Date: Sept 3, 2026

Source: https://aipolicylab.se/aipex/

Operationalising AI Ethical Principles in Higher Education with the UNESCO Recommendation on the Ethics of Artificial Intelligence by Policy Makers and Global Universities

Tatjana Titareva (AI Policy Lab, Umeå University), Grace Thomson (Center for AI and Digital Policy (CAIDP)), Irēna Barkāne (University of Latvia), Assel Csonka-Stambekova (Independent Researcher), Yixin Dai (Tsinghua University), Chris Glass Boston College), Fatima Roumate (Mohammed V University in Rabat)

Executive summary. The rapid use of artificial intelligence (AI) tools in higher education creates new governance challenges. Universities worldwide face growing concerns about safety, privacy, unfair algorithms and threats to learning process and academic integrity. Without proper governance systems, AI tools' adoption risks increasing inequalities, reducing learning quality and violating the fundamental rights of students and educators.

The UNESCO's "Recommendation on the Ethics of Artificial Intelligence" adopted in 2021 represents the first global standard on AI ethics and applies to 194 UNESCO member states. It provides a universal framework of values, principles and actions to guide development and use of AI systems and to protect human rights in the AI era. However, putting these principles into practice requires approaches that reflect the diverse social, cultural and political realities across different countries and institutions.

This policy brief examines AI governance strategies across 16 countries on five continents: South America (Chile, Colombia, Ecuador), Africa (Egypt, Ghana, Kenya, Morocco, Rwanda, South Africa, Tunisia), Asia (China, Kazakhstan, United Arab Emirates), Europe (Sweden, Latvia) and North America (United States). The analysis maps national regulations and institutional practices against UNESCO's ten core ethical principles. It shows how governments and higher education institutions are implementing global standards in practice in ways relevant to their local contexts.

This analysis leads to five priority recommendations for policymakers and higher education leaders. First, adopt human rights-based AI frameworks with clearly defined red lines. These should align with international human rights standards and link to higher education institutions accreditation requirements. Second, maintain responsible data governance applying the principle of privacy-by-design. Prohibit unauthorised entry of personal data into

third-party tools. Conduct impact assessments for high-risk systems. Third, strengthen human oversight, transparency and accountability. Ensure all important AI decisions undergo human review. Fourth, make AI literacy universal and relevant across all disciplines. Embed ethics, critical thinking and responsible use across all programmes both in technical and non-technical disciplines. Support this with funded educator training programmes. Fifth, conduct ethical procurement and evaluation throughout the AI lifecycle. Contracts should include transparency clauses and provisions to prohibit the use of systems that violate ethical standards.

The ethical deployment of AI tools in higher education demands a multi-level commitment: users must possess adequate understanding of these tools, institutions must establish transparent guidelines and enforce them through monitoring mechanisms, and governments must provide resources for capacity development. This necessitates integrated action combining bottom-up institutional initiatives with top-down government legislation and technical support. Implementation requires coordinated action from policymakers, institutional leaders, administrators, faculty, students and community partners. Shared governance and collaboration across disciplines are essential.

Background. The adoption of artificial intelligence (AI) tools in higher education is at the forefront of conversations worldwide. Universities have become testbeds for generative AI (GenAI) tools in teaching, research and administration (European Commission, 2022). The growing debate on AI in education spans a continuum from innovation to regulation: at one end, those who advocate rapid implementation of AI tools; at the other, those who raise alarms about the existential risks of AI. In the middle, a third group of voices advocates ethical principles and academic standards for the adoption of AI systems that are fair, safe and inclusive for all higher education stakeholders.

Drawing on diverse voices of higher education institutions (HEI) leaders and researchers from five continents, this policy brief examines AI governance strategies, policies and practices across 16 countries. At the macro level, we review the most prominent national AI regulations, standards and ethical guidelines informing HEIs governance. At the micro level, some exemplary practices at selected HEIs within each country. Recognising that AI governance reflects the unique local social, cultural and political realities of each country, the cases presented aim to encourage reflection and dialogue on what is relevant and has been adopted across different contexts.

Problem statement. The rapid adoption of AI systems, especially GenAI tools, in higher education presents complex global challenges. Leaders in HEIs are increasingly confronting

the reality of AI-assisted work in classrooms and administrative operations. Applications range from personalised content to meet learners' needs to tutoring support, enrollment processing and AI-enabled chatbots for student support (European Commission, 2022).

Rising concerns about safety, disinformation, privacy, bias, the absence of transparency, accountability and human oversight pose challenges for governance, equity and inclusion (UNESCO, 2025). The use of AI-enabled tools in the classroom is associated with mental health impacts, reduced trust in institutions and overreliance on AI systems, with effects on learning quality and student retention (World Bank, 2025). The use of GenAI tools raises concerns about the authenticity of learners' work, the erosion of their critical thinking skills, the lack of depth in their learning and the loss of human connectedness (Bozkurt et al., 2024). Broader risks to inclusivity arise when AI tools are trained on data from a narrow set of contexts, which can erase diverse perspectives and reinforce stereotypes rooted in specific geographic regions (Miao and Holmes, 2023). The absence of governance mechanisms to ensure that AI tool selection aligns with educational goals, safety and fairness poses an additional challenge for equity and inclusion (OECD, 2024).

Policy analysis. The implementation of AI ethics in higher education institutions worldwide is as diverse as the countries in which they are located, the types of HEIs, their constituencies and their socio-economic contexts. While national governments and international organisations are increasingly adopting global policy and ethical frameworks to govern AI (CAIDP, 2026), the implementation of these frameworks into ethical principles, policies and regulations reflects their own governance structures, cultural norms and digital readiness.

The purpose of this policy brief is to share global examples reflecting on:

(1) How are policymakers and HEIs leaders operationalising the UNESCO Recommendations on the Ethics of AI?

(2) How can AI ethics, safety and inclusivity in higher education be both globally informed and locally grounded?

The 16 countries under study constitute a non-exhaustive sample across diverse continents. The analysis is organised according to the ten core principles of the Recommendation and maps national laws, policies and university guidelines. The analysis also considers actions undertaken by countries or specific HEIs, within Policy Area 8: Education and Research, which underscore commitments to adequate AI literacy to enable individuals to make

informed decisions about the use of AI systems (para. 101), development of AI ethics curricula (para. 106), support for AI ethics research (para. 107), training of AI researchers on AI ethics, and ensuring critical evaluation of AI research through independent scientific research (para. 110-111) (UNESCO, 2022).

Principle 1: Proportionality and Do No Harm operationalised as **Human Rights-Based Frameworks for Harm Prevention**

The use of AI systems must be proportionate to the legitimate aim, should not infringe on human rights and should be scientifically based and appropriate to the context. Provisions must be in place for rigorous risk assessment to prevent and mitigate harm, with final human determination in irreversible or life-and-death decisions (UNESCO, 2022, para. 25 - 26). Ethical values and principles can help develop and implement rights-based policy measures and legal norms.

Risk classification systems were enacted in the "*European Union (EU) Artificial Intelligence Act"* (EU AI Act), the first legally binding AI regulation globally relevant to the EU member states (European Union, 2024). The use of AI systems in admissions, assessment and student monitoring is classified as *high risk*, 'with strict requirements, including risk-mitigation systems, high-quality data sets, logging of activity, detailed documentation, clear user information, human oversight, and a high level of robustness, accuracy and cybersecurity' (European Commission, 2024, para. 4).

In Ecuador, the proposed bill *"Proyecto de Ley Orgánica de Regulación y Promoción de la Inteligencia Artificial en Ecuador"* sets out a four-tier AI *risk classification system*, including a ban on extreme-risk systems and on the processing of personal data for purposes incompatible with human rights. The Bill proposes the requirement for public registries for high-risk AI applications (Asamblea Nacional, 2024). In China, the *"Ethical Norms for the New Generation of Artificial Intelligence"* (2021) include requirements for the strengthening of risk monitoring systems, the establishment of user exit and feedback mechanisms (Ministry of Science and Technology of the People's Republic of China, 2021).

Principle 2: Safety and Security operationalised as **Requirements for Technical Robustness and Contingency Plans**

Plans must be in place to prevent and address unwanted harms (safety risks) and vulnerabilities to attacks (security risks) throughout the technology life cycle, thereby

establishing sustainable, privacy-protective data frameworks for the training and validation of AI models (UNESCO, 2022, para. 27).

In the EU, high-risk AI systems require technical robustness and resilience plans to prevent harmful or undesirable behaviours that adversely affect fundamental rights. This includes *fail-safe* plans to interrupt the operation when anomalies exist (EU AI Act, 2024, Art. 15). In Ecuador, the proposed bill *"Proyecto de Ley Orgánica de Regulación y Promoción de la Inteligencia Artificial en Ecuador"* (Asamblea Nacional, 2024, Art. 4d) includes mandates for rigorous tests, human rights impact assessments and safeguards against unintended use and adverse effects. Morocco's national cybersecurity strategy requires regular penetration testing and intrusion detection systems to prevent harm from misuse or attacks (Hespress, 2025). In China, the *"Ethical Norms for the New Generation of Artificial Intelligence"* requires AI systems to be verifiable, auditable, supervisable, traceable, predictable, trustworthy (Art 12), as well as tasks organisations to research and develop emergency mechanisms and loss compensation plans (Ministry of Science and Technology of the People's Republic of China, 2021, Art 17).

Principle 3: Right to Privacy and Data Protection operationalised as **Adequate Personal Data Protection Measures**

The use of AI systems must align with appropriate data protection and governance mechanisms for the collection, use, sharing, archiving and deletion of personal data. In education, provisions must be in place to ensure that the use of AI supports learning without the extraction of sensitive information or the misuse, misappropriation or criminal exploitation of data collected in interactions with users (UNESCO 2022, para. 32, 33, 34 and 104).

In Morocco, the General Secretariat of the Government is reviewing the *"Digital X.0"*, a draft framework law that will govern AI, data and digital identity, with three core priorities: data governance, digital identity and interoperability (Secrétariat Général du Gouvernement, 2025). Digital X.0 will overhaul the provisions of the existing personal data law09-08 (DGSSI, 2009). In Kazakhstan, the new *"AI Law"* 'bans harmful practices such as behavioral manipulation, exploitation of vulnerabilities, emotion recognition without consent, social scoring and illegal data collection' (Omirgazy, 2025a). In Sweden and Latvia, university policies prohibit uploading personal or copyrighted data to third-party AI tools, in accordance with the General Data Protection Regulation (GDPR) requirements (KTH Royal Institute, 2025a; University of Latvia, 2024/2026).

Principle 4: Multi-stakeholder and Adaptive Governance & Collaboration operationalised as **Multi-level Collaborative Governance Approaches and Mechanisms**

Diverse stakeholders must be involved in governance of AI throughout the AI system life cycle, including governments, intergovernmental organisations, the technical community, civil society, researchers and academia, media, education, policy-makers, private sector, human rights institutions, anti-discrimination monitoring bodies and groups for youth and children. Measures must be in place to enable meaningful participation by marginalised groups, communities, and individuals, and to respect Indigenous Peoples' self-governance of their data (UNESCO, 2022, para. 47).

The government of Kazakhstan engaged 13 state bodies in developing the first "*AI law"* to ensure the safe, transparent and ethical use of AI (Omarova, 2025). In Ecuador, the Ministry of Information and Telecommunications (MINTEL) proposed the creation of a collegiate entity with multisectoral representation and administrative independence to govern decisions on AI capability, data management and competitiveness (Albornoz & Gualavisi, 2025). In Morocco, in preparation for the "*Draft Law 59.24 on Higher Education and Research"*, the Ministry of Higher Education involved universities, research centres, regulatory bodies and NGOs in a coordinated, participatory, and flexible oversight of technology and the broader research ecosystem (Islah, 2025). The University of Los Andes and the Externado University in Colombia host multi-stakeholder roundtables on AI regulation with the participation of academia, civil society and government (University de los Andes, 2025).

Principle 5: Responsibility and Accountability operationalised as **Accountability and Liability Guidelines**

The ethical responsibility and liability for decisions and actions based on an AI system should ultimately be attributable to AI actors, in proportion to their roles in the AI system's lifecycle (UNESCO, 2022, para. 42). Oversight, impact assessments, audit, due diligence, and whistleblower protections must be in place to ensure accountability (para. 43). In learning, strict requirements for monitoring, assessing abilities and predicting learners' behaviours must be in place (para. 104). Rigorous, independent, multidisciplinary scientific research must ensure a critical evaluation of AI research and proper monitoring of potential misuses or adverse effects (para. 110).

In China, the *"Ethical Norms for the New Generation of Artificial Intelligence"* prescribe that humans are the ultimately responsible entities and must 'comprehensively heighten awareness of responsibility, and exercise self-reflection and self-discipline at every stage of the AI life cycle' (Ministry of Science and Technology of the People's Republic of China, 2021, Art. 3). In the UAE, the *"Charter for the Development and Use of Artificial Intelligence"* (2024) defines accountability as a policy objective and the *"UAE International Stance on AI Policy"* (2024) emphasises the need for accountability mechanisms to address any potential violations in AI use (priority 2).

In Kenya, Aga Khan University established GenAI guidelines to guide the transparent and responsible integration of AI tools into academic and administrative processes (Aga Khan University, 2023). In Kazakhstan, Nazarbayev University establishes the levels of responsibility for the integration of GenAI into learning and teaching, including response, position, acceptable use statements, dissemination, supervision and reporting (Nazarbayev University, 2023). In Latvia, the *"Guidelines for the Use of AI in the University of Latvia"* (2024, updated in 2026) define that authors of AI-assisted work 'still are and remain responsible for the originality of content, truthfulness of the facts and validity of the statements' (p. 8). In Colombia, Universidad de los Andes states that users bear the 'responsibility to verify the pertinence, accuracy and veracity of the material generated by GenAI' (Universidad de los Andes, 2024, section 2.2.1).

Principle 6: Transparency and Explainability operationalised as **Mandatory Disclosure and Contestability Frameworks**

AI actors must ensure transparency and explainability as fundamental requirements for accountability and governance. AI systems must operate in ways that are traceable and understandable to those they affect, with disclosure of when and how systems are used, and with provisions to challenge decisions and outcomes that affect their safety or human rights (UNESCO, 2022, para. 37 - 41).

In China, the *"Ethical Norms for the New Generation of Artificial Intelligence"* establish the obligation to improve transparency, explainability, understandability in the design, implementation and application of algorithms (Ministry of Science and Technology of the People's Republic of China, 2021, Art. 12). In Morocco, AI processing of personal data is governed by the *"Data Protection Law 09-08"* (CNDP, 2009) which grants citizens the right to seek recourse against automated decisions. CNDP holds hearings with scientific organisations to advance the implementation of the law (CNDP, 2025).

In Kazakhstan, the guidelines of *"Nazarbayev University's Response to Generative Artificial Intelligence in Learning and Teaching" request* faculty and students to disclose the use of AI tools and their details in the design, delivery and assessment of courses, as well as assignment completion (Nazarbayev University, 2023). In Sweden, KTH Royal Institute's "*GenAI Guidelines for studying with GenAI"* encourage students to be transparent in whether, how and why students use the AI tools (KTH Royal Institute, 2025a).

Principle 7: Human Oversight and Determination operationalised as **Non-Negotiable Human Determination**

Human oversight requires the attribution of ethical and legal responsibility at any stage of the AI lifecycle, as well as the provision of remedies to physical persons or existing legal entities. In cases where humans decide to rely on AI systems for efficacy, the decision to cede control remains with humans. AI systems can never replace ultimate human responsibility and accountability. Life-and-death decisions should not be ceded to AI systems (UNESCO, 2022, para. 35-36).

In the UAE, the "*Charter for the Development and Use of AI"* (2024) protects the 'irreplaceable value of human judgment and human oversight over AI to correct any errors or biases that may arise' (Principle 6). In China, the *"Ethical Norms for the New Generation of Artificial Intelligence"* (2021) stipulate the principle of 'strengthening responsibility', whereby humans are the ultimate responsible party and should not avoid accountability review or evade responsibilities (Ministry of Science and Technology of the People's Republic of China, 2021, Art 3).

In Sweden, the "*GenAI Guidelines for studying with GenAI"* purposes at *KTH Royal Institute* establish the 'human-in-the-loop' principle whereby students are 'responsible for all decisions and assessments of what is appropriate and correct' (KTH Royal Institute, 2025a, Guideline 3), as well as human educators should be the final decision makers about the AI systems used in educational institutions (Jonkoping University, 2023).

Principle 8: Sustainability operationalised as **Sustainable Development Goals (SDG) Alignment**

Continuous assessments of the human, social, cultural, economic and environmental impacts of AI technology must be in place, aligned with the evolving goals of the Sustainable Development Goals (SDGs) (UNESCO 2022, para. 31). Data, energy and resource-efficient

AI methods must be prioritised. Should there be disproportionate "negative impacts on the environment, AI should not be used" (para. 86). Rigorous and independent scientific research that incorporates interdisciplinary perspectives beyond science, technology, engineering and mathematics must be ensured (UNESCO, 2022, para. 110).

In Sweden, the KTH Royal Institute (2025b) provides resources on the energy consumption and ecological footprint of generative AI. In China, the discussion of AI and SDGs is active through academic research projects, conferences and reports (The Chinese University of Hong Kong, Shenzhen, n.d.). In Colombia, the guidelines for the use of generative AI (*"Lineamientos para el uso de inteligencia artificial generativa (IAG)"*) at the University de los Andes stipulate that the use of GenAI must be coherent with and contribute to the SDGs (Universidad de los Andes, 2024).

Principle 9: AI Awareness and Literacy operationalised as **Transdisciplinary AI Literacy Initiatives**

Governments, academia, civil society, media and the private sector must work jointly on accessible education, civic engagement and AI literacy initiatives so that members of society can make informed decisions and be protected from the undue influence of AI systems (para. 44). Learning must focus on the impact of AI on human rights and access to rights, as well as on the environment and ecosystems (para. 45). Pre-requisite skills for AI education must include an AI ethics curriculum (para. 101-102), aligned with national education programmes and traditions, developed in local and indigenous languages and accessible to persons with disabilities (para. 106) (UNESCO, 2022).

The "*EU AI Act"* requires AI literacy for providers and deployers (European Union, 2024, Art. 4). In the UAE, the *"Charter for Development and Use of AI" (2024)* stipulates as one of the priorities and key components the promotion of AI awareness (p. 11). In Morocco, *"National Strategy "Digital Morocco 2030"* invites scientists to 'engage in multidisciplinary research (digital, legal, sociological, etc.) to reflect on the development of AI and its impact on society', as well as 'include digital education as early as primary school' (Ministry of Digital Transition and Administrative Reform, Morocco, 2024, p. 12 - 13). The UAE Education, Human Development, and Community Development Council established a compulsory AI curriculum across K-12, with 25% of the content devoted to AI ethics (Rasheed, 2025). Kazakhstan is integrating AI into national curricula at multiple levels (Omirgazy, 2025b). In Rwanda, the National AI Policy includes 21st-century skills and high-level literacy

as enablers of the strategy (Republic of Rwanda, Ministry of ICT and Innovation, 2022). Public AI literacy is a key element of Kenya's national AI strategy (Kenya AI Strategy 2025 - 2030).

Tsinghua University in China launched an internal AI Literacy website that focuses on the fundamentals and applications of generative AI in teaching and learning, with a dedicated section on the "Responsible Use of Generative AI" with key principles for academic and ethical practice (Tsinghua University, 2025). In the United States, the State Council for Higher Education in Virginia (SCHEV) awarded a grant to a consortium led by Virginia State University, a historically Black institution, Northern Virginia Community College, a major community college, and Brightpoint Community College, to expand AI instruction in dual-enrollment and transfer-pathway programmes. The programme includes AI micro-credentials for professional advancement and open educational resources for wider use across the state's higher education sector (Northern Virginia Community College, 2025; Virginia State University, 2025).

Principle 10: Fairness and Non-Discrimination Operationalised as **Ex-ante Human Rights Impact Assessments and Remediation**

AI actors must promote social justice and safeguard fairness and non-discrimination in line with international law. Inclusive approaches in AI development must consider the specific needs of diverse constituencies to the benefits of AI, regardless of race, colour, gender, age, disability or other grounds. AI actors must make all reasonable efforts to minimise and avoid reinforcing discriminatory or biased applications and outcomes and ensure effective remedies against algorithmic harms (UNESCO, 2022, para. 28-30).

The *"African Union Continental Strategy"* includes plans for legal protection against algorithmic bias and discrimination, including the need to 'compensate for bias and discrimination' (p. 21-22). Member States committed to develop and roll-out AI assessments including the UNESCO Ethical Impact Assessment (EIA) (African Union, Continental AI Strategy, 2024). In Ecuador, the draft bill *"Proyecto de Ley Orgánica de Regulación y Promoción de la Inteligencia Artificial en Ecuador"*, proposes the prohibition of algorithmic discrimination against vulnerable groups and historically disadvantaged groups (Asamblea Nacional, 2024, Art. 4b and 29). In Morocco, ethical risk-assessment mechanisms aligned with the *UNESCO Recommendation* and the *"EU AI Act"*, will be part of the national AI roadmap announced by the Ministry of Digital Transition and Administrative Reform (Amer, 2025).

Ethical impact assessments are recommended by the University of Latvia, before the adoption of AI-enabled products, to protect users against manipulation and embedded biases (University of Latvia, 2024/2026). In the United States, the Center for Responsible AI (CRAI) at Virginia State University, focuses on the ethical adoption of AI to ensure that 'AI amplifies opportunity and inclusion, not division' (n.d.).

Recommendations. Building on the policy analysis above, in this section we offer five recommendations for policymakers and higher education stakeholders. They are grounded in the Recommendation. The aim is to translate high-profile principles into practice with consideration that ethical AI in higher education has to be both globally informed and locally relevant.

1) Adopt **human rights-based AI frameworks** with clearly **defined red lines**. We encourage policymakers to align national or regional frameworks with international human rights standards, and universities to provide clear guidance on the classification of the educational uses of AI tools according to levels of risk. Higher education stakeholders can implement this through institutional risk registers, ethical impact assessments and responsible procurement processes. It is important to ensure that no AI system is adopted without adequate human oversight or harm prevention mechanisms. These measures should be linked to HEIs accreditation standards and public reporting requirements. Universities can look for existing templates and guidance for institutional self-assessment for responsible AI adoption (AI Policy Lab, Umea University, 2025; UNESCO, 2023).

2) Maintain **responsible data governance** and **privacy by design**. Protecting personal and sensitive information must be a non-negotiable foundation of any ethical AI policy in higher education. Policymakers should update national privacy guidance for education. It should guarantee that the privacy protection mechanisms go beyond legal compliance. Universities should prohibit the entry of personal or copyrighted data into third-party AI tools unless approved and secure. They should also carry out data protection impact assessments for high-risk AI systems used in teaching, assessment and administrative functions. Additionally, HEIs need to promote secure internal tools, train staff and students on privacy and maintain transparency on how data are collected, stored and deleted.

3) Reinforce **human oversight, transparency** and **accountability**. All high-stakes AI-assisted decisions, including admissions, grading or disciplinary procedures should be subject to human review. Students and staff must be informed when AI tools are used and have the right to contest and request explanations for decisions affecting them. Institutions

can lead by example of transparency by publishing databases of the AI systems they use, including information about their purpose, model design and safeguards.

4) Make digital literacy, including **AI literacy**, universal and contextual across disciplines. AI literacy should not be limited to computer science but embedded in all programmes with an emphasis on critical thinking, ethics, data protection and the psychological effects of AI on learning and mental health. This requires coordinated policy support to fund educator training, micro-credentials and professional development programmes. Universities should design curricula that integrate AI ethics and responsible innovation into existing courses. It is important to stimulate educational stakeholders to learn to question, interpret and responsibly use AI outputs.

5) Conduct **ethical procurement** and **evaluation** of AI systems throughout the **AI lifecycle**. Procurement offices should act as gatekeepers of trustworthy AI systems, conducting ethical impact assessments before purchase and throughout the use (Hickok, 2024; UNESCO, 2023). Contracts with AI vendors should include transparency, access and termination clauses. It is important that institutions can discontinue systems that no longer meet ethical standards or where human oversight is impossible. National and regional policymakers can strengthen this process by tying funding and accreditation to proof of ethical procurement and periodic evaluation.

Conclusion. AI tools in higher education cannot be ethical unless users understand how to use them, institutions set clear expectations (guidelines), enforce and monitor them, as well as governments support capacity building in educational settings. This requires both top-down (government legislation and technical support) and bottom-up (institutional action) approaches. For example, using ethical impact assessments before purchasing AI tools, as well as shared agency among faculty, administrators, students and community partners. Ethical AI in higher education must be inclusive, adaptive and globally informed, but locally grounded.

Acknowledgements. This policy brief was produced under the United Nations Higher Education Sustainability Initiative (HESI) as part of the Implementation Group (IG) on "AI Ethics, Safety, and Inclusivity in Higher Education". The authors appreciate the support of Ms Arianna Valentini and Lily Liu Bosen. The research findings in this policy brief reflect the work of the authors named above. They do not represent the opinion or position of any other organisation, including the United Nations.

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