

Opinion

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The “4S” Framework for International Exchange and Cooperation in Vocational Education

Reflections on the Tianjin Consensus from the World Vocational and Technical Education Development Conference

<https://doi.org/10.1515/wvte-2025-2014>

Published online November 4, 2025

Abstract: The Tianjin Consensus released at the 2024 World Vocational and Technical Education Development Conference outlines a blueprint for the development of global vocational and technical education and sketches the “4S” action framework for international exchange and cooperation in vocational education: advocating the concept of Sharing in international exchange and cooperation in vocational education; prioritizing Skills in areas such as vocational skills, digital skills, and green skills; focusing on System building as the core to lay the foundation for multi-stakeholder connectivity; and improving vocational education Standards to ensure the quality of international exchange and cooperation in vocational education.

Keywords: international exchange and cooperation; sharing; skills; system; standard

In November 2024, education ministers from 32 countries attended the Ministerial Roundtable of the 2024 World Vocational and Technical Education Development Conference and jointly released the Tianjin Consensus on World Technical and

The article is based on the original work published in *Chinese Vocational and Technical Education*, Issue 6, 2025, with further expansions in the present text.

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Vocational Education and Training Development: Declaration of Ministers of 32 Countries (referred to as the Tianjin Consensus), charting a blueprint for the future of global vocational and technical education.

1 Sharing Is the New Principle

Currently, international exchange and cooperation in vocational education has entered a new phase of “sharing”. In 2022 and 2024, the World Vocational and Technical Education Development Conference was held in Tianjin twice. The Tianjin Initiative and the Tianjin Consensus were successively released after the conferences. From the Initiative to the Consensus, education ministers from different countries have placed higher expectations on vocational education by shifting from creation to sharing. The Initiative emphasized that vocational education is value-creating education, advocating for equity, inclusivity, accessibility, and quality-first principles to provide suitable vocational education and training for all groups. The Consensus further proposed that “countries should commit to building technical and vocational education systems that are closer, fairer, more inclusive, and sustainable while strengthening global exchange and cooperation in this field”.

China’s Minister of Education Huai Jinpeng stated that China is willing to work with countries worldwide to enhance mutual learning, joint development, and shared benefits, jointly advancing the Global Development Initiative (GDI) and contributing to the accelerated implementation of the United Nations 2030 Agenda for Sustainable Development. The 2024 World Vocational and Technical Education Development Conference attracted over 1200 participants from more than 100 countries and regions, with the number of international attendees surpassing domestic ones, which demonstrates the growing global appeal of China’s vocational education. Participants spoke highly of China’s achievements and wanted to learn from China’s technological advancements and vocational education expertise.

The Tianjin Consensus presents a shared vision for vocational education, highlighting its skill value, economic value, international value, and cultural value – addressing the needs of individuals, the world, and the future.

1.1 Skill Value: Vocational Education as a Pathway to Empowerment

Vocational education creates value by equipping students with practical competencies, establishing “skills” as its fundamental value. The Tianjin Consensus emphasizes that “skills training provides opportunities for all, particularly

disadvantaged groups, to transform their destinies by enhancing employability and entrepreneurial capabilities, lifting them out of poverty while offering strong support for career development and ultimately enabling self-advancement”. Skills serve as a critical tool for poverty alleviation. In China’s poverty reduction efforts, vocational education has become the vanguard of educational poverty alleviation. Survey data reveals that a significant proportion of secondary vocational school students come from rural households and urban low-income families, while 91 % of higher vocational college graduates are the first-generation university students in their families. Nationwide, over 70 % of vocational students originate from rural areas, making vocational education an effective pathway to break the cycle of inter-generational poverty.

1.2 Economic Value: Vocational Education as a Driver of Growth

Vocational education plays a pivotal role in facilitating domestic industrial upgrading, promoting cross-border industrial integration, and maintaining the stability of global industrial and supply chains. With technological advancements driving industrial transformation, the transition toward a green economy, digital economy, and care economy has emerged as a critical trend, presenting new concepts, requirements, and tasks for vocational education development. To support cross-border industrial integration, vocational education must establish an internationalized educational framework. A prime example is China’s Nanning Vocational and Technical University, which focuses on meeting the demands of China-ASEAN cross-border industries. The university has strengthened specialized programs in electronics, advanced equipment manufacturing, and new energy vehicles while introducing ASEAN language courses (e.g., Thai, Vietnamese) and general cultural studies on ASEAN nations. It has also developed discipline-specific curricula aligned with the talent needs of Chinese enterprises developing overseas and ASEAN-based companies, cultivating skilled professionals with global competencies. In maintaining global industrial and supply chain stability, vocational education bridges international production capacity cooperation by deepening industry-education integration. It precisely aligns with global talent demands, trains highly skilled professionals with international perspectives, and fosters platforms for technical exchange. For instance, China’s Dongguan Polytechnic has addressed the talent needs of Guangdong-based enterprises operating in printed circuit board (PCB) industry from Thailand, Vietnam, Malaysia and other Southeast Asian countries. The institute provides short- and medium-term skills training, and management programs for mid-to-senior personnel, and a dual-track “academic + practical training” system in collaboration with Chinese companies in Thailand. It enrolls Thai students

in electronics and intelligent manufacturing programs and offers vocational degree education for international students.

1.3 International Value: Vocational Education as a Tool for Global Poverty Alleviation

During the China-Africa Vocational Education Cooperation Dialogue in June 2025, Takayiza Cleopas, Director of Zambia's Technical Education, Vocational and Entrepreneurship Training Authority (TEVETA) under the Ministry of Technology, emphasized, "Zambia urgently needs to equip its youth with livelihood skills to drive economic development." Statistics reveal the challenge: in 2021, out of 6.4 million Zambians aged 15–35, there were 3 million lacking formal education while only 38,000 (0.6 %) received skills training. This contrasts sharply with OECD averages where 37.4 % of participants aged 15–19 in vocational education, with Finland in particular up to 44.8 %. By 2023, China's comparative data shows significant progress, with 91.8 % gross enrollment in upper secondary education, where vocational students constitute nearly 40 % of total high school enrollments and 43.5 % of the 15–19 age cohort. These figures highlight the pronounced Global North-South divide in vocational education access, underscoring the imperative for cooperative "skills gap" reduction to accelerate poverty alleviation. China has been addressing the issue through concrete initiatives since 2019, notably establishing the China-Zambia Vocational College of Science and Technology through collaboration between China Nonferrous Metal Mining Group and 10 Chinese vocational institutes. The college offers 10 specialized programs including Mechanical Manufacturing & Automation, Information & Automation, Mechatronics, and Gemstone Identification. Adapting Chinese vocational education standards to Zambia's context, these institutions have developed localized Zambian vocational standards. The commitment deepened in September 2024 when President Xi Jinping proposed at the Forum on China-Africa Cooperation, "China is willing to enhance the 'Future Africa-AU Vocational Education' initiative with Africa, jointly building engineering colleges and 10 new Luban Workshops, these programs will cultivate urgently needed technical talent for Africa's agricultural and industrial modernization, with 60,000 African women and youths receiving upskilling training to become catalytic forces for Africa's talent ecosystem development."

1.4 Cultural Value: Vocational Education as a Bridge for Cross-Cultural Understanding

The Belt and Road Initiative identifies "people-to-people bonds" as the fundamental pillar among its "Five Connectivity" goals. Vocational education, through its "Going

Global” strategy encompassing overseas campuses, collaborative projects, and personnel exchanges, actively contributes to building a community with a shared future for mankind. By jointly cultivating skilled professionals, it not only stimulates local economic growth but also deepens mutual understanding and friendship among nations. Andrew Giles, Australia’s Minister for Skills and Training, hailed China-Australia vocational cooperation as “a model for global educational collaboration”. Over three decades, the two countries have established more than 220 joint ventures in higher vocational education. China has amplified its vocational education voice globally through the World Vocational and Technical Education Development Conference, successfully hosted in Tianjin in both 2022 and 2024. These events showcased China’s achievements and best practices while creating vital platforms for international exchange. A significant milestone occurred in 2024 when China’s National Vocational Students Skills Competition was rebranded as the World Vocational College Skills Competition, marking a crucial step in its internationalization. This premier event now not only evaluates teaching quality and student competencies across global vocational institutions, but also strengthens international cooperation to advance worldwide vocational skills development.

2 Skills Are Priority Areas

Skills development is a key priority of the Tianjin Consensus, which highlights the critical importance of skills for individuals, societies and nations. For individuals, skills provide fundamental support for survival and development; for societies, they serve as the essential currency in labor markets; and for nations, they represent a common language that connects all humanity. The Tianjin Consensus places special emphasis on developing vocational skills, digital skills and green skills, with particular focus on enhancing green and digital skills among youth. This demonstrates the World Vocational and Technical Education Development Conference’s deep understanding of future skill demands and its forward-looking vision for global technical and vocational education.

2.1 Vocational Skills

The Tianjin Consensus calls on countries to “value skills development, increase investment, and build flexible and diversified technical and vocational education and training systems to ensure learners acquire skills that meet their survival and development needs”. As China’s first overseas applied technology university, the Cambodia-China University of Technology and Science has innovated a “skills + Chinese” training model, cultivating over 3000 students through

enterprise-ordered classes. The Consensus points out that “enhancing vocational skills for youth’s self-employment and entrepreneurship will expand their opportunities to gain a foothold in the labor market”. According to the International Labor Organization’s report *World Employment and Social Outlook: Trends 2025*, the global youth unemployment rate reached 12.6 % in 2024, significantly higher than the general unemployment rate. To promote youth employment, countries not only emphasize employment skills training but also actively expand employment channels and optimize employment service systems. South Africa has established industry skills committees to align training content with pillar industries like mining and tourism. Australia provides career guidance through school-based professionals to help students acquire work-related skills and knowledge before graduation. In March 2025, China’s Ministry of Education issued a notice launching the “Double Thousand” plan to enhance graduate employability, which will establish 1000 micro-specializations and 1000 vocational training courses targeting talent needs in future industries, strategic emerging industries, traditional industry transformation, digital economy, green economy, low-altitude economy and people’s livelihood services.

The Consensus proposes to “uphold inclusive concepts, focus on disadvantaged groups, promote gender equality in vocational education, and enhance their employability and poverty alleviation capabilities”. In 2014, President Xi Jinping stated in an important instruction on accelerating vocational education development, “We should strengthen support for vocational education in rural, ethnic and impoverished areas to ensure everyone has opportunities to excel in life.” In the poverty alleviation campaign, vocational education directly improved workers’ employability and farmers’ incomes through vocational training, achieved rural industrial upgrading through school-enterprise cooperation, and broke inter-generational poverty through talent cultivation.

2.2 Green Skills

Green economy represents an environmentally sustainable model of production and consumption, serving as an imperative choice for both developed and developing countries. Carbon neutrality has become a focal point in global trade competition, making green skills an essential requirement for industrial workers in current industrial development. These skills encompass the knowledge, technologies, and competencies needed to promote social, economic, and environmental sustainable development. The UNESCO-UNEVOC focuses on various aspects of green skills development, including curriculum design, training programs, qualifications, certifications, green campus initiatives, teacher training, as well as collaboration with markets and communities. It aims to develop flexible lifelong learning

pathways and frameworks for recognizing green skills acquired through both formal and informal vocational education. Countries can integrate green and low-carbon concepts into vocational school curricula by establishing shared platforms, pooling resources, and jointly developing standards that align with their respective green industrial development needs. This approach fosters the cultivation of technical talent in fields such as low-carbon construction, new energy, environmental protection, carbon emission statistics and accounting, and carbon emission/carbon sink monitoring. A case in point is China's Changzhou Institute of Engineering Technology, which has established 10 international cooperation platforms overseas, including the Zheng He Center in Pakistan, an overseas campus in Hungary, and the Friendship College in Malaysia. Aligning with national and local priorities as well as the industrial layout of the Belt and Road cooperation partners, the institute has developed specialized program clusters and high-quality courses focused on "green and intelligent" technologies, providing crucial support for accelerating China's "vocational education going global" strategy.

2.3 Digital Skills

To align with the accelerated digital transformation, UNESCO has called for cultivating essential digital-era competencies including information technology, data analytics, and programming through initiatives such as the Pan-African Initiative for Digital Transformation of TVET and Skills Development Systems in Africa. China's vocational education digitalization, which began in 2010, has made comprehensive progress through key projects including the National Vocational Education Teaching Resource Database, the teaching competency track of the National Vocational Students Skills Competition, digital campus infrastructure development, and virtual simulation training base construction. These systematic efforts have significantly improved digital infrastructure, enhanced digital literacy among both teachers and students, transformed digital teaching methodologies, and continuously upgraded digital governance systems. In response to the global digital wave, China has implemented a two-pronged approach: the National Smart Education Platform has extended its services to over 200 countries with more than 10 million overseas users, providing cloud-based access to China's high-quality vocational education resources; simultaneously, China is advancing its Digital Skills Enhancement Actions by strengthening industry-education integration, accelerating the development of national occupational standards and training packages for digital professions, and actively cultivating "Digital Craftsmen" while sharing China's expertise in digital skills development globally. As of August 2024, the number of digitally-related occupations identified in China's Occupational Classification Dictionary (2022 Edition) has increased from 97 to 106 after the latest additions, demonstrating the rapid evolution of digital vocations.

3 Systems Are Multi-Stakeholder Foundations

The establishment of interconnected systems serves as the essential platform and foundation for enabling vocational education to support national economic and social development while facilitating global sharing of educational resources.

3.1 Building a Global Stage for Worldwide Vocational Education Collaboration

The 2024 World Vocational and Technical Education Development Conference established a global platform for vocational education exchange through six major international public goods: conferences, league, awards, competitions, exhibitions, and publications. During the conference, the World Technical and Vocational Education and Training League was launched, with its inaugural membership comprising 89 institutions from 43 countries and regions. The conference also introduced the concept of the “Beijing Accord”, providing a reference for enhancing the quality of global vocational education. Participating nations agreed to break down barriers by jointly implementing cooperative training programs, collaboratively developing skill standards, and sharing experience and outcomes in cultivating highly skilled talent. Drawing on the concept of National Qualification Frameworks (NQF), countries will work together to establish mutual recognition mechanisms for vocational qualifications and skill levels through the development of these frameworks.

3.2 Creating an Ecosystem for Deep Education-Industry Integration

Within the framework of international exchange and cooperation, countries should strengthen partnerships with multinational corporations and industry associations to jointly establish global platforms integrating education with industrial needs, thereby providing robust technical and skilled talent support for national economic and social development. Chinese vocational institutions will, for one thing, uphold the “Industry-Education Partnership” principle by transitioning from “following enterprises overseas” to “jointly venturing abroad” through employee training, collaborative program development, and overseas campus establishment – creating new models for international industry-education integration and innovative apprenticeship systems; for the other, develop distinctive “Chinese Language + Vocational Skills” programs and flagship “Vocational Education Going Global” brands to foster cross-cultural understanding and mutual respect, ultimately promoting people-to-people connectivity.

3.3 Sharing China's Distinctive Approach to Vocational Teacher Training

The teaching workforce serves as the pivotal element in vocational education reform. Guided by national standards, China has established an integrated pre-service and in-service training system for vocational educators through school-enterprise and inter-institutional collaboration, ensuring the continuous professional development of “dual-qualified” teachers who possess both academic credentials and industry experience. Through international cooperation, China actively shares successful practices to enhance teacher competencies through international exchange platforms. China has established international teacher exchange mechanisms that invite outstanding foreign educators to conduct demonstration teaching in Chinese institutions while selecting domestic faculty for overseas study programs, thus enriching cultivating approaches; implement leadership capacity-building plans to develop vocational school administrators with global perspectives and international education exchange experience; and leverage the National Smart Education Platform to create a “Cloud Campus” for global vocational educators, delivering specialized training to teachers across nations.

4 Standards Are Quality Assurance

“The joint development of quality standards for vocational education, which align with global sustainable development goals and gain broad international recognition”, represents a critical foundation for ensuring effective and sustainable global cooperation in technical and vocational education. At their core, these quality standards must ensure vocational education systems can meet diverse national labor market demands while cultivating technical and skilled talent that meets industry requirements.

4.1 Establishing a Vocational Education Standards Chain Anchored in Occupational Standards

The international dissemination of vocational education standards is a crucial indicator for enhancing the global influence of vocational education. These standards originate from occupational competency standards developed through the integration of international industry requirements with localized adaptations, encompassing both demand-side elements, including vocational skill standards, job competency standards, and product specifications, and supply-side components, including professional teaching standards, curriculum frameworks, internship and training protocols, faculty development systems, student cultivation

models, and enterprise feedback mechanisms. A prime example is China's Shenzhen Polytechnic University's collaboration with industry partners to develop international talent training standards for the new energy vehicle sector. Through establishing the "Shenzhen Digital Workshop" and creating English-language instructional resources from courses, textbooks to equipment that cover core new energy vehicle technologies, the university is facilitating the overseas adoption of Chinese vocational education standards.

4.2 Developing Mutual Recognition Standards for Vocational Education Degrees

Globally, three engineering technology education accreditation agreements hold the most significant influence: the Washington Accord, Sydney Accord, and Dublin Accord. The Beijing Accord, which is set to be announced at the 2026 World Vocational and Technical Education Development Conference, will establish mutual recognition standards for associate and bachelor's degree programs in vocational education worldwide, with its mission being to facilitate the international mobility of skilled professionals through multilateral recognition of vocational qualifications. The Beijing Accord is positioned to become the globally recognized benchmark for vocational education quality standards, serving as both an access pass for member countries to international vocational certification systems and transnational mobility pathways, and as an employment passport for graduates from member institutions seeking careers with multinational enterprises. This framework builds upon existing international accreditation models while specifically addressing the needs of vocational education systems across different economic contexts.

4.3 Creating Global Quality Assurance Standards for Vocational Education

On the basis of degree accreditation, quality assurance systems, and qualification frameworks, China will improve the vocational education quality assurance system to build a high-quality global vocational education community. Grounded in the Beijing Accord, China will refine the standards and quality assurance mechanisms for its international vocational education brands including Luban Workshops and Silk Road Institutes, and improve the quality certification standards and guarantee systems for international students receiving vocational education in China. These initiatives will connect with internationally recognized National Qualification Frameworks (NQF) to jointly establish mutual recognition mechanisms for vocational qualifications and skill levels, promote the conversion and mutual recognition between academic education, non-academic education, and vocational skill

levels, and achieve the interconnection between academic certificates and vocational skill level certificates.

The Tianjin Consensus has provided clear directions and an action guide for the development of global technical and vocational education. The four elements, Shared Value (Sharing), Skills Development, System Connectivity, and Quality Standards, will gradually bring the concepts of the Tianjin Consensus to fruition, injecting more “skills power” into building a community with a shared future for mankind. By sharing the value of technical and vocational education globally, we can look forward to a more equitable, inclusive and sustainable global future.