

International Association of Universities (IAU), founded in 1950, is the leading global association of higher education institutions and university associations. It convenes and connects 600 Members from around 130 countries to identify, reflect and act on common priorities.

IAU partners with UNESCO and other international, regional and national bodies active in higher education **and serves as the Global Voice of Higher Education.**

## UNIVERSITIES AND THE INTERPLAY OF HUMAN INTELLIGENCE AND GENERATIVE AI



# MESSAGE FROM THE SECRETARY-GENERAL



**Dear Members of the IAU,  
Dear Readers,**

Welcome to this new edition of *IAU Horizons*. We're thrilled to present an array of engaging activities and initiatives in all four priority areas of work of the Association, including leadership initiatives, Internationalization, higher education and research for sustainable development, and the digital transformation of higher education, cross cutting peer learning opportunities, and a wealth of other resources available to our Members.

In particular, we are pleased to draw your attention to the publication of the full *Report of the IAU 6<sup>th</sup> Global Survey on Internationalisation*. This flagship publication stems from a worldwide consultation, offering comprehensive insights into the current landscape of internationalization. Delving into its significance, benefits, governance models, challenges, and opportunities, the report explores internationalization across teaching, learning, research, and community engagement. For the first time, both the Report and its Executive Summary are available under a Creative Commons license, accessible online via the IAU website. We express our sincere gratitude to all our partners for their invaluable contributions, and extend our appreciation to every university for their diligent efforts in completing the survey questions. The Report is the result of a true collective endeavour and reflects the collaborative spirit and dedication of all involved. We invite collaboration on these critical issues; please reach out if you're interested in partnering with IAU.

Additionally, we're gearing up for the Second Global Survey on the State of Digital Transformation. Your valuable contributions will be instrumental in mapping out this evolving dimension. These surveys provide a unique opportunity to benchmark practices and developments within your institution, country, and region, informing policy and practice within universities worldwide.

Help us expand the higher education community under the IAU umbrella by inviting your partner institutions to join, thus enhancing our collective capacity to effect change.

In the second part of this magazine, please read the stimulating collection of papers exploring the opportunities and challenges posed by the integration of artificial intelligence in higher education and daily life. Authored by experts from around the globe, these 18 papers offer insights into various aspects, including the need for multilingual AI, its application in teaching and learning settings, and its potential impact on research and collaboration.

Last but not least, let me draw your attention to the opening of the website of the IAU International Conference 2024! Against the backdrop of global geopolitical shifts shaping higher education and society, the Conference invites much needed global discussions on the role of higher education in a rapidly changing world. Focused on the theme "University Values in a Changing World," the Conference explores the pivotal role of values in guiding decision-making, ethical conduct, and meaningful engagement within universities and with society at large.

This conference aligns with the core vision and mission of IAU, as articulated by country delegations to UNESCO already back in 1948, underscoring our commitment to bridging divides and fostering a world of peace, inclusion, and genuine development. We look forward to welcoming a large and diverse audience to Sophia University, in Japan, in November, for what promises to be a thought-provoking and enriching event.

Enjoy your magazine!

**Hilligje van't Land, PhD**  
IAU Secretary General



# IAU Horizons 29.1 – Contents

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# Highlights from the IAU 2023 INTERNATIONAL CONFERENCE

## HIGHER EDUCATION WITH IMPACT: THE IMPORTANCE OF INTERCULTURAL LEARNING AND DIALOGUE

The IAU 2023 International Conference, hosted by Qatar University in Doha, convened some 300 participants from 80 countries to discuss *"Higher Education with Impact: the Importance of Intercultural Learning and Dialogue"*.

More than 30 years ago, the UNESCO Director-General, Federico Mayor Zaragoza, addressed the IAU conference stating that *"universality and diversity are not to be construed as opposition, but rather a dialectic, which has as its synthesis interdependence"*. In the current context, this message is again very important. The enriching dialogues and insightful presentations throughout the conference reaffirmed the essential role of universities in nurturing intercultural learning and competence. This goes beyond mere academic responsibilities; it encompasses an environment that embraces diversity and cultivates global citizenship while instilling respect for the other. Although challenging to quantify, and thus often falling by the wayside in external assessments of universities, this commitment represents a crucial contribution to advancing human rights, democracy, the rule of law, and the pursuit of peacebuilding.

During the opening plenary session entitled **"The Intercultural Imperative in a De-globalizing World?"** speakers highlighted that universities are inherently intercultural in their mission and daily activities. This key characteristic and principle must remain inviolable, even in times of strife and heightened geopolitical tensions as universities have a key role to play in building intercultural competencies, nurturing mutual understanding, and in establishing a sense of interconnectedness. In a world that seems increasingly polarised and divided, marked by the erosion of social coherence and human freedoms, universities can leverage their influence and stem breakdowns in civic discourse. As stated by one of the speakers, it is important to move from simply understanding different cultures to recognizing the necessity of diverse perspectives. As stated by the representative of the Global Student Forum: *"Higher education is more than a path to a prosperous future; it is a journey of cultural discovery. Through the intercultural dialogue fostered in our universities, we are stepping into a future where our differences are our greatest strength."*

The importance of international collaboration and mutual understanding also came to the fore in the session **Opening Knowledge for Humanity in an Interconnected World**. The IAU policy statement on Digital Transformation recognizes

the principles of the UNESCO Open Science Recommendation. In pursuit of greater equity in academic publishing, a call was made for a transition towards diamond open-access as the persistent challenge of high Article Processing Charges (APCs), particularly in countries without Read-and-Publish agreements, remains a substantial barrier for researchers. The shifting landscape of journal ownership, from scientific societies or universities to commercial publishers, challenges and prompts reflections on academic autonomy in publishing. The imperative for inclusive international collaboration emerged strongly, emphasizing that "Open Science must address the concerns of the Global South to avoid replicating the shortcomings of traditional scientific practices." This necessitates meaningful dialogue between diverse knowledge systems and a reconsideration of research assessments and evaluations to align with the principles of open science. Open, fair, and equitable knowledge systems has the potential to benefit humanity collectively.

The session **Deliberate Interdependence: what do we give up – what do we gain?** focused on the interesting tension in today's higher education systems, i.e. that universities compete while also collaborate with each other. The speakers introduced new successful models of equitable collaboration that can help overcome some of these tensions. For instance, through multi-national and cross-regional clusters of excellence with equal stakes. The session showed that there is a need for a more comprehensive and shared approach to building human and institutional capacities and capabilities and to rationalize, synergize and share resources more radically and globally.

The concluding plenary session debated **the Impact of Geopolitics on the Future of International Cooperation**. In a world grappling with escalating geopolitical challenges, the session illustrated the pressing dilemmas higher education leaders face and their impact on universities and global collaboration. The ongoing conflict in the Middle East serves as a poignant example, highlighting the complexity and heterodoxy universities need to navigate. While universities embrace diverse perspectives, it was emphasized that *war* 'embodies' the ultimate divergence of opinions. This raises an important question about the role of universities and how leaders need to mitigate the extraordinary geopolitical pressures by their various stakeholders and constituents during times of conflict. Criticism has been levelled against universities for taking a public stance, others face criticism for lack of it. Universities are pressed by the need to uphold institutional



IAU EVENTS

integrity and credibility, executing their academic responsibilities while avoiding being ‘instrumentalized’ by the political agenda or other powerful forces within society. One speaker translated this dilemma into a discourse of academic responsibility: university leadership cannot not choose, i.e. that university leadership should take a public stance on a given issue, and give reasons for it, or choose not to go public on a given issue and, equally, state their reasons for such a decision clearly.

This session vividly demonstrated the mounting pressure on higher education leaders during times of global turmoil, characterized by a polarized world with no simple solutions. The ability of university leaders to take a stance further hinges on the contextual situation and the systems within which their institutions operate. It emerged that striking a delicate balance between upholding university values and preventing political interference has become increasingly challenging in many parts of the world.

These highlights offer just a glimpse of the crucial discussions that unfolded during the conference, covering a broad spectrum of topics, such as sustainable development, transformative and globally-engaged leadership, and internationalization. The conference served as a powerful testament to the International Association of Universities’ capacity to provide for a truly global platform, in which so many voices from around the world engaged in sharing their perspectives on the challenges and opportunities that the higher education sector is facing.

Since its inception by UNESCO in 1950, intercultural learning and dialogue has been embedded in the DNA of the Association. This commitment will continue to guide IAU’s endeavors in the years ahead. Heartfelt gratitude is extended to Qatar University for so graciously hosting the event. The conference reasserted the pivotal role of universities in society – not only *despite* but also *because of* the geopolitical tensions the world is experiencing. They are instrumental in cultivating intercultural learning and dialogue as a vital aspect of their social mission and as a significant contribution to nurturing a culture of peace.



## 2023 Global Meeting of Associations (GMA)

The IAU Global Meeting of Associations (GMA) is the biannual gathering of IAU Member associations and organisations. It took place prior to the IAU International Conference and welcomed some 30 participants from 18 Member associations from all continents.

Framed by the conference theme, the conversations during the GMA were focused around:

- The role of languages in intercultural learning and dialogue both at the level of member institutions and associations;
- Interaction of diverse cultural groups at local institutional and organizational level;
- The effect of the digital transformation on intercultural learning and dialogue and the role that organisations play in addressing these.

The IAU Member associations continue to convene online until the next in-person meeting to take place in conjunction with the IAU 2025 International Conference.



# IAU 2024 INTERNATIONAL CONFERENCE

The IAU looks forward to convening its Members and the higher education community during the upcoming International Conference, to be hosted by Sophia University in Tokyo, Japan, in November.



## UNIVERSITY VALUES IN A CHANGING WORLD

In today's dynamic and ever-evolving global landscape, universities find themselves navigating heightened complexity and uncertainty. Institutions and their leaders are increasingly compelled to adapt swiftly to a diverse range of expectations. Against this backdrop, this conference highlights the pivotal role of values, exploring how they provide universities with guidance for decision-making, ethical conduct, and meaningful engagement. Furthermore, conference sessions will assess the extent to which these values are used to address the grand challenges encountered by societies.

These challenges transcend geographical boundaries, impacting universities worldwide irrespective of their size, traditions, cultures, or operational styles. From a social and moral perspective, academic leadership is under growing pressure to respond to issues of equity, equality, and access. Institutions and their leaders are expected to contribute to the establishment of just and sustainable societies aligned with the UN 2030 Agenda and its associated Sustainable Development Goals (SDGs).

In epistemic terms, universities today grapple with mounting skepticism, which, compounded by the rise of populist, autocratic, and nationalist policies, seeks to undermine the legitimacy and relevance of higher education as trusted and autonomous places of knowledge, research, education, and service.

Politically, higher education finds itself entwined in the intricate and unstable dynamics of national and international politics. Institutions are compelled to address complex questions related to identity, ethics, and civic responsibility, all while contending with concerns about democratic institutions, human dignity, and peace.

Simultaneously, rapid technological advancements, particularly in generative artificial intelligence, exert profound influence on education, research, and collaboration, presenting unprecedented opportunities and daunting challenges across all disciplines. The times demand a reevaluation of academic engagement and knowledge production and dissemination.

Values, intrinsic to the very essence of universities since their inception, are deeply embedded in diverse cultures and traditions. They are integral to specific value systems within the societies in which universities operate. Amid this rich and diverse set of cultures and traditions, do higher education institutions around the world share certain fundamental university values? Are academic values, such as autonomy, academic freedom, and research integrity, at risk of being subverted by political pressures? To what extent do values play a crucial role in upholding the integrity and trustworthiness of universities in society? These are essential questions that this conference promises to explore and address.



**Take part in these global conversations!**

Early bird registration opens on 15 June 2024.

Discover the programme and all practical information here:

[www.IAUTokyo2024.net](http://www.IAUTokyo2024.net)





**Universities, the UN 2030 Agenda and beyond**

*Universities and other higher education institutions have a crucial role to play in advancing society for the benefit of all. However, despite positive progress, more needs to be done. What does it take for universities to philosophically and structurally rethink higher education to better serve society? What transformations are required to support such transformation?*

**Opening the Gates of Knowledge to Empower Humanity**

*How can leaders of higher education contribute to bringing about transformations to open the gates to knowledge? The IAU Open Science expert group will present the outcomes of their work, and discuss issues at stake and the tensions that impact the road to open science.*

**Fostering Equity, Human Dignity, and a Culture of Peace through Higher Education**

*The title of this session suggests that universities hold a social and moral responsibility towards humanity in contributing to the cultivation of equity, human dignity, and a culture of peace. Is this a commonly shared objective and if so, how does it translate into action across the different missions of the university?*

**Check out the themes and get involved !**

**Academic Freedom and Institutional Autonomy in Times of Adversity**

*Universities grapple with mounting scepticism, which, compounded by the rise of populist, autocratic, and nationalist policies, seeks to undermine the legitimacy and relevance of higher education as trusted and autonomous places of knowledge and service. In what ways are academic values, such as autonomy, academic freedom, and research integrity, at risk of being subverted by political pressures? To what extent do values play a role in upholding the integrity and trustworthiness of universities in society?*

**Leading Values-based International Cooperation?**

*The IAU advocates for fair and inclusive internationalization that values diverse voices and cultures, one that fosters an equitable global community and serves the common global good. How can universities advance values-based international cooperation when they are bound by ever more restrictive rules and regulations imposed by their respective governments?*

**University Values and Digital Innovation**

*What is at stake for universities in a world with rapid technological developments? In what ways do they demand a rethinking of teaching and learning methodologies, assessment practices, and research processes within universities? Amidst this continuous dialectic between tradition and innovation, are university values a constant that can contribute to shaping this continuous transformation?*

**Universality, Diversity and Interdependence**

*Values, deeply embedded in cultures and traditions, are intrinsic to the very essence of universities since their inception. In a context in which university leaders are ever more drawn into profound political, economic, cultural and social issues, university values are increasingly being tested and contested at the local and global level. Amid the rich and diverse set of cultures and traditions around the world, what are the fundamental values that universities share? How do universities navigate the ethical dimensions of universality and diversity in a world of interdependence?*

**About the host: Sophia University**



**上智大学**  
SOPHIA UNIVERSITY

Sophia University, also known as "Jochi Daigaku" in Japanese, was established in 1913 by the Jesuits, a

renowned Catholic order with a strong commitment to educational excellence. From its foundation, the university emphasized an internationally focused curriculum and rigorous training in foreign languages. This emphasis quickly positioned Sophia as a leading Japanese institution for the study of foreign languages and literature.

Today, the University is a leading center for teaching and research in multiple disciplines including humanities, social

sciences, and natural sciences. Sophia University has been at the forefront of globalizing Japanese higher education. For Almost three-quarters of a century, the university has offered classes in English and has welcomed a diverse community of students, faculty members, and researchers from around the world, fostering educational mobility, collaboration, and specialization. Building on this wealth of experience and knowledge, and with a student body of 13,640 and 1,400 faculty members representing over 90 countries, Sophia is committed to nurturing individuals with a deep understanding of diversity and practical skills and knowledge, preparing them to excel in their chosen fields.

# IAU ACTIVITIES RELATED TO ITS STRATEGIC PRIORITIES



## Values-based Leadership

### DISCERNING THE VALUE AND VALUES OF HIGHER EDUCATION

#### Governance and Leadership

The IAU is a meeting point of different Members who all represent and operate within diverse higher education systems, and precisely that is also one of the added values in the IAU Executive Leadership Programme (ELP). The ELP has set itself an ambitious task: to impart not only management skills, but to also address wider questions of leadership, to provide university leaders with a framework to navigate the complex contextual, political and social aspects of the job. In a recent module, facilitated by IAU President, Andrew Deeks, one of the key learnings was that most higher education institutions in the world will find themselves fitting somewhere within an imagined triangle, with each of the three corners representing the key characteristics 'market', 'state authority', and 'academic oligarchy'. Depending on the predominant governance model, any higher education institution will be closer to one of the respective corners of such a triangle. Such is the higher education landscape, and such are the tensions within it.

The question of leadership, however, and how it expresses itself in varying forms and styles, is more complex. Scholars of leadership have identified various types: Strategic leadership, emotional leadership, authoritative leadership, transactional leadership, and others. In recent times, it is transformational leadership especially that is being hailed as the model of choice in the corridors of many universities and other organisations, including UNESCO, to bring about change. It resonates with the call for the transformation of higher education – to be more transformative in effect, i.e. to be more responsive to the grand challenges of our time. The main traits of transformative leadership have been identified as empowerment of employees, setting ambitious goals, provide intellectual stimulation, develop a group vision, and delegate tasks to others.

But talent, experience, and skills in any of these leadership styles are not enough: Success often depends on contingency – leaders yield best outcomes if their leadership style fits the distinct situation or structures in which they are called upon to perform. What happens, however, when governance models do not agree with a particular leadership style? This is especially tricky in cases where the university is dependent on state compliance or bound to the volatility and autocratic structures



in which they operate. It is in these instances that the ideal-types we neatly place in rectangular boxes in our power-point presentations are truly tested. What if *transformative leadership* is prone to end up in jail in certain countries? How can we speak of best practices in building long-term institutional strategies when the university is surrounded by political, ecological, or social turmoil, directly impacting the day-to-day running of the institution? What when the government leaves little or no room for autonomous decision-making? What when the faculty or student body – or any other stakeholders for that matter, wishes to impress a particular political argument or activity or are torn because of it?

#### Scholarship and the Scope of the University's Mandate

One of the first systematic scholars of leadership and authority was the sociologist Max Weber. More than hundred years ago, he warned us not to let political and ethical reasoning influence true scholarship, Weber developed his reasoning for such strict separation in his two seminal lectures "*Science as a Vocation*" and "*Politics as a Vocation*" (1917 and 1919, respectively). Today, many are asking for a more engaged and outspoken university. University leadership is pressed by many stakeholders to overcome the uneasy division that Weber conceptualised to help insulate the universities and protect both spheres from corrupting each other. Weber did so with good reason, as Wendy Brown points out: "*Just as nothing is more corrosive to serious intellectual work than being governed by a political programme (whether that of states, corporations, or a revolutionary movement), nothing is more inapt to a political*



*campaign than the unending reflexivity, critique and self-correction required of scholarly inquiry.”<sup>1</sup>*

Today, we are still toiling with the public role of academics and science. In a recent IAU webinar on “*Knowledge Diplomacy in a changing World*”, organized with University College Dublin, the speakers debated how universities are, or should be, part of public diplomacy and the role of knowledge diplomacy – again, a dance on a very thin line between a scientific and a political agenda. The ethos of science, as another influential epistemic thinker, Robert K. Merton, maintained, depended on the principles of communality, organized scepticism, universalism, and, moreover, disinterestedness that the evaluation and pursuit of scientific truth must follow impersonal criteria independent of the researcher’s personal attributes and political notions.<sup>2</sup>

Both Weber and Merton would warn us about any shift from pure knowledge exchange to engaging in a political agenda as any such act runs the risk of breaching the very fragile, yet necessary space universities have staked out for themselves for unhindered reflection, scholarly inquiry and unending self-correction. For them, the universities must remain autonomous places, in which communities of scholars, free of political or bureaucratic constraint, could pursue truth and knowledge for the good of society.

It would be anachronistic to claim that we must return to the late Humboldtian model that Weber and possibly Merton subscribed to. Their theory of change, in which knowledge, autonomously generated, would inevitably prevail in the public marketplace of ideas by virtue of its intellectual and scientific appeal alone, has gone out of fashion – not unlike Adam Smith’s metaphor of the intangible hand – that individuals acting on their self-interests would bring about greater social benefits, even if unintendedly.

## Value, Values and Academic Responsibility

Today, for better or worse, university leaders are ever more drawn into international and national politics as well as profound social transformations and movements. This has prompted new discussions on what basis a university should engage. We increasingly read the term ‘university values’ in lieu of ‘academic values’, to accommodate additional institutional, social, and ethical dimensions beyond knowledge production and teaching. But where do you draw the line? As a conservative counterpoint, Weber, with his rigid distinction between ‘facts’ and ‘values’, and his insistence on the inviolability of the sciences, prompts us to think carefully about the scope of the university mandate, especially when there is too much marketisation and too much politicisation of academia going on.

1. Wendy Brown, *Nihilistic Times: Thinking with Max Weber* (Cambridge MA: Harvard University Press 2023), 99.

2. Robert K. Merton, ‘The Normative Structures of Science’, in R.K Merton (ed.), *The Sociology of Science: Theoretical and Empirical Investigations* (267-278), Chicago: University of Chicago Press, 1973 [1942].

It is a bitter pill to swallow that with the introduction of market forces and their associated terminology, universities today seem to have fewer tools at their disposal to defend and communicate their unique role in society. In consequence, the commodification of higher education, with its twisted notions of value, is seeing universities suffer financially and epistemologically.

Nowhere do these interlinkages come to the fore more clearly than in the current political campaigns against the critical humanities. But universities should not be too quick to detract from their own doings, as the Vice Chancellor of Queens University and IAU Vice President, Patrick Deane, recently reminded us: “*We’ve all sort of colluded in a language about education that privileges the instrumental, neoliberal view [...]. I think we’ve actually played a role in this, which has been damaging to the cause of universities and potentially to our future.*”<sup>3</sup>

Whatever degree of hopelessness might have gripped the academia, there are plenty of reasons to remain resolute as long as we show the willingness to face uncomfortable truths without lapsing into wishful thinking or despair. It will be crucial though for universities themselves to rediscover their independence from both politics and economics, so that the question of *what the university is for* rests with scholars, not demagogues, technocrats or managers.

William Davis, for one, reminds us that values are fragile and precious resources “*without which we stand no hope of confronting the crises of the present.*” Universities are still the best suited places to examine them in depth, both historically and theoretically. But we must go further and clearly identify the interdependencies of the value of higher education and its values: “*Academic freedom needs defending, against both the state and the market, but so does academic responsibility: to recognise what the university can still uniquely do, which money and power alone cannot.*”<sup>4</sup> This holds true, wherever you find yourself in the triangle.

3. “Visa cuts compound financial woes for Queen’s University”, University World News, 6 February 2024 [<https://www.universityworldnews.com/post.php?story=20240206100537630>]

4. William Davies · Stay away from politics: Why Weber? · LRB 21 September 2023 [<https://www.lrb.co.uk/the-paper/v45/n18/william-davies/stay-away-from-politics/8/8>]

## GET INVOLVED

➔ Learn more about the ELP programme on the IAU website and confirm your interest in signing up for the next cohort.

For more information, please contact: Andreas Corcoran at [a.corcoran@iau-aiu.net](mailto:a.corcoran@iau-aiu.net)



# Internationalization

Internationalization of higher education is an inevitable process in the era of globalization and a deliberate strategy for improving quality and relevance of higher education and research. IAU focuses on the academic rationales, the equitable and collaborative nature of the process and aims to minimize the adverse effects of international interactions when these take place in highly unequal and diverse contexts among HEIs with different resources, needs and interests.

## VIRTUAL INTERNATIONALIZATION: A REVOLUTION OR A TEMPORARY PHENOMENON?

Virtual internationalization has become crucial for institutions seeking to enhance global engagement and educational opportunities. Virtual tools enable cross-border collaboration, knowledge exchange, and learning experiences without geographical limitations of the physical space.

The COVID-19 pandemic accelerated the development and adoption by Higher Education Institutions (HEIs) around the world of virtual tools for internationalization. However, after the end of lockdowns, there has been a return to more traditional forms of internationalization, mobility of both students and staff overall and one might question if internationalization underwent a “virtual revolution” or if the emphasis on virtual internationalization was only temporary and did not substantially change the way internationalization is implemented at HEIs around the world.

The sixth IAU global survey on internationalization of higher education conducted in 2023 received replies from 722 HEIs in 110 countries and territories all around the world. It provides some answers to this question by investigating the realm of virtual internationalization, exploring institutions' engagement with such opportunities, both globally and regionally.

## Engagement in virtual internationalization

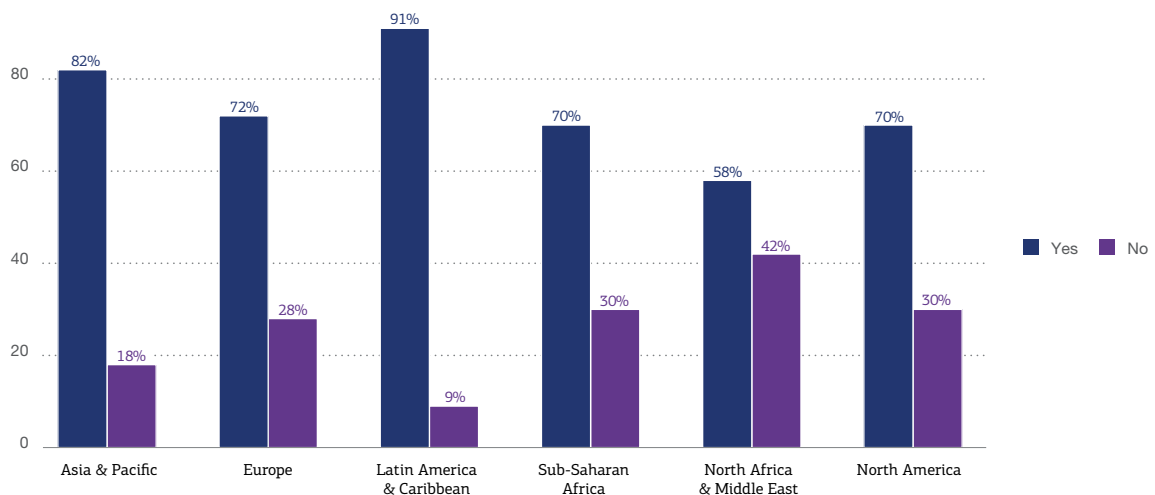
At the global level, the resonance of virtual internationalization becomes evident. 77% of the respondents affirm their institutions' engagement with virtual internationalization opportunities, while only 23% indicate non-participation.

In the question that surveyed which types of virtual internationalization activities HEIs are engaged in, the majority indicated offering virtual exchanges, collaborative online international learning (COIL) and online preparatory courses, but not MOOCs and online degree programmes offered by the institution to students in other countries. The most common activity is virtual exchanges (69%), and the least online degree programmes offered by the institution to students in other countries (45%).

This widespread engagement highlights the growing recognition of the potential of virtual opportunities in enhancing global interactions and educational offerings.

At the regional level, the impact of virtual internationalization takes on varying dimensions (**Figure 1**). Latin America & the Caribbean emerges as the frontrunner, with an impressive 91% of institutions engaging in virtual internationalization opportunities, followed by institutions in Asia & Pacific (82%), reflecting the region's proactive adoption of technological advancements. North Africa & the Middle East is the region with the lowest

**Figure 1 – Does your institution engage in virtual internationalization opportunities? (Regional results)**



engagement, yet still with a significant number (58%) of institutions engaged in virtual internationalization opportunities. Lastly, Europe, Sub-Saharan Africa, and North America have relatively similar engagement levels, hovering around 70%.

The diverse pattern of engagement in virtual internationalization opportunities underscores the complex interplay of context, institutional strategies, and technological readiness, but overall, it shows that virtual internationalization has become common practice at the majority of HEIs in all regions of the world.

### Priority of internationalization activities

It is interesting to compare this positive conclusion regarding the importance that HEIs attribute to virtual international opportunities to another question of the survey that investigated the priority of internationalization activities.

The results of this question show that there is not one single activity that was chosen by a majority of HEIs, indicating that there is not an overall common priority activity around the world, the prioritization of activities may differ depending on the specific context.

However, it is interesting to note that when comparing different type of internationalization activities, the priority attributed to virtual internationalization activities is low (17%) compared to other priorities such as, for instance, outgoing mobility opportunities (44%) and international research collaboration (39%).

At the regional level, a comparative analysis of the most important activities for internationalization reveals significant variations across regions.

In some regions there is clearly one activity which is chosen by the majority of respondents as the most important, while in other regions there is a higher variety of priorities. Virtual internationalization is not really considered a priority in any region. Only in Latin America & the Caribbean, it is the third most important activity (37%), which is a much higher

percentage than in any other region. However, it remains much lower than the one for outgoing credit-seeking student mobility (student exchanges) (65%), which is the most important internationalization activity in that region.

Therefore, it can be concluded that HEIs in all regions reported substantial engagement in virtual internationalization, but they allocate relatively low priority to virtual internationalization opportunities in comparison to more traditional internationalization activities which remain dominant in internationalization strategies.

### Conclusion

The results of the 6<sup>th</sup> IAU Global Survey on internationalization show that there has been a substantial increase in engagement with virtual internationalization all around the world and that virtual internationalization is now established as being part of the internationalization opportunities at HEIs. They also show that the prioritization and development of virtual internationalization activities is not the same, but that virtual exchanges, COIL and online preparatory courses offered to students in other countries are the most developed and important activities.

At the same time, they show that virtual internationalization activities are not prioritised in internationalization strategies and that traditional activities such as student mobility remain the most important activity to most institutions.

Therefore, a “virtual revolution” of internationalization might not have happened and virtual internationalization might not have completely changed internationalization practices at HEIs around the world, but it is clear that virtual internationalization has become more common around the world. In particular, the development and adoption by many HEIs of virtual exchanges and COIL can be seen as positive as these activities are powerful tools to foster internationalization of the curriculum at home. They might help increasing both the inclusivity of internationalization overall, by offering alternative international experiences to those who are unable to benefit from the physical mobility opportunities, as well as a complement either before or after a mobility experience.

## GET INVOLVED

### ➔ Use the results of the 6<sup>th</sup> IAU Global Survey on Internationalization of Higher Education!

The 6<sup>th</sup> IAU Global Survey on Internationalization of Higher Education was conducted in 2023 and includes replies from 722 HEIs in 110 countries and territories all around the world. The Survey report provides global trends and a regional analysis. The Report was published in 2024 and is open to all.

The survey results are of seminal importance in the field of internationalization of higher education, they are used by researchers and experts in the field and attract the interest

of policy makers and higher education media. There are multiple possibilities to use the survey results, for instance to conduct further research, to benchmark an institution's internationalization process at regional and global level, or to conduct a revision of internationalization policies and activities.

**If you are interested in organising an event to know more about the survey results or to work together with the IAU to conduct further research, please do not hesitate to contact:**

**Giorgio Marinoni** at [g.marinoni@iau-aiu.net](mailto:g.marinoni@iau-aiu.net)



## Higher Education and Research for Sustainable Development

Universities play a key role advocating, educating and leading the way for a more sustainable future. For many years, IAU has been fostering actions for sustainability in support of *Transforming our world: the 2030 Agenda for Sustainable Development* and the related Sustainable Development Goals.

### HOW CAN AI ACCELERATE THE INTEGRATION OF SDGs AT HEIS?

As the world strives to achieve the United Nations' Sustainable Development Goals (SDGs) by 2030, higher education institutions (HEIs) play a pivotal role in shaping the future. They educate global citizens, foster breakthrough discoveries, and transfer knowledge into society through collaborations with communities, governments and businesses. However, there remains untapped potential within HEIs that can be harnessed to accelerate progress toward the SDGs, in particular when adopting and implementing a Whole-Institution Approach (WIA) to sustainable development.

Universities are dynamic hubs of innovation, research, and education. Their impact extends beyond lecture halls and laboratories. HEIs prepare our future leaders, contribute to scientific advancements, and address global challenges.

#### Artificial Intelligence (AI) at universities

AI has the potential to revolutionize various sectors, and Higher Education is no exception. The developments in the last years took institutions by storm, creating a need to respond to changes in teaching and learning, assessment methods and research. However, it is furthermore important to discuss how AI can significantly enhance the integration of SDGs within HEIs.

In response to the prompt: "How can AI contribute to the achievement of SDGs?" the ChatGPT response included detailed options around Data Analysis and Insights, Predictive Analytics, Resource Optimization, Environmental Monitoring, Healthcare and Education, Financial Inclusion, Natural Disaster Response (OpenAI, March 2024).

One could think of a variety of applications in the higher education context: for improving the institutional strategy and a **whole-institution holistic approach** to managing and implementing activities, in research, as AI facilitates the analysis of large quantities of data, in **communicating** about activities at the university and creating content, or for **analysing and mapping** research output by SDG or how SDGs are reflected in the curriculum. **HEIs are training future experts** and some universities have already identified the need to adapt study programmes in computer science based on innovative technologies with AI, and tailored to the needs of sustainable transformation of society. For



An AI-generated image of a university campus reflecting SDG-colours in the building structure CanvaAI, 2024.

instance, UCL offers a Master's in Artificial intelligence for Sustainable Development.<sup>5</sup>

**The private sector is increasingly reaching out to HEIs**, for instance, Google.org called into life in 2023 the "AI for global goals" project and last year announced an open call for ideas from NGOs, academic institutions and social enterprises on ways they could use AI to advance on the SDGs. Among the 15 projects selected, several are at HEIs, such as at the University of Melbourne, the University of Surrey, or the AI Lab at Makerere University.<sup>6</sup>

To summarise, thanks to ChatGPT once again<sup>7</sup>, HEIs can leverage AI for SDGs for:

- 1. Curriculum Enhancement:** Integrate AI-related topics into existing courses and develop new programs focusing on AI and its applications in addressing SDGs.

5. <https://www.ucl.ac.uk/prospective-students/graduate/taught-degrees/artificial-intelligence-sustainable-development-msc>

6. <https://globalgoals.withgoogle.com/globalgoals/supported-organizations>

7. The points 1-7 have been generated using OpenAI's Chat GPT.

2. **Research and Innovation:** Encourage research projects and collaborations that explore the potential of AI in addressing specific SDGs.
3. **Data Analytics for Impact Assessment:** Utilize AI-driven data analytics to assess the impact of educational initiatives and research projects on SDGs.
4. **AI for Accessible Education:** Develop AI-powered tools and platforms to enhance access to quality education, especially in remote or underserved areas.
5. **Climate Research and Environmental Monitoring:** Use AI techniques such as machine learning and remote sensing to analyze climate data, model environmental changes, and develop predictive tools for mitigating the impacts of climate change.
6. **AI for Social Innovation:** Encourage students and faculty to develop AI-driven solutions for addressing social challenges and promoting sustainable development.
7. **Ethical AI Education:** Offer courses and workshops on AI ethics, responsible AI development, and the societal implications of AI technologies. By educating students about the ethical considerations surrounding AI, higher education institutions can foster a culture of responsible innovation and ensure that AI is deployed in ways that align with the principles of sustainability and social justice (OpenAI, ChatGPT3, March 2024).

**Emerging networks and tools around AI in HE** include the “ai4sdgs-cooperation-network” with several HEIs contributing.<sup>8</sup> The French Development Agency (AFD) has designed a tool, the SDG Prospector (<https://sdgprospector.org/>), to assess references to SDGs in any type of document. Introduced in 2023, it is based on a language model developed by Facebook, which enables it not only to identify keywords, but also to contextualize sentences and analyze documents submitted to it in greater detail.<sup>9</sup> A similar tool for analysing documents

8. <https://www.ai-for-sdgs.academy/>

9. See also <https://www.afd.fr/en/actualites/artificial-intelligence-sustainable-development-goals>

is provided by the UN Statistics office: <https://linkedsdg.officialstatistics.org/#/>. Another option HEIs might explore is using AI tools to improve resource allocation and finance, and other tools to improve operations and processes.

### HEI at its full potential

Overall, AI has the potential to accelerate progress towards the SDGs by enhancing decision-making, improving efficiency, and enabling innovation across various sectors. However, it is essential to ensure that AI technologies are deployed ethically and inclusively, taking into account potential risks and unintended consequences. By incorporating AI into education, research, and innovation initiatives, higher education institutions can play a significant role in advancing the SDGs and preparing future generations to address the complex challenges facing our planet. Only through collaboration between academia, industry, and policymakers, we can accelerate progress toward a sustainable and equitable future.

Since the early 1990s, the **IAU has advocated for the key role higher education can play for a more sustainable future**, supported by two IAU Policy Statements that translate this commitment: the [IAU Iquitos Statement on Education for Sustainable Development](#) (2014) and the [IAU Kyoto Declaration on Sustainable Development](#) (1993). The Association supports and informs the **Transforming our World: The 2030 Agenda for Sustainable Development** and is part of the UNESCO Education for Sustainable Development (ESD for 2030) initiatives. Through engagement with Members at events, through publications, and by providing tools and visibility through the [IAU HESD Global Portal](#) (a platform collecting higher education’s actions for Sustainable Development (SD) since 2012), learning opportunities, change dynamics, and positive impact for SD are created.



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and support IAU HESD:

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[www.iau-hesd.net](http://www.iau-hesd.net)

➔ **Read the IAU HESD Survey Report, presenting data from 464 institutions globally:** <https://iau-aiu.net/Accelerating-Action-for-the-SDGs-Read-the-Report-of-the-3rd-IAU-Global-Survey>

➔ **Learn more about the IAU HESD Global Cluster:** <https://www.iau-hesd.net/index.php/IAU-Global-HESD-Cluster>

**For more information, please contact:**  
Isabel Toman at [contact@iau-hesd.net](mailto:contact@iau-hesd.net)



## Digital Transformation of higher education

The digital transformation of society is inevitably reshaping the higher education sector and it impacts the way HEIs operate at all levels, from governance to teaching and learning, from the content of curricula to knowledge production and research activities. The IAU supports institutions in this process of transformation that higher education institutions are reacting to, interacting with and shaping to remain relevant in increasingly digitalised societies.

### WHAT IF ARTIFICIAL INTELLIGENCE HAD A DIFFERENT NAME?

In order to reflect on the impact of Artificial Intelligence (AI), particularly generative AI (GenAI), in higher education, we need to navigate a wide spectrum of perspectives, ranging from utopian visions to dystopian concerns, which is further complicated by a significant level of uncertainty about future developments.

Amidst this complexity, a puzzling question arises: does the labeling of this technology influence the way we look at AI, does it influence discourse and opinion surrounding AI? In other words, would it be possible to reduce the gap between utopian and dystopian visions if the technology had a different name?

The purpose of this article is not to call for a name change in the technology – this would be impossible. Yet, maybe a discussion of the name itself would contribute to a better understanding of the technology and allow us to think differently about its capabilities, opportunities and challenges, and also to dissociate it from its implicit connection to human intelligence.

To gain an understanding of the origin and rationale behind the name, let's go back to 1948. In his article 'Intelligent Machinery' (1948) Alan Turing defined his ambition to investigate whether it would be possible for machinery to show intelligent behavior.<sup>10</sup> Without using the name AI, Turing uses the human intelligence allegory to explain his ambition of replicating the capabilities of human intelligence in a human-made (artificial) system. The actual term, Artificial Intelligence, was coined a few years later in 1956 when a small group of scientists gathered for the Dartmouth Summer Research Project on Artificial Intelligence. Organized by John McCarthy, a mathematics professor at the Dartmouth College, the objective of the conference was "to proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it."<sup>11</sup> This objective is in principle very similar to Alan Turing's quest. This shows that the genesis of the term was based on a description of the ultimate aim of the research.

10. <https://weightagnostic.github.io/papers/turing1948.pdf>

11. <https://home.dartmouth.edu/about/artificial-intelligence-ai-coined-dartmouth>



© Pixabay-Rudy and Peter Skitterians

This was probably wise in order to pave the way for a new field of study and to scope the purpose of this new discipline. Yet, it also illustrates that the origins of the name did not seek to describe the actual functions of the machines at the time, but rather the would-be end state. Fast forward to 2024 and we now find ourselves in a context where the term *Artificial Intelligence* is being used more than ever.

At the time the concept of AI was introduced, very few had access to a computer or any kind of digital technology. Yet, today we are surrounded by, and to a large extent dependent on, digital technologies in our everyday lives, and as is the case for other technologies, *Artificial Intelligence* concerns everyone, not just experts. In this context, the question is whether a name evocative of human intelligence generates the expectation that machine *can* imitate human intelligence and that they actually *deliver* on the promise of the name Artificial Intelligence or is it just an empty promise. The words are purposely in italic, because while the underlying aim is still to replicate human intelligence, the AI systems at our disposal today are quite far from actually delivering what it promises. This is not a problem in itself, as long as the discourse around AI and its impact on higher education and society does not

get tainted or distorted by this allegory between human and artificial intelligence. But what if it is? What if it contributes to instilling confidence in the information generated by GenAI and the perception that the system is an authoritative source of information?

To continue this thought experiment, it would be interesting to come up with a more descriptive name for GenAI. So what is GenAI? On OpenAI's website, it is stated that the aim is to "build our generative models using a technology called deep learning, which leverages large amounts of data to train an AI system to perform a task."<sup>12</sup> In other words, GenAI refers to a system that is capable of generating human-like text based on the patterns and information learned during training of the system. The system, however, does not understand the information it is scanning, it cannot judge the veracity of the information, it cannot apply such things as logic and reason – abilities that form part of human make-up and intelligence. However, based on probability models, it can compose text that looks very similar to human output. This over-simplified introduction to a complex system merely serves to highlight some of its key distinguishing features and limitations. With this understanding, could a more descriptive name be something along the lines of:

*Instant pattern scan of (human) digital output and natural language generator based on probability.*

While this name is way too lengthy and stands no chance of competing with GenAI, it may convey a more accurate representation of the machine's current capabilities and limitations. Intelligence normally encompasses qualities such as critical thinking, problem-solving, creativity, judgment, and reasoning – attributes that are absent in the GenAI system. This raises the question of whether it is appropriate for the system to bear a name that includes 'intelligence,' albeit artificial.

At the same time, the name refers to an inherent ability in the system that surpasses human abilities – the ability to scan and identify patterns within vast volumes of information. There are multiple examples, for instance in the field of medicine where systems are trained to detect tumors or other indicators of disease, thus making them more accurate and efficient than humans<sup>13</sup>. This means that the system possesses alternative functions that can be useful and complementary to human capabilities, as long as users are aware of its limitations. Importantly, this implies that the system can potentially be used to inform, support or maybe even augment human intelligence.

Yet, again it is important to highlight that using AI should be done so under the responsibility of humans, in line with the UNESCO Recommendation on the Ethics of AI<sup>14</sup>: 'Member states

*should ensure that it is always possible to attribute ethical and legal responsibility for any stage of the life cycle of AI systems, as well as in cases of remedy related to AI systems, to physical persons or to existing legal entities.'*

It is impossible to assess whether discourse related to GenAI would have been different with a different name. As already stated, the aim of this discussion was not to actually change the name of *Artificial Intelligence*, but rather to call for an understanding of the important differences between human intelligence and artificial intelligence in order to avoid any misattributions between the two. This is important in the discussions around the potential and limitations of AI systems, to ensure that they are founded on the actual capabilities of the system and not on the implicit promise of an ultimate end state that we may or may not attain one day.

One positive aspect of the name AI is that it triggers reflection on what it means to be human, our capabilities, our values, norms, and principles in our interaction with and use of technologies. Hopefully, this reflection will reaffirm the importance of academic integrity when it comes to using GenAI in higher education. When the first car was invented, the highway codes we now rely on were nonexistent. Today, while these codes may vary across countries, they collectively ensure a standardized framework for safe navigation in traffic. Similarly, we must establish a code of conduct for AI, ensuring a universally-accepted set of principles to guide ethical and responsible use.

Ultimately, the threat does not emanate from machines or AI systems, but from us – humans – based on how we choose to use these technologies. Acknowledging that the term *Artificial Intelligence* is here to stay with all its connotations, it is important to generate awareness of both the potential and the limitations of AI systems, uncoupled from the understanding of what human intelligence is. Establishing guardrails, norms and guiding principles becomes paramount to guiding the ethical use of these systems, and assigning responsibility for potential misuse. This is essential if we want to make sure that AI systems can be used to enhance rather than replace human intelligence.

#### GET INVOLVED

➔ See the full IAU Webinar on generative AI at the IAU YouTube Channel:

[https://www.youtube.com/watch?v=gE\\_GKsdTPAs&t=181s](https://www.youtube.com/watch?v=gE_GKsdTPAs&t=181s)

➔ Access the IAU Policy Statement

<https://www.iau-aiu.net/New-IAU-Policy-Statement>

For more information, please contact:  
Trine Jensen at [t.jensen@iau-aiu.net](mailto:t.jensen@iau-aiu.net)

12. <https://openai.com/research/overview>

13. One example: <https://www.theguardian.com/society/2023/apr/30/artificial-intelligence-tool-identify-cancer-ai>

14. <https://unesdoc.unesco.org/ark:/48223/pf0000381137>



# IAU KNOWLEDGE HUB

## New IAU Publications

### IAU Global Survey Report: Internationalization of Higher Education: Current Trends and Future Scenarios



The IAU 6<sup>th</sup> Global Survey on the Internationalization of Higher Education, conducted in 2023, received responses from 722 higher education institutions (HEIs) in 110 countries and territories. The resulting survey report, "Internationalization of Higher Education: Current Trends and Future Scenarios," analyses the findings in order to present both global and regional trends. The report furthermore compares

current findings with data from the IAU's previous Global Surveys on Internationalization in order to explore long-term changes occurring in the internationalization field. In doing so, the 6<sup>th</sup> IAU Global Survey paints a picture of the current state of internationalization around the world, its recent transformations, and its possible evolutions moving forward.

Download the report on [www.iau-aiu.net/Publications](http://www.iau-aiu.net/Publications)

### Higher Education Policy (HEP)

#### HEP 36/4 – December 2023



The last issue of HEP in 2023 brought together a collection of papers looking at, amongst other things, implementing research policy in two state universities in Cameroon, how AACSB accreditation contributes to research in business schools, the Slovak route to institutional mergers, the effects of parenthood on grant applications in China, partisanship and state funding

for higher education in the United States, and the impacts of spatial inequalities on the gap in the earnings of similar graduates.

#### HEP 37/1 – March 2024

The first issue in 2024 of Higher Education Policy looks at governmental failure to address housing problems for international students in Australia, performance-based funding policies in the UK, Germany and France, the application of decolonization to higher education, drivers behind Chinese prefecture cities' adoption of vocational colleges during the latest tertiary education expansion, and how HE reforms in Poland has altered the power structure of the HE governance in place.

For more information on HEP, and to see abstracts, please visit <https://link.springer.com/journal/41307/volumes-and-issues>

**NEW**

**IAU Members now have online access to HEP via a URL referral scheme put in place by IAU and SpringerNature.**

➔ **To access the journal, please go to <https://iau-aiu.net/HEP-Latest-issue> and follow the instructions.**

**For questions, please contact: Nicholas Poulton ([n.poulton@iau-aiu.net](mailto:n.poulton@iau-aiu.net))**

### IAU 2023 Annual Report



The Annual Report offers a comprehensive summary of projects and activities undertaken in 2023 with facts and figures. It showcases the IAU's commitment to its global membership through a focus on four key strategic areas: Values-Based Leadership, Internationalization for the Common Good, Sustainable Development, and Digital Transformation. It presents

details on the 16<sup>th</sup> General Conference, the 2023 International Conference, and the latest Global Meeting of Associations. Additionally, the report provides an overview of the IAU Governance structure, Membership and the Financial report of the Association.

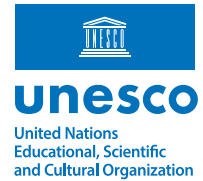
Download the report here: [www.iau-aiu.net/annual-reports](http://www.iau-aiu.net/annual-reports)



# IAU WORLD HIGHER EDUCATION DATABASE (WHED)



In collaboration with:



The IAU’s World Higher Education Database (WHED) is a unique reference portal, freely available online, providing authoritative information on accredited higher education institutions (HEIs) in some 196 countries and territories; it also provides comprehensive information on national education systems and credentials. As the WHED only includes officially verified information provided by national competent bodies (Ministries, HE Commissions, UNESCO Delegations, etc.) it is regarded as a trusted source of information on accredited HEIs. It is continuously updated and currently lists just over 21,000 HEIs and this number is growing each year. It is the only official source of information on HEIs at the global level; it is maintained in collaboration with UNESCO.

The WHED helps users understand the education systems in place in each country, and also assists credential evaluators in the recognition process of overseas credentials; in this way the WHED facilitates a more fluid circulation of knowledge and talent, especially within the framework of the *UNESCO Global Convention on the Recognition of Qualifications concerning Higher Education* which came into force in March 2023. To help with its implementation, IAU added the Global WHED ID – giving each institution in the WHED a unique identifier to help facilitate identification and thus recognition more easily. In a recent update to the database, IAU has also created a permalink for each entry in the WHED – through one-click access to their data, institutions can now use this permalink to identify their listing to other higher education stakeholders.

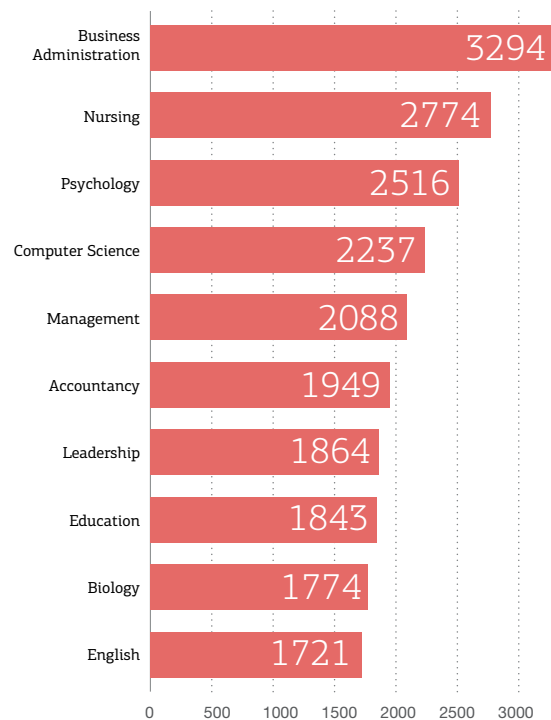
## Updates

IAU has just finished its updating cycle for the USA and you can find some basic statistics on the 2568 institutions listed.<sup>15</sup> The update shows that 30% of the institutions are public and 70% are private institutions. In **Figure 2** you see the most frequent degree programmes by field of study offered by HEIs in the USA.

As these data show, the WHED is also a useful tool for research. It contains valuable information that can be used for analysing and comparing education systems and university data for instance. Other data is also available such as institutional founding dates and degree levels available within each institution and country. IAU has provided data over the years to organisations to study higher education within a particular country or region. Our data is also used for internal information systems, such as those used for human resources on-boarding or

overseas student applications and credential evaluation. Should you be interested in an extraction of our data, please do not hesitate to contact us.

**Figure 2 – Top ten fields of study offered by HEIs in the USA**



## GET INVOLVED

Please check the data we have on file for your institution and let us know of any changes to update.

Our next updating cycle concentrates on Africa and we welcome information from the national competent bodies in Africa – please do contact us also if you wish to contribute to updating the data we currently hold on your country’s education system.

➔ **Learn more:** <https://whed.net/About.html>

**For more information, please contact:**  
**Andreas Corcoran at [a.corcoran@iau-aiu.net](mailto:a.corcoran@iau-aiu.net)**

15. For the US, institutions listed in the WHED should offer at least a Bachelor’s degree and have graduated at least three cohorts of students.



## IAU Membership News

IAU is pleased to welcome 18 new Members from 12 different countries into its global community. We are grateful to all our Members for their incredible support and engagement.

Sign up for the Newsletter and follow IAU on social media to receive updates from IAU on activities and to be informed of opportunities for engagement. Make sure to share news or updates that would be of interest around the world to be published in the News from Members section on the IAU website.

For questions about membership, contact [membership@iau-aiu.net](mailto:membership@iau-aiu.net)

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State Islamic University Syarif  
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# IN FOCUS

## Universities and the Interplay of Human Intelligence and Generative AI

by **Trine Jensen**, Manager, HE & Digital Transformation, Publication and Events, IAU.

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The widespread distribution of generative AI has raised many questions for higher education institutions to address, spanning a wide spectrum of visions from utopian ideals to dystopian scenarios. To shed light on what is at stake for higher education, this 'In Focus' section is devoted to **Universities and the Interplay between Human Intelligence and Generative AI**.

While generative AI has caused quite a stir, numerous authors remind us that this is a natural reaction when society is exposed to new technological advancements that inherently challenge established procedures and practices. In addition, these developments also bring another complex question to the fore: what does it mean to be human?

Throughout the selection of articles, there is a common trend to view the impact of AI from a dual perspective outlining the opportunities alongside the risks. Striking a nuanced and informed balance in the trade-off between these is the current quest for higher education.

In the same manner, many authors also remind us that human steering of generative AI becomes essential to proactively design how to use the technology to serve humanity.

While the technology itself does not have an agenda, the leading companies behind the most used tools may have. In other words, while the impact of these tools is global, their developments are currently curated by private companies in only a few countries of the world. Several authors are pointing toward issues of fair and inclusive representation, issues around veracity and 'hallucinations', the bias that are inevitably included as part of the training of the systems as some of the main risks that needs to be addressed to avoid exacerbating already existing inequalities.

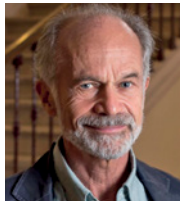
At the same time many articles also call for openness to the positive potential of generative AI, to innovations and to involving students in the process and jointly evaluate how AI tools can be constructive in the learning itinerary. Some authors are also stressing the need to consider the impact on human cognition. Without banning the use of generative AI, one suggestion is to provide spaces of learning without technology in parallel to spaces with technology to stimulate multiple approaches to the development of human cognition.

There are no absolute answers to the many questions that arise when technological advancements force us to think about what it means to be human in societies that are increasingly dependent on digital technologies. However, the quest for higher education is to use our human intelligence to examine, study, explore and shape the use of generative AI in a manner that serves humanity, and allow it to hopefully to augment human intelligence.

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## 01 A plea for technological bilingualism in education



by **Daniel Andler**, *Professor Emeritus, Sorbonne Université & École normale supérieure, PSL, France*

How should AI impact education?

This broad question gives rise, understandably, to countless debates.

The positions which are defended are usually of the following form: for *this* kind of student at *this* stage of training in *this* area, this system of AI tools is the optimal mode of AI-enabled education, one which maximizes the benefits afforded by AI and minimizes the downsides. Even though they invariably include personalization for each learner as a central, AI-enabled feature, these proposals are homogenous, in a sense that will presently become clear.

The metaphor that I will be using to bring out the contrast with my proposal is linguistic: the current proposals are monolingual; mine is bilingual. Let me explain. Many populations in the world have been or are still exposed to two languages (and often more). As a temporary solution, some have evolved a pidgin, an unstable hodge-podge of the two languages. In some cases, pidgin has with time evolved into a creole, which is a natural language in its own right, one that blends features of the two languages in accordance with the cognitive constraints of deep linguistic structure. In most other cases, people have adopted bilingualism: today roughly half the world population is bilingual.

Reverting to the case at hand, technology in education, the corresponding models are the following: ‘techno-pidgin’, an unstable, unprincipled mix of digital tools and traditional methods; ‘techno-creole’, a novel educational system; ‘techno-bilingualism’. What already exists and everyone is aiming to improve are varieties of techno-pidgin. What is beyond reach at this point is techno-creole. What I propose instead, as an alternative to all versions of techno-pidgin, is techno-bilingualism: a bi-modal educational model in which students are exposed to courses taught without any contribution from digital devices, whether rudimentary or cutting-edge; and to courses taught with the best tools, devices and mechanisms that technology can provide.

The objections are glaring. So let’s first try and dispel them.

- 1) Isn’t t-bilingualism sub-optimal by design? If no-technology is better than with-technology, then a curriculum entirely technology-free is better than my bimodal proposal, and the other way round.  
The trouble is that nobody knows one or the other to be the case. And further, even as evidence begins to accumulate,

“Certain fundamental skills can only be developed and deployed, by students and teachers alike, with the exercise of unaided human cognition or intelligence.”

people will differ on how to balance strengths and weaknesses at least until one side dwarfs the other.

- 2) What is the basis for claiming that t-creole is out of reach? The evidence is overwhelming that AI is far from having reached maturity, that it—and more broadly the entire digital sphere— present known and unknown risks which require guardrails that have not yet been discovered, and that the impact of AI on education cannot yet be robustly assessed.
- 3) Why then shouldn’t we all focus on getting to the t-creole stage from the present t-pidgin situation? First, the technology-rich half of my proposal is geared toward that goal, in contrast with a system where technology would be muzzled or held back for the sake of protecting learners from unwanted side-effects: the idea is to give technology a fair chance of making its case, and to students to get the very best it can provide. Second, going all out on technology closes off the potential benefits of a technology-free learning regime.
- 4) Wouldn’t t-bilingualism require not only new resources but a total rethinking of the present educational systems? Won’t it be a source of strife among the teachers and within the administration?  
It is already widely accepted that technology-rich education will require new resources and new educational models, and this is only the dawn of a new era. T-bilingualism will on the contrary relieve some pressure on resources, ease the requirement of fitting technology in all programs, and allow the energy of teaching and administrative personnel to flow in the direction of their spontaneous preferences regarding technology.

What are the direct arguments in favor of t-bilingualism? The case of the technology-rich half of the proposal is straightforward. First, the overall contribution of digital services, and AI in particular, to both the learners’ and the teachers’ tasks is beyond doubt. Second, today’s students are tomorrow’s workers and citizens, who must be prepared to function and compete in a technology-rich, AI-enabled environment.

The other half is no less important. We must preserve a technology-free sector of education. Certain fundamental skills can only be developed and deployed, by students and teachers alike, with the exercise of unaided human cognition or intelligence. And no assurance can be given that technology



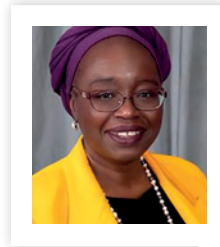
will be kept at bay in the t-enabled mode, despite the virtuous guarantees that the (human) teacher will always remain at the helm, using the technology as a mere set of tools. In fact the combined pressure of time and economic constraints, natural effort-avoidance, technical progress and marketing by the AI industry will gradually restrict the agency of the teacher. This won't necessarily be wrong or harmful, but it will impede the natural pedagogic process, which rests on trust and personal stake on the part of both teacher and learner.

Without the space provided by the technology-free half of the curriculum, two crucial abilities would soon be lost. The first is the ability to perform some intellectual operations that have always been regarded as central to human thinking—in fact, constitutive of human thinking. These are: producing novel ideas, sorting them out, examining them with a critical eye, and going from inchoate mental flux to articulate speech, conversation and organized text. But while this ability could be lost, in the way mental arithmetic is now beyond the pale of most people, for a while the norms of rich imagination, rational mulling and dialogue, and persuasive writing would be retained. The next stage would be the even more disastrous loss of those norms. Imagining, mulling, talking, writing would be... whatever AI in fact produces. And then the very possibility of applying critical thinking to the technologies deployed in the technology-rich part of the curriculum would have vanished, annihilating an essential argument for using technology in education.

The safest, most straightforward way of ensuring that human intelligence remains at the helm of the pedagogic process and is given the space to flourish is to keep it free of technology at certain, non-exceptional set times. The exact terms of this exclusion need to be negotiated and adapted to the circumstances; but the principle must be held firm.

Finally, two benefits of t-bilingualism should be mentioned. One is that if it turns out, in the fullness of time, that technology-intensive education is harmful or ineffective, in general or for certain categories of learners or topics or age groups, it will be possible to revert to an entirely non-technological pedagogy, as both learners and teachers will have retained some basic competence in that mode. The second benefit is that the vexed question of testing students will be solved effortlessly. Graded credit will be obtained only in technology-free courses, with on-site exams, which need not be very numerous. The technology-rich courses will only get Pass/No Pass credit, with distant validation permitted, yet will remain attractive to students for obvious reasons: the excitement of using powerful tools, and the preparation for their professional future.

## 02 Artificial Intelligence & Campus Life



by **Fanta Aw**, *Executive Director and CEO, NAFSA: Association of International Educators, USA*

Through all my years working with students, I have always strived to instill the core value of critical thought. I have urged students to avoid binary thinking. Being able to think with complexity and nuance is to be a thoughtful and effective student. In the past year, the topic of AI has come up in nearly every classroom I have stepped in and, I am happy to report, these students have generally approached the topic with the complexity and nuance I hope they will approach every issue with. Now that AI is here and beginning to affect higher education, we cannot have a binary response to it. Instead of instinctually deciding whether it will destroy education as we know it or completely fix every problem in our field overnight, we must focus on the process of learning. That is the very tenant that higher education was built on, and to not engage AI with curiosity would be a disservice to our field.

### Hopes & Reservations

Generally, I am excited about where AI can take us. We are already seeing the benefits it can have in the classroom and for administrations. For students, AI helps break down language barriers, allows for services to be available 24/7, and provides tools that level the playing field for students of all abilities. Beyond these impacts on students, we are even beginning to see business programs pioneer majors in AI. We have also started to see the immense potential Artificial Intelligence could have to positively affect administrative roles in universities as well. Some of the institutions beginning to use these new tools have revealed the ways AI can assist in research and reduce routine and repetitive tasks like sifting through big data. It can also respond to student support channels in a more effective and efficient manner and can streamline enrollment and admissions management. We are just scratching the surface of the potential AI can have for our field.

Though, like many, I also have my reservations about what AI could mean for our field. While there are many benefits that we are just now beginning to see, we cannot simply accept these conveniences into our lives without considering the risks. There is already a dire need for safeguards as we continue to implement AI into our university systems. We can see issues of pre-existing bias come into play – the AI is, after all, just pulling from pre-existing data. How will we look to combat these biases? We have begun to see how 'hallucinations' are allowing AI to push false information

“The more we engage with AI, the more we need to focus on what we as humans bring to the table. We must refocus on the core mission and ethics that have guided higher education for centuries.”

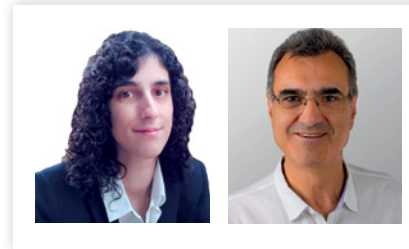
that, if unchecked, could pose serious problems. Will we still be capable of deciding what is true for ourselves? The more we engage with AI, the more we need to focus on what we as humans bring to the table. We must refocus on the core mission and ethics that have guided higher education for centuries.

### The Great Unknown

AI is providing a unique opportunity for us to reflect on those very ethics. It is forcing us to consider some larger questions about what it means to be human. It is forcing us to think about how we think. I have been reflecting on what is inherently human and the things we will need to actively preserve as AI comes into our lives. People will always be essential because of our ability to think critically, engage with issues in context, and work in a complex world in a way only humans can. But AI is a deeply useful tool that can improve the lives of students, educators, and administrators alike. The onset of AI must force us into action. We must continue to ponder these impossible questions and build guardrails to protect us from the obstacles we are already seeing and the hazards we have yet to come across. In higher education, we must actively work to preserve our core tenants of *Knowledge, Community, & Social Impact*. These foundational pursuits cannot be accounted for by AI and will always remain as the ultimate purpose of higher education.

I hope we can use this new tool to assist higher education. It has the potential to improve administration, teaching, and learning in our universities, but we cannot be lackadaisical in our acceptance. We must resist the urge to staunchly choose one side or the other and instead approach this major change with diligence and focus. If we are able to do that, we will be able to harness it with our ethics as the guiding force. This moment is the beginning of a long process of learning and growing alongside Artificial Intelligence. We will have to find a way forward to work effectively and compassionately with it in all of our lives.

## 03 Generative AI in the Classroom: Cure or Curse? A Neo-Luddite manifesto



by **Catarina Moreira**,  
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Human Technology  
Institute, University  
of Technology  
Sydney, Australia  
and **Joaquim**

**Jorge**, Professor, Instituto Superior Técnico, University of Lisbon, Portugal

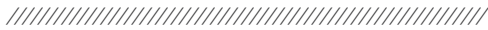


Since the dawn of the Industrial Revolution, society has grappled with the double-edged sword of technological advances. From the infamous protests of Ned Ludd [1] against mechanised looms to the recent vandalism of Autonomous taxis in S. Francisco<sup>1</sup>, innovations have stirred a potent mix of anticipation and apprehension. The electronic calculator's foray into academia during the 1970s serves as a prime historical parallel to today's burgeoning era of Generative AI and tools like ChatGPT, LLaMA or Gemini. Lauded by some for rescuing students from the drudgery of manual calculations, the calculator was decried by others as the usher of cognitive decline. However, while calculators always provide accurate results, Generative AI technologies often produce incorrect answers. In this vein, Generative AI, much like its numerical predecessor, stands at the crossroads of educational evolution, offering both liberation from mundane tasks and inciting debate over the potential atrophy of a learner's intellect.

### The Good

Generative AI in the classroom has the potential to democratise learning. Historically, access to quality education and expert tutoring has been a privilege of a few, often determined by geographical and socioeconomic

1. Reuters Feb 13 2024, <https://www.reuters.com/business/autos-transportation/san-francisco-waymo-arson-sparks-fresh-debate-self-driving-cars-2024-02-13/>



factors. However, AI-driven educational tools can make high-quality, personalized learning accessible to a global audience, irrespective of location or financial status. This democratization can level the educational playing field, allowing anyone with internet access to benefit from high-level tutoring and learning resources. Moreover, Generative AI facilitates personalized learning, where educational content can be tailored to each student's needs. Unlike the centuries-old one-size-fits-all approach, Generative AI enables a more nuanced and adaptive learning experience. It can analyze students' performance, identify strengths and weaknesses, provide instant feedback and adjust the curriculum accordingly. This customization ensures learners can achieve mastery at their own pace, engagement and motivation, regardless of their starting point. It can also free educators from menial tasks to focus on the nobler aspects of their craft.

### The Bad

The introduction of calculators to the classroom sparked considerable controversy, paralleled today by the debate surrounding using large language models (LLMs) like ChatGPT in educational settings [2]. Critics argue that just as calculators were once viewed with suspicion for their potential to diminish mathematical skills, LLMs face skepticism over their suitability for classroom integration. However, this comparison overlooks a crucial difference: calculators provide correct answers, whereas LLMs operate on a different principle altogether.

LLMs, often described as "stochastic parrots," generate responses by probabilistically predicting the next word in a sequence. This method does not guarantee accuracy but produces plausible answers based on the model's training data. Consequently, LLMs' outputs can sometimes be misleading or incorrect, necessitating a critical eye to distinguish between valid information and "nonsense." This distinction highlights the importance of critical thinking skills [3], especially in educational contexts where discernment and verification of facts are fundamental.

Relying on LLMs without a solid foundation in the subject matter poses significant risks. Articulate LLM-generated content seduces students who mistake fluency for accuracy. This vulnerability underscores educational systems' need to prioritize developing foundational solid knowledge across various disciplines. Without this basis, students lack the essential skills to critically evaluate the information provided by LLMs, making them susceptible to misinformation and manipulation.

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**“Holistic approaches are crucial to navigating Generative AI's educational limitations. This includes refining AI for greater accuracy, focusing on user-centred designs, and embedding critical thinking into curricula for students to critically assess and challenge AI content.”**

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### The Ugly

The potential for LLMs to spread misinformation inadvertently is a concern that cannot be overlooked. The ease with which persuasive yet unfounded content can be generated challenges educators and students alike. It emphasizes the need for a balanced approach to incorporating LLMs into the classroom, where their benefits in fostering engagement and personalized learning are leveraged while also ensuring that students are equipped with the critical thinking and knowledge necessary to navigate the complexities of information in the digital age. To manage this in educational settings, teaching students critical thinking and verification skills becomes crucial, encouraging cross-referencing with up-to-date, credible sources and fostering an understanding of the strengths and limitations of AI-generated content.

### A Way Forward

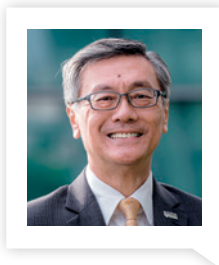
Educational technology and AI-assisted learning are at a pivotal moment. While innovative, the prevalent autoregressive models still need to meet modern education's comprehensive needs fully. Hope lies in new technologies, such as Knowledge Graphs and Explainable AI (XAI), which mirror human cognitive processes and offer AI reasoning transparency.

Yann LeCun's vision for Objective-Driven AI [4] suggests a shift towards proactive, goal-oriented AI systems capable of planning and executing educational strategies tailored to individual learner needs. This approach could transform AI from a supplementary tool to an active participant in the learning process, dynamically adapting to meet diverse educational goals.

The journey ahead goes far beyond technological innovation. Indeed, holistic approaches are crucial to navigating Generative AI's educational limitations. This includes refining AI for greater accuracy, focusing on user-centred designs, and embedding critical thinking into curricula for students to critically assess and challenge AI content. Ethical guidelines for AI use must prioritize privacy and transparency. Collaboration among educators, technologists, and policymakers should ensure that AI tools meet educational needs. Adaptive learning environments powered by AI should cater to individual student needs, offering personalized experiences. Continuous feedback loops from users should steer AI improvements, aligning technology with pedagogical objectives. Moreover, investing in educator professional development is crucial for integrating AI effectively into teaching strategies. This multipronged approach aims to enhance the educational landscape, making AI a valuable ally in fostering more inclusive, engaging, and effective learning experiences.



## 04 “The Age of Intelligence”



by **Tan Eng Chye**, *President, National University of Singapore, Singapore*

We are at the cusp of the next industrial revolution – the age of intelligence. More specifically, the age of Artificial Intelligence (AI).

AI has coursed through the gates of higher education institutions around the world, whether we are ready or not. In the face of this fast-growing and indomitable phenomenon, it is vital for universities to pick up speed on how we integrate AI into the fabric of our institutions, through our programmes, people, and research.

Learning and thinking form the foundations of education, and it is imperative to ensure that the development of intellectual skills of learners are not compromised in an age where there is a rising use of and undeniable reliance on AI in educational institutions. For example, it is typical for us to search online for information through search engines such as Google, pick out relevant materials and consolidate these. This task may now be delegated to ChatGPT that has developed the capability to source, extract and consolidate relevant information on a particular topic, and as a result, eliminate the need for human agency. If learners grow overly reliant on AI tools, this foundational skill might be lost. In short, education, especially tertiary education, must be reimagined.

This is a call for educators to move beyond their comfort zone of instructionism (teacher-focused, skill based, product-oriented, non-interactive, and highly prescribed) and instead employ hands-on constructivism (student-focused, meaning-based, process-oriented, interactive, and responsive to student interest).<sup>2</sup>

Additionally, an increased and more meaningful engagement with learners will allow educators the opportunity to emphasise humanness in education.<sup>3</sup> This includes navigating the nuances of human interaction, empathy, and ethical decision-making.

Educators should also take a transdisciplinary approach in the development of learners’ AI competencies to build their multidimensional understanding of AI’s relevance and its intersection with various fields. On the part of learners, they will need to be adept in both critical thinking and problem-solving skills.

2. <https://eric.ed.gov/?id=ED490726>

3. <https://www.timeshighereducation.com/campus/age-ai-teach-your-students-how-be-human>

“Learning and thinking form the foundations of education, and it is imperative to ensure that the development of intellectual skills of learners are not compromised in an age where there is a rising use of and undeniable reliance on AI in educational institutions.”

Critical thinking skills include having an astute knowledge of what AI tools are capable of as well as their shortcomings. This would enable learners to ask relevant and specific queries, leading to improved outcomes and valuable insights.

To understand and handle the algorithms powering AI tools, learners must grasp the basics of computational thinking – a mode of problem-solving which is the basis of prompt engineering that is taught alongside the use of ChatGPT. In doing so, educators and learners alike will be able to link theory and practice with projects.

The advancement of AI has also paved the way for personalised learning, where learners are empowered to dictate their learning goals, the pace of their learning, how they learn and more. Aside from being technically proficient, learners need to be **C**urious, **C**reative and **C**ollaborative – capable of adapting to new and unexpected scenarios.

Given that AI will likely displace large numbers of blue-collar and bottom-rung white-collar workers,

one of the biggest challenges in the Continuing Education and Training (CET) sector is how to retrain and reskill displaced workers. CET will need to provide them with new meaningful career pathways.

For research-intensive universities, AI can play a significant part in expediting research. To harness AI’s full potential requires the development of multidisciplinary and interdisciplinary teams and an enhancement of research infrastructure to boost computing power. Examples include DeepMind’s Alphafold, Huawei CLOUD’s Pangu-Weather and Fusion Science’s advancement through AI.

Unquestionably, there are some inherent risks in the use of AI tools, from inaccurate information to inherited biases in data as well as intellectual property and copyright issues. As such, regulation will have to move in tandem with technology developments, and must be considered at the different stages, from data collection to model training and model output.

In view of AI’s voracious appetite for energy, another major consideration is its impact on the environment. Currently, the National University of Singapore (NUS)’s School of Computing has 127 Graphics Processing Unit (GPU) servers.



If all were run at full capacity, they would consume 630 kilowatts (kW) in just an hour. At the university-level, servers housed within our three data centres expend over 12 million kW annually, with almost 30% contributed by GPU servers. Besides electrical consumption, the heat and carbon dioxide emitted contribute to AI's overall carbon footprint, which is certain to grow.

NUS hopes to reduce our carbon footprint by 30% by 2030. With the soaring interest in the use of AI for education and research, we are seeking more efficient ways to cool our data centres. Numerous prototypes are in place including the Sustainable Tropical Data Centre Testbed – the world's first tropical climate data centre<sup>4</sup>.

As man and machine compete for dominance, higher education institutions have a key role to play in ensuring that human intelligence reigns supreme over machine. Let us respond to the call to transform education, drive innovation, and shape the future.

## 05 A Tale of Two Taros



by **Jin Kuwata**, *Department of Mathematics, Science, and Technology, Teachers College, Columbia University, USA*

Across institutions the question of how artificial intelligence (AI) will impact, if not radically disrupt education reveals both our excitement for the possibilities and apprehensions around the unknown. Given the complexities, how do we navigate the pathways forward? How can we integrate AI to augment our capacity while protecting our intellectual traditions and values? To this, I reflect on two Japanese folktales.

**Urashima Tarō:** *Urashima Tarō is a young fisherman who rescues a turtle and is taken to a magical undersea palace. Despite enjoying the wonders, he yearns for home and in parting, is given a mysterious box — with instructions that it never be opened. Upon return he's surprised by the passage of time and eventually gives into nostalgia and curiosity. He opens the box and in a puff of smoke, finds himself transformed into an old man.*

The metaphor of Urashima Tarō emphasizes the realities of time, change, and serves as a reminder around responsibility and consequence. I recently surveyed my hundred or so graduate students; which opinion more accurately represented how they've used AI in the past? The results split students straight down the middle into two groups:

“We're not just learning from AI. We're shaping a future with AI, where our wisdom and experiences, like timeless folktales, remain invaluable and enduring.”

- Task-oriented (50%): "I've been using it to accomplish tasks faster and achieve better results even if it means learning less."
- Learning-oriented (50%): "I've been using it to learn more even if it means accomplishing tasks slower and with poorer results."

It's tempting to see the cup as half-empty. Consequently, conversations shift toward whether AI is undermining student attitudes about learning. At worst, it raises suspicions that AI usage might be at odds with the spirit of scholarship and academic honesty. Be wary of opening the box. Yet, the true cautionary tale is presuming that the surface represents reality. If we open the box, we actually find that there's more to this story. In a follow-up, I asked students to expand on how they're using AI. Even for those who report task-orientation, the actual practices engaged in reveal sophisticated learning-oriented behaviors.

These very students use AI as powerful cognitive supports in the problem-solving processes they encounter. They use AI to delve into explanations, dissect problems, and emulate expert reasoning. They use it to reflect on their thinking, challenge their understanding, and self-regulate their learning. Interactions with AI are deeply personal, blending learning with their life experiences and interests. If not for the fog of AI, the behaviors exhibited here might be the kinds educators celebrate as signals of thoughtfulness, authenticity, and agency. These healthy and productive markers suggest a hopeful picture of the future, one we should strive to realize.

**Momotarō:** *Momotarō is a boy born from a peach. With each passing year he grows stronger, one day embarking on a journey to defeat the oni (i.e. demon) causing trouble across the land. On this adventure, he befriends a dog, monkey, and pheasant by sharing millet dumplings and together they sail toward Oni Island. In the final battle, each contributes in their unique ways, evil is banished, and they return triumphant.*

There's an urgency felt in higher education around the shifting socio-technological landscape. My fellow colleague, Dr. Lalitha Vasudevan inspires us to be "technologically nimble" and this concept resonates with me. It emphasizes agility and adaptability rooted in understanding and empathy of our communities. This spirit reflected in Momotarō's collaborative journey starkly contrasts with Urashima Tarō's isolated tale. It's better to go forward together than alone.

4. <https://news.nus.edu.sg/worlds-first-tropical-climate-data-centre-testbed>



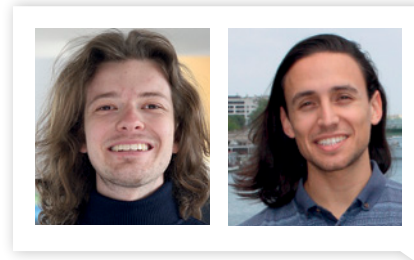
At Teachers College, Columbia University (TC) partners like Dr. Charles Lang and the Digital Futures Institute (DFI) are proactively coordinating institution-wide engagements with the community to understand what AI means for how we work, how we learn, and how it impacts the larger world around us. We embrace a hands-on and exploratory approach where play and experimentation is encouraged. It's about embracing both discoveries and mistakes, inspiring dialogues that lead to genuine insights.

Would Urashima Tarō's journey have ended differently, had he crossed paths with Momotarō and learned from his tale? By embracing and sharing our diverse contributions we are empowered to shape an enriching, collective future. Engaging with colleagues and students has refined my own teaching, guiding students to harness AI not merely for tasks but deeper understanding and growth. This approach, grounded in our shared human experience, ensures our educational practices evolve with technology and not become overshadowed by it. We're not just learning from AI. We're shaping a future with AI, where our wisdom and experiences, like timeless folktales, remain invaluable and enduring.



An AI-generated image of Momotarō meeting Urashima Tarō (Image generated using GPT-4 / DALL-E)

## 06 A Towards GPT-empowered Universities: Student Recommendations to Thrive in the Generative AI Era



by **Andrea Olmi & Siro B. Pina Cardona**, *Erasmus Mundus students in Research and Innovation in*

*Higher Education, Eötvös Loránd University, Hungary*

The advent of generative artificial intelligence (GenAI) calls for a paradigm shift in the way we learn and teach, with universities having no choice but to address it. As societies grapple with increasing mistrust and uncertainty moving forward, how can students and professors collaboratively utilise GenAI to advance learning and teaching? From the most populous yet least heard voices in institutional discussions —students, among whom a third express dissatisfaction with their university [1]— we propose the following three recommendations.

### 1) Towards a learning-by-doing approach

After the release of ChatGPT and other large language models (LLMs), students increasingly rely on GenAI for learning, with 35% of students in Sweden regularly using ChatGPT [2]. Simultaneously, 72% of college professors express concerns about ChatGPT's potential impact on cheating [3]. We – the students – challenge this mainstream depiction by advocating for an AI-university synergy through a learning-by-doing approach.

In pedagogy, “learning by doing” refers to hands-on and task-oriented methodologies that draw upon student engagement as the main driver for learning. Thus, a learning-by-doing approach with and through GenAI could potentially represent a goldmine for higher education by changing students’ attitudes toward knowledge acquisition. Picture a classroom with active

“GenAI presents us – students and professors – with an opportunity to explore often-unseen teaching dynamics, where GPT-empowered students take more active roles in their learning journey and professors serve as guardrails of knowledge.”

and conscious students using GenAI to trigger their capacity to ask questions, augmenting their sensibility towards local and global challenges. They are guided by a professor using GenAI as an assistant to showcase opportunities and drawbacks beyond LLM-generated content. To foster innovative learning and teaching, universities worldwide need to open spaces for dialogue on GenAI, allowing professors and students to build the road, together, as they walk it. However, with existing power imbalances within the classroom, this road cannot be built by one actor over another.

## 2) A redefinition of students-professor power balance

While professors are rarely seen to flatter inside the classroom, students are more vulnerable and open to failure. By prioritizing the professor's creation and dissemination of knowledge over the student's learning process, our academic culture encourages students to separate from professors rather than to connect [4]. Therefore, we advise redefining student-professor asymmetric power balances by enhancing students' agency.

From our perspective, striving for greater student-professor intellectual and empathic connections is an ongoing and much-awaited process. Nonetheless, GenAI presents us – students and professors – with an opportunity to explore often-unseen teaching dynamics, where GPT-empowered students take more active roles in their learning journey and professors serve as guardrails of knowledge. GenAI's transformative potential could elevate the students' position within the classroom, by amplifying their voices and rearranging the asymmetries with professors.

Acknowledging a power position, whether it be from the professor's or students' perspective, requires *trust* among each other and towards universities at large. To ensure universities remain at the forefront of society and serve as beacons for best practices, it is vital to expand reflection on the conditions of GenAI praxis beyond the classroom.

## 3) Institutional actions on fairness and transparency

Major international organisations are currently progressing in establishing the legal and ethical boundaries for AI use on a global scale (see, e.g., the forthcoming EU's AI Act). While crucial for the responsible use of AI in societies, institutional efforts are also needed to cultivate open and conscientious mindsets among all stakeholders in higher education. Hence, we assert that combining a global response with a parallel institutional effort is paramount for growing critical and social *human* beings in the long term.

From an institutional standpoint, transparency and fairness when using GenAI emerge as fundamental principles – especially among professors and students. Transparency entails openness and clarity in academic activities, with both

professors and students declaring whether they have used GenAI and how. Fairness ensures its equitable and just application, with all students and professors having access and training to GenAI tools.

Against this backdrop, we propose the following actions. In the short term, the creation of an ethical code of conduct on the use of GenAI by *all* university stakeholders – including students – to promote fairness and transparency within the institution. On a mid-term level, a concerted revision of university strategic plans to consider GenAI's impact on learning and teaching, research and community engagement. Lastly, on a long-term note, the establishment of a multi-stakeholder observatory where institutional actors can holistically voice needs and discuss new regulations, to pursue fairness and transparency further.

## Conclusion

Undoubtedly, universities must harness GenAI not to lag behind and to prepare students for work life and society at large. In this transition towards a GPT-empowered student body, a learning-by-doing approach, a redefinition of professors-students power balances and institutional actions are essential to enable students to thrive in the GenAI era. Ultimately, we believe that our recommendations could serve as a compass for universities to leverage the opportunities in the interplay between GenAI and all institutional actors. In the end, we have no choice but to learn by doing together.

## 07 Living with AI



by **Rosa Maria Vicari**, Full Professor, Institute of Informatics, Federal University of Rio Grande do Sul, Brazil, UNESCO chair holder in ICTs and a member of the Brazilian AI Governance Committee

Higher education for the 21<sup>st</sup> century involves strengthening learning capacity and developing a range of crucial competencies tailored to a new technological and social reality. The emphasis is on preparing individuals capable of promoting alternative development models, and thereby contributing to steering countries toward sustainable growth. This requires a diverse set of skills, encompassing conscious decision-making, critical thinking, creativity adaptability for self-reinvention and self-employment, empathy, resilience, a sense of responsibility, adeptness in relationship-building and collaboration, and the capacity to navigate the complexities of human-AI interaction. The question is: How do we ensure that students acquire these competencies that are required for an adequate education in the 21<sup>st</sup> century?

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**“The key focus should be on educating people about conscious and ethical use of AI. If used appropriately, these technologies hold the potential to level opportunities and raise the level of knowledge.”**

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To achieve this objective, humans must be able to draw on multiple dimensions – cognitive, ethical, physical, artistic, social, and affective. Education must respond to these human needs. Interaction is an important characteristic in learning and to achieve educational objectives. Until recently, interactions were only between living beings. Currently, technological advancements have transformed the dynamics of interactions by including human-AI interaction, which has become both a simple and natural part of everyday life. Prompts play an important role in shaping communication with machines.

The shifting focus toward digital citizenship education has evolved by embracing principles such as safeguarding personal data, respecting the privacy of other participants, acting ethically, and empowering peers to make informed decisions while taking proactive roles in proposed activities. The current ethical dilemmas in AI within education revolve around issues of prediction, decision-making, and the potential impact on students' behavior. Automated decision-making and text generation may produce skewed results that replicate and amplify existing prejudices. It is therefore essential that students practice critical reasoning skills based on data and facts and that they pose pertinent questions as questions are as important as the answers.

In this educational context, it becomes crucial that students acquire skills for self-directed learning. While AI may seem magic, humans need a wake-up call to remain vigilant. Bots can provide good, but not necessarily excellent answers. We must critically explore the content and guide the output generation to obtain the desired result. However, if students use AI to solve a difficult math problem, they risk missing out on the learning process if they simply let AI solve it. Personally, I would not want to study Brazilian history inside the guardrails created by a particular company. In other words, while students should be educated in using AI tools like chatbots to solve problems and act proactively in their learning process, this is a new reality that includes working in teams composed of both intelligent systems and human beings. As this trend continues, human beings will increasingly find themselves sharing opinions and decisions with AI, which will in turn influence other AI outputs and development. The next frontier of generative AI is likely to shift towards the use of agents rather than chatbots, with agents demonstrating proactive behaviour in contrast to their reactive bot counterparts.

We all know that AI systems are developed by a few (OpenAI, for instance, has approximately 1000 employees, and probably a smaller number of people are responsible for establishing guardrails). This leads to the introduction of bias and potential misuse in the data (individual and collective) used for their learning, as well as in the algorithms developed for their operations. It is furthermore impossible to say which input samples generate a particular output.

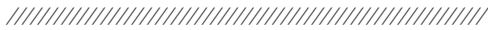
Given this reality, students must understand the limits of AI. Professors need to foster discussions that go beyond the limits of factual content, encouraging a shift in mentality from a static approach disconnected from other subjects to one that addresses uncertainties, focusing on 'why' questions.

Furthermore, there's a need for the ability to adapt to new social contexts and to seek information from different media and AI tools. For instance, developing critical thinking skills is crucial in several areas, including AI and the government (democracy, legitimacy, and transparency), AI and the business (algorithmic bias and inequality), AI and society (challenges and opportunities), and AI and sustainability (energy expenditure). These aspects may generate debates among students and professors about AI's inherent ethical issues. The key focus should be on educating people about conscious and ethical use of AI. If used appropriately, these technologies hold the potential to level opportunities and raise the level of knowledge.

However, for that to happen, the following dilemma would have to be addressed. AI tools learn from data, yet the large amount of existing data does not consider regional diversity. For example, using a popular AI art generator to create images of intelligent people, led to a result lacking diversity, as only images of white people were used. Secondly, many large language model systems use web content for training without proper attribution to intellectual property.

On the other hand, it is possible to establish global legislation where companies are required to declare their data sources (domain and copyrighted material) and also to authenticate (sign) the outputs produced by their systems (texts, videos, audio, images). Governments worldwide, as both producers and consumers of AI, bear the responsibility for such regulatory initiatives. Ensuring the authenticity of content providers becomes crucial, especially for applications with potential educational uses.

AI technologies have become an undeniable reality. It is now up to the education sector to reevaluate what are the essential competences and skills required by students to navigate this reality that impacts everyday life, education, the economy, and the world of work.



## 08 Ban, use, or cite Generative AI?



by **Anna Jobin**, *Senior Researcher & Lecturer in Science and Technology Studies, Human-IST (Human Centered Interaction Science and Technology) Institute, University of Fribourg, Switzerland*

Should universities ban the use of generative AI (GenAI) in written works or, on the contrary, teach how to integrate it into learning practices? Extractive data practices of many available GenAI platforms support the first stance, whereas the general hype around AI and widespread access may favor the second one. However, neither position does justice to the university's epistemic mission in teaching. Instead of focusing on banning or imposing new information technologies, universities should more than ever strive to provide the conditions within which humans can learn.

### Digital transformation

The narrative of AI as a revolutionary force overlooks the foundational role of digitization and connectivity, with the Internet and web technologies pioneering the changes we now attribute to AI. These earlier innovations have profoundly impacted how information is accessed, consumed, created, and distributed. They have been used by our students from early on: From Google searches about topics or the spelling of words to reading Wikipedia articles, from sharing course notes online to asking for homework help in Internet forums, the university learning experience has already been changing long before the arrival of GenAI. At the same time, students' learning experience has always included taking responsibility for their work, no matter how it was created.

### Common misconceptions

Internet and web technologies have also facilitated unprecedented digital data generation and accumulation that have served to create current GenAI models. Today, few would advocate for a complete ban of access to web search or Wikipedia at universities. I find it therefore curious to see how GenAI starts such conversations anew. Why? Because GenAI is neither source nor author. Attributing human-like thinking or consciousness to it is misleading. GenAI does not provide knowledge. It is a powerful computational tool that generates output based on previous data, parameters and probabilities. These outputs can be used by humans for inspiration, modification, copy-paste, or simply be ignored.

At our university, students do not need to reference the use of thesauri, on- and offline dictionaries, writing correction software, or conversations with others about the topic in their writing. I am not fond of the idea of generically referencing

“Instead of focusing on banning or imposing new information technologies, universities should more than ever strive to provide the conditions within which humans can learn.”

the use of GenAI. Ascribing GenAI the status of a source or author to be cited is a profound mischaracterization of how the technology works and further reiterates the AI hype narrative. Moreover, it may wrongly incentivize students to view GenAI output similarly to other types of sources we already ask them to cite. But because GenAI generates individualized output with each request, hence its name, such output cannot be traced back or reproduced in the future. I fail to see what would be gained by citing it, unless it is for specific educational purposes.

### Ethical challenges

Should the use of GenAI be encouraged, then? If it is such a powerful computational tool, harnessing its benefits within universities seems not only justified but necessary? However, as ever so often, it is complicated. Thanks to scholars in the humanities and social sciences, as well as activists and journalists, we know better than to uncritically endorse any of these platforms. There are valid points of criticism that can, and should, be brought up against GenAI platforms, such as illegal data acquisition strategies, veiled data labor, lack of basic testing and missing ethical guardrails, dubious business motives, lack of inclusive governance and harmful environmental impact.

### Comprehension beyond the hype

What we cannot do is ignore the existence of GenAI platforms easily accessible to our students. In an article for The Guardian, the eminent media scholar Siva Vaidhyanathan warned us in May 2023 already that we might be "committing two grave errors at the same time. We are hiding from and eluding artificial intelligence because it seems too mysterious and complicated, rendering the current, harmful uses of it invisible and undiscussed." GenAI, its output, and its implications need to be understood in all fields and contexts. This encompasses not only grasping the technical aspects of these technologies, but also critically analyzing their social, political, and cultural dimensions. Our goal should thus be to cultivate a safe, positive learning environment that stimulates critical thinking. Ideally, universities foster the necessary skills that allow students to evaluate information and build on existing knowledge to make informed decisions outside of any hype discourse. Such skills will not become less relevant in times of abundant GenAI content but rather more.

## 09 Generative AI and the Risk of Digital Colonialism in African Education



by **Arthur Gwagwa**, *PhD Candidate, Department of Philosophy and Religious Studies, Utrecht University, The Netherlands*

The emergence of generative AI tools, such as ChatGPT, has caused a stir in our education, which [might force educational reform](#). But its risks still need to be studied. Yet, viewing AI as a sociotechnical system [1] – not just a tool – reveals how it is shaped by the languages and social systems of a few powerful countries at the expense of the diversity of geography, language, and culture. We can, therefore, predict that in the same way Machine Learning has facilitated intentional or unintentional discrimination against specific individuals or groups in various domains, like criminal justice, GenAI will likely import these harms into education, particularly by defining education through the Western cultures, lending legitimacy to ideas that harm certain members of society with a long-term deleterious impact on students' development and socio-cognitive functioning. We can prevent some of the harms by engaging technology's relevant critical history of social harm.

African college students mostly rely on GenAI [chatbots created by Africans](#), such as [Pi AI, developed by Inflection AI](#), an artificial intelligence chatbot via WhatsApp. Despite the attempts to universalise the tools, they aren't available in all countries for various reasons, such as data costs and poor connectivity. Some chatbots claim to be neutral interlocutors by creating an AI companion capable of coherently conversing on any topic, offering advice and personal assistance to their users. However, their limited access to the datasets violates net neutrality principles, threatening freedom of expression, equality of opportunity, security, privacy, and innovation. It builds a 'walled garden' where the world's poorest people can only access a limited set of insecure websites and services. In addition to affording limited experiences to Africans, these new capabilities risk replacing human judgement or harming certain members of society. Although some of the dangers of AI are new, viewing AI as a sociotechnical system – not just a tool – helps us appreciate that some of its challenges aren't new and, therefore, brings the values underlying AI to the surface.

AI imposed from outside and shaped by the language and social systems of a few powerful countries risks becoming a form of digital colonialism that ignores the diversity of geography, language and culture. Nowhere has colonialism been more ingrained than in education, where the colonised were conditioned to be ashamed of their identity, culture, and languages.

“AI imposed from outside and shaped by the language and social systems of a few powerful countries risks becoming a form of digital colonialism that ignores the diversity of geography, language and culture.”

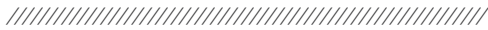
Generative models in AI, for example, large language models (LLMs) such as ChatGPT, rely on geographically, culturally or linguistically non-diverse sources: 'LLMs model their output on the texts they have been trained on, which is more or less the writing of the entire Internet, including all the biases – the prejudices, racisms including physiognomy, and sexism – that constitute much of it. In the same way, language models themselves may take on the status of a surrogate public sphere in the future,[2] and they may do the same in education by refining learning, libraries, and classroom settings.

Some African education systems in the former European colonies are modelled on Western languages and social systems. GenAI will accentuate exclusion since it will rely on the data being spewed from these systems, thus perpetuating the superiority of Western languages and cultures. Despite efforts to reverse this, such as the Masakhane NLP project, the exclusion of marginalised people and places will likely worsen. [Gebru says](#), "In accepting large amounts of web text as 'representative' of 'all' of humanity, we risk perpetuating dominant viewpoints, increasing power imbalances and further reifying inequality". Gen AI will further marginalise communities because of its overreliance on induction instead of deduction reasoning. Once these systems are given a veneer of objectivity, their outputs can be used to justify discrimination based on false inferences. As the U.S. criminal justice has shown through the [biased use](#) of facial recognition technologies to people of colour, education can also be prone to subjecting some people to computational pseudoscience.

The above risks have implications for the trustworthiness or responsibility of GenAI. Given that human learning and development are underpinned with general cognitive capacities (CCs) primarily shaped by one's environment, there are questions about the exact nature, longevity and desirability of the effects that technology use may have on human CCs and, by extension, on their long-term development and socio-cognitive functioning—an understudied area.

### Solutions

As Africa ponders to introduce GenAI in education, there is a need to avoid the hermeneutic injustice in the digital realm, made possible by AI technologies, as these will not only aggravate the existing prejudices against the cognitive capabilities and types of knowledge of non-whites and non-Westerners, but it will also create new dehumanising asymmetries of its own.



GenAI must be responsibly developed and used within African contexts by paying attention to the entire ecology, including race, culture, and environmental costs. Models like GPT-4 should be evaluated not just on scientific tasks but also on the risk they potentially cause across various domains. This challenges educators and policymakers to rethink the role that skills like critical thinking, creativity, and emotional intelligence can play and to pay attention to the essential history of social harm to recognise how the pursuit of science can marginalise those whose exclusion has been rationalised or found “productive”[3].

## 10 Artificial Intelligence and its Implications for Inclusive Education



by **Paulius Pakutinskas**, *UNESCO Chair on Artificial Intelligence, Emerging Technologies and Innovations for Society, Head of LegalTech Center and Full Professor, Mykolas Romeris University and Board Member of Artificial Intelligence Association, Lithuania*

Artificial Intelligence (AI), once a figment of science fiction, has rapidly become a pivotal part of our daily lives and society. Its applications range from comparatively simple tasks like voice recognition to complex decision-making processes in healthcare, finance, and education. However, this swift integration comes with its set of challenges and opportunities, especially within the educational sector. While AI promises to revolutionize these sectors by improving efficiency and creating new opportunities, it also raises ethical, privacy, and employment concerns, illustrating the complex duality of its influence. The dual nature of AI's impact—its potential to both enhance and disrupt societal norms—requires a careful examination, particularly in the context of education.

As a UNESCO Chair on AI, Emerging Technologies and Innovations for Society, I am very interested in the application of Emerging and Disruptive technologies in areas that are important to human beings and to society, and it is particularly important to me that this application of technologies is for good, i.e. that we can not only eliminate the negative aspects of technology but also foster the development of human-centered technologies that promote the harmonious development of society.

AI is not a new phenomenon, it has been evolving since the middle of the last century, but after the success of the major generative AI models, in particular ChatGPT, introduced by OpenAI, many universities and other educational institutions have felt that they are not ready for such challenges. Reactions have ranged from calls for a complete ban on AI

“Beyond ethical dilemmas, the rapid pace of AI development also outstrips the ability of educational institutions to adapt their curricula, teaching methods, and assessment strategies to reflect the new skills required in an AI-driven world.”

in the classroom to encouragement to use as much of the new technology as possible. The new technologies we are discussing are, in their tangible forms, a powerful tool, and there are undoubtedly both positive and negative sides to them. The education system has evolved gradually and subtly over time. While there have been updates to the content and subjects taught, the fundamental structure has seen minimal change. However, stating it has remained static would be inaccurate. For example, the pandemic period significantly accelerated the adoption of existing innovative learning methods, making them a necessity rather than an option and, in some cases, the sole means to continue education. And now we have a new helper, AI, which is able to cope with many tasks that were previously only humanly possible, and most importantly is constantly improving at a tremendous speed. How can universities and other learning institutions respond adequately? Can we remain passive or must we be active and even proactive?

Let's simply assess whether there is a choice to ignore AI technology, to assume that it is a fleeting phenomenon, that it does not affect most, if not more or less all, areas of human activity. It is very easy to conclude that it is already there and that we need to look at it and try to get the most benefit with the least negative effect.

Education is a foundational pillar of society, instrumental in shaping future generations. It encompasses a broad spectrum of learning stages, from early childhood education through to tertiary education and beyond, into lifelong learning.

The advent of AI has sent shockwaves through the traditional educational landscape, highlighting significant unpreparedness in integrating this technology effectively. One of the most contentious issues is the ease with which students can now utilize AI for academic writing and other assignments, raising concerns about academic integrity and the value of human effort in education. Beyond ethical dilemmas, the rapid pace of AI development also outstrips the ability of educational institutions to adapt their curricula, teaching methods, and assessment strategies to reflect the new skills required in an AI-driven world.

When we want to improve or correct something, it is important to look at what the problems are or what the challenges are, and then we can look at what tools would help, but in our case it is the other way around, because we have powerful tools,



and we can look at how to apply them and where to apply them in order to get a better result. However, let us look at the generally acknowledged problems of education, which are more or less common in many countries, sometimes even irrespective of their level of development.

Education globally is facing a tightrope walk between innovation and tradition. Budgets are tight, making it hard to keep class sizes small and resources fresh. Many students, regardless of where they live or their financial status, find doors to learning closed due to various barriers. The fast pace of tech growth demands that curriculums evolve swiftly, leaving educators and learners in a constant state of catch-up. There's a pressing need to align educational content with the ever-changing job market, ensuring relevancy. The gap in access to education is not just a local issue but a global crisis, affecting millions. The struggle to integrate technology in classrooms is universal, challenging teachers to become perpetual learners. High-quality education remains an elusive goal for many, hindered by outdated methods and materials. The disparities in educational opportunities create a divide that impacts future generations. Addressing these challenges requires a collective effort, pushing for policies that prioritize education as a fundamental right.

Can AI technologies help solve these problems? Yes, it is through these technologies that we can improve processes, introduce new methodologies, make high-quality studies at all levels accessible to all, even in the most remote corners, and thus enrich global society in general. Is it all that simple? No, education has been a major part of human activity for centuries, if not since the beginning of human knowledge of the environment, so change is complex and we need to see both sides of the good objectives and the potential risks. The risks could be the subject of much discussion, but for the purposes of this article let us limit ourselves to a fraction of the potential risks, such as the elimination of teachers and lecturers from the labour market, the loss of human contact in learning, the prejudice and discrimination that sometimes is inherent in AI technologies, ensuring the provision of only fair and validated learning content, and others.

AI stands at the forefront of transforming the global education landscape, addressing its myriad challenges with innovative solutions. AI's capacity to offer personalized learning experiences marks a significant departure from the one-size-fits-all approach, adapting to the unique pace, style, and preferences of each student. This personalization not only enhances engagement but also improves educational outcomes by catering to individual learning needs.

Moreover, AI's role in making education more accessible cannot be overstated. Through adaptive technologies, students with disabilities find new avenues for learning, with AI-powered tools designed to meet their specific needs. This democratization of education ensures that learning barriers are minimized, making education inclusive for all.

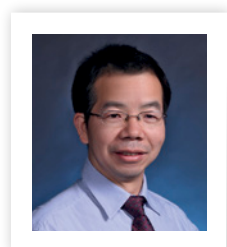
The efficiency of AI extends to administrative tasks as well, particularly in the automation of assessment. By taking over the time-consuming process of grading, AI allows educators to dedicate more of their time and resources to teaching, thereby enhancing the quality of education. This immediate feedback loop also benefits students, who can quickly identify and work on their areas of improvement.

Another revolutionary aspect of AI in education is its support for lifelong learning. AI-driven platforms enable individuals to pursue continuous education beyond the confines of traditional classrooms. These platforms offer personalized learning paths that align with each individual's career goals and interests, promoting a culture of continuous improvement and adaptability.

In conclusion, AI not only addresses the current issues facing the education system but also adds significant value by making learning more personalized, inclusive, and efficient. Through its application, education can evolve to meet the demands of the modern world, preparing individuals not just for the job market, but for a lifetime of learning and adaptation. This underscores the transformative potential of AI in redefining what it means to learn and educate in the 21<sup>st</sup> century.

What we need to do now is to find the best strategies to quickly and seamlessly integrate AI technologies into education and get the most out of it. This is where everyone needs to come together, from politicians, education professionals, learning institutions, students, parents and all other groups in society. I invite and encourage everyone to join forces and make a change so that we all win.

## 11 Reshaping Higher Education with Vital Competences in the Intelligent Era



by **Huang Ronghuai**, *UNESCO Chair on AI in Education and Professor & Co-Dean, Smart Learning Institute, Beijing Normal University, China*

The breakthrough development of generative artificial intelligence (GenAI) technologies such as ChatGPT, Gemini, and Sora has enabled the systems to "learn and understand" human language and generate high-quality and coherent text, complex and realistic images, dynamic and detailed videos, and other content as needed. Furthermore, users can intuitively and tangibly perceive and experience the profound impact of generative AI on their learning, work, and daily lives. GenAI is becoming an important driving force for accelerating the transformation of higher education and it is bringing unprecedented challenges in the process.

“To prepare for the revolutionary effects of the intelligent era, whether educators, parents, or society at large, everyone needs to adapt to fundamental changes in educational philosophy, especially the conceptual changes regarding knowledge, learning, curriculum, and instruction.”

On the one hand, its emergence has led to a gradual reduction in many simple, repetitive, and standardized manual tasks within higher education institutions, such as administrative paperwork, data entry, and routine grading, providing more time and resources for innovative research and personalized instruction. Additionally, generative AI brings a series of ethical challenges to higher education, including the disappearance of certain positions, the crisis of academic integrity caused by homework "cheating" and academic "plagiarism," and the technological ethics formed by human-machine coexistence. In response to the continuous evolution of intelligent technology, we should recognize the inherent logic of AI's role in transforming education, rethink the changes in educational concepts in the era of intelligence, grasp the concerns of cultivating the "vital competence" of the new generation of citizens in higher education, and promote the high-quality development of higher education.

To prepare for the revolutionary effects of the intelligent era, whether educators, parents, or society at large, everyone needs to adapt to fundamental changes in educational philosophy, especially the conceptual changes regarding knowledge, learning, curriculum, and instruction [1]. The first change is **Knowledge Created beyond Experts**, which we should learn in schools. In the intelligent era, knowledge demonstrates substantial collective wisdom. Humans collaborate with AI technologies to produce knowledge, each becoming a producer and disseminator of knowledge. The second change is **Learning Coupled to Digital Environments**, where technology serves an important role for students. In an environment of intelligent interconnectivity, digital technology offers endless possibilities for creating various learning scenarios. The fragmentation and dynamism brought about by multi-space interconnection and cross-space interaction require students to engage actively in deep learning. Another change is **Curriculum Integrated with Multiple Subjects**, fostering interdisciplinary learning and holistic understanding among students. This shift transforms the curriculum from singular and rigidly preset group courses to diverse and personalized courses across multiple subjects. This leads to the formation of a more comprehensive, interconnected, and integrated curriculum system. The last change is **Instruction Assisted by Intelligent Systems**, facilitating a symbiotic relationship between teachers and AI technology. Teachers coexist, collaborate, and learn with AI technology, enabling personalized instruction analysis,

decision-making, and implementation based on data to become normalized.

In order to adapt to the deep integration of generative AI into various aspects of production and life, it is necessary to cultivate students' vital competencies in the intelligent era, focusing on five key concerns: active learning, creativity, adaptability in employment, and the ability to handle various situations and environments.

The first competence lies in **Active Learning during Lifetime**.

This skill will emerge as the central learning aptitude in the intelligent era, highlighting students' sense of self-efficacy and subjective initiative in higher education. Through various behaviors such as self-planning, self-decision-making, self-monitoring, self-management, and self-evaluation, individuals can actively uphold and refine their learning trajectory during their time at the university and throughout their lives.

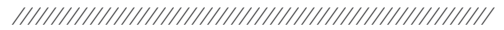
The second competence involves **Creatively Using AI**. This ability not only underscores the capacity to utilize past experiences for novel problem-solving and integrate diverse viewpoints for innovative solutions but also emphasizes applying acquired knowledge and experiences to address real-world challenges in everyday life. Higher education should foster and nurture students' critical thinking and problem-solving skills, directing them toward conducting original research and practical applications with advanced technological resources. This competence may unlock their potential for innovation and creativity.

The third competence is **Adaptability of Flexible Employment**.

This ability ensures that students can adapt to diverse work environments and meet various job requirements. They can seamlessly transition between different roles and responsibilities to fit various work scenarios and occupational demands. In the intelligent era, students will require strong professional skills and interdisciplinary literacy to effectively adapt to the dynamic developments across different industries and respond to changes in social needs.

The fourth competence is **Resilience to Uncertain**

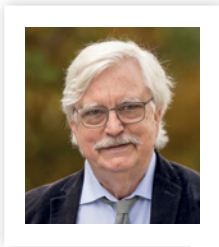
**Circumstances**. This skill involves cultivating the ability to make wise decisions in complex environments and adhere to the principle of technology for good, ensuring that technological innovation benefits humanity while respecting individual privacy, safeguarding data security, and promoting social fairness and justice. Moreover, it entails coping with social uncertainties, requiring students to possess critical thinking and risk assessment abilities to make wise decisions in constantly changing social and economic conditions. Furthermore, it involves the ability for security and technological ethics, where students can understand and address safety and ethical issues in the intelligent era, possess technical ethics awareness and ethical judgment abilities, use technology resources reasonably, protect personal privacy and information security, and understand the ethical dilemmas and social impacts that technological developments may bring.



The fifth competence involves **Survival in Rich AI Environments**. This skill describes the close collaboration between humans and machines within rich AI environments. While prioritizing individual subjectivity and initiative maximizes human creativity and the multitasking efficiency of machines. By combining the strengths of both humans and machines, optimal performance is achieved.

In this era of rapidly updating knowledge and frequently iterating technology, cultivating students' vital competencies becomes particularly crucial. The integrated development of these competencies will help students adapt to changes in higher education and lay a solid foundation for success in the intelligent era. Through reshaping educational philosophies and emphasizing the cultivation of competencies, such as being active during their learning throughout Life, creativity leveraging of AI, adaptability to flexible employment, resilience to uncertainty, and thriving in rich AI environments, students can allow to meet the challenges of an increasingly complex and changing knowledge production in the future and make positive contributions to the progress and development of society.

## 12 An AI-enabled Model for Massive Hybrid Learning



by **Chris Dede**, Professor, Harvard Graduate School of Education, USA

Advances in generative AI can enable a next-generation model for massive hybrid learning, a means to achieve the aspirational vision of universal global

access to higher education. A decade ago, massively open online courses (MOOCs) were heralded as the solution to this challenge. While they failed to reach their aspirational vision, primarily because of asynchronous presentational/assimilative instruction, MOOCs provided the foundational models and infrastructure for emergency learning during the pandemic. The remote synchronous education initiatives forced by COVID-19 extended both the technical infrastructure for learning across distance and human capacities for remote instruction and interaction. Recently, generative AI has enabled natural language processing, which empowers naturalistic interaction with digital supports as well as enhanced analytics for backend feedback. This article posits that, for the first time in history, all the components necessary for a new hybrid model of higher education centered on learning at scale through personalization and engagement are now available.

In 2022, three leading universities (Harvard, MIT, Stanford) each independently formed internal task forces to study innovative approaches to digital learning developed during the pandemic. An overarching theme that emerged was achieving high levels of student engagement online, at scale.

The pandemic underscored that motivation is essential for sustained learning and forced instructors and institutions to prioritize student engagement and wellbeing (Dede & Lidwell, 2023).

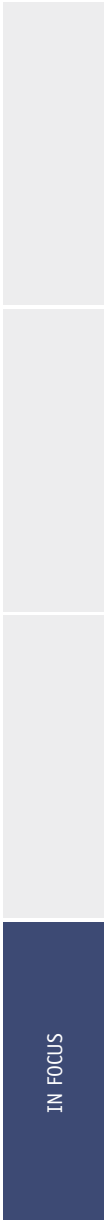
The Community of Inquiry framework is a widely used model for developing and evaluating online education (Kim & Gurvitch, 2020). The three dimensions in this framework are social presence (each learner can express their identity in community interactions), cognitive presence (participants in the community construct meaning through sustained communication), and teaching presence (the design, facilitation, and direction of cognitive and social processes to realize personally meaningful and educationally worthwhile learning outcomes). Combined, these dimensions provide a strong model for hybrid engagement and learning at scale.

The author is a Co-Principal Investigator and Associate Director for Research of the National Artificial Intelligence Institute for Adult Learning and Online Education (AI-ALOE), funded by the U.S. National Science Foundation. Its mission is to conduct responsible use-inspired fundamental research into AI that is grounded in theories of human cognition and learning, supported by evidence from large-scale data, evaluated on a large variety of testbeds, and derived from the scientific process of engineering learning (Goel, Dede, Garn, & Ou, in press). Its aspirational vision is to develop novel AI theories, techniques, and tools to enhance the proficiency of online adult learning at scale to make that modality comparable in effectiveness and engagement to similar face-to-face offerings for occupation-related learning, particularly in science, technology, engineering, and mathematics (STEM) fields.

Some of AI-ALOE's work centers on enhancing social, cognitive, and teacher presence to increase student engagement. For example, Ashok Goel at Georgia Institute of Technology is leading the development and deployment of an AI tool called *SAMI* that takes learners' self-introductions in an online class as inputs and analyzes these to help build connections among the learners. *SAMI* uses natural language processing for understanding learner's self-introductions and matches knowledge graphs to identify connections among the learners. More recently, *SAMI* has started making recommendations for team formation and is now utilizing ChatGPT for named entity recognition and other language tasks.

As another example, AI-ALOE is evolving an AI tool called *Jill Watson* for enhancing teacher presence by automatically answering questions posed by learners in online discussion

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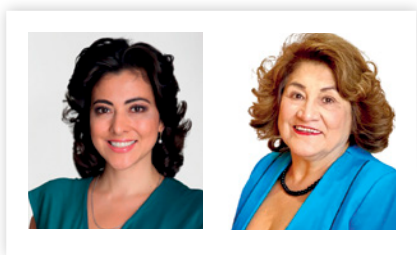




forums any time, any place. *Jill Watson* combines digital libraries for storing answers to previously asked questions, natural language processing for classifying new questions, and machine learning techniques for retrieving answers and generating a novel answer for the new question. Overall, the prevalence of researchers developing interventions that increase student engagement in massive online learning is encouraging. Beyond incremental gains, when combined these could lead to transformative models for next-generation hybrid massive learning.

In our hybrid world, colleges, universities, and regions that force all teaching and learning to be face-to-face are dooming their graduates to reduced agency in every other aspect of life. Transformative models for next-generation hybrid learning are an important next step for higher and continuing education. A global coalition of higher education institutions could begin to realize this vision, an essential step in enabling all learners to survive and thrive in our increasingly turbulent global civilization.

### 13 Multidimensional impacts of Generative Artificial Intelligence in research



by **Nayana María Guerrero Ramírez**, *Lecturer, School of Accounting and Administration & Gloria Ramirez Hernandez*, *UNESCO Chair holder*

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Generative Artificial Intelligence (GenAI) is an area of Data Science that focuses on studying text and analyzing its structure and content to discover meaning through vector representations of words and sentences. It uses a Machine Learning model to learn predefined patterns and generate content. The development of AI chatbots necessitates collecting the largest bodies of human knowledge available in digital formats and processing it to generate mathematical representations of vectors. This allows the construction of the Knowledge Vaults known as LLM (Large Language Model), many of which offer semantic searches and the construction of human-like text.

Generative Artificial Intelligence (GenAI) is changing how people interact, think, and behave in all areas of life, including education and research. The emergence of question-and-answer systems and interactive Chatbots, such as OpenAI's ChatGPT and Google Gemini have propelled GenAI widely into the public

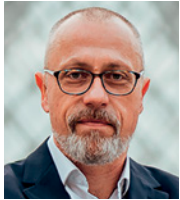
“The creators of GenAI models and systems are private companies driven by commercial interests. Therefore, in academia, it is necessary to explore how this technology can be used to address non-profit focused social and educational problems.”

sphere. These tools can respond to questions, propose meaning, search across immense information sets to suggest the most appropriate answers, and write new texts based on the results obtained. Academics and students use GenAI applications to solve exam questions, conduct research, prepare reports, and perform various other educational activities. Likewise, GenAI has become a valuable resource in social science research, particularly in terms of discovering and analyzing behavioral patterns. Reflecting on the transformation of the methods and modalities of education as a result of the public acceptance of GenAI is now crucial in academia. The impact on the transmission of knowledge in education is already felt in the higher education community worldwide. Moreover, the effect on research will be increasingly significant and multi-dimensional. It is thus necessary to question how exactly generative AI is shaping not only research results, but how it is conducted.

The creators of GenAI models and systems are private companies driven by commercial interests. Therefore, in academia, it is necessary to explore how this technology can be used to address non-profit focused social and educational problems. In this context, both the linguistic and mathematical models developed may be considered with a social emphasis. Using AI tools, it is possible to conduct large-scale qualitative research to identify behavioral patterns. However, a human perspective will remain necessary in order to identify possible biases in the research process, including within the AI itself.

Nonetheless, GenAI can be used for social good. Understanding this framework, one may look to the feminist cause and the exciting contributions it has made to society by incorporating the gender perspective into sectors and subjects where the gender perspective is typically missing. GenAI will make the study of these non-traditional and perhaps non-quantifiable intersections much more approachable for research. For example, when analyzing women's narratives in an informal context, patterns that are not easily interpreted with traditional research tools can be identified by studying comments on blogs or social networks. In this way, GenAI is changing how research is carried out as it automates the analysis of large amounts of data, extracts the most relevant information, and generates texts with that data. Of course, incorporating a gendered perspective in research, for example, will always require human intervention to ensure that the conclusions are free of bias and that new (human) knowledge is incorporated. This type of approach to GenAI still has a long way to go, but it is nonetheless relevant to promote the use of GenAI in this context.

## 14 The importance of education in escaping from the narrative on “AI ethics”



by **Emmanuel R. Goffi**, *Head of Studies at the Human Technology Foundation in Paris, France, and Artificial Intelligence Ethicist and Ethics Sherpa, France*

Teaching and learning are at the core of the construction of our individuality. Acquiring knowledge and methods for mobilizing it allows each of us to develop critical thinking abilities. These abilities are key to our perception of the world around us and to our understanding of the environment we live in.

Today, this environment is made up of artificial intelligence technologies permeating certain communities around the world to varying degrees. Even more than these technologies themselves, it is the narrative that has been patiently constructed.

Interestingly, while lots of people are focusing on certain impacts of these technologies, the weight of the narrative is left apart, almost totally ignored, willingly or not.

Twenty-six centuries ago, Greek sophist Gorgias of Leontini, stated in his *Encomium of Helen*, that “discourse is a great potentate”, stressing the importance of words in the shaping of our representation of the world.

As the “basic form of objectivation” (Berger and Luckmann, 1966) language is, and has always been a tool of choice to spread ideas, influence people, and in the worse case to manipulate them. Not to consider the impact of language on our perceptions is to deliberately position ourselves as potential victims of certain malicious actors, or at least to accept to become followers instead of leaders. This kind of stance can quickly become devastating for individuals, for companies, and for societies.

When it comes to artificial intelligence systems (AIS), the weight of the narrative is not neutral. The mere phrase “artificial intelligence” has an impact on the way we approach these technologies. Imagine that instead of coining the phrase “artificial intelligence” for the Dartmouth Summer Research Project in 1955, John McCarthy had called it merely

“When it comes to artificial intelligence systems (AIS), the weight of the narrative is not neutral. The mere phrase “artificial intelligence” has an impact on the way we approach these technologies.”

“algorithms”. Do you think we would keep comparing these technologies with human intelligence? Nothing is less certain, for the simple fact that we are using the word “intelligence” inevitably leads to a comparison with human cognitive capacities, and then this comparison inevitably leads to concerns regarding the potentiality that this “human-like” systems could turn against humans.

So the real question here is: what is AI? And even a little provocatively, does AI exist outside of the phrase and its symbolic significance?

Here learning is key. Without learning it is difficult to make inferences and to make inferences using knowledge to think critically and question the mainstream narrative. Once again, such a situation inexorably leads to passive conformism, to voluntary servitude, to submission to a discourse defined by others.

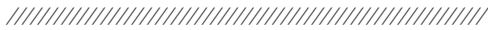
It is striking how the narrative on “AI ethics” is repeated without recoil. Words such a values, ethics, deontology, transparency, trust, responsibility, artificial intelligence, to name but a few, are used without any understanding of what these words mean.

Interestingly, norms entrepreneurs, such as the European Union or some private actors, are actually playing with this lack of recoil and critical thinking, setting soothing narrative to reassure consumers. This point has been stressed but Thomas Metzinger, professor of theoretical philosophy at the University of Mainz and former member of the EU Commission’s High-Level Expert Group on AI who wrote the Ethics Guidelines for Trustworthy Artificial Intelligence in 2019. In a piece published on the Tag Spiegel’s website, Prof. Metzinger declared that “the Trustworthy AI story is a marketing narrative invented by industry, a bedtime story for tomorrow’s customers”, adding that “the underlying guiding idea of a ‘trustworthy AI’ is, first and foremost, conceptual nonsense”.

This conceptual nonsense is possible precisely because nobody questions the narrative. The possibility to shape perceptions through a narrative rests not only on the ignorance of the receiver of the narrative, but also on their ignorance regarding their knowledge.

It also rests on the fact that words are made of two components: a signifier, the sound of the image of the word, and a signified, namely the concept encapsulated in the word. This has been documented by Ferdinand de Saussure in his *Course in General Linguistics*, published in 1916, but way before him by the Stoics in the 4<sup>th</sup> century BCE.

This consideration is important. Think about the seven requirements established Ethics Guidelines for Trustworthy Artificial Intelligence above mentioned. They have been set at a very high level of abstraction, opening the way to all sorts of interpretations.



Transparency, for instance, speaks to everyone. The image or the sound of “transparency” is obvious. Nonetheless, the concept behind it may differ greatly from one person to another, not to mention from one context to another. Yet, transparency, as well as other requirements such as accountability, privacy, diversity, or human agency are used as if their meaning was clear and homogeneous to all.

What is at stake here is knowledge. Our knowledge acquired through learning and its counterpart, namely teaching. The reflection above, whatever its quality, cannot be done by a generative AI system. It is the product of years of learning. It stems from education.

As Walter Lippmann wrote it in the *Stakes of Diplomacy*, “where all think alike, no one thinks very much”. Without education this is where we are going. Are we ready for that? Are we willing for that to happen?

## 15 Generative AI and Japanese higher education



by **Muneo Kaigo**, Professor, Faculty of Humanities and Social Sciences, University of Tsukuba, Japan

In Japan, the Ministry of Education, Culture, Sports, Science and Technology along with most universities have

quickly accepted that generative AI will be prevalent in our society, and they have announced general guidelines for its use. The Japanese government has been actively addressing AI development through initiatives like the "Principles for a Human-Centered AI Society" in 2021. Recognizing the potential benefits and risks associated with generative AI, the AI Strategy Council of Japan held a meeting in 2023 to address immediate concerns and emphasizes the need for a balanced approach to utilize AI responsibly, acknowledging potential issues such as reliability, misuse, and abuse.

While generative AI can potentially enhance learning effectiveness and faculty efficiency, concerns exist regarding its misuse, such as students solely relying on AI-generated content for class assignments. Many universities and colleges are already formulating guidelines to address these concerns and guide appropriate AI use in education. It is crucial for institutions to tailor their policies to the specific needs of their educational programs and continuously monitor the evolving landscape of generative AI.

Higher education institutions should determine the permissibility of using generative AI and establish clear guidelines for students and faculty. These guidelines should consider the educational objectives, content, and potential

“Universities and colleges have a crucial role to play in equipping students with the necessary knowledge and skills to navigate the evolving digital society.”

concerns surrounding AI usage. Generative AI can be a valuable tool for brainstorming, identifying issues, information gathering, proofreading, and supporting students' independent learning activities like translation and programming. Beyond immediate benefits, educational activities should also integrate learning the principles behind generative AI, crafting effective prompts, and critically evaluating its outputs, allowing students to understand its strengths and limitations. Beyond student use, faculty can also utilize AI for developing teaching materials, streamlining administrative tasks, and more. Sharing best practices and addressing concerns arising from such use can foster responsible and effective implementation.

The core of university education lies in independent learning by students. Utilizing generated content without personal effort, such as directly using AI outputs for class assignments, undermines the learning process and may constitute plagiarism if copyrighted content is inadvertently included. While tools to identify AI-generated text exist, relying solely on them for evaluation is discouraged. Additionally, different versions of AI can produce varying outputs, impacting the results. Implementing assessments like quizzes and oral examinations is recommended for a holistic evaluation.

The risks and limitations of generative AI also need to be understood by those in higher education faculty and students. Generative AI, trained on massive datasets, often outputs content containing biases or inaccuracies. It's critical to understand these limitations and verify AI outputs through independent research, similar to internet information verification. Unintended leaks of confidential or personal information can occur through AI inputs. General security measures are crucial to prevent such disclosures. Furthermore, copyright laws in Japan stipulate that permission is required to use copyrighted materials. Utilizing AI-generated text without proper caution can lead to copyright infringement.

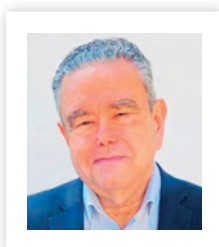
Universities and colleges have a crucial role to play in equipping students with the necessary knowledge and skills to navigate the evolving digital society. This includes understanding the latest trends, possibilities, and risks associated with AI, along with developing ethical considerations and data literacy. Institutions should continually adapt their curriculum to reflect the rapidly evolving technological landscape.

The University of Tsukuba strives to advance science and culture alongside nurturing individuals with creative minds

and strong values. We also emphasize adapting to the ever-changing world. Upholding data confidentiality, research accuracy, originality, and fair practices are core principles in their research activities. At the University of Tsukuba, users of generative AI are currently advised against requesting confidential information or research-related content from the AI. Additionally, when incorporating AI-generated content into publications, proper citation and responsible use are crucial. All information obtained from AI should be critically evaluated and verified with other sources to mitigate the risk of encountering biases or misinformation. Finally, the University emphasizes staying informed about the evolving landscape of generative AI to adapt and respond appropriately to new challenges and opportunities.

The benefits and risks of generative AI are many for all disciplines. However, all higher education institutions will sooner or later quickly need to adapt to this new technological environment and rapidly adjust to the possibilities and problems that will accompany this nascent technology. All faculty will need to use and learn its evolving capabilities begin incorporating the idea that generative AI will be used into curricula and begin the creation of a new style of education that can fully nurture the generation of the future. Generative AI presents both opportunities and challenges for universities and colleges. By carefully considering its potential benefits and risks, while adhering to ethical and legal considerations, institutions of higher education can effectively integrate generative AI into their educational practices, ultimately preparing students for success in an increasingly AI-driven world.

## 16 Artificial Intelligence in Higher Education: A Profound Transformation



by **Andrés Pedreño Muñoz**,  
*Professor of Applied Economics and  
founder of the artificial intelligence Hub  
Torre Juana OST, Spain*

Artificial Intelligence (AI) stands as the driver of an unprecedented transformation across various sectors, including higher education. The report "Artificial Intelligence in Universities: Challenges and Opportunities"[1] provides an in-depth analysis of how AI is redefining the educational landscape, presenting both its challenges and potential benefits. This opinion article gathers some of the multiple impacts of AI discussed in the work related to the future of teaching, learning, research, and university management, without overlooking the ethical challenges and inequalities that its implementation entails.

The introduction of AI in the university setting promises a revolution in pedagogy and cognition. The personalization of learning, powered by systems capable of adapting to the individual needs of each student, opens new dimensions in teaching. This ability to personalize not only enhances the educational experience but also presents a challenge: the design of curriculums that effectively incorporate these technological tools without compromising the quality and integrity of learning.

The predictive and generative capabilities of AI radically transform evaluation and research methodologies. The automation of repetitive tasks and the analysis of large volumes of data facilitate a more objective evaluation and continuous monitoring of student progress, freeing educators to focus on more complex tasks and direct interaction with students. In the field of research, AI acts as a catalyst for discoveries and advancements, allowing the exhaustive analysis of complex data and the generation of new hypotheses.

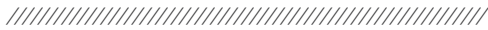
However, the implementation of AI in higher education is not without challenges. The digital divide widens as the availability of technological resources and the capacity to adapt vary significantly between institutions, exacerbating existing inequalities. At an ethical level, critical questions arise about intellectual property, data veracity, and privacy, demanding a robust regulatory framework and deep ethical reflection by educational institutions.

The integration of AI into higher education is not just a matter of technological innovation but also of alignment with academic values and codes of conduct. Transparency, inclusion, and equity must be guiding principles in the development and application of AI technologies, ensuring that their implementation benefits the entire educational community and reflects institutional values.

### E-tutor: a practical and real use case of how AI can enhance student success

A use case highlighted as a paradigmatic example of how AI can empower students in assimilating knowledge is the e-tutor (<https://1millionbot.com/que-es-e-tutor/>). It represents a significant evolution in the educational field, focused on personalized learning through artificial intelligence. This tool, designed to adapt to the individual needs of each student, offers a wide spectrum of functionalities aimed at both students and teachers. For students, the e-tutor facilitates everything from the generation of summaries and outlines to the completion of specific exercises and self-assessment, promoting deeper and

“The integration of AI into higher education is not just a matter of technological innovation but also of alignment with academic values and codes of conduct.”

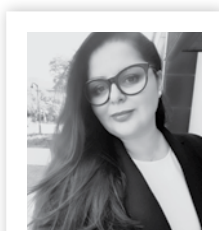


autonomous learning. On the other hand, for teachers, it provides support in preparing exams, evaluating work, and creating teaching materials adapted to different levels of understanding, among other capabilities. The implementation of generative AI, such as that based on models like ChatGPT/GPT4, highlights the need to integrate these technologies into university education, not only to improve educational effectiveness but also to prepare students for a digitalized future.

In conclusion, AI has the potential to radically transform higher education, improving teaching, learning, and research. However, for this transformation to be equitable and ethical, it is imperative to proactively address challenges related to inequalities and ethical issues. Universities must lead not only in the adoption of these technologies, but also in critical reflection on their impact. The era of AI in higher education is an opportunity to reimagine and redefine what it means to educate, research, and manage in the 21st century, always with a focus on the common well-being and the progress of society.

However, educational institutions are often slow to adapt to disruptive changes associated with digital technologies. They adapt without transforming the systems and therefore not fully leveraging their potential. In AI, it is about addressing a profound revolution. If universities are not diligent in change, a significant "gap" can be created between the demands of professional development and our training, methods, and scope. Therefore, the "AI revolution" demands a transformation of methods and mindsets addressing both the challenges and opportunities.

## 17 Elevating Education: Unraveling the Intricacies of Human and Generative AI Integration in Universities



by **Gabriela Simion-Howard**,  
Professor of Education-Teacher  
Preparation, School of Education (SOE),  
Dallas University, USA

### Introduction

The integration of generative artificial intelligence (AI) in higher education represents a transformative shift in the way universities approach teaching, learning, and academic research. This article explores the implications of this integration, examining how generative AI is reshaping traditional paradigms and presenting both challenges and opportunities for educational institutions. By unraveling the intricacies of human and generative AI interplay, this article aims to provide a comprehensive understanding of the evolving landscape of higher education in the age of AI integration.

“By embracing pedagogical innovations, fostering collaborative learning environments, addressing ethical considerations, implementing adaptive assessment strategies, and supporting faculty development, universities can navigate this complex terrain responsibly and effectively.”

### Pedagogical Innovations

Generative AI is revolutionizing pedagogical approaches in higher education by offering new tools and methodologies to enhance teaching and learning experiences. Virtual tutors powered by AI algorithms can provide personalized instruction, adaptive feedback, and real-time support to students, augmenting traditional classroom instruction. Additionally, AI-driven content generation platforms enable educators to create interactive learning materials tailored to individual student needs and preferences. These pedagogical innovations have the potential to improve student engagement, promote active learning and enhance knowledge retention.

### Collaborative Learning Environments

The integration of generative AI is fostering the development of collaborative learning environments that transcend traditional classroom boundaries. AI-powered collaboration platforms facilitate virtual teamwork, peer-to-peer interaction, and knowledge sharing among students from diverse geographic locations and cultural backgrounds. These platforms leverage AI algorithms to facilitate communication, coordinate group activities, and monitor collaborative progress, enabling students to work together effectively in virtual environments. By promoting collaborative learning, generative AI enhances social interaction, promotes cultural exchange, and fosters a sense of community among learners.

### Ethical Considerations

As higher education institutions embrace generative AI technologies, it is essential to consider the ethical implications of their use. AI algorithms may perpetuate biases, reinforce inequalities, and infringe upon student privacy rights if not implemented thoughtfully. Educators and policymakers must address ethical concerns related to data privacy, algorithmic transparency, and algorithmic fairness to ensure that AI technologies are deployed responsibly and ethically in educational settings. Additionally, efforts should be made to promote digital literacy and ethical reasoning skills among students to empower them to critically evaluate and navigate AI-mediated learning environments.

### Adaptive Assessment Strategies

Generative AI offers unprecedented opportunities for adaptive assessment strategies that cater to individual student needs





and learning preferences. AI-driven assessment tools can analyze student performance data in real-time, identify areas of strength and weakness, and generate personalized feedback and recommendations for improvement. These adaptive assessment strategies enable educators to assess student learning outcomes more accurately, tailor instruction to meet individual learning needs, and promote student success. However, it is essential to ensure that AI-driven assessment tools are valid, reliable, and free from bias to maintain the integrity and fairness of the assessment process.

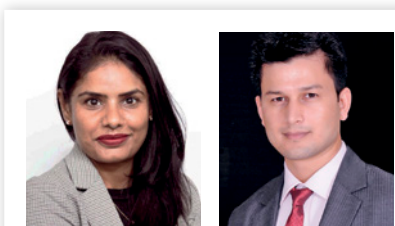
### Faculty Development

The integration of generative AI requires faculty to acquire new skills, competencies, and pedagogical approaches to effectively leverage AI technologies in their teaching practices. Faculty development programs should provide training and support to help educators integrate AI tools and methodologies into their courses, design AI-enhanced learning experiences, and assess student learning outcomes effectively. Additionally, ongoing professional development opportunities should be offered to enable faculty to stay abreast of emerging AI trends, best practices, and ethical considerations in higher education.

### Conclusion

The integration of generative AI is transforming the landscape of higher education, presenting both challenges and opportunities for educational institutions. By embracing pedagogical innovations, fostering collaborative learning environments, addressing ethical considerations, implementing adaptive assessment strategies, and supporting faculty development, universities can navigate this complex terrain responsibly and effectively. Through a multidimensional exploration of the evolving role of generative AI in higher education, this article contributes to the ongoing discourse on the future of education, offering practical insights and recommendations for elevating the quality and inclusivity of learning experiences in the age of AI integration.

## 18 Human + Machine: The Future of Higher Education is Collaborative Intelligence



by **Shruti Choudhary**,  
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### Introduction

*Ready to flip the script on higher education? Buckle up, because Generative AI is charging in, rewriting the syllabus and leaving both professors and students scrambling for the highlighter. This ain't just another shiny app – it's a revolution in disguise.*

Imagine personalized learning paths tailored by AI tutors, research papers co-written by bots, and entire curricula generated in minutes. Sounds like education nirvana, right? But hold your champagne flutes, because alongside this glittering potential lurks a shadow of ethical and practical pitfalls.

### The AI Revolution in Higher Education

Imagine a future where education transcends the confines of brick-and-mortar classrooms, where personalized learning paths dance with adaptive challenges, and [gamified assessments](#) transform knowledge into a thrilling quest. This is not science fiction; it is the dawn of a new era, powered by the transformative potential of Generative AI.

Forget the limitations of traditional remote learning. AI tutors can tailor lessons to individual learning styles, offering real-time support and feedback. Struggling with a complex concept? No problem, AI can generate interactive simulations or personalized study guides to solidify your understanding. Gone are the days of one-size-fits-all curriculum; [AI empowers educators](#) to craft dynamic learning paths that cater to each student's unique strengths and weaknesses.

But the magic goes beyond individualized learning. Gamification, infused with AI, can transform assessments from tedious chores into engaging adventures. Imagine mastering historical events by navigating a branching narrative, or perfecting your scientific reasoning through a virtual laboratory. Learning becomes an immersive experience, sparking curiosity and igniting a passion for knowledge.

And what about those hands-on experiences that define Project-based and [Experiential learning](#)? AI can create virtual worlds where students can test hypotheses, design prototypes, and collaborate on real-world projects. Imagine constructing a sustainable city in a simulated environment, or debating the ethics of AI with a virtual expert. These immersive experiences offer unparalleled opportunities for learning and skill development, preparing students for the challenges of the future.

“The AI revolution in higher education promises a glittering future with personalized learning, immersive experiences, and tailored skill development. Yet, beneath the allure lie shadows of data privacy, ethical considerations, and potential biases lurking within algorithms.”



But the journey doesn't end there. AI-powered virtual assistants become your personal learning concierge, guiding you through the vast ocean of information, locating relevant materials, and suggesting personalized pathways for further exploration. No more drowning in a sea of data; AI becomes your lighthouse, illuminating the path to knowledge and understanding.

This symphony of benefits isn't just a futuristic dream; it's already playing in the halls of some of the world's most prestigious universities resounding the transformative power of Generative AI.

The future of education is not a single instrument; it's a full orchestra, where gamification, technology, and personalized learning harmonize with real-world application, skill development, and flexible learning models. And humans must be conducting this symphony of powerful AI, navigating the ever-evolving landscape of hybrid and asynchronous modes, ensuring every student has the opportunity to learn, grow, and thrive.

On the bright side, educators can use AI to create adaptive learning platforms that cater to diverse learning styles and budgets. But before we bask in the full radiance of this AI symphony, a word of caution. Like any powerful tool, Generative AI comes with its own limitations, whispers in the harmony that demand our attention. We must acknowledge these potential pitfalls with the same zeal we embrace the benefits, ensuring that technology enhances, not undermines, the true value of education.

### The Shadow Side of AI: Data Privacy, Fairness, and Transparency

The *AI symphony*, while beautiful, has its discordant notes. Data security remains a pressing concern, with vast student information feeding algorithms that raise privacy and

vulnerability questions. Ethical considerations echo through the halls, as the line between human and machine-generated knowledge blurs. Transparency and accountability become critical, as we grapple with the opaque inner workings of AI algorithms that shape learning experiences. Perhaps the most unsettling melody is the potential for bias and discrimination. AI algorithms, trained on imperfect data, can perpetuate societal inequalities, reinforcing harmful stereotypes and shaping futures based on unjust criteria. These are not mere whispers in the background; they are urgent counterpoints demanding attention, let the AI symphony become a cacophony of unintended consequences.

### Conclusion

The AI revolution in higher education promises a glittering future with personalized learning, immersive experiences, and tailored skill development. Yet, beneath the allure lie shadows of data privacy, ethical considerations, and potential biases lurking within algorithms. To create a truly bright future, we must orchestrate a harmonious interplay between AI and human strengths. Collaborative intelligence, embracing professors as conductors guiding AI tools, is key. Transparency and accountability must illuminate the algorithms, while lifelong learning ensures everyone dances to the rhythm of technological evolution. This balance, where innovation meets ethics and human connection flourishes, will not just revolutionize education, but create a symphony of opportunity for all.

So, is Generative AI a Trojan horse or a golden goose? The answer, like a good essay, lies in the nuance. We must embrace the potential while wrestling the pitfalls. It's time for educators and tech heads to join forces, build guardrails, and navigate this brave new world together.

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