

RESEARCH ARTICLE

More Graduates, Fewer Skills? Vocational Education Expansion and Skilled Labour Shortages in China

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Abstract

China's need for skilled workers to upgrade its industrial system is increasingly urgent due to global economic competition. Despite massive expansion of its Vocational Education and Training system over the past two decades, a significant skilled labour deficit remains. Current debates on the inefficacy of vocational education focuses on the lack of institutional synergies between education and industry but often overlooks the inherent conflicts within the vocational education system and micro-level skill formation processes. Our ethnographic research in two upper-secondary vocational schools unveils a disturbing trend: the rapid massification of vocational education, which prioritizes student enrolment numbers over educational quality, fails to address the demand for skill formation and skilled labour. It inadvertently generates adverse consequences for both administrative management and classroom instruction. Skill development frequently falls to after-school professional associations and an exclusive group of elite students. Meanwhile, reform initiatives, such as the craftsmanship campaign and skill competitions, benefit only a few without improving the employment prospects for the wider student population. These findings call for greater attention to the inherent tensions within China's Vocational Education and Training system. Only when there is a deeper understanding of the underlying causes of ineffective skill formation in vocational schools can China achieve its national goal of industrial upgrades.

摘要

随着全球经济竞争加剧，中国亟需一大批技术工人以帮助产业升级。然而，在过去二十年间，职业教育的大规模扩招似乎并未能有效解决中国的技术工人短缺问题。目前关于“无效职业教育”的学术讨论，主要强调教育与产业之间缺乏制度协同，却常常忽视了职业教育系统内部以及微观技能形成过程中存在的问题和矛盾。基于在两所中等职业学校的田野调查，本文揭示出了一个令人不安的趋势：职业教育的快速普及化使得学校重招生数量而轻教育质量，导致其既未能有效提高学生的技能，又不能解决中国技术工人短缺问题，反而给行政管理和课堂教学带来了未曾预想的诸多挑战。此外，技能培养的责任被转移至课后专业社团和少数精英学生。而新的改革措施，如弘扬工匠精神和技能大赛，也只是惠及少数学生，而未能改善大部分学生的就业前景。基于这些发现，本文呼吁后续研究能更多地关注中国职业教育培训系统在快速扩招后所出现的内在矛盾和张力。只有更深入地了解造成“无效职业教育”的根本原因，中国才能实现产业升级的宏大目标。

Keywords: vocational education; skilled labour shortage; skill formation

关键词: 职业教育; 技能工人短缺; 技能形成

Over the last 40 years, China has emerged as the “world's factory” by leveraging its demographic dividends. However, this labour-intensive growth model has proven unsustainable due to its aging population and intense global competition.¹ To escape the “middle-income trap,” the

¹ Cai 2010; Zhang, Yang and Wang 2011.

Chinese government launched a series of industrial upgrades in both the manufacturing and service sectors. Despite ambitious agendas for the forthcoming decade, the persistent shortage of skilled workers continues to hinder these efforts.

With more than 23 million vocational school students in 2020,² such shortages of skilled labour come as a surprise. This surprise is heightened by the substantial efforts and resources that the Chinese government has committed to improving vocational education in recent years. Measures include the introduction of free upper-secondary vocational education, the expansion of higher vocational colleges by one million students from 2019 to 2021 and the establishment of applied technology universities.³ The vocational education system has witnessed an unprecedented trajectory, with enrolments in upper-secondary vocational schools escalating from 4.56 million in 2004 to 7.11 million in 2009.⁴

Despite such substantial investment in vocational education, the question arises: why does it still fail to address the skilled labour shortage? Institutional scholars contend that a successful skill formation regime necessitates a high level of synchronization between the educational system and economic–industrial development.⁵ The experience of the Asian Four Tigers indicates that the “developmental state” must play a more proactive role, implementing centralized control over the vocational education system to align it with the evolving demands of industrial upgrades.⁶ Thus, existing academic discourse often critiques the misalignment between vocational education and industrial needs in China, underlining the imperative for the state to assume greater responsibility in enhancing vocational education.⁷ Suggestions encompass the introduction of collective industrial governance,⁸ augmentation of financial investment, reform of the certification system and the bolstering of ties with industry.⁹ Yet, while these studies have shed light on the institutional barriers to effective skill formation, they fail to satisfactorily elucidate why the issue remains despite significant national investment and reforms. The educational system’s structure and the importance of student centrality in skill formation are often insufficiently examined, with a disproportionate focus on reform deficiencies. Moreover, these studies frequently overlook the nuanced micro-dynamics of school-based training, a gap which this research seeks to fill.

Utilizing rich ethnographic data and comprehensive interviews conducted in two upper-secondary vocational schools, we strive to make three salient contributions to the ongoing dialogue on ineffective skill formation in vocational education. First, we dissect the myriad challenges Chinese vocational schools face, spanning enrolment, instruction, extracurricular activities, craftsmanship campaigns and school-to-work transitions. We underscore the struggle of vocational institutions to reconcile social equality with skill development, especially against increasing student heterogeneity. Second, we spotlight the often-neglected voices of vocational schoolteachers and students within traditional skill formation discourses. We assert that an effective skill formation strategy necessitates a nuanced appreciation of student barriers and employment anxieties, thereby moving beyond a strictly top-down model. Third, we critique the national strategy of refining vocational education through elitism, as exemplified by skill competitions and craftsmanship discourses. We contend that this approach risks an undue concentration of resources on a select elite, potentially undermining the broader goal of raising the skill levels of the majority of vocational students.

2 National Bureau of Statistics, <https://data.stats.gov.cn/easyquery.htm?cn=C01>. Accessed 13 September 2022.

3 Zhang and Cerdin 2020.

4 National Bureau of Statistics, <http://data.stats.gov.cn/easyquery.htm?cn=C01>. Accessed 14 September 2023.

5 Busemeyer and Trampusch 2012.

6 David et al. 1999.

7 Wang, Xing 2021.

8 Zhang, Hao 2017; 2021.

9 Durden and Yang 2006; Cooke 2005.

Addressing Skilled Labour Shortages through Vocational Education Enhancement

Over the past two decades, the Ministry of Human Resources and Social Security (MOHRSS) has been tracking the supply and demand for labour in more than 80 major cities in China. The ministry's quarterly reports revealed that the position-to-seeker ratio of skilled labour reached a historical peak of 2.0 in early 2020.¹⁰ Senior skilled workers, technicians and senior technicians were in particularly high demand. Furthermore, the Ministry of Education (MOE) estimates that China will confront a skilled worker deficit of 30 million by 2025, representing a 48 per cent short-fall in fields such as materials, CNC machine tools, energy-saving and new energy vehicles.¹¹

Vocational education has emerged as a crucial tool for the Chinese government to mitigate the dearth of skilled labour. In an effort to amplify the standing of vocational education, the most recent revision of the Vocational Education Law in 2022 posits that “vocational education holds equal importance to general education.”¹² The initiative aimed at transforming the entrenched societal prejudices against vocational education and its students across diverse sectors. An overhaul of the National Vocational Certificate System (NVCS) has also occurred, with numerous outdated skill qualifications being removed since 2013. As part of certification reform, in 2019 the MOE introduced the “1+X Vocational Skill Certificate System Reform.” Under this system, vocational students in the MOE's affiliate schools graduate with an educational degree from the MOE and a skill certificate from an industry organization as proof of both their educational attainment and skill proficiency.

A nationwide campaign targeting craftsmanship in vocational institutions was also initiated as part of skill education. The craftsmanship narrative, initially formulated by Premier Li Keqiang 李克强 in 2016, was designed to enhance the quality of goods produced by Chinese brands. Nevertheless, a significant reconceptualization occurred in 2020 when President Xi Jinping 习近平 redefined the craftsmanship discourse, casting it as an individual's enduring commitment to achieving exceptional mastery and absolute perfection in skilled work. This campaign consolidates the enhancement of personal skills with the overarching ambition of national prosperity, as demonstrated by slogans such as “craftsmen forge a powerful country” (*gongjiang qianguo* 工匠强国).¹³

The Ineffectiveness of China's Vocational Education and Training System

After completing the High School Entrance Examination (HSEE), junior middle-school graduates in China are generally offered the choice between academic and vocational tracks. A more detailed explanation of this dual-track system is provided in Figure 1. Depending on the governing authority, there are two types of vocational schools. One variety of vocational school, affiliated with the MOE, includes upper-secondary vocational schools, vocational schools and higher vocational colleges. The other variety includes technical schools and technician colleges under MOHRSS's supervision.

Despite being pivotal to China's industrial progression and holding substantial expectations from the government, vocational education persistently manifests as a vulnerable segment within the education sector for its substandard and outdated skill training.¹⁴ Research conducted by Yi and colleagues demonstrated that nearly 90 per cent of students perceived their acquired general or vocational skills as negligible.¹⁵ Cooke highlighted several deficiencies within the Chinese Vocational Education

10 Skilled labour includes workers with skill certificates, ranging from junior skilled workers to technicians. http://www.mohrss.gov.cn/SYRlzyhshbzb/zwgk/szrs/sjfx/201107/t20110723_66141.html and http://www.mohrss.gov.cn/SYRlzyhshbzb/zwgk/szrs/sjfx/202004/t20200421_366027.html. Accessed 13 September 2022.

11 *Guide for Manufacturing Talent Development*, released in 2016 by the MOE, MOHRSS, and the Ministry of Industry and Information Technology.

12 *The Vocational Education Law of the People's Republic of China*, released in 2022, http://www.moe.gov.cn/jyb_sjzl/sjzl_zcfg/zcfg_jyfl/202204/t20220421_620064.html. Accessed 12 September 2023.

13 Pun and Qiu 2020; Wang, Geng 2022.

14 Yi et al. 2013; Lai and Lo 2006.

15 Yi et al. 2018.

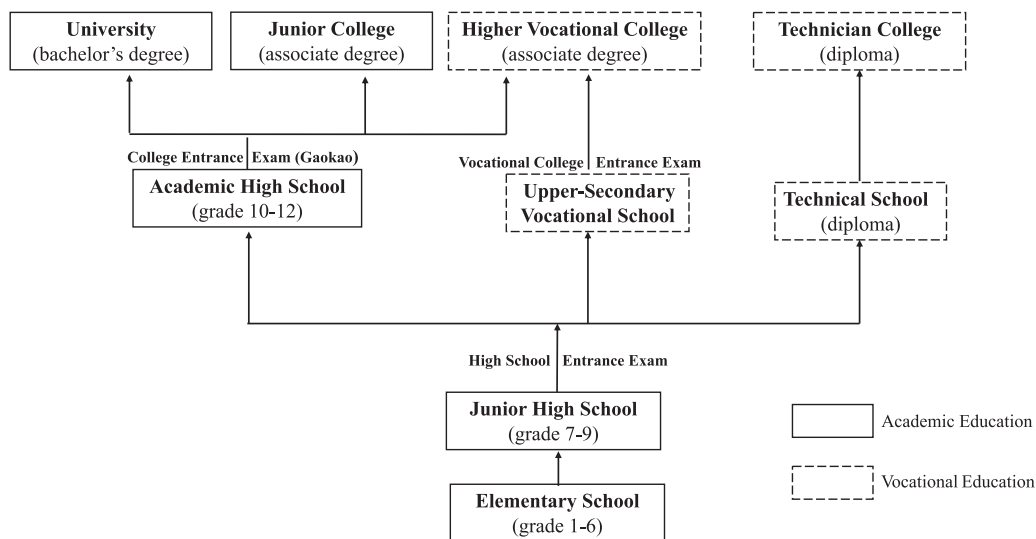


Figure 1. China's Formal Education System

Source: The authors drew the figure based on Zhang Hao's (2021) research.

and Training (VET) system: subpar training equipment, poor teaching quality, diminished appeal compared to academic institutions and limited job opportunities for graduates.¹⁶ Vocational school students are also vulnerable to exploitation as cheap sources of factory labour during their internships.¹⁷ Thus, the transformative impact of vocational schools remains highly questionable.

Existing scholarship explaining the ineffective vocational education in China mainly focuses on institutional discussions, offering three types of explanations: resource scarcity, skills mismatch and imbalanced skill training.¹⁸ A policy review by the Organisation for Economic Co-operation and Development (OECD) in 2008 stated that vocational education generally requires higher financial investment for instructional equipment and competent instructors compared to general/academic education.¹⁹ However, public expenditure on upper-secondary vocational schools in China was less than that on the same level of academic schools in 2020, partially substantiating the resource deprivation argument.²⁰ A prevalent piece of evidence supporting the skill mismatch thesis is employers' lack of recognition for NVCS skill certificates, which further diminishes the attractiveness of vocational education.²¹ Moreover, drawing on the collective skill formation thesis,²² Zhang concludes that the absence of civil society governance at the industry level hampers China's attempts to reform apprenticeships, since students cannot acquire transferable general skills without the collective governance of the business community.²³

While the above research rightly underscores the necessity of financial input and institutional collaboration with the business sector to enhance the quality of vocational education, these studies often overlook the student perspective and the complexities inherent in micro-level skill formation at the school level. Although a handful of ethnographic studies have examined the school-based

¹⁶ Cooke 2005.

¹⁷ Chan, Pun and Selden 2015; Smith and Chan 2015; Su 2010.

¹⁸ Zhang, Hao 2017; 2021.

¹⁹ Hoeckel 2008.

²⁰ http://www.moe.gov.cn/jyb_xwfb/gzdt_gzdt/s5987/202111/t20211130_583350.html. Accessed 13 September 2022.

²¹ Kong 2015; Wang, Xing 2021.

²² Streeck 2012; Busemeyer and Trampusch 2012; Bonoli and Emmenegger 2021.

²³ Zhang, Hao 2021; 2017.

training, they predominantly focus on the role of vocational education in class reproduction rather than skill formation. For instance, Zhou's rigorous ethnographic study observes that the concern for discipline takes precedence over employability in classroom instruction; rural vocational students receive scant training at school and reproduce their parental status.²⁴ Similarly, Woronov exposed a ritualized, devoid-of-substance vocational education system which conditions students for enduring repetitive tasks in the low-level service sector.²⁵ These empirical studies tend to attribute "ineffective skill training" in vocational schools to intentional design. The class reproduction perspective, while insightful, may overlook the intricate dynamics within the vocational education system, thus underestimating the possibility that ineffective training could also emerge as an unintended consequence of systemic issues rather than being solely a strategic outcome.

Indeed, the vocational education system is far from a monolithic entity; rather, it is characterized by profound tensions and conflicts.²⁶ Historically, vocational education has been caught in a delicate balance between the pursuit of educational equality and the logic of marketization, a duality that originated with the inception of vocational education in Europe. Here, the intent was to provide education to working-class children, alleviating poverty while simultaneously addressing the labour requirements of industrial production.²⁷ China is not an exception to this trend. It has broadened the reach of vocational education to afford educational opportunities for students who are not part of the academic track, due to either financial limitations or capability constraints.²⁸ Chen Ziji 陈子季, the then-director of the Department of Vocational Education and Adult Education, announced in 2020 that rural students constituted over 70 per cent of vocational school enrolment in China.²⁹ Meanwhile, the Chinese government also anticipates vocational education to cultivate skilled workers to drive its industrial advancement plan. This dual mandate becomes especially challenging as upper-secondary vocational education begins to move towards massification.³⁰

The onset of massification brings its own set of intricacies, potentially compromising the quality of skill training and introducing additional strain to pedagogical practices. Singh and Shawa underscored this issue in their study, which spotlighted how burgeoning enrolment numbers in South Africa's technical colleges impeded the provision of high-quality Technical and Vocational Education and Training (TVET). This problem largely stems from the subpar "calibre" of enrolled students, who seem to be more interested in subsidies than in skill acquisition.³¹ In regions where upper-secondary education participation is ubiquitous, such as the Nordic countries and Iceland, vocational educators also encounter a broad array of student profiles, and the strategy they employ to manage this escalating diversity is individualization.³² According to Kuznetsova and Régnier, individualization in pedagogy implies that educators adapt their teaching methods to cater to individual student needs while continuously monitoring and assisting their learning progress as necessary.³³

However, in countries with a strong governmental presence, such as China, the goals of skill development are often dictated at a national level by the central government.³⁴ The conception of "skills" in this top-down, hierarchical model may diverge from that interpreted by educational institutions and educators, which are often geared towards the smooth operation and accident-free

24 Zhou 2015.

25 Woronov 2011; 2012.

26 Elliott 1996.

27 Benavot 1983.

28 Koo 2015; 2021.

29 http://www.moe.gov.cn/fbh/live/2020/52735/mtbd/202012/t20201209_504275.html. Accessed 29 September 2022.

30 Shi 2014.

31 Singh and Shawa 2021.

32 Eiríksdóttir and Rosvall 2019.

33 Kuznetsova and Régnier 2014.

34 Wang, Geng 2023; Postiglione 2020.

execution of course curricula. This perspective may also deviate from students' perception of "skills," which they often correlate with better employability. Consequently, a top-down approach to enhancing skill acquisition, emphasizing national economic expansion and international competitiveness, may not align with the immediate interests of schools and students. This contrast is particularly stark when compared to the student-centric individualization approach. Such divergence can engender significant tensions, particularly in scenarios where the school's capacity to proactively design alternative strategies – strategies that reflect the actual conditions and needs of their students – is limited.

In a nutshell, despite the extensive contributions of scholarly literature on skill development within vocational education, two critical issues still lack clarity. First, the mechanisms by which vocational institutions systematically restructure their organizational structures and pedagogical methodologies to cater to state-imposed skill development objectives remain underexplored. This includes an examination of potential tensions and conflicts that may arise during the process of such institutional adjustments. Second, the impact of recent, extensive reforms instituted by the Chinese government on students' skill acquisition – particularly the students' direct experiences and challenges – is still largely unexplored in academic discourse.

Data and Methods

The data analysed in this study come from a four-year PhD project investigating skill formation and class reproduction in vocational education (*Zhongguo zhiye jiaoyu jineng xingcheng yu jieceng zaishengchan* 中国职业教育技能形成与阶层再生产). The project lasted from October 2017 to December 2020 and involved 104 student interviews from six vocational schools across five cities. Most data and information presented below were collected in autumn 2020 from two upper-secondary vocational schools in a third-tier city ("City A") of Guangdong province. The data was further supplemented by interviews with students from the same majors at other vocational schools.

City A was chosen as the primary research site for two reasons. First, Guangdong, being at the vanguard of China's economic reform, has been grappling with skilled labour shortages since 2004 and consequently has a heightened awareness of this problem. This makes it an apt location to scrutinize why vocational education's expansion has not remedied skilled labour shortages. Secondly, compared to metropolises and underprivileged areas, City A manifests an average level of educational input and skill training effectiveness, thereby potentially augmenting the generalizability of our findings. The focal point of our research is upper-secondary vocational education as it forms the bedrock of the entire vocational education system and confronts more profound challenges in recruitment and resource accessibility.

Out of the multitude of vocational programmes, nursing and auto mechanics were selected as they are widely acknowledged as technically demanding programmes and occupations. Both fields are grappling with impending skilled labour shortages in China. The document *Opinions on Promoting High-Quality Development of Modern Vocational Education* highlights nursing as a profession distressed by labour shortages, a predicament exacerbated by the rapidly aging population.³⁵ In 2019, China had only 30.83 nurses and midwives for every 10,000 people, a stark contrast to Germany (141.9) or Korea (81.78).³⁶ Besides, China's automotive aftermarket is anticipated to hit 1.7 trillion yuan by 2025,³⁷ with electric vehicles being earmarked as one of the ten

35 The document was released by the General Office of the Central Committee of the Communist Party of China and General Office of the State Council in October 2021.

36 [https://www.who.int/data/gho/data/indicators/indicator-details/GHO/nursing-and-midwifery-personnel-\(per-10-000-population\)](https://www.who.int/data/gho/data/indicators/indicator-details/GHO/nursing-and-midwifery-personnel-(per-10-000-population)). Accessed 13 September 2022.

37 Deloitte, "Digitalization, impact the future: aftermarket industry transformation 2020 white paper of China auto aftermarket," 2020. <https://www2.deloitte.com/content/dam/Deloitte/cn/Documents/consumer-business/deloitte-cn-cb-data-enlightens-the-future-and-market-industry-reform-en-201127.pdf>. Accessed 13 September 2022.

high-technology industries in the *Made in China 2025* initiative. As the automotive market burgeons, the demand for skilled workers in the repair industry will invariably escalate.

Between September 2020 and December 2020, the first author conducted four months of participant observation in two upper-secondary vocational schools as a volunteer teacher. The Bridge School is esteemed for its high-ranking auto repair programme within Guangdong province, while the River School is famous for its healthcare training programmes. The weekly association sessions facilitated the first author's observation of classroom instruction, placement sessions, students' preparation for skill competitions, certificate tests and participation in professional associations (*zhuanye shetuan* 专业社团) and internship hospitals. Moreover, 36 semi-structured interviews with 31 students and five teachers were conducted, triangulated by casual discussions and interactions with dozens of other students and teachers in both schools. Most student informants were aged 16–18, hailing from local rural villages or adjacent counties. Interviews encompassed topics such as school and programme selection, professional learning, internship experiences and career prospects.

An Era of Massification: Escalating Tensions in Skill Training

From 2002 to 2008, China's upper-secondary vocational education sector underwent a rapid expansion, sparked by two policy declarations from the State Council in 2002 and 2005.³⁸ This growth aimed to redress the skilled labour deficit confronting China, setting a target of enrolling eight million vocational students by 2010. Specific attention was given to creating training opportunities for students hailing from rural and disadvantaged backgrounds. Consequently, China has entered an era of massification in upper-secondary vocational education, with nearly 90 per cent of junior school graduates securing admission to post-compulsory education. While the central government's policy ostensibly presents no conflict between the provision of high-quality skills and mass vocational training for academically weaker students, the practical execution reveals considerable challenges in harmonizing these objectives.

School recruitment: a balancing act between quantity and quality

Within China's state-funded skill development system, the financial sustenance of vocational schools is heavily tethered to a per-student state subsidy. According to two interviewed vocational schoolteachers, "the state subsidy totals 7,000 yuan per student, and inadequate enrolments can jeopardize teacher remuneration." Concurrently, student recruitment remains a formidable challenge for vocational schools in China, given the schools' less favourable reputation, restricted career prospects and the declining school-age population. The urgency to ensure survival has become a pressing concern for many upper-secondary vocational schools, thus compelling them to prioritize enrolment numbers over the academic calibre of candidates.

Our investigation revealed a worrying situation: the extremely low admission standards in the two schools. For instance, the mean HSEE scores for automotive maintenance and nursing majors were approximately 200 and 350 points, respectively. This is in stark contrast to the threshold score of 800 points demanded by the foremost local academic high school, which is two to three times higher. Furthermore, we encountered a few individuals who, despite having not completed junior high school education, re-enrolled in vocational schools after two or three years in the workforce. While vocational schools retain the autonomy to admit students lacking a junior high school diploma, such an easing of admission criteria yields substantial heterogeneity within the student body in terms of motivations and willingness to pursue skill learning.

From our observations, students interviewed can be segregated into three distinct categories: proactive learners, passive learners and reluctant learners. Proactive learners are marked by their

38 *The Decision on Vigorously Developing Vocational Education*, released by the State Council in October 2005. http://www.moe.gov.cn/jyb_xgk/moe_1777/moe_1778/tnull_27730.html. Accessed 12 September 2023.

fervent desire to attain practical skills that promise to boost their future career prospects. These students exhibit high adherence to both school administration and teacher's directives, but they represent a small fraction of the student population – approximately 2 or 3 out of 50. By contrast, passive learners are the students who, owing to their suboptimal HSEE scores, are left with scant options other than to enrol in vocational schools. This segment constitutes a sizeable fraction of the interviewees, reflecting the government's policy of maintaining “roughly equal ratios of vocational education to general education,” a policy that funnels half of junior high school graduates into the vocational track. Lastly, reluctant learners comprise those students who, propelled primarily by parental expectations or pressures, choose vocational schools despite their lacklustre academic performance or lack of motivation for further studies. The prevalence of such students has seen an upturn with the relaxing of admission standards.

The increasing heterogeneity within student communities inherently imposes amplified requirements on educators and school management. However, our observations reveal a lack of proportional growth in the number of teachers, despite the expansion of the student body. This issue is clearly exemplified in the cases of Bridge School and River School. In 2021, the Bridge School reported a pupil–teacher ratio of 39.38:1, which surged to 43.11:1 the following year, implying an average responsibility of 43 students per teacher. A parallel trend was detected at the River School, where the ratio escalated from 16.66:1 in 2021 to 21.34:1 in 2022. These trends suggest that both vocational schools have expanded their student bodies without a commensurate increase in their teaching staff. Viewed in a broader context, this predicament is not unique to the Bridge and River Schools. As of 2019, upper-secondary vocational schools in 13 provinces and cities across China had yet to meet the pupil–teacher ratio of 20:1, as stipulated by the MOE in its *2010 Standards for the Establishment of Upper-Secondary Vocational Schools*.³⁹

Classroom instruction: unravelling the discipline–skills paradox

In the face of systemic pressures due to rapid expansion, maintaining a sense of normalcy in these educational settings has become increasingly challenging. Our visits to these campuses revealed a disciplined exterior, characterized by vigilant security guards, attentive class monitors and walls adorned with slogans promoting craftsmanship and skill learning. However, contrasting this disciplined exterior was evidence of disorder, such as bathrooms littered with cigarette butts and alcohol bottles. This discrepancy between the visible discipline and underlying unrest serves as a stark reminder of the systemic pressures these schools grapple with in managing a diverse student body.

This sentiment was echoed by school administrators and teachers, who shared their constant vigilance towards potential conflicts within the student body. As one teacher candidly put it:

Sometimes I feel that the school is a juvenile correctional centre where skill learning comes second; the top priority is safety and discipline. The headmaster comforts us [teachers] that we are doing charity work as the more students attend vocational schools, the fewer gadabouts wander the streets. We might be helping to reduce crime rates.⁴⁰

Classroom instruction, serving as the primary conduit for skill transfer, also replicates the militaristic school management approach. This disciplinary strategy is primarily employed to maintain classroom decorum rather than to facilitate substantive and efficient teaching and learning, which affirms the aforementioned teacher's statement. For instance, teachers may merely warn

39 “Notice from the Ministry of Education on the issuance of ‘standards for the establishment of upper-secondary vocational schools,’” 6 July 2010, http://www.moe.gov.cn/srcsite/A07/moe_950/201007/t20100706_96545.html. Accessed 14 August 2023.

40 Interview with Teacher Pan, teaching an electric circuitry course, 11 October 2020.

students caught sleeping in class or engaging in mobile games and hesitate to enforce punitive measures to avoid confrontation. An illustrative case involves a student who absconded from class for three days to play games in the dormitory. The headteacher (*banzhuren* 班主任) expressed concern about the student's behaviour, but also revealed a reluctance to impose strict measures: "I was so afraid that he would jump out the window if I forced him to come to class. It is better to have other students convince him."⁴¹ On another occasion during a practical training course, final-year students were preparing for an impending skill qualification exam. While eight students surrounded the teacher to review cylinder measurement procedures, two others were detached, playing games in the corner and later requested the teacher repeat the instruction. These examples underscore the prevalence of vacuous and inefficacious pedagogical practices, which paradoxically persist beneath the façade of stringent disciplinary measures within the school setting.

In theory, the process of skill acquisition is often conceptualized as a dynamic interaction that mandates mutual engagement from educators and learners. The learners' preparedness, encompassing their foundational academic knowledge as well as their intrinsic motivation to learn, is an integral element in effective skill formation.⁴² However, our classroom observations revealed that two thirds of the students struggled with the rudimentary skill of division, a basic component of the skill test and content typically taught in primary schools. The teacher, with an air of resignation, commented:

You see, students' understanding and mathematical abilities are too poor to digest the knowledge and skills I teach. I am not a maths teacher in junior middle school. They are supposed to have this prerequisite knowledge before coming here.⁴³

Education can be envisioned as a chain of interconnected links; when students lack the requisite foundational knowledge, it necessitates additional time and effort from teachers for remedial instruction to deliver the planned curriculum. This issue not only burdens the educators but also impedes students' motivation to pursue their professional careers. Xiao Long, a final-year auto repair student who merely scored a 200 mark on the HSEE, exhibited an aversion to mathematics and physics. When asked about his proficiency in school-taught skills, he responded:

Perhaps 40 out of 100. It was so hard for me to understand the content. Last semester, I spent three months learning how electric circuits worked. I really tried but failed ... I might try out as an apprentice in the auto repair shop to see if I can handle the job. If they kick me out, I might find something else.⁴⁴

Xiao Long's experience echoes the sentiments of many mediocre students, who also expressed their dissatisfaction with skill acquisition and low self-efficacy. Yet, becoming a skilled worker requires a relatively lengthy period of skill advancement. Auto repair graduates should commence as apprentices at an auto repair store and move up the ranks from junior to intermediate, senior and ultimately technical director. Self-efficacy, based on effective skill acquisition, forming the cornerstone of continual devotion, is key to skill progression and a tool for weathering the difficulties typically faced by new entrants in skilled professions. Pan Long, despite being an exemplary student, also expressed low self-efficacy regarding his potential to advance to the role of a senior technician, a position that demands not only years of rigorous work but also the challenging task of publishing academic papers, an endeavour particularly daunting for vocational students who were not trained in academic thinking. As Pan Long candidly stated, "I could never do it myself!"

41 Interview with Teacher Chen, the teacher of an automotive repair class, 22 October 2020.

42 Xiong 2015.

43 Interview with Teacher Su, teaching practical training courses in automotive repair programmes, 11 October 2020.

44 Interview with Xiao Long, 25 October 2020.

In examining student motivation, it was discerned that a substantial proportion of learners either displayed a more passive, ambivalent stance or exhibited explicit resistance. The passive learners often had a limited comprehension of their selected majors and related career trajectories. These students frequently navigated a transitional phase and might opt to discontinue their educational journey if they found the curriculum unappealing. This was evidenced in an auto mechanic class, which initially enrolled 50 students but only retained 23 by the first semester of the third academic year.

In addition to passive learners, there is a smaller but growing minority of reluctant learners who are enrolled in vocational programmes due to familial coercion. One such learner was a student named Ming, colloquially referred to as “ Sleeper ” owing to his propensity for dozing off during lessons. Ming had previously discontinued his junior high school education and engaged in factory work for several years before his parents incentivized his re-enrolment with a 20,000-yuan investment. Regardless of his cognizance of the significance of education, he grappled with keeping pace with the lessons, primarily due to his deficient academic foundation.⁴⁵ For reluctant learners such as Ming, in-class somnolence served a dual function. It represented not only a silent appeal for assistance from the pedagogue but also a means of asserting their presence among peers, indicating a bold defiance of authority.

Such disruptive behaviours have a significant impact on the pedagogical climate within the classroom. Xiaofeng, another student, narrated a noticeable shift in the class’s learning environment, further confirming the effects of such behavioural trends.

In the first year, our efforts were tireless. However, as time progressed, we’ve noticed a perceptible decline in our educational pursuit. Evenings that were once dedicated to homework have now become our playtime ... This transition is not exclusive to my experience; it’s a class-wide phenomenon ... A significant number of students in our school habitually bypass lessons without incurring any penalties or reprimands. This lax attitude has gradually become institutionalized within our class culture. Our class has a particularly high rate of absenteeism.⁴⁶

Professional associations: nurturing talents and intensifying inequality

Despite the challenges apparent in classroom instruction, it would be oversimplification to perceive vocational schools merely as juvenile correctional centres devoid of skill advancement. Rather, since President Xi’s rise to power, the central government has reiterated its commitment to bolstering skill development in vocational education across all levels. Amid these policy transformations, vocational schools, grappling with an increasingly diverse student population and a relative dearth of teaching resources, confront substantial hurdles in the practical execution and appropriate adaptation to these government-mandated “ skill upgrades.”

Our subsequent investigations unveiled that professional associations serve as a valuable adjunct to classroom instruction, offsetting its deficiencies in skill training. They fulfil a crucial role, facilitating schools to align with national skill standards and secure government financial assistance. Unlike traditional classroom settings, these professional associations span across grades and centre around specific specialties or competitive events. Under the aegis of a single subject-specialist teacher, the associations cater to a range of functions, including the dissemination of specialized skills, the identification of potential high-achievers and the creation of a community of committed learners.

These active learners, through their participation in professional associations, gain opportunities for additional training and preparation for skill competitions, which vary from local to international levels. For instance, in 2020, the Bridge School handpicked 60 students out of a pool of 3,000 to compete in provincial skill competitions, resulting in three second-place and 13 third-place winners.

⁴⁵ Interview with Ming, 27 October 2020.

⁴⁶ Interview with Xiaofeng, 21 November 2020.

Contrasting the classroom instruction's emphasis on stability and discipline, professional associations prioritize skill enhancement and talent identification. Each association operates with its unique set of rules and traditions. One such instance is the auto repair association, which has endured over the years, with knowledge being passed down from older to younger student generations. This association not only prepares its members for competitions but also grooms them as prospective automobile mechanics. A notable practice is the requirement for members to complete 40 push-ups at the commencement of each training session. As explained by the student leader, this practice underscores the need for physical endurance in addition to technical expertise in the field of automobile repair. The association implements a system of elimination based on student attendance and performance, further reinforcing its focus on discipline, commitment and competitive excellence.

Nevertheless, there are two latent issues associated with these professional associations. Firstly, they select only a fraction of students, extending the necessary privileges and support exclusively to these few. For example, in a cohort of 100 automotive repair students, only 30 could receive intensive job-specific skill training. Both schools prioritize members of these professional associations for certification examination, such as the newly established "1+X Vocational Skill Certificate System Reform." Despite its intention to optimize scarce resources, this resource allocation method undeniably exacerbates the existing disparity between active learners and their average counterparts. Secondly, the training content provided by the professional associations is primarily oriented towards the demands of skill competitions rather than the needs of the labour market. This implies that, unless students achieve accolades in highly prestigious skill competitions, most employers are unlikely to increase their wages or improve their conditions solely based on students' award-winning performances.

Craftsmanship: a privilege for the elite minority?

As previously articulated, the craftsmanship campaign (*gongjiang jingshen* 工匠精神), initiated in 2016, has pervasively influenced all vocational institutions as a top-down skill enhancement endeavour. Central to this movement are the principles of professionalism and patriotism. As Bowles and Gintis articulate, educational institutions not only equip students with cognitive skills but also socialize them into becoming workers who embody the cultural traits demanded by the labour market.⁴⁷ In the context of school-based training in China, it is the state which outlines the requisite core values.⁴⁸ The education of craftsmanship is seamlessly integrated into school curricula and promulgated throughout the campus via mottos such as "with glorious labour and precious skills, we create great marvels," and "practice more, think more."

Skill competitions function as critical conduits for promoting the ethos of craftsmanship. The pioneering National Skills Competition, organized by the MOHRSS in 2020, encompassed 86 competitive events. Both schools demonstrated considerable enthusiasm towards their students' participating in these competitions, as success reverberates beyond institutional prestige to the acquisition of supplemental resources. Moreover, these accomplishments confer economic benefits upon the supervising instructors, further cementing the value of these competitions within the vocational education landscape.

Both schools' students dedicated an entire semester to preparing for provincial contests, and the bulk of participants were members of professional associations. These students, granted the privilege to forgo regular classes, were able to utilize the practical training base for competition preparation as needed.

This bifurcation of practices elucidates the emergence of dual growth trajectories among students. The standard trajectory involves students simply progressing through a three-year

⁴⁷ Bowles and Gintis 1976.

⁴⁸ Wang, Geng 2023.

programme with minimal emphasis on skill advancement. The alternative, pursued by a select group of elite students, involves engagement with professional associations and participation in skill competitions, fostering a more intensive skill acquisition process. This dichotomy within the vocational education system potentially reflects systemic disparities in opportunities for skill development.

The elitism inherent in the craftsmanship campaign and skills competitions has led to feelings of exclusion among many vocational students. In mid-September 2020, we participated in the Skill Carnival (*jineng jie* 技能节)⁴⁹ hosted by Bridge School. Attending the opening ceremony, we were impressed by how the school linked vocational training to middle-class professionalism and patriotism. The opening video at the ceremony featured a group of professionals in white lab coats passionately discussing advances in technology, embodying the values of professionalism, dedication and progress. This scene was followed by a glimpse of the World Skills Competition, where students from vocational schools proudly displayed the Chinese flag and were awarded with gold medals. The video conveyed the state's propaganda that "sharpening skills brings glory to the nation" and reinforced the moral doctrine that "craftsmen forge a powerful country."

We asked a student informant sitting nearby how he understood craftsmanship. "Craftsmanship?" After a moment of contemplation, he responded by pointing out that "the signs and banners of craftsmanship are everywhere on campus, as you can see. I think that it refers to dedication and skill advancement." While his answer was not surprising, he further mentioned that those who had triumphed in skill competitions embodied craftsmanship. However, when we probed how he planned to integrate the concept of craftsmanship into his career plan, he fell silent. Other average vocational students exhibited a similar sense of disconnection. We realized that the banners and slogans championing craftsmanship seemed to be abstract ideals for most students. This prevailing sense of alienation stems primarily from the considerable rift between the positive narratives disseminated by the state and the feelings of uncertainty and powerlessness experienced by young students transitioning into the workforce.

Lost in transition: shifting pressures to employment

The school-to-work transition is always a crucial leap and a "culture shock" for young students. It also serves as a metric to evaluate the quality of vocational schools, which are designed to equip students with practical skills and recognized certifications, thereby facilitating a smoother transition into employment. However, our findings show that even students who excel in coursework and skill competitions may struggle to thrive in the workforce without a robust system that aligns their skills with suitable job opportunities.

Take for example, Yucheng, a final-year student in the automotive repair programme. Despite winning a Provincial Second Prize for sheet metal skills and passing the intermediate automotive skill test, he grappled with uncertainty about his future career path due to a dearth of relevant firms. Instead of offering a structured internship programme, the Bridge School hosted on-campus job fairs to connect students with potential employers. Unfortunately, these job fairs provided little to no vetting of companies or positions, leaving students to navigate the complex job market largely unaided.

In lieu of practical guidance, the headmaster repeatedly underlined to students that success only comes after "eating bitterness" (*chiku* 吃苦) and demonstrating persistence (*jianchi* 坚持), invoking his personal history of endeavour. However, this message was met with scepticism and derision from students, who mockingly accused him of "giving fake promises." The students' mockery is not without reason. Open positions most closely related to the automotive repair major were for car washers, roles that required minimal skill. Several logistics companies, notably Vipshop, a leading

⁴⁹ The carnival is the largest event in the academic year and lasts an entire month. During this month, a variety of on-campus competitions and association activities are held.

e-commerce company, and Cainiao, one of China's top five logistics firms, recruited young vocational students regardless of their areas of specialization. This reality suggested that the skills students acquired at school may not be recognized or further developed in the workplace.

Adding to the controversy was a Shenzhen-based manufacturer that produced circuit boards. All positions listed in its job advertisements required a bachelor's degree or above, yet the Bridge School does not offer undergraduate programmes. Students congregated in front of the job board, grumbling, "if you look down on us, why bother coming here to recruit workers?" The harsh reality was that only a small proportion of auto repair graduates remained in the field. According to a Bridge School alumni poll, merely 35 per cent of 237 alumni remained employed in the auto maintenance industry within five years after graduation. Nearly half of the recent graduates found employment in manufacturing plants.⁵⁰

Nursing students at the River School were not very optimistic about employment either, even though their internship training was more standardized. They were assigned one-year internships in local public hospitals, rotating through different departments for one to two months at a time. The interviewees were generally satisfied with the content of their internship training, gaining new skills and insights into hospital working conditions. However, due to credential inflation, local public hospitals no longer offered permanent employment to upper-secondary vocational graduates. Most nursing students, according to a nursing instructor, found employment in privately owned hospitals or beauty centres, usually without permanent contracts and with salaries ranging from 3,000 to 4,000 yuan per month.⁵¹ This scenario mirrors the employment situation of the majority of upper-secondary vocational students. As per the River School's 2020 yearbook, 1,568 of its 1,776 graduates entered the workforce directly without pursuing tertiary education.

However, even among those excellent enough to be enrolled in tertiary programmes, there was much confusion and hesitation over career decisions. Wang, a highly competent student enrolled in a college nursing programme, expressed a lack of drive to work as a nurse:

Although a nurse's job is stable, the income is terribly low [compared to its long working hours]. The working environment is so stressful as medical accidents may occur at any time. Nurses are also required to continue learning and pass exams endlessly. One of my junior middle school classmates, now a salesman in a club, earns 7,000 to 8,000 yuan every month, whereas even if I graduate from the college and become a nurse in a public hospital, the income is only 3,000 to 4,000 yuan per month. Being a nurse may be helpful for families, but it cannot fulfil individual financial needs.⁵²

In Wang's assessment, the journey to becoming a nurse – characterized by years of schooling, obtaining a nursing qualification, long working hours, night shifts and potential for medical incidents – does not correlate with the remuneration, despite the relatively higher social status of being a nurse. This sentiment seems typical within the industry in China. A survey conducted in 2020 involving 2,695 registered nurses found widespread dissatisfaction with the nursing profession, largely due to low pay and lengthy working hours. Over 59 per cent of the surveyed nurses reported earning less than 6,000 yuan per month.⁵³ Thus, despite the relatively high entry standards into the nursing programme, quality placements and recognized skill certificates, nursing students still harbour numerous reservations about entering the industry, not to mention other vocational programmes like auto repair. This situation elucidates the stark reality that confronts a vast majority

⁵⁰ Zhang, Ling 2014.

⁵¹ Interview with Teacher Zhang, teaching a basic nursing course, 6 December 2020.

⁵² Interview with Wang, 5 November 2020.

⁵³ "Current situation of nurses' professional life" survey, *China Youth Daily*. http://news.cyol.com/content/2020-05/12/content_18609836.htm. Accessed 13 September 2022.

of vocational school students in their early career trajectory, serving as the source of their all-encompassing anxiety and profound sense of disorientation.

Conclusion and Discussion

This study seeks to unravel the paradox of skilled labour shortages in China amid the significant expansion of vocational education and massive governmental investments and reforms. Although scholarship on ineffective vocational education offers compelling insights, academic discourse has largely addressed this conundrum from resource scarcity or deficient industry integration perspectives. The unique contribution of this study lies in its micro-level dissection of school-based training – a facet largely overlooked in current discussions.

Firstly, this research carefully outlines the multifaceted challenges that Chinese vocational schools currently grapple with, spanning enrolment, classroom instruction, extracurricular activities, the craftsmanship campaign and the transition to employment. Nationally, upper-secondary vocational schools are tasked with a delicate balance of fostering social equality and promoting skill development. However, our analysis indicates that in the context of the rapid expansion of upper-secondary education, these schools find it challenging to harmonize these objectives effectively. In order to retain an adequate student body, schools and teachers often find themselves compromising on the calibre of their applicants and the standards of classroom instruction. This situation engenders a shift of daily pedagogy and school administration towards preserving discipline and stability, thereby assigning skill development and talent selection – ideally a school-wide mission – to extra-curricular professional associations, pursued by only a select few.

Secondly, this study amplifies the frequently marginalized viewpoints of vocational schoolteachers and students within the broader discourse on skill formation in China – a narrative traditionally dominated by the logic of optimization and instrumentalization.⁵⁴ Our findings suggest that skill acquisition is a multifaceted process, shaped by the dynamic interaction between educators and learners. The students' academic preparedness and motivations to learn are equally pertinent to micro skill formation as are the resources of schools and the capabilities of the instructors. Thus, addressing the issue of ineffective skill formation requires more than top-down initiatives; it necessitates a bottom-up approach that acknowledges the obstacles students face in acquiring skills, as well as their apprehensions and uncertainties in pursuing employment.

Lastly, this article challenges the current national strategy of improving the quality of vocational education through the elitism embedded in craftsmanship campaigns and skills competitions. These initiatives may inadvertently suggest that craftsmanship is reserved for a select few since skill competitions often remain inaccessible for most vocational students, either objectively or psychologically. We contend that a significant disconnect exists between this elitist approach to skill acquisition and the actual conditions faced by vocational students. The superficial promotion of the craftsmanship spirit and the exclusivity of skill competitions have failed to genuinely address the challenges associated with skill acquisition, job search and the commitment to pursue technical professions among vocational school students.

While our study offers important insights, it is worth noting its limitations. Our research is primarily focused on public upper-secondary vocational schools, and findings may not fully represent other levels of vocational education such as higher vocational colleges. Despite these limitations, our study provides critical insights into the challenges faced by these schools, offering valuable perspectives for addressing similar issues across the vocational education spectrum in China.

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⁵⁴ Wang, Geng 2023.

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