Ethical Digital Higher Education Leadership

A report by Professor Richard Watermeyer, Dr Danielle Guizzo and Lara Dzabolova. Commissioned by the N-TUTORR National Digital Leadership Network

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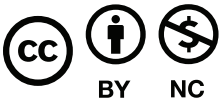

Author biography

Richard Watermeyer

Richard Watermeyer is Professor of Higher Education and Co-Director of the Centre for Higher Education Transformations at the University of Bristol. He is by training and orientation a sociologist of higher education; author of well over 100 academic articles, chapters, books and commissioned reports focused on policy and practice challenges and transformations in higher education; and the recipient of research funding for leadership of 19 (inter)national higher education research studies. Richard's current research focus is on the sociological analyses of digital disruption in global higher education contexts. In this oeuvre he has acted as the Deputy Director of the (£1m) Digital Futures of Work programme (https://digitalfuturesofwork.com) and led an international research team into the effects of digital transitioning and AI adoption in global higher education. Such work has also featured in such analyses of the impacts of generative AI adoption by UK academic researchers (Watermeyer et al. 2024, forthcoming); in recent keynote addresses to the Research in Distance Education and E-Learning and Academic Practice and Technology conferences; and commentary pieces featured by Nature (https://www.nature.com/articles/d41586-024-00115-7) and the LSE (https://blogs.lse.ac.uk/impactofsocialsciences/2024/01/22/if-generative-ai-is-saving-academics-time-what-are-they-doing-with-it/).

Danielle Guizzo

Danielle Guizzo is Associate Professor in Economics Education and staff researcher of the Centre for Higher Education Transformations at the University of Bristol. Her research expertise is on the political economy of higher education and the state of academic labour and knowledge production in the light of technological and economic transformations, using a combination of historical and qualitative methods to understand change. Danielle has authored 25 academic articles, co-edited a book and has written several book chapters, reports, and briefs for policymakers. She was awarded the 2024 Clarence E. Ayres scholar award from the Association for Evolutionary Economics for her research on the ceremonialism of higher education from an economic-institutionalist perspective, and has secured research grants as a P-I on the impact of research assessment tools over economics research (funded by the ESRC Rebuilding Macroeconomics Initiative) and as a co-I on how academics have been using technologies in the Covid pandemic (funded by the Royal Economics Society). Danielle has also acted as a consultant for Brazil's Ministry

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Abstract

The horizon-scanning report will provide a critical analysis of extant knowledge related to academic integrity as a commitment to six underpinning values of honesty, trust, fairness, respect, responsibility and courage (ICAI, 2021), guiding ethical behaviour across the tripartite domains of teaching, research and administration, and as impacted by rapidly evolving digital technologies, especially artificial intelligence (AI) tools. It will provide recommendations for university leaders navigating institutional best practice and policy for academic integrity in special reference to higher education's digital transformation (McGill/JISC, 2023), and as germane to institutional and national strategic priorities for the Irish sector and, its community of technological universities. Through a blend of historical and case study analysis the report will offer a globally informed perspective to current and emerging legislative guidelines and existing procedures for the implementation and safeguarding of academic integrity (at national and institutional levels), in the midst of digital disruption, and, furthermore, as understood and enacted upon by key higher education stakeholders including funders, regulators, membership organisations, learned societies, higher education support organisations, trade unions, and publishers.

Introduction to the National Digital Leadership Network Report Series

The National Digital Leadership Network (NDLN) is a collaborative initiative designed to support digital transformation across Ireland's Technological Higher Education sector. Established under the N-TUTORR programme with funding provided through the EU's NextGenerationEU initiative, the network was officially launched in November 2024 to provide a national platform for digital leadership and complementary knowledge exchange and strategic collaboration. While the N-TUTORR programme has now concluded, our network continues its work under the guidance of a steering board composed of sector leaders and external experts.

Digital leadership in higher education extends far beyond technical expertise or the adoption of certain tools and platforms: it's about vision, strategy, and culture change. Effective digital leaders ensure that digital strategies and developments align with institutional and national priorities, not only enhancing teaching, learning, research, and administration functions but also upholding academic values, promoting equity, and driving business innovation. In this context, the NDLN fosters collaboration among higher education leaders, policymakers, and practitioners, providing opportunities to share insights, explore emerging challenges, and develop shared solutions.

As part of its work, the NDLN has commissioned a series of horizon-scanning reports authored by leading national and international scholars and practitioners. These reports explore key trends at the intersection of digital innovation, traditional leadership and strategic planning, providing actionable insights to support higher education institutions in aligning these trends and related opportunities with institutional and national priorities. Covering topics such as the evolving role of generative AI in academia, data-driven decision-making, academic integrity, new models of learning and teaching and new ways to plan for financial sustainability, this report series offers timely advice and direction for higher education leaders navigating the interrelated complexities of the digital and post-digital age.

We extend our gratitude to the N-TUTORR programme for its financial support, and to N-TUTORR Co-ordinator Dr Sharon Flynn for her direction and continued support of the network. Thank you also to members of our national steering board and to our external contributors, in particular Professor Lawrie Phipps.

A big personal thank you in addition to my colleagues in the Department of Technology Enhanced Learning (TEL) at MTU -- especially Darragh Coakley and Marta

Guerra -- whose work has been vital to the preparation and publication of these reports. We are also very grateful to Dr. Catherine Cronin, our chief editor, and, of course, to all our authors whose insights, expertise, and dedication form the heart and foundation of this series.

We invite you to engage with these reports and join us in shaping the future of digital leadership in higher education.

Dr Gearóid Ó Súilleabháin
Department of Technology Enhanced Learning (TEL)
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Executive Summary

This review paper offers an evidence-informed consideration of ethical leadership of higher education institutions (HEIs) in the context of digital transformation (McGill, 2023). It offers a globally informed perspective of challenges, opportunities, and pathways for ethical higher education (HE) leadership in the midst of accelerating technological innovation and potentially increasing technological adoption.

The review offers pathways for ethical digital HE leadership through critical discussion of:

1. "Digital educational leadership" (cf. Brown et al., 2016) practices, profiles, and models (e.g. heroic/distributed/systems-based)
    - **a.** Digital literacy, skills, and competencies among HE leaders and, analogously, digital leadership maturity and preparedness
2. Organisational and operational challenges and opportunities for (i) ethical leadership of digital transformation in HE settings and (ii) ethical HE leadership through digital transformation in the contexts of:
    - **a.** Changing business models, processes, structures, functions, and service delivery (and as links to efficiency, agility, competitiveness, institutional performance, market, policy and regulatory pressures, reputational/risk management, rankings, and prestige)
    - **b.** Resourcing in relation to specialist expertise, personnel, and infrastructural investment, and as experienced through:
        - **i.** external buy-in through technology procurement and EdTech partnerships (supporting service delivery across core missions of teaching, research, and administration) – functional and critical EdTech perspectives
        - **ii.** internal development – staff (re)skilling and training and digital talent acquisition
        - **iii.** concerns of technological determinism/solutionism
    - **c.** Specific institutional priorities for digital investment (and as may be attributed to institutional type)
3. Social/cultural challenges for (i) ethical leadership of digital transformation in HE settings and (ii) ethical HE leadership through digital transformation in the contexts of:

a. Institutional culture change (staff resistance)
b. Work (re)organisation (blended/hybrid/co-working; precarity issues)
c. Staff and student health and well-being
d. Equality, inclusivity, and diversity (EDI) agendas
e. Environmental impact(s) of technology adoption

Introduction

Amidst the myriad challenges that HEIs currently face, a transition towards and acculturation of digital leadership is of special interest and universal concern. Moreover, the insertion – often invisible – whether by stealth or undeliberated, of endlessly innovating technologies places extra demands on those at the helm of HEIs and their practice of ethical and adaptive leadership. This is especially the case where their leadership skills and competencies may be formative and, more so, untested in relation to the effects of digital transformation on their institutional communities. Ethical digital leadership possesses core elements of role-modelling, integrity, altruism virtues which stress a human-centred approach to technology adoption. Leaders are challenged to integrate strategic vision with ethical considerations in order to align digital transformation with institutional values, ensuring inclusivity and sustainability while fostering collective resilience in HE communities.

Ethical digital leadership possesses core elements of role-modelling, integrity, altruism virtues...

This document provides a review of the extant research literature on digital leadership, specifically as it pertains to higher education. As we establish in the following pages, digital leadership is a critical but understudied area of higher education leadership in need of rapid advancing if universities are to respond confidently and capably to challenges of minimal technology integration to technology embedding within institutional strategies. Digitalisation holds the potential to reshape – and in many instances already is reshaping – HE teaching and learning, research, professional services, and manifold institutional processes, presenting both challenges and opportunities for universities' operational and organisational structures. Some of these challenges, as we report, include safeguarding teaching quality, managing data privacy, addressing financial burdens, and balancing industry influences. Opportunities, nonetheless, emerge alongside new regulations. For instance, digital transformation can offer opportunities to shape regulatory frameworks, enhance institutional reputations, and establish new benchmarks for quality and performance, which can be established from a "bottom-up" perspective to ensure more equal participation and levelling for smaller institutions. Also, developing in-house technological solutions and strategic collaborations with EdTech firms, if both partners play an equal role, can strengthen institutional autonomy and competitive positioning.

However, HE leaders are challenged to balance institutional missions with technological advancements, ensuring investments in digital tools align with broader goals and aspirations, such as promoting equity and sustainability. Consequently, we discuss the need for the reprioritisation of the social, cultural, and environmental aspects of digital transformation and for recognition that these are integral to steering institutional missions and action plans. Core challenges, such as resistance to change (i.e. techno-phobia/digital disavowal), adherence to traditional structures, and limited strategic planning further add to the concerns of academic/professional services staff with regard to job security and workload, particularly in times when HEIs are financially pressured to adopt technologies to reduce operational costs – and even when investment in digital infrastructure requires substantial financial outlay.

A review of the core literature and debates stresses that an effective digital transformation requires addressing organisational resistance, fostering inclusivity, and promoting collaborative approaches. HE leaders are encouraged to support professional development, enhance infrastructure, and prioritise ethical guidelines for technology use, as well as integrate mental health and EDI strategies into digital initiatives. Ethical leadership can mitigate resistance, improve well-being, and ensure digital justice, creating a resilient and innovative academic environment – aspects which are presented as part of our core recommendations.

Through this review, we argue that HE leaders must adopt a mission-oriented approach, aligning digital advancements with broader institutional goals and fostering agility in order to remain responsive to changes. A mission-oriented approach requires that HEIs align their digital investments not just with immediate institutional needs but with broader societal challenges, such as inclusivity, climate action, and civic learning. For instance, prioritising hybrid learning platforms can enhance accessibility for non-traditional students. Similarly, investments in sustainable digital infrastructures – such as energy-efficient data centres – can contribute to institutional carbon reduction targets.

By framing digital investment decisions around mission-driven goals, rather than outsourcing these tasks to external EdTech vendors, HEIs can ensure their investments support transformative societal impacts rather than perpetuate existing inequalities. The success of digital investments in HEIs should not solely be measured by financial returns or administrative efficiency but by their contributions to educational quality, equity, and innovation. Improved metrics – such as enhanced student engagement, reduced digital divides, and the number of staff and students empowered through digital training while maintaining job security – can work as potential benchmarks.

Organisation of the Review

Our review consists of three main sections: (i) a focus on ethical HE leadership through/for digital transformation, which also provides conceptual framing for thinking about leadership approaches, profiles, and styles; (ii) challenges and opportunities for digital education leadership; and (iii) social and cultural aspects for ethical leadership in digital transformation. We conclude our review with a series of recommendations for building ethical digital leadership. Before we proceed to Part One, a quick word on the methods underpinning this contribution.

Methods Statement

As a review paper, our goal is to provide a preliminary assessment of available literature in order to identify something of the current state-of-the-art knowledge pertaining to ethical digital leadership in HE settings. The literature search was administered via portals, including the Web of Science and Google Scholar, with several articles additionally boosted from the literature via a snowball sampling technique.

The first part of the search focused on trends in leadership of digitalisation in higher education Here we deployed search terms including: “digitalisation”, “universities”, “higher education”, “leadership”. The second part involved a review of the literature on challenges and opportunities for ethical leadership of and digitalisation in HE, using the following keywords: “challenges”, “opportunities”, “digital leadership”, “digitalisation”, “leadership”, “ethical leadership”, “higher education”, “universities”.

The final part of our review was carried out in ten steps, in accordance with ten subheadings, similarly through the use of relevant search words. For instance, the challenge of changing business models, processes, structures, functions, and service delivery: “change”, “business model”, “process”, “structure”, “function”, “service”, “universities”, “higher education”.

Part 1. Ethical Leadership in Higher Education: Approaches, Profiles, and the Digital Dimension

In an era defined by permacrisis, HEIs operate within a "volatile, uncertain, complex and ambiguous" (VUCA) landscape (Rudolph et al., 2024; Tanniru & Peral, 2021; Watermeyer et al., 2022). Leaders in HE face dual pressures: adapting to societal and political demands for transformative change while safeguarding core values such as freedom of speech and academic autonomy. Effective leadership in this context requires a nuanced understanding of leadership approaches, profiles, and styles.

Leadership in HE can be approached through a combination of three core elements: approaches of leadership, profiles adopted by leaders, and styles of leading. These are important groundings in navigating the potential for ethical digital leadership.

Leadership approaches in higher education: Drawing on Macfarlane, Bolden, and Watermeyer (2024), we can classify HE leadership approaches into three categories:

- **Traditionalist:** resists managerialism and marketisation, emphasising institutional autonomy and core HE values related to activities in teaching and research
- **Reformist:** advocates for inclusive leadership, addressing inequalities and injustices
- **Pragmatist:** focuses on practical competencies and skills for effective leadership

While tensions exist between these approaches, a pluralist perspective, which values both the preservation of traditional university values and the pursuit of transformative change, emerges as the hallmark of ethical HE leadership (Watermeyer et al., 2022).

Leadership profiles in HE: Leadership profiles in HE, meanwhile, manifest in two primary forms:

- **Heroic leadership:** centralised, top-down leadership (Arnold, 2021; St. Clair, 2020; Jameson et al., 2022; Macfarlane et al., 2024). Given the VUCA environment HE is currently navigating, such a top-down and unilateral approach to leadership is seen as ineffective due to its lack of relational and contextual dynamics (Brown et al., 2016; Watermeyer et al., 2022)
- **Post-heroic leadership:** emphasises collective dynamics, relationships, and systems, offering a more adaptive and inclusive model for HE leadership (Dion,

2012; Macfarlane et al., 2024) that might be especially complementary to the challenge of digital transformation

Styles of leadership in HE: A variety of leadership styles are also observed in HE settings: instructional, transactional, democratic, and distributed (Antonopoulou et al., 2021a; Dion, 2012). The latter – distributed leadership – is argued to be the most appropriate leadership style for ethical and effective leadership in a VUCA environment, especially for and through digital transformation (Anwar & Saraih, 2024; Brown et al., 2016; St. Clair, 2020; Eddy & Kirby, 2020; Ehlers, 2020; Ratajczak, 2022). Advocates of distributed leadership promulgate a view of leadership as a function and action, rather than a formal position, and they consider leadership to be present at all levels of university activity (St. Clair, 2020; Brown et al., 2016).

Digital Leadership and Transformation in Higher Education

Effective leadership requires a diverse set of competencies. Bryman (2007) identifies key characteristics for effective leadership, categorised as strategic (having a clear vision and proactivity) and tactical (employing effective organisation, clear and effective communication, and the ability to give feedback) and underpinned by essential human qualities such as trustworthiness, consideration, and role modelling. These are echoed by Watermeyer et al. (2022), who also identify self-reflexivity, inclusivity, and digital engagement as essential attributes for effective and ethical leadership in HE.

Effective leadership requires a diverse set of competencies.

Despite its growing relevance, the digital dimension of HE leadership has to date received limited scholarly attention and has been habitually treated as a secondary focus. It endures a diverse taxonomy, which currently does not cohere well and includes, inter alia, e-leadership, information and communication technology (ICT) leadership, EdTech leadership, etc. (Brown et al., 2016; Jameson et al., 2022; Ratajczak, 2022). With the seemingly ubiquitous penetration of digital technologies – particularly automative (Watermeyer et al. 2023; 2024) – into HE environments and the working practices of HE staff, consideration of digital leadership practices and effects is warranted.

For some, a functional approach to digital education leadership is recommended (Jameson et al., 2022) which focuses on enhancing teaching, learning, and value creation (Brown et al., 2016; Tanniru & Peral, 2021; Carvalho et al., 2022); managing and guiding organisational change (Ratajczak, 2022); and the effective use of digital data

to facilitate business goals and processes (Antonopoulou et al., 2021b). However, it is also necessary to employ a critical perspective (Jameson et al., 2022) that elucidates the political economy of digitalisation and pays attention to (unequal) power relations, the ethics of technology production, and issues of social injustices exacerbated by digitalisation of education (Macgilchrist, 2021; Williamson et al., 2021).

Digital leadership is also linked to digital transformation, which can be understood through two lenses. A technological deterministic approach frames technology as shaping social practices, such as learning and teaching (Brown et al., 2016). In an HE context, such an approach has unhelpfully limited understanding of digital transformation to incorporating technology and devices into educational practices, with the role of education being to master digital competencies (Jameson et al., 2022). Alternatively, a social practices approach defines digital transformation as a systemic cultural, operational, and technological shift, thus reshaping HE models and their value propositions (Brown et al., 2020). This perspective offers a more holistic reading that allows HE to address the need for organisation-wide cultural, operation, and technical shifts, prioritising a purposeful integration of technology based on institutional needs (Brown et al., 2016; Fraser-Krauss, 2022; McGill, 2023).

Marshall (2018) frames digital transformation in HE as a "wicked problem" – an ambiguous, evolving condition complicated by multiple interpretations and the various demands and expectations of diverse stakeholders, which are often mutually contradictory yet simultaneously true, a strategic paradox. This perspective underlines the complexities of universities as social, cultural, and political domains, and resists a narrow conceptualisation of digital transformation in HE as the normative (and unreflexive) application of technology in classrooms and across campuses, as something value-free and politically inert.

Brown et al.(2016) define digital education leadership as a means of fostering and nurturing digital literacies as multiple context-based social practices and concomitantly the greater capacity of individuals to live, learn, and work in a technology-mediated world through the cultivation of critical capabilities (and agency) in appraising technology use, rather than developing one-size-fits-all digital competencies (Cook & Dunn, 2022; Jameson et al., 2022; Marshall, 2018; McGill, 2023).

Leaders, however, are required to achieve digital education leadership maturity (Durek et al., 2019) and evolve capabilities to lead universities towards and through digital transformation, spanning minimal integration of leadership and technology to embedding digital leadership in organisational strategy. Jameson et al. (2022) provide a classification of six levels of digital leadership maturity in HE. These range from no

connection between leadership and digital transformation (level 1) to recognition of leadership and technology as co-existing components (level 3) to embedding digital leadership in strategic organisational development, leading critical discussion of power relations as well as the transformative potential of digital technology and leadership (level 6).

Analogously, Antonopoulou et al.(2021a) argue that effective digital education leadership comprises three main competencies: strategic vision, business knowledge, and digital knowledge. Jameson et al. (2022), however, call for a more comprehensive techno-ethical framework of digital education leadership capacities, which considers the needs and interests of individuals and the organisation; the cultivation of emotional and social intelligence to work with changing power dynamics; and changing working and learning conditions.

Ultimately, ethical digital education leadership, while affecting the entire HE community, still largely depends on the engagement and competencies of those who hold formal leadership positions, who are expected to strategise, lead by example, and develop digital literacies – their own, and of students and staff, thus providing "a collective sense of direction and energy" (Marshall, 2018). As argued by McGill (2023), it is the responsibility of senior leaders to create and implement digital strategies, with an engagement across all roles and departments.

Amid diverse approaches to leadership and varying levels of maturity, what does ethical digital education leadership look like? While the literature on digital transformation and digital HE leadership is still emerging, discussions on ethical digital education leadership are even more limited. Ethical leadership is rooted in values of virtue and the common good (Dion, 2012). Similarly, yet in a more specific discussion of ethical digital leadership, Abbu et al. (2022) define ethical digital leadership as mature digital education leadership with humans in the centre, encompassing three characteristics: role-modelling, integrity, and altruism.

Ethical leadership is rooted in values of virtue and the common good...

Role-modelling

Most authors agree on the importance of leading by example, or the ability to "walk the walk", as a vital characteristic for digital HE leaders. While Brown et al. (2016) suggest that HE leaders do not need to be digitally proficient, their main function is to see how emerging digital tools and structural changes impact their universities.

Mature digital education leadership by extension involves in-depth understanding of the potential and risks of digital technologies.

Integrity

In digital education leadership, integrity implies fostering trustworthiness in the use of technology. This requires adopting a critical approach to understanding digital transformation, with particular emphasis on uncovering and tackling social injustices. More specifically, integrity also involves critical digital ethics, particularly in the use of AI (Abbu et al., 2022; Royal Society, 2024; Zvereva, 2023) and the safeguarding of personal and business data (Bowen, 2021).

Altruism

Prioritising a human-centeredness of digital education leadership is defended widely in the literature (Brown et al., 2016; Carvalho et al., 2022; Jameson et al., 2022; Marshall, 2018; Watermeyer et al., 2022). Adopting altruism, with a human-centred approach, means to acknowledge the complexities of HE and understand universities as not only as knowledge delivery services, but as living experiences (Watermeyer et al., 2023; Žmavc & Bezlaj, 2024).

A reformist approach to ethical digital leadership that encompasses these three core leadership characteristics (role-modelling, integrity, and altruism) is the most suitable in the context of current structural change. This approach integrates the critical examination of digital practices with a commitment to inclusivity and systemic improvement, accounting for existing needs in the HE sector. Similarly, whereas different leadership styles have valuable characteristics for various contexts, a distributed leadership style allows different actors to address potential challenges and solutions enabled by digital tools.

Part 2. Challenges and opportunities for digital leadership: A mission- oriented approach

The emergence of digital technologies has the potential to irreversibly change HE. Notably, digitalisation has impacted core organisational functions while bringing new organisations into its operational ambit, along with a need for new regulations (Antonopoulou et al., 2021b; Anwar & Saraih, 2024; Carvalho et al., 2022). Digitalisation offers both challenges and opportunities for leadership, requiring leaders to balance baked-in traditions with innovations that potentially supplant them. In this section, we examine key operational dynamics, challenges, and opportunities, offering leadership strategies to address economic pressures and leverage digital transformation for sustainable progress. Additionally, we discuss how HE leaders can further support digital transformation while accounting for the heterogeneities within the HE system and its structures, also exploring how leaders can establish a mission-oriented approach that benefits from engagement with the EdTech sector and novel technologies while developing in-house digital infrastructures and ensuring a participatory and ethical space.

Leadership is pivotal in fostering digital maturity and organisational agility, ensuring that institutions remain responsive to change while upholding core academic values. Effective leadership requires a holistic approach to digital transformation, in particular one that integrates technological advancements with broader institutional goals, such as maintaining teaching quality, ensuring data privacy, and addressing ethical concerns (Marshall, 2018; Gudergan et al., 2021). Consequently, leaders must foster digital maturity and organisational agility in order to manage continuous change, maintain traditional university values, and balance competing missions (St. Clair, 2020; Gudergan et al., 2021; Tanniru & Peral, 2021; Watermeyer et al., 2022).

Key Challenges in Digital Transformation

The higher education sector is known for its rigid structures, intransigence to, or else slow conversion through cultural and organisational changes, and wide institutional inequalities. Its current business model demands that its leaders ensure efficiency and a responsible use of financial resources while maintaining institutional prestige, rankings, and quality in teaching and research activities. Digital transformation, then, poses a further challenge to HE leadership of ensuring that institutions can effectively promote and adopt new digital technologies while accounting for other existing sectorial and social pressures.

Some of the challenges posed by digital transformation are:

Maintaining and Monitoring Teaching and Learning Quality

Digital transformation of teaching demands robust quality management in order to monitor, assess, and maintain high teaching standards (Jameson et al., 2022; Rocha et al., 2022; Watermeyer et al., 2022), including provision of academic integrity in technology use in relation to assessment and plagiarism (Gudergan et al., 2021).

Safeguarding Data Privacy and Ethics

There are emerging ethical concerns in relation to data management – that is, data privacy and accountability (Bowen, 2021; Zain, 2021) – which adds complexity to institutional risk management and requires robust contingency plans (St. Clair, 2020; Marshall, 2018; Paul, 2024).

Dealing with Financial Pressures

Digital transformation also raises concerns with financial constraints due to to the fact that it constantly needs to be updated and replaced (Antonopoulou et al., 2021b; Anwar & Saraih, 2024; Paul, 2024; Tanniru & Peral, 2021; Zain, 2021), as well as the fact that training and support must be provided to staff and students (St. Clair, 2020; Watermeyer et al., 2022), albeit against a backdrop of limited financial support (Eddy & Kirby, 2020; Ratajczak, 2022). As will be discussed, the financial challenges posed by digital transformation can affect HE institutions differently – in particular, the amount of university resources available for staff training, hardware and software purchase, and investments in IT – and can exacerbate existing institutional inequalities in the HE system, affecting how such institutions can perform in the future. As is the case of smaller universities in Ireland, the financial pressures emerging from the digital transformation can put these HEIs in a vulnerable position.

Additional financial pressures may emerge from students – who expect personalised and flexible learning facilitated by digital technology, similar to their experiences in commercial marketplaces – thus necessitating higher institutional investments in EdTech (Paul, 2024; Tanniru & Peral, 2021), as well as from staff, who expect support in continuous professional development to deal with new IT systems and software (Antonopoulou et al., 2021a; Zain, 2021). Further, financial challenges currently faced by HE in the light of reduced public investments and rising pressures to perform and deliver add considerable pressure, which means hard investment decisions for leaders.

Managing External Influences (from Industry)

Digital transformation enhanced the connection between HE and industry, which both brings advantages and prompts considerations over ethical operations. For instance, an increasing number of HEIs outsource the responsibility for robust and reliable communication to private companies, raising concerns over data integrity (Telent, 2024). There are also examples of technological corporations changing the length of studies on a particular course from three years to eighteen months, and orchestrating modifications to curricula in accordance with the needs of the industry (Nemorin et al., 2023; Safiullin & Akhmetshin, 2019; Saini et al., 2024). Nonetheless, questions on the influence of commercial EdTech corporations over public education emerge. Firms such as Samsung and IBM have wielded increased influence over scientific research in HEIs due to extensive collaborations (Royal Society, 2024; Williamson & Komljenovic, 2023), resulting in a shift from fundamental to more applied research (Royal Society, 2024). HE is increasingly perceived as a source of significant profit (Nemorin et al., 2023): for instance, during the Covid-19 pandemic the UK's Department of Education provided £96 million worth of laptops to students as part of a digital support system. In other countries, non-EdTech firms have also been involved in educational processes – for example, WhatsApp being used in Argentina as a means of communication between students and teaching staff (Chan, 2024). The commercialisation of education, amplified during events like the Covid-19 pandemic, underscores the profit potential of EdTech investments, sometimes at the expense of educational equity. Balancing these financial demands with the ethical and academic mission of HE remains a critical challenge for institutional leaders. As we suggest in this report, however, there are potential opportunities for HEIs to develop in-house technologies or create guidelines to deal with digital expansion while productively collaborating with global EdTech firms without sacrificing their autonomy.

The Potential for Technological Determinism and Solutionism

Another existing challenge relates to technological determinism and the misconceptions of the extent to which technology can indeed promote substantial educational improvements. The EdTech sector has long been presenting a view of technology as a solution to HE's manifold problems, necessitating universities to change in order to adapt to modern technology (Fraser-Krauss, 2022; Selwyn, 2016). Yet, as is argued by Marshall (2018), such framing of technology is "unrealistic and uninformed" (p. 7) and compromises human values. Furthermore, as Norman (1998) persuasively argues, a technology's success is in its invisibility, that is, that it leaves visible only the value it provides to humans, and in particular to participants of HE.

EdTech companies also tend to proclaim the death of the university, positioning technology as a liberator of knowledge and a pathway to cutting-edge experiential learning (Watermeyer et al., 2023). However, evidence of the effectiveness of technology for learning and teaching purposes is patchy, which is commonly attributed to the limitations of EdTech companies in acknowledging and appropriately responding to the complexities of universities as organisations (Watermeyer et al., 2023; Jameson et al., 2022; McGill, 2023). More importantly, a reductionist view of the role of universities as being limited to knowledge production neglects their broader value proposition that includes socio-cultural development and social capital accumulation. Such a values-assertion of HE is in tension with the technologically deterministic vision habitually propagated by EdTech vendors. Consequently, it is imperative that institutional decision-makers perform a critically informed appraisal of the cost-benefit of digital tools to HE environments; however, though this is regrettably often absent, with HE leadership instead being easily swayed by the solutions offered by tech-vendors, sometimes for problems that may not even exist.

Key Opportunities in Digital Transformation

Given the emerging challenges that digital transformation poses to HE leaders, new missions, visions, and actions are needed to address potential adversities and accommodate conflicting needs that the digital and HE contexts may have. These opportunities can span from shaping and guiding sectoral regulations in order to adapt the "rules of the game" towards a more inclusive and productive use of technology; improving institutional reputation, where smaller or less prestigious universities can add to the digital transformation debate with their expertise – a case of "levelling up"; and the possibility of creating new benchmarks for a more comprehensive assessment of HE institutions.

These opportunities are enumerated below.

Navigating New Regulatory Requirements

Emerging regulations around data protection laws, data security, intellectual property, and copyright require HEIs to be current and proactive (Bowen, 2021; St. Clair, 2020; Marshall, 2018; Paul, 2024; Mayes et al., 2015; Ratajczak, 2022; Rocha et al., 2022). In areas such as AI, where regulations are often lacking, universities must independently develop their own policies, which requires the collaboration of stakeholders, robust data governance frameworks, and risk management (Anwar & Saraih, 2024; Brown et al., 2016; St. Clair, 2020; Watermeyer et al., 2022). Compliance with regulations can impact funding and resource allocation decisions (Eddy & Kirby, 2020), raise conflict with principles

of institutional autonomy (Ehlers, 2020; Ratajczak, 2022), and constrain innovation (Marshall, 2018; McGill, 2023; Paul, 2024), and for HEIs operating in multiple countries, there is also a need to navigate a variety of regulations while also maintain cohesive digital strategy (Rocha et al., 2022).

Improving Institutional Reputation

University rankings present another dual-edged opportunity. The focus on digitalisation to boost rankings represents a challenge for the HEI to balance strategic priorities and core missions with the metrics that influence rankings and prestige (Paul, 2024; Ratajczak, 2022). However, the pursuit of metrics-driven improvements risks mission drift, as institutions may prioritise rankings over broader goals (Carvalho et al., 2022). Some HEIs are risk averse in the interest of avoiding negative impacts on rankings, which can in turn stifle innovation (Marshall, 2018; Paul, 2024). Furthermore, an emphasis on digital technology and rankings may create pressure to adopt a certain type of technology and produce a certain type of research, potentially at the expense of academic autonomy (St. Clair, 2020; Marshall, 2018) and authenticity (Watermeyer et al. 2024).

Setting up New Benchmarks

Digital tools can have a positive effect on rankings where purposed to enhance the quality and delivery of education and research capabilities (Eddy & Kirby, 2020; Paul, 2024; Ratajczak, 2022) and increase interdisciplinary research opportunities, which can be highly weighted in ranking systems (Marshall, 2018). Improved data management can enhance the quality of decision-making, teaching and learning based on student data, and help track performance, improving an HEI's reputation (Royal Society, 2024; Tanniru & Peral, 2021; Zain, 2021). Therefore, the challenge is to find a balance between fostering innovation and managing associated risks, as well as make sure that the digital transformation of education does not compromise quality of teaching but meets quality standards (Brown et al., 2016; Brown et al., 2020; Eddy & Kirby, 2020). Globally, benchmarking against international peers offers insights into more effective digital strategies, thus ensuring competitiveness in the wider HE landscape (Paul, 2024). Though we caution against an over-privileging of rankings in steering universities' strategic development, where the conclusions they draw of institutional performance may be overly reductive and only partially reflective, and moreover derived despite methodological inconsistencies.

Steering Opportunities in HE Digital Leadership: A Mission-Oriented Approach for Managing Resources

Digital transformation in HEIs faces persistent challenges in resource management. At the centre of discussions related to leadership and guiding structural change in HEIs lies the issue of managing scarce resources. Instead of focusing on administrative efficiencies and vendor-led solutions that claim EdTech to be "innovation saviours" for smaller HEIs, we propose mission-oriented policies and actions as a way forward to address the complex challenges of digital leadership and resource allocation in HE.

Given that digital leadership opens up new opportunities for leaders and stakeholders to shape future institutional and sectoral priorities, a mission-oriented approach (Mazzucato, 2018) prioritises societal value creation and aligns investments with clear goals to maximise impact and build new benchmarks, particularly in fast-changing contexts.

Revisiting Technology Procurement and EdTech Partnerships

Digital transformation in universities has introduced numerous external actors, with EdTech companies playing a dominant role. Currently, universities' digital ecosystems are dominated by big EdTech infrastructure and EdTech incumbents (Komljenovic et al., 2024). Hollands (2017), in a large-scale study of HE decision-making on technology acquisition, found that 93% of senior leaders relied on colleagues – both internal digitalisation leads and external peers from other HEIs – as primary sources of information. Business vendors represented 80% of cases, particularly by universities focused on technology, such as MIT, which often test products pre-implementation. The belief in the expertise of EdTech companies is seen in EU policy documents, where EdTech is represented as a panacea (Žmavc & Bezlaj, 2024).

Other sources of information for decision-makers are identified as news outlets (in 62% of cases). Only 9% of cases reference scholarly peer-reviewed journals. Studies also identify that most decision-makers perceive technological universities and business vendors to be experts in digital transformation (Komljenovic et al., 2024). Consequently, digital investments prioritise administrative improvements – such as marketing, recruitment, and infrastructure – over pedagogical innovations (Watermeyer et al., 2023; McGill, 2023), illustrating an important gap in how digital leadership can promote transformative educational change. By way of example, a UK Russell Group (leading research) university recently spent £11 million on upgrading its communication infrastructure in partnership with the EdTech firm Telent (Telent, 2024). Hollands' (2017) study also finds that investment in learning management systems is the top priority for HEIs (29% of cases), with

only 7% of cases investing in online/hybrid learning. These trends support the point made by Watermeyer, Shapiro, and Chen (2023) that students and teachers are rarely the focus of digital transformation strategies.

The prevalence of isomorphic behaviour within the HE sector, and concomitantly a trend among decision-makers to rely on the experiences of other HEIs – can lead to tech products being applied in different institutional settings, without prior analysis of their appropriateness. A one-size-fits-all approach perpetuates the power of big EdTech corporations, making it more and more challenging for EdTech start-ups to enter universities (Hollands, 2017). This leaves little room for creativity and innovation in the digitalisation of HE.

Indeed, the small percentage of decision-makers relying on scientific research raises concerns about the criticality of technology adoption, which further impresses a need for ethical digital education leadership and for a greater capacity among HE decision-makers for scrutinising offers from commercial EdTech, and recognising its impacts (often unseen) on sociocultural and political contexts (Žmavc & Bezlaj, 2024). As Macgilchrist (2021) argues, amidst overwhelming instability in all areas of life, including HE, EdTech has in many cases perpetuated social injustices where it "codes racialised, gendered, classed, religious, heteronormative, able-bodies norms into everyday educational practices", a concern shared by many (cf. Jameson et al., 2024; McGill, 2023; Watermeyer et al., 2023).

The widespread faith in EdTech coupled with senior leaders' digital immaturity and the lack of communication between different levels of stakeholders – and significant ambivalence in respect of internal institutional expertise as relates, for instance, to learning technologists employed by universities (cf. Watermeyer et al., 2021) – leads to an inverted approach to digitalisation, one that begins with a solution, such as a new technological product, that subsequently pursues a problem to solve (e.g. poor student performance) (cf. Komljenovic et al., 2024). Additionally, the role of EdTech in shaping university curricula prioritises a narrow set of civic skills, normally related to job-market readiness, over broader university values like public engagement and academic autonomy (Safiullin & Akhmetshin 2019).

Thus, a mission-oriented strategy would shift procurement priorities towards achieving equitable educational outcomes, such as increasing access to high-quality hybrid learning and fostering in-house innovations. By embedding critical evaluations into procurement processes, HEIs can mitigate dependency on large corporations, empower smaller EdTech start-ups, and address systemic inequalities encoded in existing technologies.

Internal Development and Talent Acquisition

Staff training and digital talent acquisition present key challenges for HEIs. While sustained training and professional development opportunities for staff are crucial to their acquisition of digital competencies and thus digital maturity across institutions, these are expensive investments that may also meet pushback (Bowen, 2021; Goulart et al., 2022; Montero Guerra et al., 2023; Rodríguez-Abitia & Bribiesca-Correa, 2021). Context appropriate staff training involves a thorough assessment of current skill thresholds and potential future skills needs, which is not always carried out effectively due to digital immaturity across institutional settings (Eddy and Kirby, 2020; Goulart, Liboni & Cezarino, 2022; Ratajczak, 2022).

With respect to digital talent acquisition and staff retention, leaders in HE face competition from the private sector, which usually provides more attractive salaries and benefits (Bowen, 2021; Eddy & Kirby, 2020; Ratajczak, 2022; Royal Society, 2024). Consequently, HEIs are challenged to develop retention strategies – that is, opportunities for career advancement, recognition and reward of achievements, and, as importantly, fostering an inclusive and supportive work environment (Chan et al., 2024; Eddy and Kirby, 2020; Ratajczak, 2022). Digital transformation also requires a diverse range of skills, such as technical expertise, project management, and change management, which requires HEIs to revisit their recruitment processes (Rodríguez-Abitia & Bribiesca-Correa, 2021).

Digital tools, however, can enhance personnel management by supporting data-driven decision-making in recruitment, training, and performance assessment (Montero Guerra et al., 2023). Forming partnerships with industry and other HEIs can also be beneficial in broadening access to resources and expertise and building a strong employment brand which highlights an institutional commitment to professional growth and therefore helps attract and retain talent. (St. Clair, 2020; Goulart et al., 2022).

Mission-oriented leadership emphasises career advancement opportunities, inclusivity, and interdisciplinary collaboration as core retention strategies. Partnerships with industry and other HEIs can provide access to resources and expertise, while leveraging digital tools for data-driven recruitment and staff training, which may ensure that digital transformation aligns with broader institutional values and fosters sustainable growth while avoiding the potential challenges of dependency on commercial EdTech products.

Institutional Priorities for Digital Investment

Since 2010, EdTech expenditure and investment has been increasing, surging in particular during the Covid-19 pandemic (Williamson et al., 2021). Venture capital investment in EdTech grew from $500 million in 2010 to $7 billion by 2019. This increased further

to $16 billion in 2020 and reached $20 billion in 2021 (Moş teanu, 2021). By 2025, the global EdTech market is projected to hit $350 billion. As specific to AI, the Royal Society (2024) reports that 33% of EU investment in AI comes from the public sector, with UK Research and Innovation alone allocating £55 million to responsible AI development in 2023.

A study by Bromley and Turner (2024) on UK universities' digital investment highlights stark disparities between seventy-six institutions. In 2022–3, a total of £7.2 million was spent on digital activities, where over £2 million came from just two Russell Group universities in the top ten rankings. Meanwhile, thirty-three universities (the majority being post-1992) spent under £50,000 each, with average spending being £94,960. Investment priorities varied by institutional size, strategy, and region; notably, larger universities directed funds towards teaching and research, while smaller institutions focused on marketing to remain competitive. Yet, despite growing investment, HE is still reported to lag in investment and expenditure in digital tech (McGill, 2023; Watermeyer et al., 2023).

Skelton (2023) provides guidelines for effective investment strategies, which will vary depending on institutional types and priorities, yet can still serve as a useful framework for strategic investment and expenditure. Leaders, decision-makers, and strategy developers should take into consideration the following:

- Investment for and through digital transformation implies investment in people and skills, not only technology
- HEIs' digital investment should aim to reduce digital poverty
- The state of the university's IT infrastructure – to cover the fundamental need of the institution
- Accounting and procurement rules – universities should revisit how they procure technology in order to make sure large tenders do not prohibit start-ups from entering the market
- Analyse current financial spends on IT and benchmark against the sector
- Establish clear success criteria for digital investment

As an overarching framework for effective and ethical investment and expenditure, Mosteanu (2021) argues for the investment in digital campus which emphasises social interactions, participatory pedagogy, the presence of supportive teachers, and the use of technology to support learning. Then, a mission-oriented leadership demands ethical considerations of the political implications of EdTech, ensuring decisions support participatory pedagogy, social interaction, and public accountability.

Part 3. Social and Cultural Aspects for Ethical Leadership in Digital Transformation

Culture Change and Staff Resistance

The evolution of HEIs into digital universities involves strategic organisational changes, which can provoke staff resistance. One of the main challenges for ethical and effective leadership in effecting digital transformation is general resistance to change and adherence to traditional structures (Bryman, 2007; Garrison & Vaughan, 2013; McGill, 2023; Watermeyer et al., 2023), especially in contexts where staff members value the core principles of universities and view digital transformation as a threat. Digital transformation entails new roles and functions for faculty and staff, which can be challenging for those with established practices and routines (Akour & Alenezi, 2022; Behneman, 2024; Rof et al., 2020); while collaborative, multidisciplinary approaches conflict with traditional institutional cultures and structures that favour siloed departments and individual achievement (Gkrimpizi et al., 2023). Bureaucratic cultures further hinder agility in implementing changes within HEIs (Jameson et al., 2022; Watermeyer et al., 2023).

More specifically, the literature identifies several barriers to embracing digital transformation by staff. First, as revealed in the analysis of EU policy documents by Žmavc and Bezlaj (2024), teachers are usually positioned as "underdeveloped" and lacking digital competencies, with those portrayed as "good" teachers typically being those who use educational technology uncritically. EdTech companies fuel polarisation in this area, as they often tend to promote an ideal view of teachers who embrace technology without criticising it, which leads to resistance from most educators (Macgilchrist, 2021). Second, digital transformation leads to obsolescence of existing skills, which may result in staff feeling their expertise is undervalued (Zain, 2021). Staff may fear losing control over teaching methods and content (García-Peñalvo, 2021; Miller, 2019) and are increasingly concerned about job security due to increased automation (Akour & Alenezi, 2022; Fernández et al., 2023; Benavides et al., 2020).

literature identifies several barriers to embracing digital transformation by staff.

At an organisational level, staff resistance is fuelled by a dearth of both strategic planning and clarity as to the goals of digital transformation (Gkrimpizi et al., 2023; Rof et al., 2020); poor articulation of the benefits of digital technology (Behneman, 2024); insufficient support and training for improved digital literacy (Miller, 2019); and inadequate IT support and time and resource management, which can lead to escalated workload (Akour & Alenezi, 2022; Anwar et al., 2023; Gkrimpizi et al., 2023), as well as technological barriers, such as slow systems, insufficient infrastructure, and lack of user-friendly tools (Mahbob et al., 2024; Miller, 2019). Furthermore, increasing security and privacy concerns are rarely addressed (Zain, 2021).

Fernández et al. (2023) have found that only 23% of universities globally, mostly from the Global North, have defined digital transformation strategies, while 56% rely on isolated initiatives. Thus, facilitating a smoother transition and fostering a culture of innovation in an ethical way requires strategic planning and visionary leadership – one which prioritises stakeholder engagement and mobilises diverse perspectives in shaping a common vision (Akour & Alenezi, 2022; Benavides et al., 2020; Fernández et al., 2023; García-Peñalvo, 2021). Transparency of goals and outcomes (Rof et al., 2020), coupled with evaluation and feedback mechanisms, will help in building trust and confidence in the legitimacy of digitalisation processes (Gkrimpizi et al., 2023; Miller, 2019). There exist opportunities for improved governance and quality assurance, addressing causes of resistance to culture change (Mahbob et al., 2024), streamlining processes, and exploiting data-driven decision-making (Benavides et al., 2020) in order to reduce workload and maximise labour value-extraction (Rof et al., 2020), while forging ethical guidelines in the use of technology that ensure privacy and security are not compromised (Behneman, 2024; Fernández et al., 2023; García-Peñalvo, 2021; Miller, 2019).

For effective and ethical digital transformation, HEIs are encouraged to take steps towards incremental adaption of digital initiatives (Behneman, 2024); allocating resources for improved infrastructure (Akour and Alenezi, 2022; Gkrimpizi et al., 2023); promoting continuous professional development alongside a community of practice, support, and interdepartmental collaboration (especially involving IT departments); and incentives for those who showcase effort and success (Benavides et al., 2020; Fernández et al., 2023; García-Peñalvo, 2021; Miller, 2019; Rof et al., 2020).

Ethical leadership of and through digital transformation can also provide an opportunity to address EDI issues along with health and well-being challenges (Akour & Alenezi, 2022; Behneman, 2024), as well as offering opportunities for leaders' self-development by developing their own digital literacies, skills to lead change and to manage conflicts (Mahbob et al., 2024). A prioritisation of ethical leadership may result in enhanced institutional reputation and ability to attract talent and new partners (García-Peñalvo, 2021).

Leadership in the Context of Work Reorganisation

The pandemic accelerated shifts in the nature of work, with university staff now expected to teach and operate in diverse settings (Holtan, 2024; Watermeyer et al., 2023, 2024b). This change poses significant challenges for ethical leadership in HE, particularly concerning precarious employment. The economic disruptions of the pandemic have further intensified job insecurity, particularly among lower-wage workers, early-career researchers, and older academics (Moreira, 2021; Saez, 2023; Spina et al., 2022; Solomon & Du Plessis, 2023). Burton and Bowman (2022) and Singh, Nair, and Watson (2021) have addressed the normalisation of precarious conditions through practices and policies that prioritise staff productivity over well-being. In addition, precarity issues intersect with race, gender, class, and disability, which creates compounded effects (Burton & Bowman, 2022; Solomon & Du Plessis, 2023). Precarity affects the social and emotional stability of staff and coterminously the quality of their work – that is, there are fewer research opportunities as precarious employment does not provide sufficient resources to pursue independent research (Spina et al., 2022). Moreover, increased reliance on digital technology and the discourse of automation in its deployment leads to a lack of recognition of human labour and particularly the contributions of more marginalised groups, all justified by cost-cutting measures (Royal Society, 2024).

Hybrid working models present additional challenges, including unclear policies, difficulties managing hourly staff, excessive workloads, burnout, and staff attrition (Chan et al., 2024; Gutman et al., 2024; Saez, 2023; Watermeyer et al., 2024b). However, hybrid and blended work arrangements offer flexibility and individualised schedules, which many staff find appealing (Holtan, 2024). Such work modes have the potential to support marginalised populations – e.g. staff and students with disabilities, those with childcare needs, and refugees and migrants (Moreira & Ferreira, 2021; Saez, 2023) – and can attract international talent (Chan et al., 2024). Additionally, hybrid arrangements have the potential to strengthen digital competencies and aid staff retention, while AI tools may help reduce workloads (Nemorin et al., 2023; Royal Society, 2024).

For ethical and effective leadership, Burton and Bowman (2022), Pervukhina and Vidrevich (2021) and Spina et al. (2022) advocate for university leadership that challenges a neoliberal status quo and seeks remediation of precarity issues by embracing cultural and social variables, logistics, and leadership approaches that are responsive to institutional idiosyncrasies. At root, HE leaders are challenged to develop a vision for the future of work that incorporates diverse staff experiences and needs (Chan et al., 2024; Holtan, 2024; see also Watermeyer et al., 2022) and addresses intersectional

dimensions of precarity with systemic changes (Solomon & Du Plessis, 2023; Spina et al., 2022). Stable employment opportunities for early-career scholars, inclusive policies for a multi-generational workforce, and empowering staff to determine their work modes – whether in-person, hybrid, or remote – are essential leadership steps in a time of digital transformation (Burton & Bowman, 2022; Saez, 2023).

HE leaders may also be encouraged to reassess and rethink employment practices in order to reduce reliance on precarious employment and institute policies in order to protect faculty and staff (Burton & Bowman, 2022; Gutman et al., 2024; Pervukhina & Vidrevich, 2021; Singh et al., 2021; Solomon & Du Plessis, 2023), deploying technology, for instance, for fatigue relief and staff support (Moreira & Ferreira, 2021) and protecting remote and hybrid workers from excessive workload (Chan et al., 2024; Gutman et al., 2024).

Mental Health and Well-being

The HE sector is reportedly gripped by a mental health crisis (Farrer et al., 2013; Lattie et al., 2019), which has been exacerbated by the experience of the global pandemic (Callard et al., 2022; Coker et al., 2023; Farrer et al., 2013; Khawaja et al., 2023; Riboldi et al., 2024). While the relationship between digitalisation and mental health is underexplored, digitalisation has emerged as one of the contributing factors to HE's mental health crisis.

Social media and smartphone use are reported to negatively impact well-being (Lattie et al., 2019); remote and hybrid work have blurred lines between work and home, leading to disruptions to the work-life balance, as well as increased isolation (Gutman et al., 2024; Khawaja et al., 2023; Montagni et al., 2020; Potter et al., 2022); while digitalisation is also attributed to the work intensification, suffered especially by marginalised groups (Wray & Kinman, 2021). Digitally disadvantaged staff and students are most susceptible, while also having less access to mental health services (Jayman et al., 2022; World Health Organization, 2022).

Digitally disadvantaged staff and students are most susceptible...

However, digitalisation is not without positive effect to health and well-being. During the experience of societal lockdown and social restrictions, technology was credited with enabling continued engagement and access to university services, and even enhanced flexibility and autonomy for staff and students (Lattie et al., 2019; Oztosun et al., 2023; Potter et al., 2022), especially for those with disabilities and/or caring responsibilities (Russell Group Universities, 2022).

HEIs have also developed digital mental health interventions – for instance, virtually adapted psychological interventions that have proved to be successful among students (Harrer et al., 2019; Riboldi et al., 2024; Shroff et al., 2023). These interventions have mitigated barriers to mental health support and improved student achievement and retention, although concerns of privacy persist (Cross & Prescott, 2024; World Health Organization, 2022), as do stigma surrounding requesting support (Wray & Kinman, 2021). Online screening programmes for mental health issues have also served to flag potential "at-risk" students (Oztosun et al., 2023), as well as served as a first source of information and raising awareness on mental health relief (Coker et al., 2023; Riboldi et al., 2024).

The complexity of causes and effects of the mental health crisis suggests that mental health is not a medical matter, but rather a social and cultural one. The World Health Organization (2022) suggests that HEIs must institutionalise mental health as part of their strategy, as well as recognise that marginalised and digitally disadvantaged staff and students are most affected (Callard et al., 2022; Khawaja et al., 2023). Strategies should include:

- Supporting research into the intersection of mental health and digital transformation (Callard et al., 2022)
- Promoting digital literacy to help staff and students manage resources and work–life balance (Coker et al., 2023; Potter et al., 2022)
- Implementing mechanisms for workload management and providing periodic check-ins (Jayman et al., 2022; Wray & Kinman, 2021)
- Developing culturally and contextually appropriate mental health interventions rooted in lived experiences and evaluated for effectiveness (Jayman et al., 2022)
- Creating infrastructure for ongoing support for students and staff, emphasising organisational-level solutions over individual-focused training (Potter et al., 2022; Wray & Kinman, 2021)

An Equality, Diversity and Inclusion (EDI) Agenda

Research on the impact of digital transformation on EDI agendas in HE is nascent, with a focus on EDI issues being at best tangential, even though it is acknowledged that sustainable development of the global community cannot be achieved without digital justice (Gottschalk & Weise, 2023; Perera et al., 2023). Strikingly, even recent comprehensive works on equality and leadership – e.g. Marques and Dhiman (2022) and McGregor and Navin (2022) – fail to mention digital transformation or educational technology.

Most authors emphasise that Covid-19 has revealed fundamental digital inequalities and a digital divide (Anwar et al., 2023; Gallardo and Ruiz-Mallén, 2023; Leal et al., 2024; Macgilchrist, 2021; Perera et al., 2023; Roscoe et al., 2022; Wheele et al., 2024). Inequalities manifest in uneven access to technology and basic infrastructure across different geo-demographic variables – such as location, income, age, race, gender – which impacts academic performance of students and, as a consequence, their employability (Anwar et al., 2023; Laufer et al., 2021; Perera et al., 2023; Royal Society, 2024; Viberg et al., 2024). Students from disadvantaged social and economic backgrounds or of immigrant background are particularly affected (Gottschalk & Weise, 2023), with high-income communities acquiring the most benefits of technology, including offline benefits (Perera et al., 2023).

Many authors also emphasise that educational technology, in particular AI, reproduces societal inequalities and codes pre-existing biases – racial, sexual orientation, gender, disability – norms into everyday educational practices (Macgilchrist, 2021; Nemorin et al., 2023; Roscoe et al., 2022; Royal Society, 2024; Williamson et al., 2021; Viberg et al., 2024). Growing use of AI is attributed to the perpetuation of epistemic injustices, with Western epistemologies being imposed on the Global South (Viberg et al., 2024) and technological solutionism that marginalises underrepresented groups (Williamson & Komljenovic, 2023).

Despite these challenges, digital transformation has the potential to advance EDI agendas. AI can support curriculum diversification and decolonisation by identifying diverse topics outwith the traditional curriculum (Gottschalk & Weise, 2023). Nonetheless, this capacity of AI and technology is often discussed more than acted on (Macgilchrist, 2021; Viberg et al., 2024).

There is also considerable variation in the technology spend – and how such spend is rationalised – according to institutional context, or more specifically institutional wealth. Typically, elite universities are able to invest significantly more money in digitalisation of education, whereas smaller universities are forced to invest in the technology for advertising and marketing (Saini et al., 2024).

While policy documents (Gottschalk & Weise, 2023; Royal Society, 2024) and EdTech proponents claim that technology and AI can broaden student participation and improve access to higher education provision, there is little sustained research to support such claims (Laufer et al., 2021; Nemorin et al., 2023). However, as has been argued by Gottschalk and Weise (2023), Perera et al. (2023), and Viberg et al. (2024), AI can be instrumental to enhancing EDI efforts in educational provision due to its ability to provide analytics on the progression and educational goals of each student, as well as identify the specific needs of individual students and members of staff and therefore

support their well-being and mental health. Roscoe et al. (2022) propose AI could serve as a means by which to identify systemic barriers to access.

Universities are challenged to develop long-term, inclusive digital transformation strategies to address existing digital inequities effectively (Anwar et al., 2023; Royal Society, 2024). These strategies should include:

- Access to infrastructure, ensuring all staff and students have access to basic technology and reliable digital infrastructure (Saini et al., 2024)
- Providing ongoing training and technological support, especially for those marginalised by digital initiatives (Jameson et al., 2022; Laufer et al., 2021)
- Prioritising the accessibility and usability of AI tools to support diverse needs (Jameson et al., 2022)
- Using AI to identify systemic barriers and designing interventions to dismantle them (Roscoe et al., 2022)

Environmental Impacts

Technology, including educational technology, is a critical driver for meeting the objectives of the Paris Agreement (Abad-Segura et al., 2020; Baena-Morales et al. 2020; Hajj-Hassan et al., 2024; Luna, 2023). However, the environmental impact of digital transformation is inadequately addressed, despite its significant relevance to ethical digital leadership.

While technology has a potential to mitigate environmental harm, its life cycle, from manufacturing and distribution to usage and disposal, incurs significant environmental costs. As Samuel, Lucivero, and Somavilla (2022) elucidate, educational technology and AI cannot be viewed as benign and neutral entities: HEIs must recognise that they are a reflection of capitalism and an instrument of power. Using EdTech with good intentions does not automatically reduce its harm – it must be deployed critically (Gallardo & Ruiz-Mallén, 2023). Processes involved in producing and utilising educational technology and AI are energy intensive and heavily reliant on fossil fuels, and they contribute to carbon emissions and biodiversity loss. Even greener production processes are unable to offset the environmental impacts (Baena-Morales et al., 2020; Bieser & Hilty, 2018; Leal et al., 2024; Luna, 2023; Samuel et al., 2022).

The environmental footprint of AI is particularly concerning, with data collection, analysis, and storage logistics consuming massive amounts of energy, with its estimated greenhouse gas emissions, for instance, found to be commensurate with what is produced by the US commercial aviation sector (Royal Society, 2024). Additionally,

underwater cables essential for the functioning of data centres cause detrimental impact on oceans, while also rarely being accounted for in the evaluation of environmental impact of technology production and usage (Luna, 2023). HE decision-makers must give greater critical consideration to the embeddedness of technology deployment in HEIs, given their milieu of climate crisis and as part of their ethical responsibility in providing students with liveable futures (Gallardo & Ruiz-Mallén, 2023).

To engage in ethical leadership that is also environmentally aware, HE leaders must acknowledge the inevitable environmental impact of technology adoption. They should begin by reflecting whether the technology will actually bring significant benefits, or whether it is innovation for the sake of innovation (Gallardo & Ruiz-Mallén, 2023).

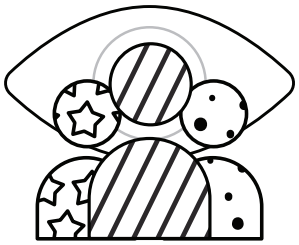
Thus, when adopting technology in environmentally challenging times, HEIs and their leaders should:

1. Be critical in their choice, analysing technology producers' environmental reports (also recognising that some data on environmental harm, e.g. the impact of underwater cables on water systems and biodiversity, is purposefully omitted) (Baena-Morales et al., 2020)
2. Use more sustainable technology with responsible sources, limit pollution and waste (Luna, 2023), and use technology to reduce environmental impact (e.g. Digital Clean Up, which helps identify and remove "dark" data which is unknown or unused)
3. Harness AI to enhance energy efficiency by evaluating and making suggestions, as well as contributing to climate science by improving the accuracy of predictions and supporting disaster preparedness (Royal Society, 2024; Samuel et al., 2022). Digital technology can serve as a means to promote awareness of and engage students with the climate crisis (Hajj-Hassan et al., 2024) and to promote activism through digital tools (Gallardo & Ruiz-Mallén, 2023; Lowan-Trudeau, 2023). HEIs are a crucial stakeholder in sustainable digitisation, given the prominence of their role as a knowledge producers (Leal et al., 2024).

However, these solutions are technocentric and will only help improve energy sufficiency and reduce carbon emissions. HEIs are critical institutions in fostering ethical reflection on the societal implications of their technological choices, which includes questioning capitalist structures and colonial or exclusivist knowledge. By prioritising environmental responsibility and equity, HEI leaders are key in steering a more sustainable and inclusive future for their students and society more widely.

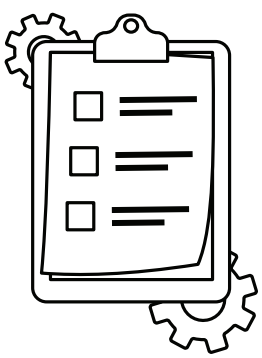
Recommendations for Building Ethical Digital Leadership

We conclude our review with a set of recommendations for HE policymakers, stakeholders, and university boards, offering suggestions that can guide future mission and vision (set A), as well as practical actions to ethically and sustainably lead the digital transition (set B).



A. Recommendations for Mission and Vision:

- Adopt distributed leadership: promote collaboration and inclusivity across all levels of HE to address challenges collectively, especially in digital transformation efforts
- Focus on key characteristics of ethical leadership: cultivate role-modelling, integrity, and altruism in leadership practices in order to prioritise human-centred and value-driven digital transformation
- Advance digital maturity: embed digital leadership into institutional strategies as defined by governing boards, progressing from minimal integration to a holistic, critical approach that explicitly addresses power dynamics and equity
- Promote a strategy for inclusive and sustainable transformation: once embedded, institutions and stakeholders should align digital initiatives with broader institutional goals to enhance inclusivity, reduce inequalities, and address sustainability concerns effectively
- Inclusive leadership: engage diverse community groups to shape transformation strategies that can support inclusive and diverse practices, both related to research and educational activities



B. Recommended Actions and Practices:

- Invest in capacity building for staff: focus on staff training for digital literacy, infrastructure upgrading, and fostering a supportive culture to enhance digital maturity across institutions, while clearly signalling that core work values and job stability will not be compromised
- Adopt ethical digital practices: establish robust data governance frameworks to address privacy, accountability, and ethical concerns related to EdTech partnerships

- Encourage inclusivity and equity: reduce digital poverty through targeted investments, ensuring equitable access to digital tools for all students and staff
- Active listening before strategic planning: survey and map staff concerns regarding digital transformation and address these concerns when developing and communicating strategies
- Mental health support: normalise and institutionalise mental health strategies, incorporating workload management, flexible policies, and digital tools to support wide staff well-being
- Invest in IT infrastructure in targeted areas, ensuring a more equitable access to technology and usability for all staff and students

Concluding Thoughts

For the Irish technological university sector specifically, an integrated approach to leadership for digital transformation and shared learning across all five of its institutions and also in conjunction with local further education providers and industry stakeholders/employers – a leadership ecosystem – is recommended as a pathway to establishing leadership maturity for HE digitalisation. Investing in distributed leadership and mobilising leadership (capacity building), at all levels and across all job functions within and across universities, will be key to ensuring democratically participative and inclusive, consultative, and ethical praxis as universities undergo digital transitioning and its effects on working practices, processes, and structures, including pedagogical practice. Those at the summit of institutional decision-making must be supported and guided by the collective intelligence and experience of their staff, students, and stakeholders; a model of heroic leadership is inadequate in the context of negotiating the myriad challenges thrown up by digital transformation. Relatedly, we would add that there is a collective responsibility for digital leadership upon all members of Ireland's technology universities, and that they must not assume this responsibility is solely the purview of those with formalised leadership roles. This is especially key in ensuring that EDI concerns are given full voice, that a diversity of opinion and perspective is "licensed", and the precarising dimensions of technology adoption are mitigated as fully as possible. Whole community digital literacy will also be vital to defend against profligacy in technology investment, (excessive) technological dependency and indiscriminate (and inverted) technology appropriation, and concerns related to the assetisation of higher education by corporate interests.

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