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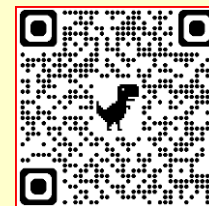
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A Comparative Study on the Development of Vocational Education in Mongolia and China: Pathways, Challenges, and Synergies

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ABSTRACT

Presents a systematic comparative analysis of the vocational education and training (VET) systems in Mongolia and China, two nations navigating distinct economic transitions that place a premium on skills development. As Mongolia seeks to diversify beyond its mining sector and China shifts towards a high-tech, innovation-driven economy, it elucidates the structural, policy, and operational divergences and convergences in their respective VET frameworks. Employing a qualitative comparative case study methodology, the research draws on national policy documents, statistical data from international bodies like the World Bank and ADB, and scholarly literature from both countries. The analysis, structured around governance, scale, curriculum, and financing, reveals that China's VET system is defined by its immense scale and strong state-led governance, designed to align massive human capital with strategic industrial needs through initiatives like the "Double High Plan." In contrast, Mongolia's system is more compact, flexible, and heavily influenced by international partnerships, focusing on competency-based training (CBT) for key economic sectors. While China excels in systematic investment, it faces challenges in ensuring quality across regions, whereas Mongolia struggles with sustainable financing and a limited industrial base for deep school-enterprise cooperation. The findings underscore significant potential for synergistic cooperation, where China's experience in large-scale system management can complement Mongolia's agility and expertise in demand-driven models. The paper concludes by proposing concrete collaborative pathways, including joint curriculum development for cross-border industries and the establishment of a Mongolian-Sino VET cooperation center, offering valuable insights for policymakers and contributing to regional human resource development goals.

KEY WORDS: Vocational Education, Comparative Study, Skills Development, Mongolian-Sino Cooperation.

1. Introduction

In the contemporary global economy, the strategic importance of vocational education and training (VET) as a catalyst for economic development, social equity, and individual empowerment is universally recognized (OECD, 2020). Nations are increasingly leveraging VET systems to bridge the gap between education and employment, fostering a skilled workforce capable of meeting the

demands of a rapidly evolving industrial landscape. This study focuses on two neighboring countries at distinct stages of economic development: Mongolia and China.

Mongolia, a landlocked country with a population of approximately 3.5 million, possesses a resource-driven economy heavily reliant on

the mining sector (e.g., coal, copper, gold). Recognizing the vulnerabilities of this economic model, the Mongolian government has articulated a national development vision, "Mongolia-2050," which emphasizes economic diversification, sustainable development, and the growth of sectors like tourism, agriculture, and renewable energy (Government of Mongolia, 2020). Achieving this vision is contingent upon developing a domestic workforce equipped with the relevant skills, a challenge directly addressed by its VET system.

China, the world's second-largest economy, is undergoing a critical transition from a labor-intensive, manufacturing-based "world factory" to a technology and innovation-driven global leader. This "Made in China 2025" and "dual circulation" strategy paradigm necessitates a VET system capable of producing millions of highly skilled technicians, advanced manufacturing specialists, and modern service professionals (State Council of China, 2019). The Chinese government has consequently placed VET at the top of its national agenda, implementing sweeping reforms characterized by massive state investment and centralized policy direction.

While both countries prioritize VET, their historical contexts, economic scales, political systems, and development trajectories have resulted in fundamentally different approaches. A systematic, comparative analysis of these two systems is conspicuously absent in existing literature. Most studies tend to focus on one country in isolation (e.g., Zha, 2021; Batjargal, 2018).

This paper, therefore, addresses a critical gap by studying: What are the key features of the governance structures and policy frameworks for VET in Mongolia and China? How do the two systems compare in terms of their scale, structure, and operational models, particularly concerning curriculum and industry linkages? What are the primary challenges and opportunities facing VET development in each country? Based on the comparative analysis, what are the potential synergies and actionable pathways for Mongolian-Sino cooperation in the VET sector?

By answering these questions, this research aims to provide academically rigorous insights with significant policy relevance and practical value for educational planners, policymakers, and international development agencies in both countries and the broader Central Asian region.

2. Literature Review and Theoretical Framework

2.1 Theoretical Framework

This study is underpinned by two primary theoretical lenses: Human Capital Theory and the concept of Policy Borrowing/Lending. Human Capital Theory, pioneered by Schultz (1961) and Becker (1964), posits that investment in education and training enhances an individual's productivity, which in turn fuels economic growth. From this perspective, VET is a direct investment in the skills of the workforce, yielding returns for both the individual (higher wages) and the state (increased GDP, innovation). This theory provides a foundational rationale for why both Mongolia and China are heavily investing in VET as a strategic national asset.

However, the how of these investments is shaped by national contexts. The concept of policy borrowing, as elaborated by Phillips and Ochs (2003), provides a framework for understanding how educational reforms are transferred across national borders. The process involves four stages: cross-national attraction, decision, implementation, and internalization/indigenization. Mongolia's VET system has been significantly shaped by projects funded by the

Asian Development Bank (ADB) and Swiss development agencies. These projects introduced and supported the implementation of Competency-Based Training (CBT), while China's recent VET reforms show elements of borrowing from the German dual system.

This framework helps us analyze not just what the policies are, but where they originated and how they have been adapted to local conditions. For instance, China is currently in the "Implementation" and "Internalization" phases, adapting the dual system to its unique state-led, large-scale context. Mongolia is further along in the "Internalization" phase for CBT, having fully embedded it into national policy, though its sustainability remains a key question.

2.2 Vocational Education in Mongolia

The literature on Mongolia's VET is equally insightful. Studies often emerge from institutions like the Mongolian University of Science and Technology and are frequently supported by international organizations. A key focus is the transition from a Soviet-style, centrally planned system to a more market-oriented, demand-driven model. The introduction of CBT in the early 2000s, heavily supported by the ADB's "Vocational Education and Training Project," is a watershed moment (ADB, 2013).

Scholars like Batjargal (2018) in the *Mongolian Journal of Education* emphasize the critical role of the Training and Vocational Education Coordination Council (TVECC), which includes representatives from government, industry, and training providers, in ensuring that VET programs align with labor market needs. However, research also points to systemic fragilities. A study by Enkhuvshin and Munkhbat (2021) highlights the "patchwork" nature of financing, which relies on an unstable mix of state funding, student tuition, and intermittent donor support. Furthermore, the limited size and capacity of Mongolian industries pose a significant challenge to establishing the kind of deep, long-term school-enterprise partnerships seen in more industrialized nations.

2.3 Vocational Education in China

The literature on China's VET system is extensive, reflecting its scale and importance. Scholars highlight its hierarchical structure, encompassing junior secondary vocational schools (JVS), senior secondary vocational schools (SVS), and higher vocational colleges (HVC) (Zha, 2021). A central theme in recent research is the government's push for "industry-education integration, school-enterprise cooperation" (产教融合, 校企合作). The "National Vocational Education Reform Implementation Plan" (2019) and the "Double High Plan" (which aims to build 50 high-level vocational schools and 150 high-level professional clusters) are landmark policies designed to enhance the quality and relevance of VET (Ministry of Education of China, 2019).

Research published in Chinese journals, such as *Education & Economy* (教育经济), often focuses on the practical challenges of implementation. For instance, Wang and Li (2022) discuss the difficulties in developing "dual-qualification" (双师型) teachers who possess both academic teaching credentials and practical industry experience. Another line of inquiry concerns the persistent social stigma attached to VET, which is often seen as a second-tier option compared to academic higher education (Liu, 2020). Despite these challenges, the system's capacity for massive mobilization of resources is its defining feature, a point consistently noted by international observers like the World Bank (2020).

3. Research Methodology

This study employs a qualitative, descriptive, and comparative case study methodology. This approach is ideal for conducting an in-

depth, holistic investigation of a complex social phenomenon—such as a national VET system—within its real-life context (Yin, 2018). The research is based entirely on the analysis of secondary data, categorized as follows:

Includes national laws, master plans, and reform strategies. For China, key documents include the Vocational Education Law of the People's Republic of China (amended 2022), the National Vocational Education Reform Implementation Plan (2019), and the 14th Five-Year Plan (2021-2025). For Mongolia, this includes the Law on Education (2016), the National Vocational Education Development Program (2018-2025), and policy briefs from the Ministry of Education and Science.

Quantitative data was sourced from international databases to ensure comparability and reliability. The primary sources are the UNESCO Institute for Statistics (UIS), the World Bank World Development Indicators, and reports from the Asian Development Bank. This data includes student enrollment figures (by level and field), number of institutions, public expenditure on education as a percentage of GDP, and youth unemployment rates. National statistical offices (China's NBS and Mongolia's NSO) were consulted for the most recent available figures.

A systematic review of scholarly articles was conducted. Databases such as CNKI (China National Knowledge Infrastructure) for Chinese literature and Google Scholar for English and Mongolian literature were used. The review focused on peer-reviewed articles published between 2015 and 2025 to capture the latest trends and reforms.

The data from these sources was systematically organized and analyzed according to the four dimensions outlined in the introduction: governance, structure, curriculum, and financing. This structured comparison allows for a clear identification of convergences and divergences between the two VET systems.

4. Results and Analysis

4.1 Governance and Policy Framework

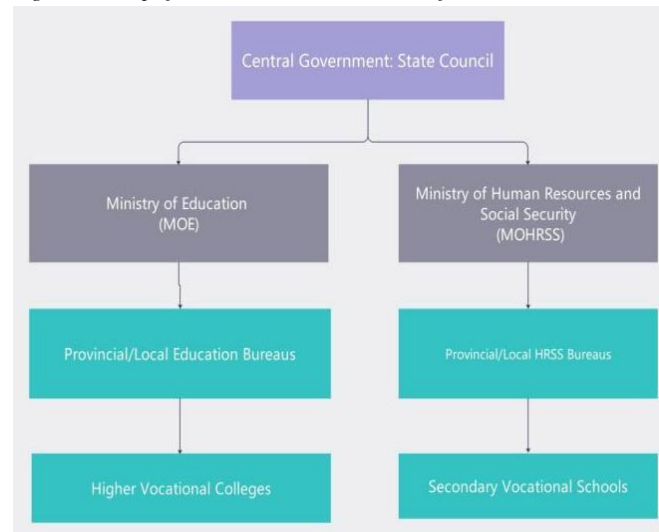
The governance structures of Mongolia and China reflect their distinct political systems and national priorities.

Mongolia's governance is decentralized and collaborative. The Ministry of Education and Science (MES) is the central authority responsible for policy, standards, and overall strategy. A key feature is the Training and Vocational Education Coordination Council (TVECC), a multi-stakeholder body that includes representatives from key ministries (e.g., Ministry of Labor, Ministry of Mining), employer associations, and VET institutions. The TVECC plays a crucial role in approving occupational standards, advising on curriculum, and promoting industry involvement (ADB, 2019). This model fosters greater responsiveness to labor market signals but can be slower in decision-making due to the need for consensus among diverse stakeholders.

The Chinese VET system is characterized by a highly centralized, top-down governance model. The Ministry of Education (MOE) and

the Ministry of Human Resources and Social Security (MOHRSS) are the primary administrative bodies, with the MOE overseeing most higher vocational colleges and the MOHRSS managing many secondary vocational schools and skill certification. Policy formulation is a top-down process, with the central government setting ambitious national goals and providing significant funding to achieve them. Local governments are responsible for implementation, but their autonomy is limited by national directives and performance targets. This model enables rapid, large-scale reform implementation but can sometimes struggle to adapt to local specificities.

Figure 1: Simplified Governance Structure of VET in China



4.2 System Structure and Scale

The differences in scale between the two systems are stark.

Mongolia's VET system is significantly smaller, reflecting its population. The system comprises around 187 institutions, including public and private vocational training centers (VTCs), institutes, and colleges within universities (MES, 2024). Total enrollment is approximately 120,000 students. The system is primarily focused on the secondary level, with fewer options for higher vocational degrees. The smaller scale allows for greater flexibility and quicker adaptation to new skill demands, particularly in emerging sectors like tourism and hospitality.

China operates the largest VET system in the world. As of 2024, there were approximately 9,800 secondary vocational schools with over 16 million students and nearly 1,500 higher vocational colleges with over 16 million students (Ministry of Education of China, 2024). The system is a major pathway for students who do not pursue traditional academic high schools, accounting for nearly half of senior secondary enrollment. The sheer scale allows for immense specialization, with professional clusters ranging from advanced robotics and new energy vehicles to modern logistics and elderly care.

Table 1: Key VET Statistics for Mongolia and China

Metric	Mongolia (2024)	China (2024)	Source
Total Population	~3.5 Million	~1.412 Billion	World Bank
VET Institutions (Total)	~140	~11,300	MOE China; MES Mongolia
VET Enrollment (Secondary & Higher)	~120,000	~32 Million	MOE China; NSO Mongolia

Public Expenditure on Education (% GDP)	5.2%	4.1%	World Bank
Youth Unemployment Rate (15-24)	18.5%	13.2% (urban)	National Bureau of Statistics of China; NSO Mongolia

4.3 Curriculum and Industry Linkage

This dimension reveals a core philosophical difference in how skills are developed.

Mongolia has fully embraced Competency-Based Training (CBT) as its national model, largely due to the influence of ADB and Swiss development projects. CBT focuses on the learner's ability to demonstrate specific competencies required by an occupation, regardless of how or where they were learned. The curriculum is modular and directly linked to National Occupational Standards (NOS) developed with industry input through the TVECC. Assessment is performance-based. This model is highly effective for producing graduates with clearly defined, job-ready skills. The main challenge is the limited pool of local companies capable of

providing high-quality work-based training placements, which is a cornerstone of effective CBT (Enkhtuvshin & Munkhbat, 2021).

In China, the dominant paradigm is "industry-education integration" (产教融合). The policy encourages schools to simulate enterprise environments, build "factory-schools," and develop curriculum jointly with companies. The "Modern Apprenticeship" pilot program is a prime example, where students split their time between classroom learning at a school and on-the-job training at a company (Zha, 2021). The government provides subsidies to companies that participate. However, the effectiveness varies. While large state-owned enterprises and multinational corporations often engage deeply, many small and medium-sized enterprises (SMEs) lack the capacity or incentive to participate meaningfully, leading to a gap between policy intent and ground reality (Wang & Li, 2022).

Table 2: VET Enrollment Distribution by Major Field of Study (Approximate % of Total VET Enrollment)

CHINA(Diversified Economy)		MONGOLIA(Resource & Emerging Economy)	
IT & New Tech	15%	Mining & Geology	25%
Manufacturing	25%	Tourism/Hospitality	20%
Modern Services	20%	Agriculture	15%
Healthcare	10%	IT & Telecom	10%
Other Fields	30%	Other Fields	30%

(Source: Compiled from Ministry of Education of China, 2023; Ministry of Education and Science of Mongolia, 2022)

This chart visually confirms the alignment of VET provision with national economic structures. China's enrollment is spread across a wide range of sectors, reflecting its diversified industrial base. Mongolia's enrollment is heavily concentrated in mining and related services, with a growing emphasis on tourism and agriculture, mirroring its economic priorities.

4.4 Financing and Teacher Development

In Mongolia, financing is a more complex and less stable mix. The state budget provides a per-student subsidy, but this is often insufficient to cover costs, leading to reliance on tuition fees. International donors have played a crucial role in financing infrastructure development, curriculum reform, and teacher training projects. However, this project-based funding can create sustainability issues once a project ends. Teacher development is a critical challenge. Many VET instructors lack recent industry experience. While donor projects have provided valuable "Training of Trainers" (ToT) programs, often involving international study tours, retaining these upgraded teachers within the relatively low-paying VET sector remains a persistent problem (Batjargal, 2018).

Figure 2: Mongolia's "Training of Trainers" (ToT) Mode

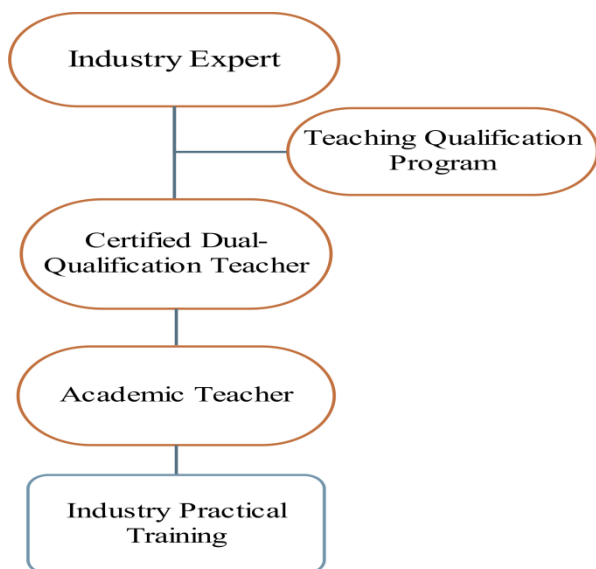


(Source: Adapted from ADB, 2022 project evaluation)

In China, financing is predominantly public, with local governments bearing the primary responsibility for operating expenses, supplemented by national project-based funding (e.g., for "Double High" schools). Tuition fees are relatively low, and there are extensive scholarship and stipend programs. A recent policy shift encourages enterprises to contribute financially, though this is still developing. A major focus of reform is the development of "dual-qualification" (双师型) teachers. The government has invested heavily in programs that send academic teachers to industry for

practical experience and recruit industry professionals to teach part-time (MOE, 2019). The goal is for a majority of professional teachers in high-level vocational colleges to be dual-qualified by 2025.

Figure 3: China's "Dual-Qualification" Teacher Development Model



(Source: Adapted from Ministry of Education of China, 2023 policy documents)

These two diagrams (Figures 2 and 3) effectively illustrate the different philosophies of teacher development: China's internal, state-driven system versus Mongolia's externally supported, cascade model.

Table 3: Comparative VET Financing Structure (Approximate % of Total Funding)

CHINA (State-Led)		MONGOLIA (Mixed Model)	
Government Funding	75%	Government Funding	40%
Tuition Fees	15%	Tuition Fees	25%
Enterprise Contributions	10%	Int'l Donor Projects	25%
		Private/Other	10%

Source: Estimated based on analysis of national budgets and ADB/World Bank reports, 2022-2024)

This visual representation starkly contrasts the two systems. China's model is robust and predictable, centered on state investment. Mongolia's model is more diversified but also more precarious, with a significant and potentially volatile reliance on international aid.

5. Discussion

The comparative analysis reveals two VET systems shaped by their national imperatives.

Mongolia's approach can be described as "adaptive agility". Its smaller, more collaborative system is designed to be responsive to the needs of a narrow but critical set of economic sectors. Its strengths are its flexibility, the strong role of industry in governance (via the TVECC), and its successful adoption of a modern, demand-driven CBT model. Its weaknesses are its financial fragility, over-

reliance on external partners, and the structural limitation of a small industrial base to provide comprehensive work-based learning.

China's approach is one of "strategic scale". Its massive, state-led system is a powerful tool for national economic planning, designed to systematically align the world's largest workforce with the needs of its strategic industries. Its strengths lie in its capacity for massive investment, rapid policy rollout, and the development of standardized curricula and infrastructure. Its weaknesses lie in potential inflexibility, uneven quality across regions, and the difficulty of fostering genuine, deep-rooted cooperation with millions of diverse SMEs.

These findings resonate with the theoretical framework. Both countries are clearly investing in human capital. However, the process of policy borrowing has led to different outcomes. Mongolia's adoption of CBT was directly facilitated by international experts and donors, resulting in a system that is perhaps more "pure" in its implementation of CBT but less integrated with a robust domestic industrial ecosystem. China's adaptation of the German dual system is being implemented on an unprecedented scale, with the state acting as the primary catalyst and guarantor.

The implications are significant. For Mongolia, the Chinese experience offers a model for building state capacity and sustainable financing mechanisms to reduce dependency on external aid. For China, the Mongolian experience suggests the value of strong, institutionalized industry bodies like the TVECC to improve labor market signaling, especially for SMEs.

6. Conclusion and Recommendations

This research has conducted a systematic comparison of the VET systems in Mongolia and China, highlighting their divergent paths of development. Mongolia has cultivated a smaller, more flexible, and internationally-influenced system centered on competency-based training for key economic sectors. China has built a massive, state-driven system focused on strategic alignment with national industrial goals. Both face unique challenges: Mongolia in achieving financial sustainability and deepening industry engagement, and China in ensuring quality and relevance at scale.

The most significant outcome of this research is the identification of immense potential for mutually beneficial synergistic cooperation. The complementary nature of their systems—the scale and state capacity of China and the agility and specialized experience of Mongolia—creates a fertile ground for collaboration. This research proposes the following actionable recommendations, which hold substantial promotional value for policymakers in both nations:

1. Joint Curriculum Development for Cross-Border Industries

Establish a Mongolian-Sino working group to co-develop curricula and standards for industries vital to both countries, such as cross-border logistics and customs, renewable energy (especially wind and solar), and sustainable mining and environmental management. This would leverage China's curriculum development expertise and Mongolia's specific knowledge of its own regulatory and geographic context.

2. Establishment of a "Mongolian-Sino VET Cooperation Center"

This center, potentially co-located at a leading Mongolian university, could serve as a hub for: Teacher Exchange Programs. Short-term exchanges where Chinese "dual-qualification" teachers train Mongolian instructors in practical skills and

pedagogical methods, while Mongolian experts share their experience in CBT implementation and managing multi-stakeholder governance; Digital Resource Sharing. The center could host a shared digital platform providing access to China's high-quality online VET courses (a national priority) and virtual simulations, which would be invaluable for Mongolia's more remote institutions; Pilot "Modern Apprenticeship" Programs in Mongolia. Pilot projects could be launched based on the Chinese modern apprenticeship model. This would provide Mongolian students with high-quality work-based learning opportunities and give companies a pipeline of locally trained, culturally competent skilled workers.

3. Collaboration in Cultural Sectors

Mongolia has unique expertise in sectors related to its nomadic heritage, such as sustainable animal husbandry, cashmere production, and eco-tourism management. Chinese VET institutions, particularly in Inner Mongolia, could collaborate to develop joint programs that not only preserve this cultural heritage but also create new economic opportunities.

In all, Mongolia and China can transform their VET systems from parallel national endeavors into an integrated, cooperative ecosystem. Such collaboration would not only enhance the skills and employability of their youth but also serve as a powerful engine for regional economic integration and a tangible demonstration of the "Mongolia-2050" and Chinese "Belt and Road" Initiative.

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