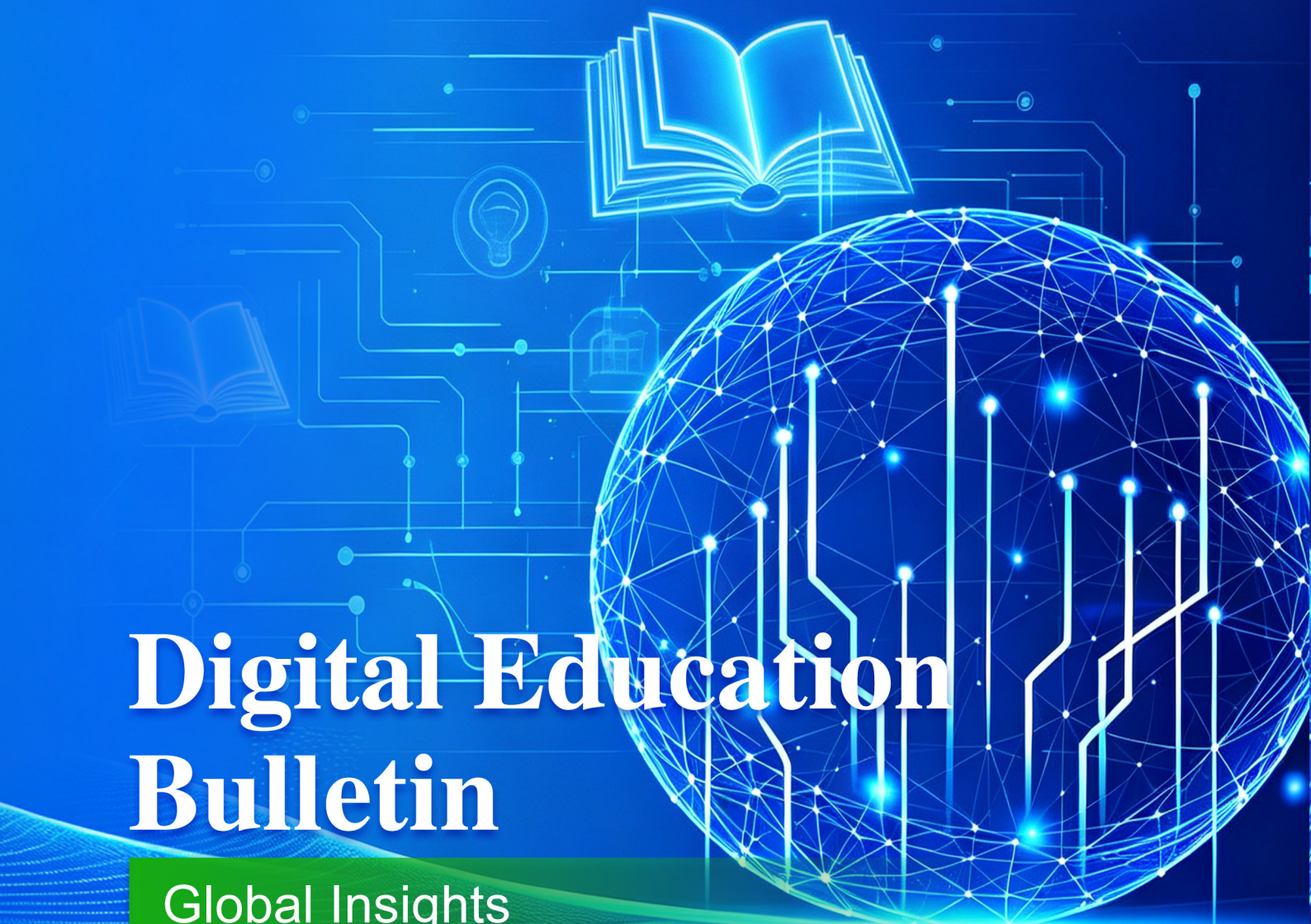
世界数字教育联盟
WORLD DIGITAL EDUCATION ALLIANCE

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Global Insights

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GFCC

The Human Edge: Global Perspectives on AI and Prosperity



The Global Federation of Competitive Councils (GFCC), in partnership with Torrens University Australia, has released a major new report: *The Human Edge: Global Perspectives on AI and Prosperity.*

Drawing on insights from 113 leaders across 32 countries and five sectors, the report offers one of the most globally diverse perspectives on how nations can strengthen human capability and institutional readiness in an AI-driven world.

Technology is advancing rapidly, investment is surging, and adoption is spreading across sectors. Yet education systems, workforce models, governance frameworks, and social protections are not keeping pace. This is the defining competitiveness challenge of the AI transition.

One of the critical challenges for educators is how we can develop human capability in the AI era. How can universities go beyond the focus on AI as a tool or a research engine to producing graduates who can work alongside AI to achieve greater productivity, creativity, efficiency and who can make a greater contribution in society to inclusive social growth.

——Professor Aleks Subic

Vice-Chancellor and Chief Executive Officer of Torrens University Australia chairs the GFCC Global Task Force on Human and AI and has been instrumental in leading the research and the strategic recommendations behind the report

Key insights from The Human Edge report

- Preparing people for the AI era goes beyond producing more data scientists, coders or AI engineers – these skills are important, but more valuable are people who can exercise judgement, critical thinking and work across disciplines to create more value with AI.
- The central risk is not that AI replaces humans, but that it rewards some humans and excludes others. Providing access to minority and disadvantaged groups is critical.
- Institutional readiness is the real competitiveness frontier in the AI era; an institution's ability to redesign work, learn quickly, build trust, deploy technology responsibly and distribute productivity fairly will set it ahead of the rest.

The report makes seven strategic recommendations for governments, universities and employers, including:

1 Establish AI-ready education and skills frameworks as a global priority

The clearest priority emerging from the survey is the need for AI-ready education and skills frameworks. These should not be narrowly technical. They should define the full capability architecture required for human–AI complementarity: AI literacy, critical thinking, creativity, systems thinking, ethics, adaptability, collaboration, entrepreneurial mindset, and applied problem-solving. These frameworks should be adaptable across the entire continuum of education, including K–12, vocational education, universities, professional education, and workforce reskilling and upskilling.

2 Build lifelong learning as infrastructure, not as a series of disconnected programs

The AI transition will not be managed through short-term training schemes alone. Countries and institutions need permanent lifelong learning infrastructure: portable learning accounts, modular credentials, employer co-investment, stackable qualifications, recognition of prior learning, and pathways that allow people to move from AI-exposed roles into AIaugmented roles. Singapore's SkillsFuture model is

instructive not because it can be copied exactly, but because it shows the importance of building the infrastructure before crisis hits.

3 Redesign work, not just curricula

The reports make an important point: the value of AI is realized when workflows are redesigned, not simply when tools are adopted. Organizations need to move from task automation to work transformation. That means identifying where AI can remove low-value cognitive burden, where human judgement must remain central, where new roles are needed, and how staff can be involved in shaping adoption. This is essential for productivity, trust, and wellbeing.

4 Protect the apprenticeship and graduate pathways into expertise

One of the most under-appreciated risks is the potential erosion of The Human Edge: Global Perspectives on AI and Prosperity 12 entry-level learning. If AI performs the routine work through which graduates and early-career professionals learn judgement, then the pathway to expertise and experience may be weakened. This is particularly relevant in law, finance, consulting, accounting, engineering, healthcare administration, software development, and research. Universities and employers should jointly design new AI-era apprenticeships and graduate route models in which early-career workers learn with AI, not around it or in competition with it.

5 Make inclusion a design principle, not a downstream mitigation strategy

AI policy should begin with the most exposed groups and regions. This includes the Global South, rural communities, SMEs, low-wage workers, women in routine roles, older workers, and communities with limited digital infrastructure. Inclusive AI requires deliberate investment in connectivity, local-language models, community-based training, public digital infrastructure, accessible tools, and trusted intermediaries.

6 Develop a human-centered AI competitiveness scorecard

The reports make an important point: the value of AI is realized when workflows are redesigned, not simply when tools are adopted. Organizations need to move from task automation to work transformation. That means identifying where AI can remove low-value cognitive burden, where human judgement must remain central, where new roles are needed, and how staff can be involved in shaping adoption. This is essential for productivity, trust, and wellbeing.

7 Move from voluntary principles to accountable governance

Ethical AI frameworks are necessary, but insufficient if they remain voluntary and disconnected from practice. Governments, businesses, and universities should develop governance models with clear accountability, audit requirements, human-in-the-loop standards, worker consultation, transparency expectations, and mechanisms for redress. The aim should not be to slow innovation, but to build trust in innovation through effective and responsible adaptation.

For more details, please visit the link below:

https://www.thegfcc.org/the-human-edge-report

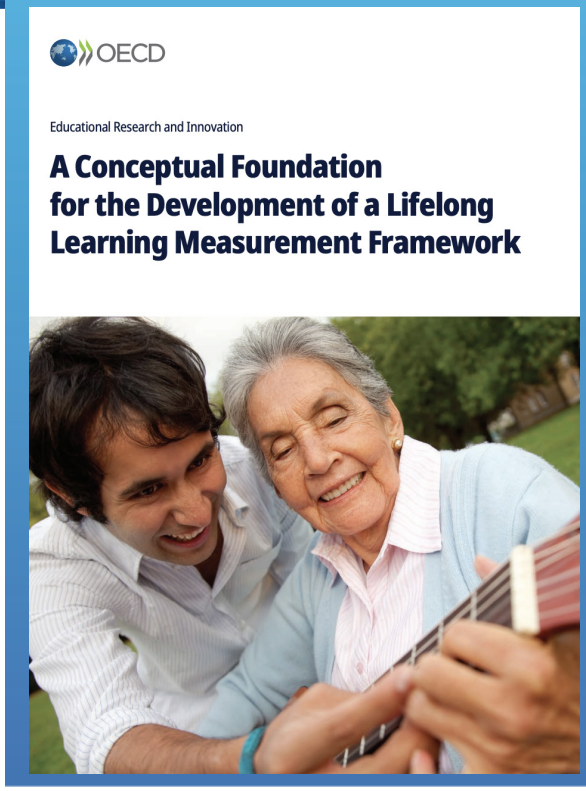
Reference:

Torrens University Australia. (2026, July 17). *Global AI report warns Australia's education and work systems need to be redesigned.*

https://www.torrens.edu.au/stories/newsroom/research/global-ai-report-warns-australias-education-and-work-systems-need-to-be-redesigned

OECD

A Conceptual Foundation for the Development of a Lifelong Learning Measurement Framework



On 28 July 2026, the Organisation for Economic Co-operation and Development (OECD) released *A Conceptual Foundation for the Development of a Lifelong Learning Measurement Framework.*

Building a conceptual foundation for a lifelong learning measurement framework

This report develops a conceptual foundation for a measurement framework that captures learning trajectories across the life course and diverse contexts, and enables systematic assessment of how policies shape participation and outcomes. It provides policymakers with a comprehensive approach to understanding how lifelong learning (LLL) systems function, where gaps exist, and how interventions can strengthen opportunities across populations.

LLL has become a central policy lever for productivity, inclusion, and resilience in the face of demographic ageing, technological change, and evolving skill demands. Yet existing data systems were designed mainly to measure educational attainment and training participation at specific life stages. They do not adequately capture learning as a lifelong and life-wide phenomenon, creating four major limitations that constrain policy design and evaluation.

- First, coverage is too narrow across the life course. Most international measurement focuses on adults aged 25-64, offering limited visibility into learning outside formal schooling in childhood and excluding adults over 64. Learning through families, communities, and digital environments is largely invisible, despite its growing importance. As a result, critical phases of human development, skill maintenance, and the links between them remain poorly understood.

- Second, measurement is largely cross-sectional, providing static snapshots rather than tracking learning over time. Current instruments do not follow how skills evolve through key life transitions such as entering the workforce, changing occupations, forming families, or retiring. The absence of systematic longitudinal linkages between surveys like the Programme for International Student Assessment (PISA) and Programme for the International Assessment Competencies (PIAAC) prevents a coherent view of skill development across decades. Policymakers cannot assess whether early investments yield long-term returns or identify where trajectories diverge.

- Third, outcomes are too focused on the labour market. While employability and earnings matter, learning also produces broader social benefits, including civic participation, health literacy, social cohesion, personal agency, and wellbeing. These wider returns are largely absent from current metrics, limiting understanding of the full value of LLL and narrowing policy debates to economic productivity alone.

- Fourth, informal learning is insufficiently captured. Much skill development occurs through everyday activities in workplaces, families, communities, and increasingly through digital resources such as online tutorials and platforms. These forms of learning remain weakly measured, creating blind spots precisely where learning is expanding most rapidly.

A three-pillar framework for measuring lifelong learning systems

The proposed framework organises measurement around three interconnected pillars: demand, supply, and coordination. Together they provide a system-level perspective for monitoring and policy analysis, recognising that LLL systems depend not only on provision but also on how well supply aligns with needs and how effectively individuals are connected to opportunities.

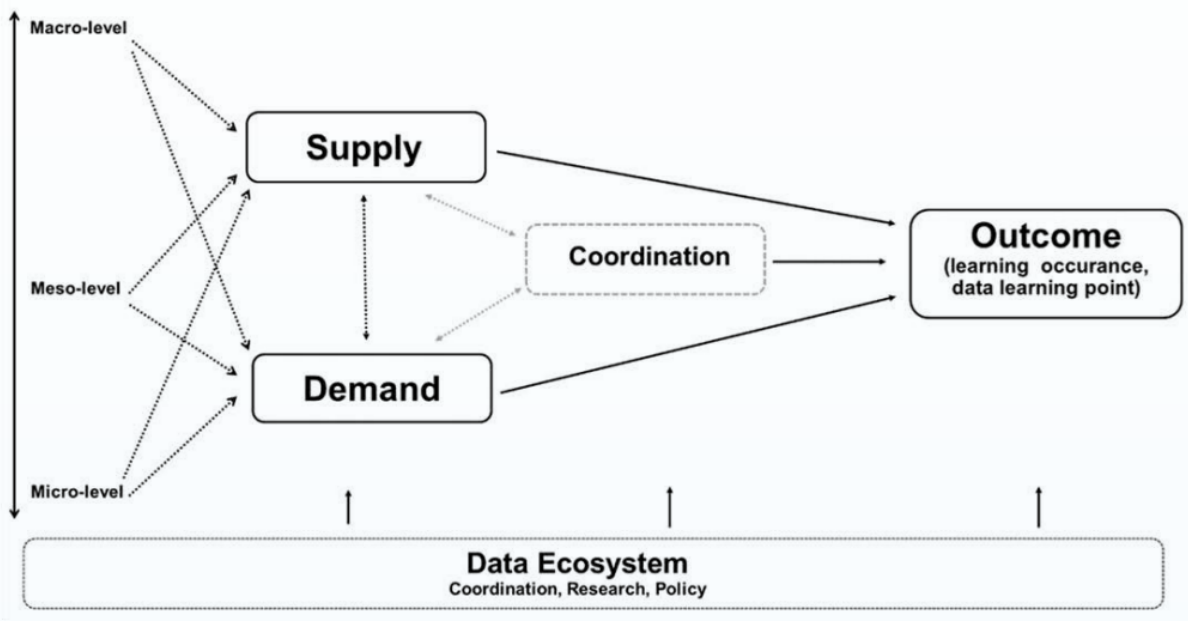


Figure 1. LLL conceptual framework

Demand captures learning needs at three levels. At the individual level, it refers to skill gaps and capabilities required for work and daily life. At the organisational and community level, it reflects skill requirements within firms, sectors, and public services. At the societal level, it encompasses system-wide pressures such as demographic ageing or technological change that generate population-wide learning needs.

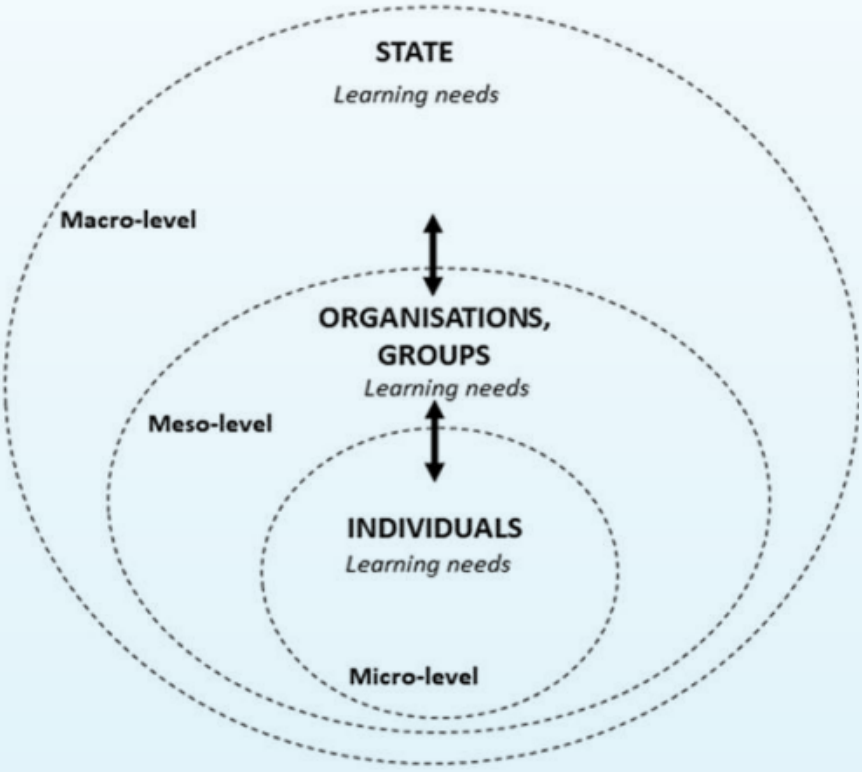


Figure 2. The Multi-Level Ecology of LLL Needs

Supply maps learning opportunities across four institutional clusters: formal education systems; employers and workplace learning; welfare and labour-market programmes; and civic and community organisations such as libraries and voluntary associations. Countries vary significantly in how these clusters are developed, accessed, and integrated, which shapes participation patterns and outcomes.

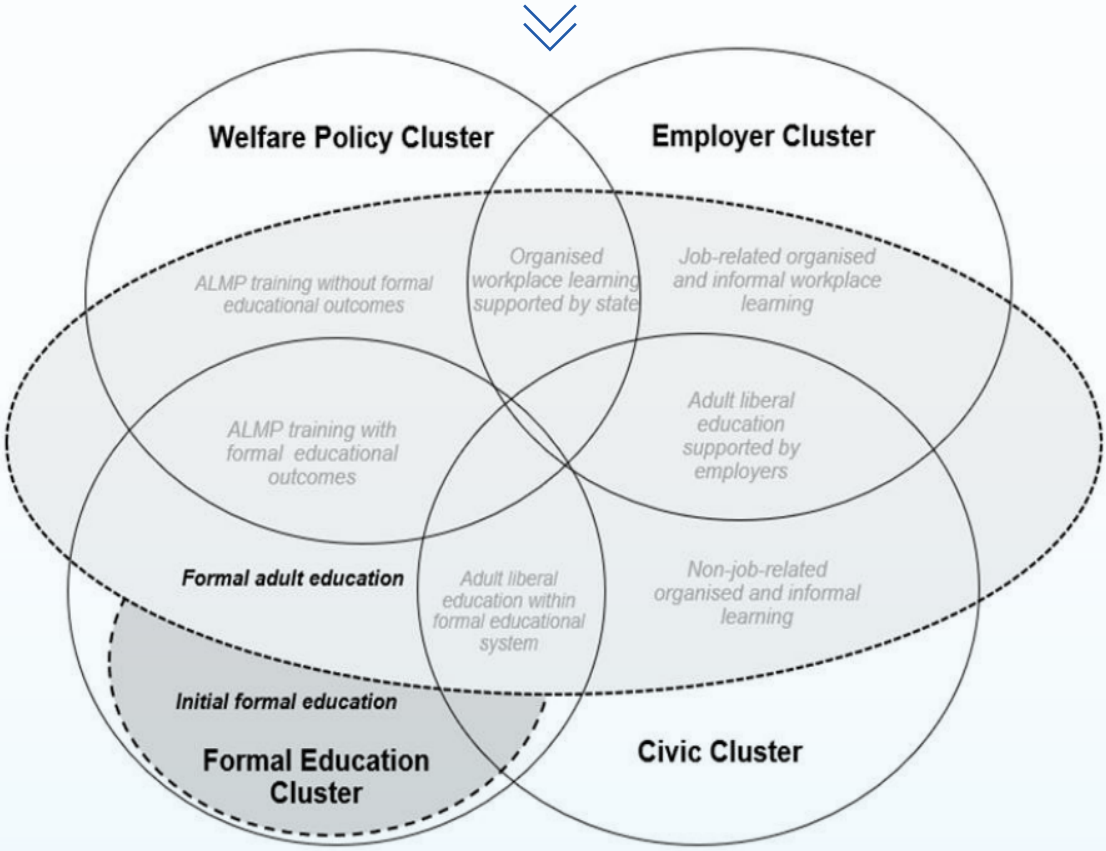


Figure 3. Embeddedness of learning activities in institutional clusters

Coordination refers to the mechanisms that align demand and supply. Strong provision and clear needs are insufficient if individuals cannot access or navigate appropriate pathways. Coordination includes governance arrangements, policy instruments such as qualifications frameworks, and guidance services that help learners make informed choices. It is the core function that converts available opportunities into effective learning pathways.

Differences across these three pillars explain variation in LLL systems and outcomes across countries. Systems with similar levels of investment can produce very different results depending on how well supply matches demand and how effective coordination mechanisms are. This perspective helps diagnose system weaknesses and understand why some reforms succeed while others fail.

Redefining what counts as learning in a hybrid digital context

The framework also updates how learning is classified. The traditional distinction between formal, non-formal education, and informal learning remains useful but is increasingly strained by digitalisation and the emergence of hybrid learning models and (ex-post) certification mechanisms.

New forms of provision blur these boundaries. Micro-credentials, for example, may resemble formal education in structure but function like non-formal training outside traditional degree pathways. Platform-based learning enables organised informal learning that is structured and scalable but not institutionally embedded in formal systems.

To address this, the framework proposes a two-dimensional representation of learning. The horizontal axis captures the degree of formalisation, ranging from highly structured, credentialed provision to unstructured learning embedded in daily life. The vertical axis captures the degree of digitalisation, from fully face-to-face to fully online, including hybrid formats.

This approach allows emerging and mixed forms of learning to be properly classified and measured. It also has direct implications for data collection: if surveys are not designed to capture blended and boundary-crossing forms of learning, they will continue to underestimate where and how learning occurs.

Strategic pathways to implementation

Operationalising the framework requires investment in data infrastructure that builds on existing systems while addressing key gaps. Five implementation streams should proceed in parallel.

01

First, survey instruments should be extended and upgraded to cover the full life course and better capture informal learning, motivations, barriers, and contexts. Measurement of digital learning should go beyond simple online/offline distinctions to include delivery modes, platforms, and AI-supported learning. New items should be piloted internationally to ensure comparability.

02 Second, longitudinal linkages should be developed to improve life-course visibility. Connecting adolescent measures (e.g. PISA) with adult outcomes (e.g. PIAAC) would allow tracking of learning trajectories over time. Integrating LLL modules into national longitudinal studies and linking survey data with administrative records would further strengthen analysis, provided robust privacy safeguards are in place.

03 Third, administrative data systems should be harmonised and integrated across sectors. Common definitions and reporting standards would improve data quality and comparability. Pilot projects could link learning records with outcomes in employment, health, and civic participation, enabling a fuller assessment of returns to learning investments.

04 Fourth, cumulative learning records or "skills passports" should be scaled. These would integrate formal qualifications, non-formal certificates, and workplace competencies into portable, individual-controlled profiles. Such systems would make prior learning visible, reduce duplication, and support more efficient learning pathways, while requiring strong standards for interoperability and privacy.

05 Fifth, advanced methods should be deployed to expand measurement capacity. AI-enabled analytics can link platform data with survey data, while participatory logging via mobile applications can capture informal learning in real time. These approaches should be piloted carefully to address issues of bias, data quality, and participant burden.

Together, these steps would create a coherent measurement infrastructure capable of supporting evidence-based lifelong learning policy. By moving from fragmented data toward a comprehensive system that captures learning across the life course, contexts, and outcomes, the measurement framework supports more effective, equitable, and responsive LLL systems.

For more details, please visit the link below:

https://www.oecd.org/content/dam/oecd/en/publications/reports/2026/07/a-conceptual-foundation-for-the-development-of-a-lifelong-learning-measurement-framework_c06663fd/27e5a619-en.pdf

Reference:

OECD. (2026). *A conceptual foundation for the development of a lifelong learning measurement framework*. OECD Publishing. https://doi.org/10.1787/27e5a619-en

UNESCO and UNESCO IIEP Promote Regional Dialogue on Inclusive Digital Transformation in Education

The UNESCO Regional Office in Santiago and UNESCO IIEP in Latin America and the Caribbean organized a series of international seminars to examine the challenges and opportunities of digital transformation in education from an inclusion and equity perspective.

The webinars were held as part of the diploma programme Digital Talent for Educational Transformation and Innovation, under the Regional Alliance for Educational Transformation and Innovation (ARTIE), and brought together more than 700 participants, including authorities, specialists, teachers, researchers and public policy officials from across the region.



The series comprised the seminars **"Perspectives on Educational Inclusion in the Age of AI: Emerging Frameworks from Latin America and the Caribbean"** (6 June) and **"Rethinking Digital Transformation in Education: Inclusion as a Continuous Process in Latin America and the Caribbean"** (15 July). Throughout both events, the experts agreed that digital technologies and artificial intelligence can have a positive impact only when accompanied by inclusive public policies, evidence, monitoring mechanisms, regulatory frameworks, teacher training and the participation of education communities.

One of the main points of consensus was that digital transformation cannot be understood solely as a technological agenda. The panellists emphasized that access to devices and connectivity is necessary, but not sufficient, to advance towards more equitable education. In this regard, they underscored the importance of strengthening institutional capacities, using data to guide decision-making, developing adaptive policies and ensuring that artificial intelligence helps to reduce, rather than deepen, existing inequalities.

> **To achieve the inclusive use of technologies in education, particularly in Latin America and the Caribbean, the most unequal region in the world, it is essential to use disaggregated data, analyze risks and design proposals that are genuinely feasible in different contexts**

— Valtencir Mendes
Head of Education at the UNESCO Regional Office in Santiago

> **Digital inclusion is not something that can simply be decreed; it must be implemented. We may have sound policies and regulatory frameworks, but the decisive issue is what happens when those decisions reach schools, teachers and students. Inclusion must become the backbone of every digital transformation policy, from design through to implementation and evaluation.**

— Alejandra Cardini
Acting Head of the UNESCO IIEP Office in Latin America and the Caribbean

The specialists also emphasized that inclusion must guide the entire digital transformation process, from policy design to implementation, monitoring and evaluation. They further highlighted the need to promote ethical competencies, critical thinking, digital citizenship, media and information literacy, and the responsible use of artificial intelligence in education systems.

The discussions also drew on recent evidence from the **Global Education Monitoring Report 2026**, which warns of the challenges the international community still faces in ensuring access to education, retention and equity by 2030. These findings reaffirm the need to place technological innovation at the service of the right to education.

For more details, please visit the link below:

https://www.unesco.org/en/articles/unesco-and-unesco-iiep-promote-regional-dialogue-inclusive-digital-transformation-education

Global Smart Education Conference 2026 Opens in Beijing

On August 18, the Global Smart Education Conference 2026, co-hosted by Beijing Normal University (BNU) and the UNESCO Institute for Information Technologies in Education (UNESCO IITE), opened in Beijing. Under the theme "AI and Education for Sustainable Development", the conference gathered experts, scholars and front-line educators across global education, technology and industry sectors. Centering on sustainable-development pathways for the in-depth integration of artificial intelligence and education, participants shared new theories, technologies and practices of smart education. They jointly explored a new model for equitable, inclusive, high-quality and universally-accessible global education in the intelligent era, and helped deliver tangible progress towards United Nations Sustainable Development Goal 4 (SDG4).







Upholding the Founding Mission of Nurturing People to Guide Sustainable Development of Education

Sustainable development of education stands as a core target of the United Nations 2030 Agenda, as well as the value benchmark for educational transformation in the intelligent era. At present, artificial intelligence, as a leading, strategic and disruptive force, is profoundly reshaping the global economic and social landscape and imposing unprecedented demands for transformation upon education. How to advance the in-depth integration of artificial intelligence and education so that technology truly serves holistic human development, educational equity and quality improvement has become a shared question of our times across the globe.

Ren Youqun, Vice Minister of Education of the People's Republic of China and Chairperson of the Chinese National Commission for UNESCO; Yu Jihong, President of Beijing Normal University; and Tang Qian, Co-Chair of the Conference and Former Assistant Director-General for Education of UNESCO, attended and delivered opening remarks at the Opening Ceremony.

Speeches delivered by diverse guests reached a broad consensus: no matter how technology evolves iteratively, the fundamental stance of nurturing people must remain unshaken. Only by firmly anchoring the core of holistic human development, balancing innovative development with ethical constraints, and strengthening transnational communication and collaboration can we translate the transformative power of artificial intelligence into tangible driving forces for educational progress.

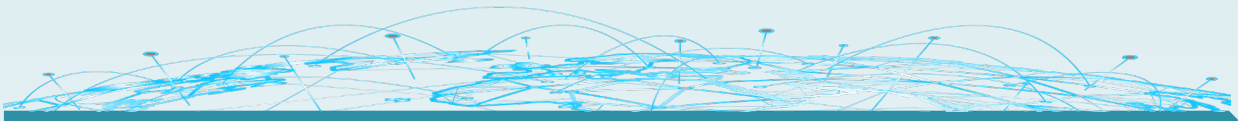


Embracing Inclusive and Equitable Development to Build a Global Smart Education Community

UNESCO has consistently regarded inclusion and equity as core principles of global educational governance, advocating that no learner should be left behind. Faced with the widening digital divide and AI-application divide amid global digitalization, it is imperative to leverage technology to narrow development gaps, uphold the public nature of education, and jointly build an open and inclusive global smart-education community.

Rabab Fatima, Under Secretary-General and High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States of the United Nations; and Chen Qun, Assistant Director-General for Education of UNESCO, delivered video remarks. They called on all countries to scale up digital education development, deepen transnational cooperation, tackle sector-wide challenges including AI-enabled educational deployment and the digital divide, and advance equitable and sustainable development of education.

Multiple education ministers shared governance insights drawing on their national practices, including Hon. Dr. Kaviraj Sukon, Minister of Tertiary Education, Science and Research, Mauritius; Hon. Mr. Bright Msaka, Minister of Education, Science and Technology, Malawi; Hon. Mr. Idrissa Samb, Minister of Employment, Vocational and Technical Training, Senegal; Hon. Dr. Mo'ale 'Otunuku, Minister for Education and Training, Tonga; and Hon. Prof. Stella Christie, Vice Minister of Higher Education, Science, and Technology, Indonesia.



A truly global smart-education community that leaves no learner behind can only be achieved by upholding inclusion and equity and accommodating differentiated development aspirations across nations. As Mr. Lester G Huang, Deputy Chairman of The Hong Kong Jockey Club and Deputy Chairman of The Hong Kong Jockey Club Charities Trust, proposed, global smart-education cooperation should be harnessed to connect educational practices from diverse regions, foster experiencesharing, joint solution-building and exploration for future schools, and guarantee equitable learning opportunities for all students.

Unveiling Smart-Education Practical Outcomes for Mutual Learning and Global Knowledge-Sharing



Against diverse practical gaps in AI-empowered education, experts, government officials and industry representatives from various countries took advantage of the conference to launch action initiatives, industry standards, authoritative research reports and implement-ready solutions. These outputs cover multiple scenarios including special education, rural education, student development and teacher capacity-building. They consolidate hands-on smart-education experience and help establish a regular global mechanism for mutual learning and knowledge sharing on smart education.

Huang Ronghuai, Co-Dean of the Smart Learning Institute, Beijing Normal University and UNESCO Chair on Artificial Intelligence in Education, together with Shafika Isaacs, Chief of the Section for Technology and AI in Education, UNESCO and Director a.i. of UNESCO IITE, jointly unveiled a landmark deliverable—**the Global Smart School Initiative.** Launched by the Global Smart Education Network (GSENet), this initiative aims to build an open, inclusive and evidence-informed global cooperation platform. It facilitates practice exchange, professional evaluation, transformation consultation and school certification among schools across countries and regions.

Hu Xiangen, Director of the Educational Research & Technology Center, The Hong Kong Polytechnic University, presented on behalf of his research team the report *Pacesetting Global Educational Transformation Report: AI-Driven Innovations from 100 Selected Top Universities*. Following its initial release in English at GSDC 2026 in Jakarta this June, we are pleased to make the report available today in all six official languages of the United Nations: Arabic, Chinese, English, French, Russian, and Spanish. The report systematically sorts out AI implementation practices of 100 top-tier universities across six continents from 2020 to 2026. It identifies differentiated transformation pathways for various regions and furnishes empirical evidence for higher education institutions worldwide to develop compliant, inclusive and sustainable intelligent campus systems.

A suite of landmark research outputs and action deliverables will also be rolled out throughout the conference. These initiatives, reports and solutions strike a balance between macro-level frameworks and on-the-ground implementation. They fully absorb local practical experience from different nations while supplying adaptable toolkits and models. They offer empirical references for smart-education reforms amid diverse national contexts worldwide, and serve as a vital bridge linking theoretical research with real-world practice.

Deepening Industry-Academia-Research Collaborative Innovation to Foster a High-Quality Smart-Education Ecosystem

Indepth integration of industry, academia and research as well as crosssector and transnational collaborative innovation constitute core pathways to accelerate global digital transformation in education. Leveraging platforms including UNESCO, the Global Smart Education Network (GSENet) and the World Digital Education Alliance, academic circles, governments and technology enterprises carry out cross-boundary collaboration. They advance innovation in AI-enabled educational scenarios, build an open-access innovation hub for smart education, and foster a high-quality smart-education ecosystem.

Conference participants delivered a series of keynote speeches covering themes such as Global Vision and Future Education, AI Technology Innovation and Industry-Academia-Research Collaboration, and Building a Smart Education Ecosystem Together. Diverse perspectives from industry, academia and international organizations fully demonstrate that high-quality development of smart education calls for in-depth coordination among all sectors to fully unlock the potential of artificial intelligence.



The conference runs from August 18 to 20. It features plenary sessions, parallel sessions and special events covering the full educational continuum including early-childhood education, basic education, higher education, technical and vocational education and lifelong learning. Its agenda addresses topics such as AI-enabled

educational governance, personalised student growth and well-being, future teachers, future classrooms, future schools, future-learning centres, integration of science-education and industry-education collaboration. It also focuses on hot-button themes including rural education, special education, learning sciences and intelligentsociety experiments.



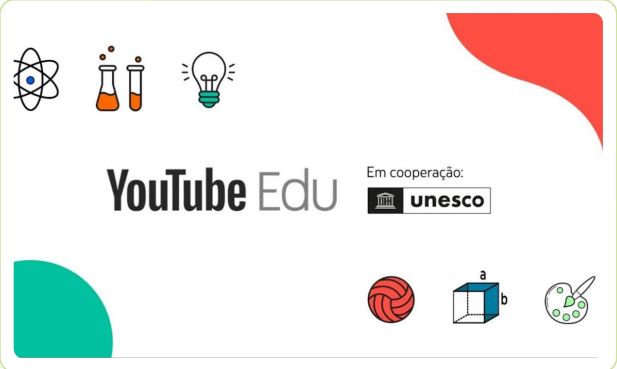
Parallel special events held during the conference include the GSENet Partners Meeting, the UNESCO IITE Governing Board Meeting, the Global Finals of the 9th Global Competition on Design for Futures (K-12 Track), Students' Voices: Empowered Youth for Shaping the Future, Bridging Industry, Academia and Research for Smart Education, and the Smart-Education Innovation Achievements Exhibition. These form a multi-level, multi-stakeholder platform for exchange and demonstration.

For more details, please visit the link below:

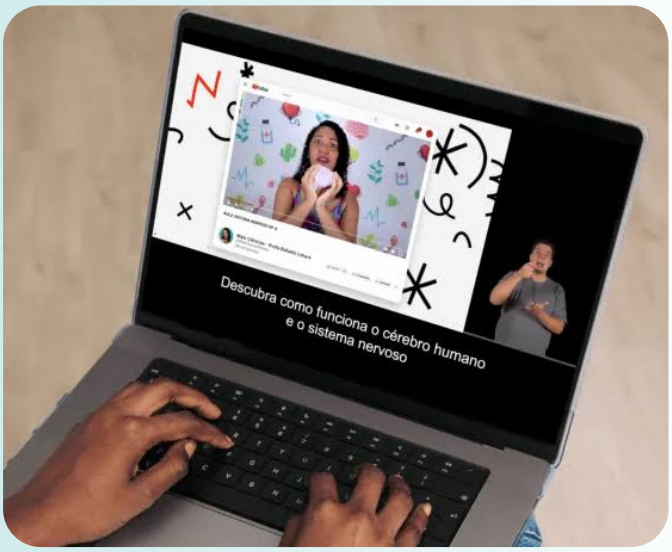
https://gse.bnu.edu.cn/en/

YouTube Edu: educational videos that connect schools to the digital world

YouTube Edu is a joint initiative of UNESCO and YouTube that brings together educational videos selected according to technical and pedagogical criteria, organized in line with Brazil's National Common Curricular Base (BNCC), and aligned with the principles of the 2030 Agenda and UNESCO's areas of action. Originally launched in 2013, the channel underwent a major restructuring beginning in 2021.



Previously focused primarily on upper secondary education and preparation for Brazil's National High School Examination (ENEM), YouTube Edu was expanded to include the final years of lower secondary education. Its collection was reorganized according to the competencies, knowledge domains and curriculum components established by the BNCC. The transformation went far beyond simply categorizing videos. Curation criteria were revised to include pedagogical quality, appropriateness of language, diversity, accessibility, technical quality and alignment with learning objectives.



This restructuring responds to a reality already firmly established in Brazilian schools. Surveys conducted during the project's redesign revealed that 91 per cent of students used YouTube as a study tool and that 65.5 per cent relied on videos to better understand content presented in the classroom. Among teachers, 92 per cent reported using videos from the platform in their pedagogical activities. These figures demonstrate that video has already become a central component of the educational experience. The question is no longer whether students will use digital platforms, but rather how they can do so in a critical, organized and pedagogically meaningful way.

Quality education beyond school subjects

The reorganization of YouTube Edu sought to keep pace with the way Brazilian education policies have evolved in recent years. Its playlists address the General Competencies of Brazil’s National Common Core Curriculum (BNCC), bringing together materials related to scientific, critical and creative thinking, digital culture, communication, responsibility, citizenship and cooperation.

The initiative also expanded the availability of content related to the Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda. More than 200 educational videos were incorporated into playlists dedicated to the 17 SDGs, providing teachers with resources on climate change, gender equality, responsible consumption, biodiversity, human rights and sustainable development.

The channel has also incorporated resources on Media and Information Literacy (MIL), as well as playlists aligned with the BNCC Computing Curriculum. These materials help students and educators verify sources, identify disinformation and develop competencies in computational thinking and digital culture.

Ongoing curation

The quality of the collection depends on a continuous process of review and updating. Between 2024 and 2025, 97 new videos for lower secondary education were added to the channel. In 2026, a new curation cycle was launched to select more than 190 additional resources for upper secondary education.

As of April 2026, the channel had approximately 493,000 subscribers, 94 playlists and around 2,300 videos. The scale achieved by the project highlights the potential of digital platforms to democratize access to knowledge, as well as the importance of providing users with trustworthy educational resources.

Accessibility and inclusion

Another important pillar of the YouTube Edu transformation was the expansion of accessibility. More than one hundred videos for lower secondary education were enhanced with Brazilian Sign Language (Libras) interpretation and subtitles, enabling students with hearing impairments to access educational content more equitably.

Communication and continuous updates

YouTube Edu is continuously updated through new resources, quizzes, challenges and collaborations with educational content creators. Its Posts section highlights curated educational videos and encourages audience engagement.

The Shorts gallery also features original videos of up to three minutes produced by teachers from different subject areas, helping students explore current issues and deepen their understanding.

Building capacity for educators

The expansion of YouTube Edu has gone beyond the organization of educational content. The initiative has also invested in teacher professional development to support the pedagogical use of video-based resources. Between 2023 and 2025, more than 670 teachers, school leaders and education professionals participated in workshops, courses and training activities delivered in partnership with public education networks, educational institutions and UNESCO Associated Schools Network (ASPnet) institutions.

As YouTube Edu established itself as a leading reference for educational content, a new generation of educators emerged, capable of translating knowledge into audiovisual formats and bringing schools closer to the digital spaces where students increasingly engage and learn. To recognize this work, UNESCO and YouTube created the YouTube Digital Education Award, which honours content creators whose videos form part of the YouTube Edu collection.

Schools and the digital environment advancing together

The expansion of access to technology is often accompanied by predictions that digital platforms will eventually replace schools or teachers. The experience of YouTube Edu points in the opposite direction.

Videos become most valuable when they are aligned with the curriculum, used with clear pedagogical intent and integrated into learning processes guided by educators who understand their students, their challenges and their learning contexts. By organizing content according to the BNCC, incorporating themes related to the Sustainable Development Goals (SDGs), expanding accessibility features, promoting Media and Information Literacy (MIL), and providing professional development opportunities for teachers, the initiative seeks to transform a habit already embraced by millions of students into a safer, more structured and more inclusive educational experience.

By bringing together teachers, students and high-quality digital resources, YouTube Edu demonstrates that educational innovation does not depend solely on new technologies. Above all, it depends on educators who are able to give meaning to these resources, integrate them into everyday learning and strengthen education as an increasingly collaborative, inclusive and interconnected process, capable of responding to the challenges of the twenty-first century.

Reference:

UNESCO. (2026, August 20). *YouTube Edu: Educational videos that connect schools to the digital world.*

https://www.unesco.org/en/articles/youtube-edu-educational-videos-connect-schools-digital-world

Best Practices in AIED (2026)

Cultivating Global Leadership for Educational Transformation Through Design Thinking and Intelligent Technologies – Global Competition on Design for Future Education (GCD4FE)

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Background

In response to the growing global learning crisis, UNESCO launched the Futures of Education initiative (2019) to rethink knowledge, learning, and education for a rapidly changing world. The UN Transforming Education Summit (2022) further consolidated global consensus on the urgent need for deep, systemic educational transformation. As the primary force driving future educational innovation and social progress, university students play an irreplaceable role in shaping inclusive, equitable, and sustainable education systems. Cultivating their leadership for educational transformation has therefore become a strategic priority to translate global commitments into realaction.

However, higher education institutions worldwide still face profound and persistent challenges in this endeavor. Many universities lack a systematic, competency-based training framework for educational change leadership. Educators often lack up to date knowledge of digital transformation, design thinking, and AI applications in education. Students are provided few authentic, project-based platforms to practice innovative problem-solving. Meanwhile, limited cross-border collaboration, weak global networking, and insufficient industry academia integration further restrict students' global competence and practical capacity.

To tackle these bottlenecks, Beijing Normal University and the UNESCO Institute for Information Technology in Education jointly launched the Global Competition on Design for Future Education (GCD4FE). This initiative builds an open, global practice platform

for educational innovation. It empowers young people worldwide to understand educational transformation, apply design thinking and intelligent technologies to address real educational challenges, and grow into active promoters and practitioners of education reform. The project aims to establish a replicable, scalable model for nurturing global leadership for educational transformation.

Case Implementation Status

This case establishes a global leadership development system for educational transformation grounded in design thinking and intelligent technologies, centered on the GCD4FE platform. After years of practice, it has achieved four core outcomes.

1 Theoretical System: NCIP Design Methodology for Educational Change

Against global educational transformation priorities, the research team has built a systematic theoretical system centered on the NCIP Design Methodology and a supporting international curriculum. Focusing on high-profile global educational issues and aligned with UNESCO Sustainable Development Goals, the team has developed forward-looking theories including Three Levels of Smart Education, Nine-Grid Map, Butterfly Effect Model, Two-Way Empowerment of Technology and Education, and Six Themes of Future Educational Transformation. These outcomes have been published in bilingual works such as Artificial Intelligence and the Future of Education, forming a comprehensive Global Educational Transformation Issue Bank that anchors student innovation in real-world challenges and key trends.

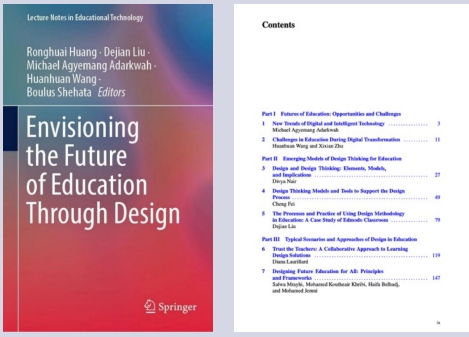
By integrating Stanford EDIPT, IDEO 3I model, and NetDragon Design Methodology, the team pioneered the education-specific NCIP (Needs–Context–Ideation–Meaning Presentation) framework. It covers need assessment, context identification, user/stakeholder analysis, competitor review, and function definition, offering a human-centered, structured workflow for solving complex educational problems.

Working with over 30 experts from 7 countries, the team developed the international Design and Learning curriculum system, including a Chinese textbook, an English monograph Envisioning the Future of Education Through

Design, and AI-enhanced bilingual MOOCs. Together, these provide new content for innovation and entrepreneurship education and a dedicated methodology to support cross-disciplinary youth in addressing global educational challenges.



Figure 1 Cover and Partial Table of Contents of the Chinese Textbook



Design and Learning
Figure 2 Cover and Partial Table of Contents of the English Monograph

Envisioning the Future of Education Through Design





2 Practical System: Human–AI Collaborative Innovation Literacy

Supported by the UNESCO Chair on AI and Education and a series of national and provincial research projects, this case has established a systematic human–AI collaborative innovation system that elevates education from simple tool use to targeted literacy development for intelligent-era talents. Focused on the goal of smart education, the research team constructed a complete human–AI collaborative innovation process covering independent thinking, problem identification, AI tool selection, human–AI interaction, output comparison, strategy optimization, ethical reflection, and knowledge transfer. This process provides clear guidance for teachers to supervise students in using AI appropriately and creatively.

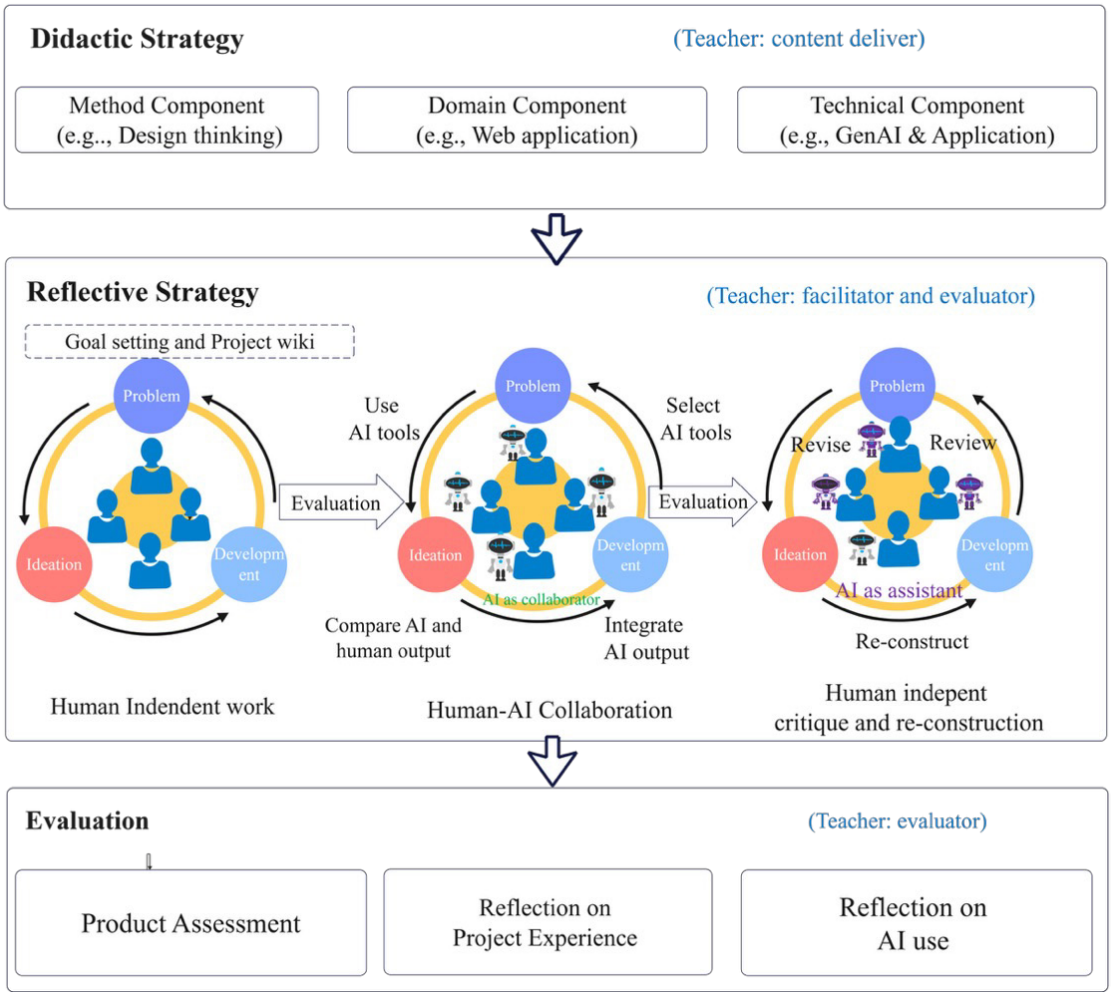


Figure 4 Teaching Process of Human–AI Collaborative Innovation

The team further proposed the iSTAR collaborative teaching framework (intelligent, Student, Teacher, AI, Robot), which centers on human teachers and integrates three types of intelligent technologies to form a multi-scenario collaborative network across physical, virtual, and hybrid spaces. It defines four progressive collaboration levels from basic tool operation to complex human–AI synergy, with ethics embedded throughout design, teaching, and assessment.

To support real-world practice, the team identified 10 AI-enabled educational design scenarios and built a self-developed platform integrating more than 500 GenAI tools. It also created an AI teaching assistant with a continuously updated knowledge base and five specialized AI mentors for writing, creativity, design, education policy, and solution evaluation. This intelligent environment has served over 10,000 students, enabling personalized guidance, real-time feedback, and responsible innovation throughout the design process.

3 Training Model: Course–Bootcamp–Competition Integrated Pathway

This case has established a progressive, spiral-upgrading global leadership development model that deeply integrates courses, bootcamps, and global design marathons into a unified system of "theoretical empowerment, practice-driven growth, and challenge-based elevation." Guided by the core mission of nurturing talent through innovation education, the model creates a seamless pathway: theoretical understanding → targeted skill building → integrated practice.

A large-scale blended curriculum has been delivered since 2017 at more than 20 universities, including Beijing Normal University, Harvard University, and Central Academy of Fine Arts. It equips students from over 40 countries with solid foundations in educational transformation and systematic mastery of the NCIP design methodology, with course satisfaction exceeding 95%.



Figure 5 Professor Dejian LIU Teaching "Design Methodology" at Harvard University

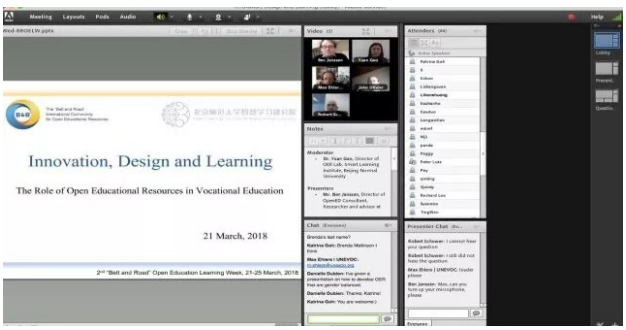


Figure 6 Webinar:
Innovation, Design and Learning

More than 40 frontier-themed bootcamps have been held worldwide in China, Croatia, Maldives, Republic of Korea, the Philippines, Tunisia, Serbia, and other countries, focusing on design thinking, GenAI, and AI agent development to turn theory into actionable skills.



Figure 7 Offline Bootcamps Held in Maldives, Croatia,Republic of Korea, and the Philippines

Since 2018, the annual 48-hour Global Design Marathon of the GCD4FE has been organized for eight consecutive years. Centered on the vision of "harmonious coexistence," it motivates students to address real educational challenges through human–human and human–AI collaboration. Evidence shows that over 90% of participants achieve significant and sustained improvement in topic selection, design, and presentation. This integrated model sharpens students' problem awareness, creativity, teamwork, cross-cultural competence, and global leadership, unifying knowledge, capabilities, and literacy.



Figure 8 Global Competition on Design for Future Education 48H Design Marathon (2025)

4 Impact Ecosystem: From Creative Ideas to Real-World Impact

Drawing on extensive experience in industry–education integration, the project has built a global, high-level collaborative mentoring network that brings together over 200 international experts from Beijing Normal University, UNESCO IITE, leading enterprises including Huawei, Tencent, Alibaba, and NetDragon, as well as professional institutions. More than 40% of these mentors are industry practitioners, who embed real-world needs and cutting-edge trends into teaching and competition design to align talent development with global educational transformation.

This initiative has cultivated a transnational, inter-university, and interdisciplinary innovation community, engaging more than 10,000 students from over 40 countries and 600 universities. Guided by mentors, students have developed more than 3,000 forward-looking and practical educational solutions through cross-cultural and cross-disciplinary teamwork.

To maximize impact, the project has established a full-chain innovation ecosystem covering patents, publications, and enterprise incubation. More than 30 outcomes have been patented or published in international case collections, with outstanding works showcased at the Global Smart Education Conference and featured in the UNESCO IITE E-Library. The project has successfully incubated high-impact edtech startups such as One Child Vision, and supported students in translating ideas into sustainable careers. Surveys show that over 30% of active participants pursue careers in educational technology and social innovation, making innovation education a powerful catalyst for long-term professional growth.

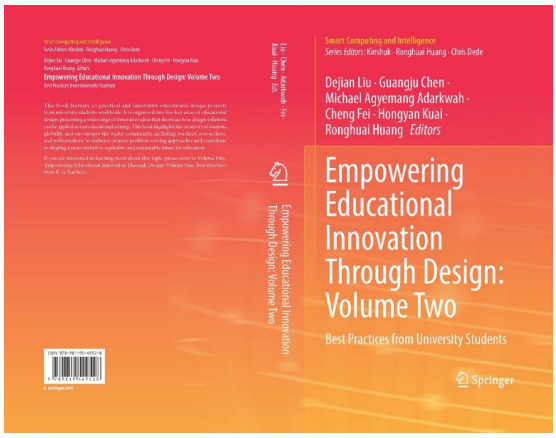


Figure 9 *Empowering Educational Innovation Through Design: Best Practices from University Students*(Published by Springer)



Figure 10 Young Students Forming Transnational, Inter-university,and Interdisciplinary Teams to Design Educational Innovation Solutions

Case Innovation and Breakthroughs

01 Theoretical Innovation

Global efforts to cultivate leadership for educational transformation are widely challenged by the lack of context specific, education oriented design theories and standardized analytical frameworks. Traditional design thinking models are often generic and fail to address the systemic, human centered complexity of educational change. This project makes a fundamental theoretical breakthrough by creating and validating the NCIP Design Methodology, the first education tailored design framework that systematically integrates needs assessment, contextual analysis, ideation, and meaningful presentation.

Unlike general design models, NCIP is built to resolve real world educational dilemmas and support cross disciplinary youth collaboration. It has been verified through research programs, published in high impact monographs, and adopted by universities worldwide.

By establishing a global educational transformation issue bank and forward looking theoretical models such as the Three Levels of Smart Education and technology–education two way empowerment, the project fills critical gaps in design driven educational innovation theory and provides a solid knowledge foundation for cultivating future oriented educational change leaders.

02 Methodological Innovation

A core global challenge in leadership development is the outdated mindset that reduces AI education to tool operation rather than higher order collaborative literacy. This case achieves a paradigm shift by advancing a human–AI collaborative innovation system that redefines talent cultivation from "learning to use AI" to "learning to innovate with AI."

Supported by the UNESCO Chair on AI and Education, the project establishes a complete human–AI collaborative workflow covering independent thinking, AI interaction, output comparison, ethical reflection, and knowledge transfer. It also proposes the iSTAR teaching framework, which centers on human teachers and

structures progressive collaboration from basic tool use to complex human–AI synergy.

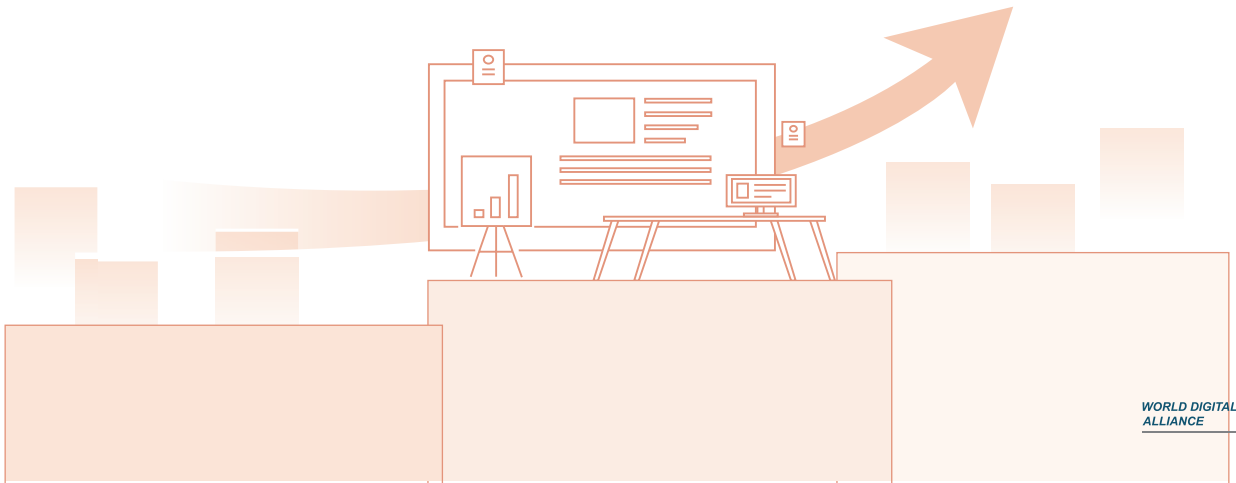
To ground these methods in practice, the team identified 10 representative GenAI application scenarios in education and developed an integrated platform with more than 500 GenAI tools, AI teaching assistants, and specialized AI mentors. These methodological innovations enable responsible, creative, and sustainable human–AI collaboration, equipping students with the core literacy required to lead education in the intelligent era.

03 Model Innovation

Most leadership programs remain fragmented across separate courses, competitions, and training activities, resulting in weak coherence and low practical impact. This project pioneers a deeply integrated course–bootcamp–competition trinity model that reconstructs the logic of leadership development.

It moves beyond fragmented skill training to build a spiral pathway: theoretical grounding → intensive skill upgrading → high intensity comprehensive practice. Systematic blended courses establish theoretical mastery of educational change and design methods. Frontier bootcamps held globally translate theories into operational skills. The annual 48 hour global design marathon fosters problem awareness, creativity, cross cultural teamwork, and global leadership under real world pressure.

This model unifies knowledge, capability, and values, fully embodying the people centered mission of education. It achieves sustained, measurable improvement in students' innovative performance and effectively addresses the long standing problem of disconnected learning and practice in global leadership education.



04 Ecosystem Innovation

A key bottleneck in global educational leadership development is insufficient industry engagement, limited international collaboration, and weak translation from ideas to real impact. This project breaks through traditional models by building a transnational, cross sector co creation ecosystem that transforms one way resource input into genuine multi stakeholder partnership.

The network brings together more than 200 distinguished mentors from universities, UNESCO IITE, and leading tech enterprises, with industry practitioners accounting for over 40%. These experts deeply participate in teaching, mentoring, and evaluation rather than only serving as judges. The ecosystem supports a vibrant community of over 10,000 students from more than 40 countries and 600 universities, who collaborate across borders, institutions, and disciplines to produce more than 3,000 practical educational solutions.

By linking innovation to patenting, publishing, and enterprise incubation, the project turns creative ideas into social and economic value. This replicable, scalable ecosystem provides a new global model for empowering youth to drive sustainable educational transformation.

05 Intellectual Property Status

The project has formed a comprehensive, well protected intellectual property portfolio that underpins its global scalability and long term impact.

Outcomes include the NCIP methodology, bilingual curriculum systems, authoritative textbooks, internationally published monographs, bilingual MOOCs, student case collections, and patented technological applications. More than 30 innovative solutions have been granted official design and invention patents. All intellectual property, including frameworks, curricula, platforms, publications, and patents, is legally owned by Beijing Normal University and its core partners. Rigorous IP management ensures stable, standardized, and sustainable global promotion.

These achievements not only protect the project's innovations but also provide reliable conditions for wide replication, international cooperation, and continuous upgrading in the field of educational transformation leadership.

For more details, please visit the link below:

https://wdea.bnu.edu.cn/docs/2026-06/b54cb478d3fa413491e524ba75110288.pdf

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Best Practices in AIED (2026)

Building an Inclusive Future Education for ALL in the Intelligent Age

▷ Futian District Education Bureau, Shenzhen, Guangdong, China

As artificial intelligence reshapes how knowledge is produced, disseminated, and learned, K-12 education worldwide faces a fundamental transition: from knowledge transmission toward fostering innovation capacity in every learner. This shift demands more than curriculum reform at the classroom level; it requires a systemic rethinking of how schools access, share, and sustain the conditions that make innovation education possible.

In practice, three structural barriers persist across educational systems. First, the key ingredients of innovation education — advanced laboratories, research mentors, authentic projects, and frontier technologies — remain concentrated in universities, research institutes, technology firms, and a small number of elite schools. Most schools, despite genuine demand, lack reliable pathways to access these resources. Second, even where a region possesses substantial assets, the absence of coordination mechanisms means that curricula, expertise, equipment, and facilities remain fragmented and underutilized, with significant disparities across schools. Third, innovation opportunities tend to be reserved for a select few students through competition tracks or extracurricular programs, falling far short of the goal of cultivating innovation capacity in every learner.

Addressing these challenges requires repositioning AI not merely as a classroom tool, but as infrastructure for rebuilding the regional education ecosystem itself — connecting schools to external expertise, enabling efficient resource circulation, and ensuring equitable access at scale.

Futian District of Shenzhen, has undertaken this systemic approach. Leveraging its position as a national hub for technology and innovation, Futian has organized its reform around three interlocking dimensions: flowing in (channeling innovation assets into schools), circulating (building a district-wide shared service system), and going beyond (scaling proven models nationally and internationally). Together, these dimensions constitute a coherent ecosystem designed to make innovation education a universal public service rather than a privilege of the few.

Case Implementation Status

Futian's reform is not a sequential, phased roll-out but a simultaneous construction along three ecosystem dimensions — each reinforcing the others to ensure that every school can deliver innovation education, and every student can participate.

Dimension 1: Flowing In — Transforming Schools into Innovation Frontlines

The challenge is not simply importing resources, but embedding the full set of conditions — physical environments, authentic projects, expert mentorship, and institutional support — into schools' everyday educational practice.

Co-building New Productivity Science Labs. Innovation education requires tangible, explorable learning environments, not abstract concepts alone. Futian has partnered with technology companies, universities, and research institutes to establish 88 science labs across all district schools. Each lab translates frontier domains — artificial intelligence, marine science, digital creativity, life sciences — into hands-on scenarios where students can observe, experiment, and create. These are not exhibition halls; they function as instructional spaces integrated into daily curricula, inquiry-based learning, and project work. Cutting-edge science becomes part of students' lived school experience.



Figure 1 The Map of Innovation Education in Futian (with 88 science labs)

Co-developing Cross-Sector Innovation Projects. Access alone is insufficient without pedagogical transformation. Futian collaborates with university labs, industry partners, and government agencies to co-develop innovation projects that convert real-world scientific, technological, and social challenges into age-appropriate learning tasks. These cross-disciplinary, inquiry-driven projects ensure that external expertise does not merely supplement existing curricula but actively reshapes what and how students learn, moving innovation education from superficial activity toward deep, problem-centered learning.

Co-establishing Doctoral Workstations. Sustained mentorship is the missing link in most school-based innovation programs. Futian has established doctoral workstations within school science museums, where university researchers, scientists, and industry engineers serve on a regular, ongoing basis — co-designing curricula, mentoring student projects, and coaching teachers. This transforms external intellectual capital from episodic guest appearances into a permanent support structure, simultaneously elevating student learning and building teachers' capacity for interdisciplinary instruction and project design.

Dimension 2: Circulating— Creating a District-Wide Innovation Education Service System

Even when high-quality assets flow into individual schools, systemic impact requires regional coordination. Futian's core insight is that innovation education must shift from school-level self-reliance to district-level public service provision.

The "Central Kitchen" — Kunpeng Youth College. Futian established the Kunpeng Youth College as the district's resource integration and supply hub. The College consolidates curricula, mentors, materials, and project resources scattered across universities, enterprises, research institutions, and schools, then repackages them into a menu-based service system. It has developed innovation programs spanning science, health, humanities, arts, and international exchange, and provides synchronized teacher training and implementation guidance. Through the 88 school-based science labs, these standardized offerings are shared across the entire district — converting fragmented, non-standardized innovation assets into modular, accessible public services.

The "College–College Branches–School" Three-Tier Supply Network. A single hub cannot achieve universal coverage. Futian has therefore extended the system by establishing Kunpeng college branches within each of the district's 11 education groups, with school-level innovation spaces serving as delivery endpoints. This three-tier network ensures that innovation resources circulate efficiently throughout the

district: centrally developed programs flow down to schools, while school-level implementation feedback flows back to the hub for iterative improvement. Every student, regardless of which school they attend, gains access to high-caliber mentors and high-quality projects.

The Kunpeng AI Platform. To manage this circulation digitally, Futian developed the "Kunpeng AI" intelligent agent, enabling online scheduling of innovation courses, mentor matching, venue booking, and supply logistics. This extends AI's role beyond supporting individual learning into supporting district-level educational governance — making resource allocation data-driven, transparent, and responsive.

Dimension 3: Going Beyond— From Local Exploration to National Sharing and Global Dialogue

A viable education ecosystem must not only function locally but generate transferable knowledge. "Going beyond" refers not to exporting resources, but to scaling Futian's institutional design, implementation mechanisms, platform tools, and ecosystem-building model so they can be adopted, adapted, and validated elsewhere.

Scaling Nationally

Through the National Alliance for AI Education in Primary and Secondary Schools, Futian disseminates its innovation education pathways, curriculum development experience, AI application frameworks, teacher professional development models, and documented case studies to schools nationwide — with particular emphasis on under-resourced regions in central and western China. Curriculum sharing, platform connectivity, mentor deployment, and public-benefit programs transform Futian's local exploration into replicable reform infrastructure.

Engaging Globally

Futian actively collaborates with partner schools across the Guangdong-Hong Kong-Macao Greater Bay Area and international sister schools, participates in the Asia-Africa Youth AI Education Exchange Alliance, and hosts the Asia-Pacific Learning Sciences Community research base. Cases have been presented

at the inaugural International Forum on Global Education Governance and School Leadership, published in the International Handbook of School Effectiveness and Improvement, and accepted for the 2026 International Congress for School Effectiveness and Improvement (ICSEI) — bringing grassroots Chinese education reform into global professional discourse.

Expanding Students' Horizons



Figure 3 Three students from Futian attended UNESCO’s AI Day

Ultimately, "going beyond" serves student development. Through Junior Ambassador showcases, AI education exchanges, and international forum presentations, Futian students gain authentic opportunities for cross-cultural expression and collaborative innovation. Three Futian students presented at UNESCO's AI Day 2026 International Summit on AI and Education, demonstrating that this ecosystem model not only transforms institutional supply but opens real pathways for young learners to engage with the wider world.

Case Innovation and Breakthroughs

1. Main Innovation Content

This case advances a distinctive proposition about the nature of innovation education reform: innovation education should not remain a boutique offering of select schools but must become a core component of regional public education services; and AI should not function merely as a pedagogical add-on but as foundational infrastructure for rebuilding the education ecosystem. Three innovations operationalize this proposition:

Innovation in Teaching and Learning Models	By embedding 88 school-based science labs and co-developed cross-sector projects into everyday instruction, Futian has shifted innovation education from competition-oriented, extracurricular programming toward curriculum-integrated, inquiry-driven learning accessible to all students. Innovation is no longer an add-on activity; it is how students learn.
Innovation in Resource Supply Models	The Kunpeng Youth College "central kitchen" and the district–branch–school supply network reconstitute what were previously closed, scattered, and school-siloed assets into a regionally coordinated, dynamically allocated, universally accessible public service system. This represents a structural shift from institutional resource ownership to shared public provision.
Innovation in Open Collaboration Models	Through the National Alliance and international partnerships, Futian has constructed a multi-layered dissemination architecture — local implementation, regional sharing, national scaling, international dialogue — enabling its reform model to be continuously tested, refined, and amplified beyond its point of origin.

2. Technology Breakthroughs

Futian's technological contribution lies not in any single tool but in embedding AI across the full stack of educational infrastructure — platforms, resources, governance, and services — to create a coherent district-level digital ecosystem.

Unified AI Education Portal ("i-Fuwa"). Futian co-developed with leading technology partners an intelligent education gateway integrating over 100 AI-powered educational agents, each vetted through a standardized evaluation and admission process. This solves a pervasive problem in educational AI adoption: platform fragmentation, inconsistent quality, and lack of governance. By providing a single entry point with unified standards and services, i-Fuwa ensures that AI tools available to every school meet consistent pedagogical and safety benchmarks.

District-Level Computing Resource Center. Futian established a shared computing infrastructure that provides foundational AI processing capacity to all schools, teachers, students, and families. This breakthrough addresses the equity dimension of AI in education — ensuring that access to AI-powered learning is not contingent on individual school budgets or technical capacity, but is universally available as a public utility.

The systemic nature of these breakthroughs — portal, computing infrastructure, and intelligent scheduling operating as an integrated whole — positions Futian's approach at the forefront of regional education digitalization, with clear implications for scalability.

3. Application Practice Breakthroughs

This case demonstrates a viable pathway for AI-supported innovation education that is simultaneously universal, systemic, and internationally connected:

- From "a few schools have conditions" to "every school has capacity". Innovation education is no longer dependent on individual school endowments but has become a standard district-wide capability.

- From "scattered resource accumulation" to "ecosystem-level operation". The central kitchen, supply network, and digital platform transform fragmented assets into a continuously circulating system.

From "local experimentation" to "model sharing and scaling". Futian's institutional design and implementation mechanisms are being adopted and adapted across regions, converting local practice into transferable reform architecture.

These breakthroughs matter for national basic education development because they demonstrate that equitable, high-quality innovation education does not require extraordinary investment at every school — it requires intelligent system design at the regional level.

4. Intellectual Property Status

All institutional designs, platform architectures, and curriculum resources in this case were developed under the coordination of the Futian District Government. Digital platforms, AI agent admission protocols, curriculum packages, and application standards were co-developed by government agencies, partner schools, technology service providers, and collaborating institutions under contractual agreements. For jointly developed outputs, Futian follows principles of legal compliance, clear rights allocation, authorized use, and open dissemination — balancing intellectual property protection with the public service mission of education.

For more details, please visit the link below:

https://wdea.bnu.edu.cn/docs/2026-06/b54cb478d3fa413491e524ba75110288.pdf

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Best Practices in AIED (2026)

AI in Teacher Education: The Institutional Experience of Moscow City University

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Case Background

Moscow City University (MCU) represents a distinctive case within the Russian higher education system. Established by the Government of Moscow in 1995, the university has evolved into a large metropolitan pedagogical institution integrating teacher education, applied research, and digital innovation. Since 2021, MCU has participated in the national academic leadership program Priority 2030, aimed at transforming universities into drivers of technological and socio-economic development. Within this framework, artificial intelligence (AI) has become a strategic direction for both research and educational transformation.

Globally, teacher education systems face several persistent challenges: the misalignment between graduate competencies and employer expectations, the subjectivity of pedagogical assessment, limited opportunities for safe professional rehearsal, and insufficient personalization of learning trajectories (Darling-Hammond & Oakes, 2021; Holmes et al., 2019). These challenges are particularly acute in pedagogical universities, where the quality of teacher preparation directly affects the broader educational ecosystem.

MCU's AI integration strategy emerged not as a technological experiment but as an institutional response to these structural challenges. The university has gradually developed an ecosystem of AI tools addressing assessment objectivity, predictive analytics, adaptive learning, and responsible generative AI use.

Implementation Process

AI integration at MCU evolved through regulatory clarification, infrastructure development, and research-based deployment. A foundational step in MCU's AI trajectory was regulatory clarification. In August 2023, Moscow City University officially legalized the responsible use of generative AI systems.

(such as ChatGPT, YandexGPT, and GigaChat) for graduation qualification papers, becoming the first Russian university to formalize governance rules for pedagogically justified AI use. Academic integrity safeguards include access to Antiplagiat with AI-text detection. Rather than prohibiting AI, the university adopted a transparency- and disclosure-based governance model, framing generative systems as tools requiring pedagogical literacy and ethical responsibility. This regulatory foundation enabled the development of more advanced AI-based instruments.

The central innovation of MCU's AI ecosystem is the system Digital Mirror of the Training Session. Developed within the Priority-2030 framework in partnership with SberEducation, the system addresses a key limitation of traditional teacher assessment: reliance on subjective expert observation without quantitative multimodal analytics. The Digital Mirror is deployed in 71 "smart classrooms" equipped with synchronized video and audio recording systems. During 20-minute simulated teaching sessions, students perform as teachers while peers act as schoolchildren. Independent experts observe through a Gesell mirror, ensuring minimal interference. The system integrates three analytical modules: (1) computer vision analysis of gaze, facial expressions, and engagement; (2) automated speech and discourse analytics identifying pedagogical markers and speech distribution; and (3) a competency dashboard combining 15 expert-defined competencies with machine-derived indicators, expanded from 20 to 44 through iterative refinement.

Parallel to this implementation, MCU researchers developed a specialized annotated dataset for spoken discourse processing and established international collaboration with Tsinghua University and Central China Normal University. The university also co-developed a Digital Adaptive Textbook for Grade 6 biology with the publishing house Prosveshchenie, integrating diagnostic personalization mechanisms.

Innovation Highlights

The MCU case stands out as a strong example of Artificial Intelligence in Education due to several interrelated features. First, the system demonstrates discipline-specific personalization. The Digital Mirror does not measure generic engagement but aligns AI indicators with 15 professional teacher competencies, including emotional regulation, classroom management, and instructional clarity. This ensures construct validity and responsiveness to authentic professional standards (Darling-Hammond, 2021). Second, the architecture embodies hybrid intelligence. By combining computer vision and discourse analytics, the system produces a multidimensional representation of instructional practice. AI augments expert perception rather than replacing professional judgment, consistent with contemporary AIED frameworks (Holmes et al., 2019). Third, AI integration is institutionally embedded. It is supported by infrastructure (71 smart classrooms), governance regulation, predictive analytics systems, and research development. This systemic integration differentiates MCU's approach from fragmented EdTech pilots. Fourth, the model emphasizes evidence-based iteration. Correlation analysis between expert and machine-generated indicators informed expansion and recalibration of metrics, reinforcing methodological rigor.

Effectiveness Proof

Between 2024 and 2025, 681 students underwent AI-supported competency assessments, producing 635 recorded model lessons across seven institutes. Pearson correlation analysis revealed statistically significant relationships between expert and AI-derived indicators. Seven correlations exceeded r = .60, while 58 fell within the moderate range (r = .40–.59), indicating convergent validity between human and machine assessment criteria. For example, speech organization metrics correlated with expert evaluations of information systematization, and emotional ratio indicators correlated with assessments of emotional regulation.

Student survey data (n = 208 responses) showed substantial trust in the system: 73% agreed or rather agreed with automated evaluations; only 3% fully disagreed. Qualitative feedback indicated that AI enhanced perceived objectivity and reduced potential human bias, although some students questioned speech recognition precision. Importantly, most respondents viewed AI feedback as complementary rather than substitutive.

Promotion Plan

The Digital Mirror model can be replicated by other institutions under four core conditions: (1) availability of synchronized video and audio capture infrastructure; (2) clearly operationalized competency descriptors aligned with national or institutional standards; (3) institutional data governance policies regulating storage, access, and evaluation authority; (4) faculty development programs supporting AI literacy and interpretive competence. Because the system is modular, with separate components for computer vision, discourse analytics, and competency dashboards, it can be applied to other professional areas, such as medical communication training or legal simulation exercises. Scalability depends primarily on alignment between technology, pedagogy, and governance rather than on exclusive proprietary technology.

Ethical Considerations

MCU's AI governance reflects the principles articulated in the UNESCO's "Recommendation on the Ethics of Artificial Intelligence" (2022). Academic integrity is ensured through a transparency- and disclosure-based model: while students may use generative AI tools, responsibility for intellectual content remains fully with the author. Data privacy and security are maintained through processing audiovisual recordings within secure institutional infrastructure, with role-based and restricted access to analytics dashboards. Fairness and bias monitoring are supported by ongoing statistical comparison between expert assessments and AI-generated indicators, enabling recalibration where misalignment is detected. Human oversight remains central: AI-generated analytics are advisory rather than determinative, and final academic decisions are made by expert evaluators. In these terms, AI operates as a developmental support instrument embedded within human governance, not as an autonomous evaluative authority.

Conclusion

The experience of Moscow City University demonstrates a shift from isolated digital initiatives to a coherent, governance-supported AI ecosystem in teacher

education. AI was not introduced as a technological add-on but embedded within institutional policy, professional standards, infrastructure, and research validation. The Digital Mirror of the Training Session shows how multimodal analytics can enhance objectivity and personalization in teacher preparation while preserving expert authority. Empirical validation, positive student perception, and measurable institutional outcomes, including reduced dropout rates, indicate both pedagogical and organizational impact. Overall, the MCU case illustrates that sustainable AI transformation depends less on technological novelty than on alignment between pedagogy, governance, ethics, and evidence-based iteration. In this model, AI strengthens reflective professional development without displacing human-centered educational values.

For more details, please visit the link below:

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