaceted (Ossiannilsson, 2025). Inclusivity is defined as a universal yet personalised approach that ensures equitable access, respect, and opportunity for all learners and staff. It values diversity without reducing individuals to their characteristics, emphasising co-creation with students to design supportive digital and physical environments that foster engagement, critical thinking, and openness. Scalability refers to the capacity to expand learning and support systems dynamically while maintaining quality and accessibility. It relies on agile, interoperable, and ethical digital infrastructures, flexible pedagogical design, and institutional alignment to ensure consistent, high-quality experiences across diverse contexts. Sustainability involves building adaptable and ethical educational ecosystems that balance environmental, technological, economic, and human needs. It promotes eco-conscious digital practices, well-being, and resilience, while embedding the UN Sustainable Development Goals (UNESCO, 2016) to ensure higher education remains socially responsible, resource-efficient, and future-oriented amid ongoing global change.

The "Three Cs" leadership framework introduces an expanded conceptual approach to inclusive and ethical AI integration in higher education: Care, Curiosity, and Challenge, reinterpreted through the lenses of human–AI co-agency, human flourishing, future-oriented leadership, and responsible AI governance, grounded in postdigital and sociomaterial perspectives. The Three Cs framework is presented as a model for navigating complexity and ensuring equity, accessibility, and human-centred values in AI-enabled environments. It offers a scalable, glocalised model that connects policy, practice, and theory for sustainable and inclusive transformation in higher education. By integrating theoretical insights with practical implications, the framework provides guidance for inclusive and ethical AI implementation and supports bridging the gap between technological adoption and leadership practice.

Care emphasises ethical stewardship and highlights ethical responsibility, human flourishing, relational trust, inclusion, responsible AI governance, and well-being. Curiosity fosters critical AI literacy, epistemic resilience, and reflexivity. Challenge and transformative agency drive innovation, accountability, institutional courage, and systemic change. Together, these dimensions form a holistic leadership model, offering a scalable and adaptable approach for leading amid uncertainty towards sustainable digital futures. Aligned with Sustainable Development Goals 4 (quality education) and 17 (partnerships), the paper presents a glocalised leadership framework that bridges global policy and local practice. It contributes to ongoing debates by articulating how leadership can shape equitable, human-centred, and sustainable AI-enabled education systems. The study provides practical and conceptual insights for researchers, policymakers, and institutional leaders working to ensure that AI enhances, rather than diminishes, equity, agency, and human-centred values in education (see Figure 2).

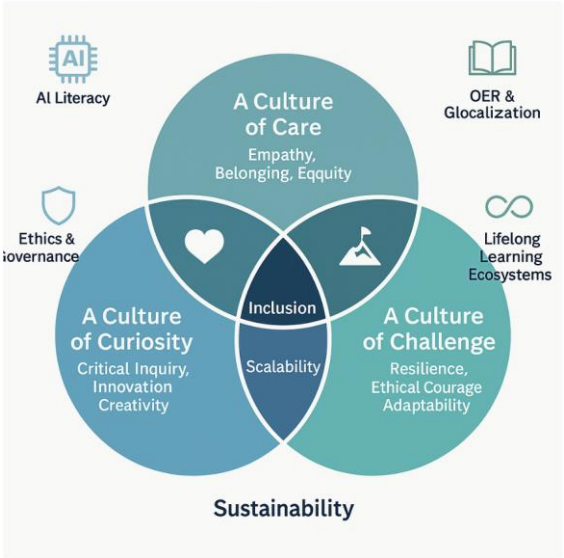

Figure 2. Postdigital Leadership Framework: the three Cs framework for AI-enabled higher education

This framework is a conceptual, theory-building contribution that addresses the gap between AI adoption and leadership theory. It is neither descriptive nor speculative, but is analytically positioned. The figure is structured around three intersecting domains: Care, Curiosity, and Challenge. The outer layer focuses on human–AI co-agency, ethics and governance, lifelong learning ecosystems, OER, and glocalisation. The output layer includes Inclusion, Scalability, and Sustainability. This framework addresses the urgent need for ethical, adaptive leadership in AI-enabled higher education. It positions leadership as a response to postdigital conditions characterised by human–AI co-agency, datafication, and socio-technical complexity.

The framework encompasses the outcomes of inclusion, scalability, and sustainability across higher education ecosystems. It aligns with SDG 4 (Quality Education), SDG 17 (Partnerships), glocalisation, and human flourishing in education. The framework explicitly states that leadership is no longer about control, but about navigating uncertainty and shaping ethical, human-centred futures in AI-mediated education. It operates within human–AI co-agency, recognising ethical, adaptive, and inclusive transformation, and shared agency between humans and technologies. Six key themes can be identified:

- AI Transformation and Digital Opportunity
- People-centred, values-driven leadership
- Proactive shaping of change
- Challenges beyond technology
- The Power of collaboration and shared leadership
- Care and ethical stewardship

4. Discussion and Conclusion

This paper addresses the emerging need to conceptualise leadership beyond techno-solutionist narratives in AI-enabled education. It argues that leadership should be redefined as an ethical, relational, and adaptive practice capable of navigating uncertainty and complexity. To meet this need, the paper proposes a conceptual framework based on three interrelated dimensions – Care, Curiosity, and Challenge – designed to support inclusive and ethical AI integration in higher education.

The framework incorporates UNESCO SDG4 (UNESCO, 2016), education for human flourishing (OECD, 2026), ethics, technology, lifelong learning, well-being, and leadership (Ossiannilsson, 2025), and provides a scalable model for inclusive AI transformation (EU, xxxx; OECD, xxxx; UNESCO, xxxx; WEF, xxxx). By adopting the three Cs framework, leaders can implement Care through ethical AI policies and inclusive design; Curiosity through AI literacy programmes, staff development, and capacity building; and Challenge by leading with agile methods through uncertainty, and, at a practical level, reforming assessment, addressing inequities, and embracing well-being, human flourishing, diversity, and inclusion.

The main practical implications are that leaders must implement ethical AI governance, institutions must ensure equitable access, and policymakers must support inclusive regulation. All levels must be involved to secure the qualities embedded in the ecosystem through a holistic approach. For leaders, this means developing ethical AI governance and promoting inclusive and accessible AI practices; for institutions, implementing AI literacy programmes and ensuring equitable access to AI tools; and for policymakers, supporting inclusive AI regulation and promoting global-local collaboration.

There is no doubt that AI will transform higher education, but leadership determines how this transformation unfolds and whether it follows an ethical, human, and inclusive path. All official authorities, such as the European Commission (2021, 2023), OECD (2023a, 2023b), UNESCO, and the World Economic Forum (2024, 2025, 2026), as well as academic scholars, emphasise the human aspect of AI use and implementation. The three Cs framework presented here offers a model for inclusive, human, and ethical leadership that supports human flourishing in AI-enabled higher education. Its implementation advances a theoretically grounded and operationalisable model for ethical and equitable leadership in AI-mediated higher education during times of uncertainty.

This study responds to the emerging need to conceptualise leadership beyond techno-solutionist narratives in AI-enabled education, supporting inclusive, ethical, and sustainable AI integration in higher education. It addresses the gap between technological adoption and leadership theory in AI-mediated higher education.

The paper presents a leadership framework to support inclusive, scalable, sustainable, ethical, and context-sensitive implementation of AI in higher education. It reframes leadership in higher education as an ethical and relational practice within human–AI systems, operationalised through Care, Curiosity, and Challenge as a scalable model for navigating postdigital uncertainty. This is a leadership model for ethically navigating AI in complex and uncertain educational systems. The issue is no longer whether AI will transform education, but whether leadership will shape that transformation ethically. It is crucial that education remains human-centred, inclusive, scalable, sustainable, and future-ready. However, we must recognise that this future began yesterday,

and the actions, considerations, and values we choose today will shape the future we want for individuals and for the planet.

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