

Research Article

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A Study on the Typological Reform of China's Vocational Education from a Comparative Education Perspective

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Abstract: Taking comparative education perspectives and typological education theory as the analytical framework, this paper examines the evolutionary logic of China's vocational education in terms of institutional construction, reform pathways, and cultural tension, and reveals its structural dilemma between institutional legitimacy and social recognition. By comparing Germany's industry co-governance model, France's qualification hierarchy and outcome transformation mechanisms, and Japan's enterprise-oriented and job-matching approach, the study analyzes how these three countries address the tensions inherent in vocational education as well as the limitations of their respective approaches. The research argues that China's typological reform should, in governance, strengthen multi-stakeholder co-governance; in reform pathways, improve outcome transfer and vertical articulation; and in institutional culture, enhance legitimacy and social recognition, thereby realizing the transition from policy advocacy to institutional stabilization. Through this comparative study, the paper seeks to uncover shared structural logics and propose locally generated pathways across the three dimensions of governance, pathways, and social identity, offering theoretical support and international reference for the typological reform of vocational education with Chinese characteristics.

Keywords: vocational education; typological education; comparative education; institutional tension; typological reform

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Driven by a new wave of technological revolution and social transformation, vocational education has increasingly become a central topic in global education reform. For China, the focus of vocational education reform is no longer merely on expansion of scale or structural adjustment, but on how to establish the independent status of vocational education as an education type, and to promote a shift from a subsidiary logic to institutional reconstruction. Implementation Plan on National Vocational Education Reform proposed that vocational education should transform toward typological education (State Council of the PRC, 2019), and the Vocational Education Law of the People's Republic of China further affirmed its institutional attributes (National People's Congress of the PRC, 2022), marking China's entry into a critical stage of typological reform. However, in the ongoing reform process, China's vocational education still faces deep-seated tensions – such as blurred typological boundaries, weak school-enterprise collaboration, and insufficient social recognition – which have hindered the full establishment of its independent and legitimate typological identity.

Within the analytical framework of comparative education, and informed by typological education theory, this study systematically examines and compares the institutional logic, typological tensions, and reform pathways of China's vocational education. Comparative education provides a horizontal lens through which the institutional structures of multiple countries can be analyzed, helping to uncover the intrinsic relationships among functional arrangements, governance mechanisms, and social expectations within different vocational education systems (Kleinert and Jacob 2019). By examining and comparing representative countries – Germany, France, and Japan – the study illustrates the differentiated responses of various systems in addressing similar tensions, thereby offering meaningful insights for China's vocational education reform. The typological education theory can help China break away from the “subordinate status” of vocational education and build an autonomous and modern vocational education system.

Accordingly, this paper focuses on three core questions. First, what are the main characteristics of China's typological reform of vocational education in terms of institutional construction, operational mechanisms, and structural tensions? Second, how have Germany, France, and Japan responded to the structural tensions within their own vocational education systems, and what reform outcomes have they achieved? Third, based on the comparative analysis of these three countries, how can China, taking its own national context into account, construct a typological vocational education system that embodies indigenous logic?

1 The Value of Comparative Education and the Intervention of Typological Education Theory

Globally, there is no single universal model of vocational education. Rather, each system is deeply embedded within the specific social structures, economic models, and cultural traditions of its respective country. As Bray et al. (2014) observed, comparative education research should not remain at a superficial level; instead, it must be understood within the corresponding social, historical, cultural, and political contexts in order to grasp its internal functions and logic. Similarly, Gonon and Deissinger (2021) pointed out that the evolution of vocational education systems is not the result of linear imitation, but is profoundly shaped by each country's unique governance structures, industrial organizations, and institutional cultures. For China, such comparative frameworks not only reveal the diversity of international experience, but also provide analytical reference for understanding the structural tensions it faces in areas such as national governance, social recognition, and the typological construction of institutions.

However, as Evans (2020) noted, the adoption of international experience – without translation into local contexts and reconstruction of institutional logic – easily degenerates into formalistic “policy borrowing”. Meaningful comparative studies, therefore, should foster “indigenous generation” and “cultural responsiveness”, rather than the uncritical transplantation of other countries' instrumental logics.

In this context, typological education theory has gradually become an important intellectual resource for China's vocational education reform. The theory emphasizes that education systems should establish typological distinctions based on functional differentiation and goal orientation, thereby breaking through the hierarchical structure centered on general education. Within this framework, vocational education is regarded as an independent education type, which should achieve autonomous development in curriculum design, educational objectives, assessment mechanisms, and institutional culture, rather than serving merely as a supplement or subordinate extension of general education (Bao 2021).

In summary, comparative education provides analytical tools for identifying the structural differences and institutional tensions in vocational education across different countries, while typological education theory lays an institutional foundation for China to move beyond the repetitive cycle of “imitation-dilemma-reimitation” and to establish vocational education as an independent education type.

2 The Institutional Logic and Cultural Dilemma of China's Vocational Education from the Perspective of Typological Education Theory

2.1 Institutional Authorization and Core Propositions of Typological Education

The concept of “typological education” first emerged in the academic discussion of China's vocational education studies and has been continuously expanded and deepened through ongoing policy development and institutional design. Existing studies have pointed out that China's vocational education is undergoing a transformation from “hierarchical education” to “typological education”. This transformation signifies not only the elevation of vocational education's institutional status, but also the systemic reconstruction of its educational logic, curriculum framework, and social functions (Zhu and Shi 2021).

With the construction of China's modern vocational education system, this concept has gradually matured and been confirmed at both policy and legal levels. The Implementation Plan on National Vocational Education Reform (2019) proposed that vocational education should shift from imitating the school-running model of general education to becoming a typological education characterized by distinct professional features and participation of enterprises and society. The newly revised Vocational Education Law (2022) formally recognized, for the first time in legislation, vocational education's institutional status as an independent education type, marking the entry of the typological education concept into a rule-of-law stage.

The core propositions of typological education can be summarized in three dimensions: functional differentiation, path independence, and goal orientation. Jiang (2019a, 2019b), from the perspective of functional positioning, emphasizes the need to break through the binary divide between general and vocational education; Xu (2020), from the standpoint of knowledge logic, proposes an independent system centered on technical knowledge; Kuang (2020), drawing on educational approaches, advocates that higher vocational education should construct a triadic structure; and Bao (2021) further argues that typological education should be grounded in “technicality – practicality – vocationality”, with the goal of achieving institutional independence. Together, these studies highlight independence as the core value of typological education theory, yet they tend to focus predominantly on institutional and structural dimensions, while giving insufficient attention to the issues of cultural foundations and social recognition underlying typological education.

2.2 Operational Mechanisms and Practical Pathways of Typological Education

The proposal of typological education theory has gradually evolved into concrete implementation ways for institutional arrangements and policy pathways. The Implementation Plan on National Vocational Education Reform (2019), known as the “Twenty Guidelines for Vocational Education”, established the basic framework of typological education, which can be summarized in five key aspects. In terms of institutional design, it proposed the construction of a vertically integrated pathway linking secondary vocational, higher vocational, and undergraduate vocational education; in the curriculum system, it emphasized a triadic unity of national curriculum standards, teaching standards, and evaluation standards; in the educational mechanism, it advocated a competence-oriented approach through the integration of work, course, competition, and certification, and the principle of unity of knowledge and practice; in the governance structure, it stressed multi-stakeholder participation and group-based school operation; and in the support mechanisms, it introduced institutional instruments such as finance, examination, and evaluation. Together, these five dimensions – from vertical articulation to standard system – outline the institutional framework of typological education and reflect the top-level design intention of the state to achieve the institutional stabilization of vocational education.

In the process of implementation, these policies have gradually been transformed into practice through specific institutional instruments, among which the 1 + X Certificate System, launched in 2019, is the most representative. This system, through the composite design of academic certificates and vocational skill level certificates, establishes a dual-track talent cultivation mechanism that combines academic learning and vocational certification, aligning with the goal orientation and practical orientation of typological education (Qin 2020). As Chen (2021) notes, this system represents a major innovation in promoting the construction of a typological education system and reflects a systematic advancement logic that extends from typological positioning and standard construction to pluralistic pathways.

To support curriculum reform and the transformation of teaching systems, China has preliminarily established a teaching standards framework composed of a specialty catalogue, professional teaching standards, curriculum standards, and internship standards, forming a closed-loop mechanism that links standards, instruction, and evaluation. Places such as Jiangsu have also explored an integrated implementation pathway featuring “three levels of articulation and six types of linkage” in practice, promoting the organic alignment among national standards, provincial requirements, and school-based practices to ensure that the teaching

system is better aligned with regional structures and occupational demands (Zhu and Chen 2019).

Meanwhile, the modern apprenticeship system, serving as an institutional model of work-study integration, has been piloted in multiple provinces and cities. Its core mechanisms include joint enrollment by schools and enterprises, dual-mentor collaborative teaching, and a workplace-oriented curriculum framework, aiming to realize the integrated logic of learning, practice, and assessment within typological education (Luo 2019). The “Double High Initiative” is regarded as a major national policy instrument for advancing institutional upgrading and system expansion in the field of typological education. It not only strengthens the development of platforms such as industrial colleges and school-enterprise alliances, but also promotes a multi-dimensional collaborative pathway that integrates resource coordination, joint standard development, and outcome transformation (Yi and Liu 2023).

At the regional level, the construction of clusters of specialties has gradually replaced single-discipline structures, becoming the basic unit of institutional design within typological education. Hua et al. (2022) point out that the triadic logic of “specialty cluster formation – post coordination – industry alignment” provides structural support for higher vocational education to shift from a “course mosaic” to typological integration.

Overall, China’s institutional pathway of typological education has gradually evolved from policy-text advocacy to mechanism-based coordination supported by concrete tools such as the 1 + X Certificate System and specialty cluster development. Meanwhile, a clearer operational logic has taken shape across multiple dimensions, including the standard system, organizational model, collaborative platforms, and capacity development (Bao 2021; Chen 2023).

2.3 Cultural Foundations and Tension Dilemma of Typological Education

Despite the continuous strengthening of typological education’s role at the policy level, multiple tensions persist in institutional practice. First, the boundaries between education types remain blurred; school-enterprise collaboration lacks stable mechanisms; and curriculum design often oscillates between employment orientation and competence cultivation, making it difficult to establish a coherent logic (Wen 2019; Luo 2019; Gao and Zhao 2020). Second, the process of institutional construction still relies heavily on the policy instruments of international organizations such as the OECD and UNESCO – including the European Credit System for Vocational Education and Training (ECVET), the National Qualifications Framework (NQF), and the modular approach – which has led to significant path dependence,

while the indigenous, context-driven logic of localized construction remains inadequate (UNESCO 2016; Li and Pilz 2023).

Against this background, scholars have proposed a cultural reconstruction approach based on “vocationality – practicality – locality”, attempting to ground values in workplace demand and regional practice, thereby reducing dependence on academic logic (Bao 2021; Jiang 2019a, 2019b). However, this transformation has been continuously constrained by cultural inertia such as credentialism and elite narratives, leaving typological education without broad social legitimacy or discursive support.

Overall, the advancement of typological education in China faces two central dilemmas. The first lies in insufficient institutional independence – its typological framework still takes general education as the referential model and lacks autonomous curriculum and evaluation standards. The second concerns low social recognition – vocational education continues to be perceived as a subordinate or inferior track in both the academic and employment hierarchies (Zhu and Chen 2019). This suggests that even with new initiatives such as vocational bachelor’s programs and the 1 + X Certificate System, typological education still struggles to achieve the essential transformation from a subsidiary logic to an institutional entity (Shi 2021; Lü 2022).

In summary, while China’s vocational education has made an initial transition from structural adaptation to typological construction, its institutional logic has yet to gain sufficient cultural legitimacy and social support. The gap between institutional design and cultural recognition remains a key barrier to the development of typological education. The following section turns to the experience of Germany, France, and Japan to explore their institutional strategies for addressing these tensions and the implications for China.

3 Comparative Analysis: Tensions, Responses, and Implications in Representative Countries

3.1 Germany: Tensions, Responses, and Implications of the Dual System

3.1.1 Structural Tensions Under Collaborative Governance

Germany’s vocational education system is centered on the dual system, whose institutional roots can be traced back to the medieval guild apprenticeship tradition. The system was formalized in the late twentieth century, particularly after the passage of the Vocational Training Act in 1969, which came into force in 1970.

This legislation established a stable collaborative governance structure involving the federal government, state governments, industry associations, and enterprises (Fürstenau et al. 2014; Deissinger 2015). Within this framework, enterprises are responsible for practical training, vocational schools deliver theoretical instruction, the federal government formulates training standards for enterprises, the state governments oversee school curricula, and chambers of commerce (such as Chambers of Industry and Commerce and the Chambers of Crafts) handle registration, examinations, and quality control (Euler 2013; Hummelsheim and Baur 2014). This institutional arrangement embodies the principle of *Beruflichkeit* – “occupation-centered education”. It seeks to achieve both skill formation and social integration through legally-defined standards, transparent learning pathways, and qualification certification, thereby creating a distinctive institutional type and mechanism of social identity construction (Deissinger 2015). Apprentices occupy a dual identity as both student and employee, reflecting the institutional and cultural feature of collaborative training between enterprises and schools (Fürstenau et al. 2014).

Over time, however, the dual system has revealed multiple layers of tension. First, with the massification of higher education, many young people increasingly favor academic routes, reducing the cultural appeal of traditional apprenticeships; the dual system has come to be viewed as a “second-best track” compared with higher education (Fürstenau et al. 2014). Second, due to early tracking in the education system, graduates from *Hauptschule* and *Realschule* represent the majority of apprentices, while migrant and minority youth tend to be marginalized. More than a quarter of young people must pass through the transition system (*Übergangssystem*) – a one- to two-year preparatory and remedial training scheme for those not directly entering apprenticeships (Hummelsheim and Baur 2014; Cockrill and Scott 1997). In addition, enterprises – facing rising training costs and burdens on instructors – have gradually reduced their training provision, with small- and medium-sized enterprises particularly affected, exacerbating the mismatch in the system (Fürstenau et al. 2014).

At a deeper level, the sustainability of this model relies not solely on legal frameworks but on deeply institutionalized social trust, industrial self-governance, and vocational culture. In other words, the institutional soil of the dual system lies in the long-term accumulation of social trust and professional culture rather than in its legal texts alone (Deissinger 2015). This implies that the transferability of the German experience is limited, since its success depends on specific cultural and social conditions.

Overall, the structural tension of Germany’s dual system lies in the contrast between a highly mature institutional framework with robust governance and coordination mechanisms and declining social appeal and enterprise participation under the pressures of higher education expansion and decreasing enterprise

enthusiasm. This demonstrates that the reform of vocational education involves not only technical and institutional design, but also the sustained support of social recognition and cultural values.

3.1.2 Institutional Responses and Curriculum Reform Pathways

To alleviate the aforementioned difficulties, Germany's vocational education system has developed a series of institutional and curricular measures. At the institutional level, the enterprise-school coordination mechanism arranges apprentices to spend three to four days per week in enterprise-based practice and one to two days in school-based learning, thereby reinforcing a competence model integrating theory and practice (Hummelsheim and Baur 2014). Vocational qualification examinations are uniformly organized by the chambers of commerce, with external evaluation ensuring consistent training standards. Enterprises are required by law to sign training contracts and appoint qualified mentors, all under industry supervision (Euler 2013). In terms of financial mechanisms, a joint model of enterprise investment and state support is adopted: the government provides subsidies and public training centers for small- and medium-sized enterprises to mitigate enterprise withdrawal and resource insufficiency (Hummelsheim and Baur 2014).

Regarding curriculum reform, recent years have seen the implementation of modularized courses combining compulsory and elective modules to enhance flexibility and adaptability (Fürstenau et al. 2014). However, the reform has achieved limited impact among small- and medium-sized enterprises, where resource disparity remains the main constraint. Studies indicate that large enterprises, equipped with sufficient resources, can implement the reform more effectively, whereas small- and medium-sized firms often remain at a formalistic level, creating a gap between policy objectives and actual outcomes.

Overall, these reforms at the institutional and curricular levels have, to some extent, eased the problems of enterprise withdrawal and supply-demand mismatch, and improved the dual system's flexibility and adaptability. Yet their impact remains limited, failing to fundamentally resolve the "legitimacy crisis" brought about by the expansion of higher education. The legitimacy crisis refers to the decline in the social status and attractiveness of vocational education, which is widely perceived as an inferior alternative to higher education, thus weakening its institutional legitimacy. This outcome indicates that institutional design can only partly buffer external challenges, whereas social recognition and cultural values remain the key for the sustainable development of the dual system.

3.1.3 Implications of Industry Co-Governance for China

The long-term stability of Germany's dual system rests on an institutional logic of multi-stakeholder co-governance involving the state, industries, and enterprises. Industry organizations – such as the Chambers of Industry and Commerce and the Chambers of Crafts – perform core functions including the formulation of training standards, registration supervision, and qualification certification. These mechanisms effectively mitigate the fragmented implementation and low enterprise participation that often occur under a state-dominated system (Hummelsheim and Baur 2014). The value of this experience lies not in the institutional form itself, but in its operational logic centered on industrial autonomy and responsibility mechanisms.

At the governance level, multi-stakeholder co-governance helps vocational education move from being subordinate to general education to typological independence, thereby fostering institutional autonomy supported by industry organizations. In terms of curriculum and training mechanisms, Germany's concept of “work-process-orientation and theory-practice integration” resonates with China's recent reform promoting “integration of work, course, competition, and certification” and “unity of knowledge and action”. Culturally, the German experience demonstrates that the social legitimacy of vocational education depends on institutionalized trust and industry identity, reminding China that the transformation of typological education must advance institutional design and social recognition in tandem rather than remain at the level of policy rhetoric.

Specific implications for China include: first, revising the Vocational Education Law or issuing supporting administrative regulations to formally integrate social organizations such as industry associations and chambers of commerce into the processes of professional standard setting, examination and evaluation, and quality supervision, thereby forming a collaborative governance mechanism between government and society; second, drawing on Germany's financial sharing model to establish public training centers and targeted subsidy programs for small- and medium-sized enterprises, so as to reduce training costs and stabilize enterprise participation; and third, at the sociocultural level, strengthening cooperation among industry organizations, the media, and local governments to jointly foster a “parity pathway” for vocational education – one that enjoys equal social status with general education – and gradually diminish the perception of vocational education as a “second-class track”.

3.2 France: School-Based Tensions, Responses, and Implications

3.2.1 Tensions of the Diploma Hierarchy and Structural Differentiation

The central tension of French vocational education lies in the fact that the state, through a centralized diploma hierarchy, has strengthened institutional unity and the authority of qualifications, yet at the same time entrenched credentialism and inequality among education types. The French vocational education system, centered on a state-led diploma hierarchy and centralized governance, has gradually taken shape since the 1960s – marked by the establishment of the baccalauréat technologique in 1965 and the classification of educational levels in 1969. It integrates general, technical, and vocational education within a unified qualification framework under the centralized administration of the Ministry of Education (Bouder and Kirsch 2007; Méhaut 2006). This system, organized around the diploma, forms a six-level vertical structure that includes the Certificat d’aptitude professionnelle (CAP), Brevet d’études professionnelles (BEP), Baccalauréat professionnel (Bac Pro), Brevet de technicien supérieur (BTS), Licence, and Doctorat. It reflects both academic hierarchy and vocational qualification functions, unified within the National Qualifications Framework, registered in the Répertoire national des certifications professionnelles (RNCP), and managed by France compétences (Cedefop 2019; France compétences 2022).

However, this highly standardized school-centered system reveals clear structural tensions. First, France is deeply influenced by credential hierarchy, as the republican ideal of education reinforces the social stratification and legitimacy of academic diplomas, giving rise to what scholars describe as the “republican cult of the diploma” (*culte républicain du diplôme*). Consequently, even as the vocational diploma hierarchy has risen, its social recognition and labor-market outcomes have not improved correspondingly (Bouder and Kirsch 2007; Méhaut 2006). Second, although France has established vertical articulation channels, these pathways primarily represent continuity of diplomas rather than true equivalence among education types. In other words, while academic and vocational routes appear formally connected, type boundaries remain, and the institutional independence of vocational education is still weak (Deissinger 2016). Third, curriculum development remains largely state-driven, with limited participation from industry organizations and local actors, leading to a mismatch between curriculum content and workplace needs (Deissinger 2016). Moreover, while nationwide organization of examinations, certification, and evaluation guarantees qualification authority and quality assurance, it simultaneously limits the flexibility of local institutions in adapting curricula and innovating pedagogy. This suggests that the French

system, while ensuring uniformity, does so at the expense of plural participation and local adaptability.

In addition, research shows that identical diplomas obtained through different routes – such as apprenticeship training, continuing education, or validation of prior experience (VAE) – often encounter nominal equivalence but substantial disparity in the labor market, illustrating a condition of “formal unity but actual segmentation” (France compétences 2022).

Overall, France’s diploma-based system ensures national coherence and qualification authority, yet simultaneously produces tensions of type inequality and insufficient social recognition. Its positive function lies in improving the social accessibility of diplomas and the cross-path recognition of qualifications, whereas its institutional limitation stems from excessive reliance on hierarchical credential ranking, thereby weakening the typological independence and institutional legitimacy of vocational education.

3.2.2 Responses Through Vertical Articulation and Modular Reform

To address the structural challenges arising from credential hierarchy and type inequality, France in recent years has implemented a series of institutional and curricular reforms. At the secondary level, vocational lycées (lycées professionnels) have introduced a unified course structure encompassing general education courses, specialized practical training, and 12–22 weeks of enterprise internships, with internship performance incorporated into graduation assessment – reflecting an operational logic of school leadership complemented by enterprise participation (France compétences 2022; Méhaut 2006). At the higher-education level, Instituts universitaires de technologie (IUTs), Sections de techniciens supérieurs (STSs), and the newly established Bachelor universitaire de technologie programs all adopt a dual-track framework combining national standards and local modules. They have uniformly implemented the European Credit Transfer and Accumulation System (ECTS) to enhance compatibility and outcome transfer among different qualification pathways and to facilitate credit accumulation and mutual recognition of qualifications (France compétences 2022).

Qualification development in France is led by Professional Advisory Commissions (Commissions professionnelles consultatives), which organize curriculum content according to the logic of “vocational tasks – competence standards – assessment requirements”. This approach forms transferable competence modules (Bouder and Kirsch 2007; Cedefop 2019). Following the 2019 reform, the National Qualifications Framework introduced a three-dimensional outcome-based standard – knowledge, skills, and autonomy – and began registering various qualifications through competence modules (blocs de compétences), thereby promoting the

accumulativeness and cross-path convertibility of credentials (France compétences 2022). At the same time, although the apprenticeship system occupies a place within the framework, qualifications are still centrally certified by the state, and enterprises play a limited role in standard setting and certificate issuance (Cedefop 2019). This indicates that France's reform, while strengthening uniformity and transparency, has simultaneously weakened the participation of enterprises and local actors in the vocational education system.

In terms of positive outcomes, these reforms have significantly enhanced the national equivalence of qualifications, facilitated student mobility across different pathways, and expanded access routes from vocational education to higher education. For instance, graduates holding the vocational baccalaureate now have smoother transitions into the Bachelor universitaire de technologie or general bachelor programs, and the accumulativeness of qualifications has improved. However, some studies point out that although the “higher-education-oriented strategy” has opened upward channels for vocational education, it has also diluted its practical core, rendering the equivalence of education types more of a superficial institutional integration rather than a substantive construction of vocational typology (Deissinger 2016).

Overall, France's reform logic of “vertical articulation – module orientation – state coordination” has, to some extent, improved the surface-level compatibility and mobility of the institutional framework, yet has failed to address the deeper issues of cultural value and social recognition in vocational education. This suggests that the French experience represents more of a technical adjustment than a genuine construction of typological independence.

3.2.3 Implications of France's Experience in Standardization and Learning Outcome Conversion for China

Under the state-led and school-centered model, France's vocational education system is built on a hierarchical diploma structure and a unified qualification framework to form institutional advantages characterized by pathway articulation, centralized standards, and transparency of qualifications. The system establishes a vertical channel encompassing the Certificat d'aptitude professionnelle (CAP), Brevet d'études professionnelles (BEP), Baccalauréat professionnel (Bac Pro), Brevet de technicien supérieur (BTS), Licence, and Doctorat, all incorporated into the National Qualifications Framework and the Répertoire national des certifications professionnelles (RNCP). This ensures the comparability and traceability of diplomas and qualifications nationwide (Cedefop 2019). In comparison, although China's “secondary vocational – higher vocational – vocational bachelor” structure already has a top-level design, it still lacks systematic support in learning outcome recognition, course

articulation, and institutional alignment. France's use of competence modules promotes outcome-based learning and cross-path mobility, effectively enhancing the accumulateness and cross-path compatibility of learning outcomes. This mechanism shares a similar logic with China's 1 + X Certificate System and provides a concrete institutional reference for typological education.

In curriculum design, France adopts a dual-track structure of national standards combined with local modules. For example, the Bachelor universitaire de technologie program applies the European Credit Transfer and Accumulation System (ECTS) to guarantee credit consistency and transnational compatibility, thus maintaining national standardization while improving learning outcome conversion and learning adaptability. This arrangement allows regions and institutions to retain a certain degree of flexibility within a unified framework, balancing standardization and local diversification. For China, this experience offers valuable insights into building a three-tier curriculum system of national courses – regional adaptation – institutional autonomy. Meanwhile, China's principle of “integration of work, course, competition, and certification” corresponds with France's modular logic, as both emphasize the connection among knowledge, skills, and assessment, facilitating a closed-loop mechanism of standards – instruction – evaluation within typological education.

Nevertheless, the French experience also cautions that vertical articulation and pathway openness do not necessarily lead to typological independence. If the social status of diplomas fails to rise and the practical nature of curricula remains weak, opening pathways may still result only in surface-level institutional integration. This echoes China's current dilemma of unconstructed social legitimacy. Therefore, in learning from France's experience, China should on one hand absorb its technical strengths in learning outcome conversion and qualification compatibility, and on the other hand avoid falling into credential hierarchy, ensuring that vocational bachelor programs and higher-vocational pathways obtain equal institutional status and are recognized for their independent social value.

3.3 Japan: Enterprise-Led Tensions, Responses, and Implications

3.3.1 Tensions Between Enterprise Dependence and Type Stigmatization

Japan's vocational education system has long been centered on enterprise-led on-the-job training, forming a company-based model of skill development. After World War II, a high school diploma gradually became the basic entry threshold for corporate employment, while the tradition of “training upon entry” reinforced enterprises' dominant role in skill formation. Through new-graduate recruitment, on-the-job training, job rotation, and internal promotion, enterprises maintain skill

development pathways, and under the lifetime employment system, enterprise training in practice undertakes the primary function of human-capital reproduction (Sawai 2020). The school system largely plays a supplementary role, providing only foundational and transitional support. For instance, some upper-secondary schools offer integrated courses that combine general education and vocational transition curricula to help students connect with enterprise-based training processes (Iwamoto 1994).

At the institutional level, Japan's vocational education system is jointly administered by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) and the Ministry of Health, Labor and Welfare (MHLW), resulting in a lack of unified qualification standards and systemic integration. Different types of schools – such as colleges of technology and specialized training colleges – design curricula and qualifications independently, producing a fragmented governance structure characterized by inconsistent standards and poorly articulated pathways (Taşlı 2018; Horai and Terada 2021). Curricula emphasize general education, while skill training mainly relies on enterprises, reflecting a division of labor between school-based foundations and enterprise-based deepening.

This institutional logic has led to three main difficulties. First, at the level of social recognition, vocational education has long been regarded as a “second-class track”. Even the establishment of Professional and Vocational Universities (PVUs) has failed to reverse its marginalized image (Kaneko 2019). The dominance of academic culture has undermined the legitimacy of vocational education, manifesting not only in preferences for academic advancement but also in discriminatory perceptions within the labor market (Khasanova 2020). Second, at the level of institutional operation, vocational school students are often positioned as a “low-advancement group”, serving more as a social safety net than as a means of capability enhancement (Ogawa 2023). Skill development is highly dependent on enterprise-based training, lacking national certification and transferable learning pathways (Taşlı 2018). Third, regarding group disparities, gender and class inequalities have become further entrenched: women are concentrated in traditional courses and have difficulty accessing mainstream corporate positions; meanwhile, insufficient adult-education provision has created discontinuities in skill reproduction (McCormick 1989; Sawai 2020).

Overall, the Japanese model demonstrates efficiency advantages in job matching and industry linkage, but it has failed to establish an independent educational typological status. This indicates that if vocational education relies excessively on enterprise-based training while lacking national standards and social recognition, its institutional stability and social legitimacy will be constrained.

3.3.2 Flexible Reform and Pathways of Social Adaptation

In response to the institutional challenges mentioned above, Japan has sought to enhance the institutional status and adaptability of vocational education through various reforms. First, at the level of higher education, Professional and Vocational Universities (PVUs) were established to incorporate vocational education institutionally into the higher education system. These universities combine degree programs, practical courses, and industry collaboration, aiming to strengthen the application orientation and improve social recognition (Kaneko 2019). At the same time, multi-track channels such as colleges of technology, junior colleges, and specialized training colleges have been included within the broader lifelong learning system, reflecting a certain degree of diversification and flexibility (Khasanova 2020).

At the operational level, enterprises remain the main actors in skill training. Japan generally relies on on-the-job training (OJT), job rotation, and the senior-mentoring-junior model (“old guiding the young”) to establish pathways for skill development (Taşlı 2018). Large enterprises set up their own training institutes or jointly establish research and development centers with universities, forming an enterprise-led mechanism for skill upgrading (McCormick 1989). The school system mainly responds to enterprise demands; curriculum content is mostly adjusted actively in response to technological updates within companies, emphasizing general education and lacking vocational orientation (Iwamoto 1994; Horai and Terada 2021). Although PVUs have introduced requirements for practical-training credits and established industry collaboration mechanisms, enterprise participation still largely depends on negotiation and has yet to achieve the institutional stability seen in Germany’s dual system (Kaneko 2019). Thus, these reforms have improved flexibility and adaptability to some extent, but remain insufficient in building an institutionalized and transferable qualification system.

At the level of secondary education, Japan has developed a unique school-enterprise recommendation-based employment system, achieving job matching through trust relationships between schools and enterprises (Ogawa 2023). Vocational high-school curricula mainly combine vocational modules with general subjects and offer flexible schooling systems (Khasanova 2020). In addition, many non-institutionalized training methods still exist in local areas and small- and medium-sized enterprises, such as “special youth classes” and “learning by watching”, which rely primarily on experiential transmission and senior guidance and are difficult to include in a unified qualification framework (Sawai 2020). These flexible mechanisms have played a positive role in improving employment-matching efficiency and mitigating youth unemployment, but they have also weakened the long-term institutional foundation of vocational education as an independent education type.

3.3.3 Job Orientation and School-Enterprise Collaboration: Implications for China

Japan's experience shows that the enterprise-led, job-oriented model of skill formation has unique advantages in improving employment-matching efficiency. Its skill development pathway relies on in-company training systems, in which on-the-job training, job rotation, and senior-to-junior mentoring enable the construction of competences that are highly aligned with job requirements. This company-based model not only improves job-matching efficiency but also helps reduce youth unemployment to some extent and fosters a continuous mechanism for skill renewal within enterprises (Sawai 2020; Kaneko 2019). By contrast, although China emphasizes industry-education integration and work-study collaboration, enterprises in practice often play an auxiliary role; job articulation tends to remain at the level of short-term internships, lacking institutionalized and long-term collaboration mechanisms. Therefore, in advancing modern apprenticeship programs, industry colleges, and the dual-mentor system, China should promote a shift from project-based cooperation to institutionalized shared responsibility, and strengthen sustainability and predictability in cooperation through clearly-defined participation standards, cost-sharing mechanisms, and evaluation systems.

At the same time, Japan's school-enterprise recommendation system demonstrates that employment matching depends not only on institutional design but also on long-term trust relationships and mutual commitments between schools and enterprises (Ogawa 2023). This suggests that, in deepening the 1 + X Certificate System, China should incorporate enterprise job standards into the evaluation criteria of certificates and achieve compatibility with academic credits and practical-training credits. In doing so, China can build a closed-loop system of "learning-training-certification-employment", promoting a shift in school-enterprise cooperation from policy mobilization to institutionalized normalization.

It should be noted that Japan's experience also indicates that highly flexible educational pathways do not necessarily imply clearly-defined education types, and employment orientation does not automatically translate into institutional independence. When adopting a job-oriented model, China should simultaneously embed national standards, credit and module recognition mechanisms, and strengthen social recognition, ensuring that reforms not only enhance job-matching efficiency but also promote the typological independence and institutional legitimacy of vocational education.

In addition, the issues present in Japan's system – such as gender segregation, gaps in adult education, and the stigma attached to vocational training – serve as a warning for China's vocational education reform. Building a system of typological education should not only emphasize job orientation and enterprise participation,

but also establish institutional guarantees in terms of inclusiveness (gender and regional equity), continuity (adult and on-the-job lifelong learning), and social legitimacy, so as to avoid falling into a structural dilemma of “high adaptability efficiency but low social legitimacy”.

4 Directions for Deepening China’s Typological Education System from a Comparative Perspective

A comparison of Germany, France, and Japan shows that although the three countries have different models, they share a common logic in addressing tensions: balancing state dominance and social participation in governance, strengthening outcome conversion and vertical articulation in pathways, and emphasizing institutional independence and social legitimacy at the cultural level.

In light of China’s realities, these three aspects reveal three directions for deepening typological education reform: first, to enhance institutional autonomy and trust foundations by combining government guidance with social co-governance; second, to improve cross-level learning outcome conversion mechanisms, such as the credit bank and the 1 + X Certificate System, and promote the integrated construction of “standards-instruction-evaluation”; and third, to advance institutional standards and social recognition simultaneously, avoiding the dilemma in which vocational education is regarded as “useful but without status”.

Therefore, the significance of comparative research lies not in the transplantation of experience but in revealing structural tensions and institutional logic. Only by deepening reform simultaneously in the three dimensions of governance, pathways, and recognition can China’s typological reform of vocational education achieve a true transformation from policy advocacy to institutional stabilization.

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