VIEWS

Xu Jiuping

Rethinking education reform in AI era

Generative AI is transforming how we work, learn and live, posing fundamental challenges to traditional education. Debates over whether AI will "replace education" reflect deeper questions: how humans and machines should interact, and what the core purpose of education really is. As technology evolves at an unprecedented pace, reform is no longer optional but imperative. By understanding the logic of human-AI collaboration, identifying clear transformation priorities, and building a new talent development system, we can chart a feasible path for modern education and cultivate the skills needed for a tech-driven world.

Clarifying the direction of education begins with two questions: how humans and AI relate, and what education is ultimately for. Humans remain the ultimate architects of AI, not its subordinates. The future is not replacement but collaboration. Education's core value will not vanish; if anything, it must return to its essence — enhancing human reasoning and intellectual growth, using AI to amplify learning while staying true to its fundamental purpose.

The distinction between human and artificial intelligence lies in cognition. AI excels at rapid computation, storing massive datasets and performing tasks within defined rules. Humans, in contrast, possess qualities AI cannot replicate: emotional awareness, moral judgment, and creative imagination. These unique capabilities ensure that AI cannot fully replace human thinking and affirm education's irreplaceable role.

This distinction also underscores education's value. Philosopher Ludwig Wittgenstein said, "The limits of my language mean the limits of my world." AI's strength is responding efficiently within established frameworks of knowledge. Yet language — and by extension AI — cannot capture the unknown. Human thought defines the outer boundary of understanding, combining judgment, creativity, and innovation in ways machines cannot. Education's central mission is to nurture these distinctly human faculties.

Recognizing AI's limits is essential for establishing a productive human-AI relationship and guiding education. AI can support learning efficiently but has clear shortcomings: it cannot explore the unknown independently or innovate beyond existing data; it lacks genuine judgment or empathy; and its outputs depend on the quality of its training data, leaving room for error.

Once the human-AI dynamic is clear, the path for education emerges. Breakthroughs in large model technologies, exemplified by DeepSeek, challenge traditional modes of teaching. Many emphasize mastering AI tools as the priority, but skills alone cannot keep pace with AI's rapid evolution. The focus should shift to cultivating higher-order thinking, strategic vision and adaptive cognitive patterns — skills that enable effective human-AI collaboration. The goal of "integrated development of educational and technological talent" sets clear competencies: understanding AI's principles, boundaries, and applications; articulating needs and leveraging AI for complex problem-solving; and using AI to enhance cognition and create value, supporting technological autonomy.

These competencies reflect a fundamental shift from knowledge transfer to cognitive empowerment. Unlike Industrial Revolution-era machines, which passively executed instructions and required standardized skill training, AI systems learn, iterate and proactively assist in complex tasks. This difference renders traditional skill-focused education inadequate and compels a move toward nurturing adaptive, creative thinkers.

Historical comparison highlights the necessity of this transformation. In the Industrial Revolution, education aimed to "fit humans to machines", emphasizing standard knowledge and industrial skills, evaluated mainly by the mastery of techniques. In the AI era, education must "develop humans", fostering personalized, high-level cognitive abilities and cultivating talent capable of using AI creatively and responsibly. Assessment now balances knowledge, skills and character, emphasizing process and holistic performance.

At its core, education reform is about liberating and developing human potential. AI can efficiently deliver foundational knowledge, but true educational value lies in cultivating higher-order thinking, stimulating innovation, and overcoming cognitive limitations. By doing so, education not only enhances individual intellectual freedom but also strengthens the human-AI relationship and empowers humanity to explore the vast possibilities of the future.

Translating this vision into practice requires a structured framework. The proposed three-dimensional system centers on cognitive empowerment, supported by multi-dimensional collaboration, and implemented through four-dimensional scenarios. Its aim is to meet the high-quality development demands of the AI era, cultivating talent with adaptive cognition, collaborative abilities and innovative capacity. This framework bridges education, technology and industry, ensuring talent pipelines for technological autonomy and industrial upgrading.

Cognitive empowerment relies on a robust educational ecosystem. Multi-dimensional collaboration focuses on four pillars: teachers, textbooks, curriculum, and assessment. Interdisciplinary teaching teams consolidate expertise; textbooks progress from basic to advanced while integrating AI knowledge; curricula combine required courses, electives and practical training to address foundational and personalized needs; assessments measure knowledge, skills and character, using process tracking and staged evaluation to refine outcomes.

Implementation depends on immersive, real-world scenarios — the "four-dimensional" platform. Virtual simulation labs provide hands-on AI experiences; school-industry partnerships immerse students in authentic projects; specialized training aligns with real job requirements; and blended online-offline environments enable learners to apply skills in practical contexts, supporting innovation and industry integration.

Ultimately, the goal of education in the AI era is to empower humans, harness AI and cultivate the next generation of thinkers, innovators and leaders capable of navigating a rapidly evolving world. Only by focusing on cognition, creativity, and collaboration can education maintain its unique value and guide humanity toward limitless possibilities.

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Weng Zuquan

Universities can power new quality growth

With the central authorities placing emphasis on achieving greater self-reliance in science and technology and developing new quality productive forces in the coming years, the 15th Five-Year Plan (2026-30) period will be decisive for advancing Chinese modernization.

As key platforms at the intersection of education, science and technology, and talent cultivation, universities shoulder three major responsibilities. They are sources of innovation, nurseries of high-level talent and facilitators of innovation along industrial chains. Their development is therefore directly linked to the country's growth.

For universities, the key lies in aligning more closely with national strategic needs and ensuring that science and technology become the primary force of productivity. This requires innovation in incentive mechanisms and deeper reform of evaluation systems so that national needs are translated into measurable and actionable standards.

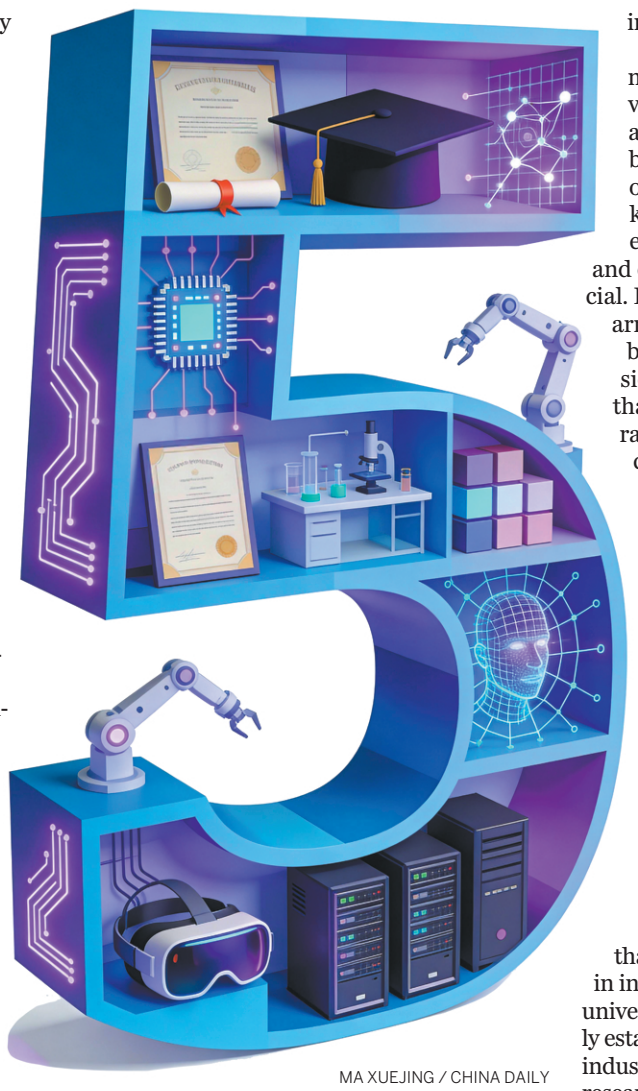
For example, the value of academic papers should be assessed not only by journal rankings, but also by whether they address real-world problems and produce tangible outcomes. The long-standing tendency to prioritize publications over application needs to be corrected. The evaluation mechanism should guide research toward novelty as well as usefulness.

Fortunately, many universities have already begun optimizing their research evaluation systems, thanks to the guidance of the central government. Progress has been made in incorporating indicators such as innovation value, industrial contribution and effectiveness in talent cultivation. As a result, a more diversified evaluation framework is taking shape.

Next, greater efforts should be made to establish differentiated and categorized evaluation systems tailored to different types of universities, disciplinary characteristics and research orientations. Basic research, applied research, social services and talent training are different, so a one-size-fits-all approach should be avoided.

Another pressing task is to further improve training systems and address shortcomings in the cultivation of interdisciplinary talent. In the era of big data, nearly all industries are undergoing continuous upgrading and high-end interdisciplinary professionals equipped with capabilities of artificial intelligence and cross-disciplinary knowledge have become a key driving force for high-quality industrial development.

Biomedical research offers a clear example. Medical science and technology have become a focal point of global technological competition. Breakthroughs in advanced medical devices, biomedical materials and AI-assisted healthcare require highly specialized professionals with integrated expertise in medicine and engineering.



MA XUEJING / CHINA DAILY

However, China faces multiple bottlenecks in cultivating such talent. Compared with the long-standing accumulation in developed countries, training systems for medical-engineering integration started relatively late in China. While training models are diverse, unified standards are lacking and training quality remains uneven.

Traditional medical universities usually have limited engineering capacity due to their disciplinary structures and program layouts, resulting in insufficient cross-disciplinary strengths. Although some comprehensive universities can integrate multiple disciplines to foster high-end talent, their influence and coverage are limited.

The persistent faculty shortage for interdisciplinary medical-engineering programs is another constraint. Data show that only about 12 percent of teachers in this field have both dual-disciplinary and dual-practice backgrounds and are able to independently offer interdisciplinary courses and supervise practical projects. Moreover, compared with the elite-oriented medical education systems in developed countries, China's medical education is transitioning from scale expansion to quality improvement, but gaps remain in per-student investment, funding sources and the share of spending on equipment and practical training.

In this context, it is advisable for relevant authorities, including the Ministry of Education, the Ministry of Science and Technology, the Ministry of Finance and the National Health Commission, to jointly introduce supportive policies to increase funding for interdisciplinary talent training, strengthen the development of cross-disciplinary faculty teams and expand investment in interdisciplinary research.

It is also essential to deepen mechanisms for industry-university-research collaboration and smooth the linkage between university research outcomes and enterprise markets. In many cases, the cooperation between universities and enterprises remains superficial. It is limited to short-term arrangements such as order-based training or commissioned research projects, rather than long-term strategic collaboration rooted in industrial chains.

Enterprises are not sufficiently motivated to participate deeply in university talent training and research planning, while the complementary advantages of academic research resources and market resources have yet to be fully realized. As a result, many research achievements remain confined to laboratories, failing to translate into tangible contributions to industrial upgrading and economic growth.

Therefore, it is recommended that the government take the lead in introducing policies that support universities and enterprises in jointly establishing platforms such as industry colleges and future industry research institutes, thereby promoting deep integration of education, research and industry. Such platforms would enable joint planning of frontier technology research and talent cultivation.

Meanwhile, closer alignment with regional industrial planning is needed, with a focus on regionally distinctive advanced manufacturing and green industries. The establishment of regional technology transfer centers can provide technical support for small and medium-sized enterprises, facilitating the upgrading of regional industrial clusters and fostering more dynamic innovation ecosystems.

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Yang Chaoming

Turning ancient wisdom into modern vitality

China has pledged to inspire cultural creativity and foster a thriving socialist culture during the 15th Five-Year Plan (2026-30). This effort is central to sustaining the nation's spiritual lifeline and strengthening cultural confidence. Tradition is not a static exhibit locked away in museums, but a living force that can integrate with contemporary life, nourish society and engage in dialogue with the world. Only through this integration can China's millennia-old cultural heritage be revitalized through creative transformation and innovative development.

Embedding traditional culture into everyday life is the foundation of cultural development. The core values of China's fine traditional culture resonate naturally with modern social life and civic ethics. Yet this resonance does not emerge automatically. It requires carefully designed pathways of adaptation. Traditional culture should not remain abstract doctrines confined to classical texts. It needs to be translated into concrete norms of conduct and everyday aesthetics.

The phenomenal success of stage performances, movies and TV shows portraying traditional arts, philosophy and stories in a modern way demonstrates that traditional culture can truly enter public life only when it finds contemporary forms of expression.

Targeted and differentiated communication is essential to expand the reach and impact of traditional culture. Different social groups have diverse cultural needs, and a single communication model cannot achieve broad and precise outreach. For young people, greater emphasis should be placed on combining education with enjoyment through study tours, classical reading competitions and themed cultural camps, enabling them to appreciate tradition through participation and experience. For community residents, cultural activities can be organized for civic engagement, such as folk customs workshops and family tradition forums, linking traditional culture with grassroots governance and neighborhood harmony. For employees, concise cultural micro-courses and short videos can convey traditional wisdom on self-cultivation and social conduct, offering spiritual nourishment amid modern work pressures.

Specialized platforms can also deepen cultural engagement. For instance, classical Chinese learning centers established in the hometowns of cultural luminaries can combine textual study with cultural tourism. Such initiatives not only deepen public understanding of tradition but also inject vitality into local development.

The task is to reinterpret these ideas in modern contexts so that Chinese wisdom can contribute more effectively to building a shared future for humanity.

Beyond domestic cultural life, China also has a cultural responsibility in the international arena: to translate traditional wisdom into ideas with global relevance. Today, the world faces shared challenges such as climate change, widening inequality and rising civilizational tensions. Concepts rooted in Chinese tradition — including harmony between humanity and nature, universal harmony and the idea that harmony is the most precious — offer valuable insights for addressing these global issues.

The task is to reinterpret these ideas in modern contexts so that Chinese wisdom can contribute more effectively to building a shared future for humanity. Many people-to-people cultural forums already provide platforms for China to articulate its vision of "harmony without uniformity" and share governance philosophies rooted in moral self-cultivation and social responsibility. Through dialogue, different civilizations can develop consensus and mutual understanding.

Innovation in forms and channels of communication is indispensable for activating cultural vitality. In the digital era, traditional culture must embrace new technologies rather than rely on conventional approaches. The digital transformation of cultural resources — enabled through technologies such as 5G, big data and cloud computing — can bring cultural relics, ancient texts and historic architecture to life. Virtual exhibitions, for example, allow audiences to appreciate museum collections remotely, while three-dimensional animation can recreate historical scenes in vivid and accessible ways.

New media platforms should also be fully utilized to produce content that is culturally rich yet approachable. The global popularity of many Chinese short videos, which depict agricultural life and traditional craftsmanship through everyday scenes, demonstrates the powerful appeal of lifestyle-based and scenario-driven storytelling. Emerging cultural forms, including online literature and micro-dramas, should also be encouraged to incorporate traditional elements, aligning cultural transmission with contemporary aesthetic preferences.

Ultimately, cultural inheritance and innovation depend on people. Therefore, cultivating interdisciplinary cultural professionals is essential for sustained cultural development. There is a growing need for talent that combines a solid grounding in classical learning with an understanding of modern communication and theoretical expertise with practical skills.

Universities should therefore optimize disciplinary structures and reform training models by breaking down traditional academic boundaries and establishing interdisciplinary programs that integrate traditional culture with digital media, cultural tourism and international communication. While strengthening foundational instruction such as classical text study, greater emphasis should be placed on practical training, encouraging students to engage in cultural creativity, intangible cultural heritage preservation and international exchange. Closer cooperation between universities, cultural enterprises and heritage institutions can provide students with real-world platforms and better align talent cultivation with societal needs.

Cultural confidence is a more fundamental, extensive and enduring form of confidence. It cannot be built without the nourishment of China's fine traditional culture. As China moves forward, it will require a more proactive approach to contemporary transformation, more innovative communication strategies and a more open mindset toward civilizational dialogue. Through sustained collective effort, cultural development during the 15th Five-Year Plan period can lead to substantial achievements, providing strong spiritual support for Chinese modernization and enabling Chinese civilization to shine with renewed brilliance in the new era.

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