

Exploring Vocational Higher College Students' Perspectives: A Comparative Analysis of Educational Systems in China and Germany

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Abstract. Internationally, vocational education systems influence students' life choices and satisfaction differently, with countries having varied approaches like Germany's paid internships or China's emphasis on academic testing. This project delves into how these differences impact students' decisions and life satisfaction, using a qualitative approach. Interviews with students from Germany and China provided insights into their educational journeys and career prospects. Results indicate that due to varying educational structures, political systems, and cultural values, each system is tailored to its national context. Thus, directly transplanting features, like incorporating Germany's dual apprenticeship system into China's vocational system, may not be effective or suitable.

Keywords: Vocational Education; Chinese and German Education System; Vocational Education Structures; Vocational Education Apprenticeships; Vocational Schooling.

1. Introduction

From the perspective of international comparison, the development and characteristics of different vocational education systems have profound, but different impacts on students' future development, career choices, life-satisfaction and living standards. Societies have good reasons to want to improve and upgrade their systems of Vocational Education and Training (VET) – smoother workforce development, easier life transitions among young people, staying at the forefront of technological innovation in the development of industries. Different countries vary in the design and operation of their vocational systems, such as Germany's, with paid internships and early vocational tracking and China's reliance on academic testing. Leaders often consider improving VET by borrowing features from other systems. But are features of different systems that appear to work well adaptable to the VET systems of other countries?

Recognizing that elements of different VET systems can be both limiting and advantageous to students' futures, in this project I explore how the differences in vocational systems contribute to actual students' life-choices, in part to determine features of these systems that appear to contribute to students' life-satisfaction within and across different societies.

Following a qualitative approach, interviewees from both Germany and China responded to questions about their educational pathways, career options, future plans, and experiences in vocational college. Results suggest that due to the different educational structures, political systems, ways of thinking, and approaches to freedom, each system makes sense in its particular national context. Improving the performance of China's vocational education system, for example, by adapting Germany's dual system of paid apprenticeships may not be appropriate and suitable given current conditions.

2. Organization of the Text

2.1. Literature Review

Previous research on VET tends to focus on national education systems and elaborates on both similarities and differences between China and Germany, the similarities are vocational education in both countries is designed to produce a high-quality workforce to meet the needs of the job market, while there exist many differences, such as student attitudes, education systems, social acceptance,

etc. For example, between the needs of Chinese and German companies and the educational systems that prepare their workers. Studies highlight the links between national training systems with the quality of employees they produce, or they examine the links between the national labor market and particular regional, industrial, and community settings (Li et al 2019 :). These topics have been pursued through other research, for example, comparing China's current vocational education and training system to the best practices of the world's most advanced systems which it aspires to copy (Stewart). In addition, other studies focus on the history of national systems and the educational structures in which they are rooted ("Vocational Education in China 2022). Additional work points to the different effects of VET systems on students based on national or even global connections of vocational systems (OECD, 2020); not only are do they effect the foundational learning experience but also future engagement with the workplace.

Research has explored vocational education systems both broadly and at individual levels, analyzing factors influencing students' specializations and the social standing of vocational students. Besides investigating the macro-situation of various vocational education systems, research has also been conducted at individual levels. To illustrate, one study identified factors influencing students' choices of specialization in schools, focusing on general practices in national systems of schooling (Kiolbassa et al.). Comparisons have also been made regarding the social standing of vocational education programs and their students in their home contexts, showing that academic students are often more respected and have higher self-esteem when compared to vocational track students (Houtte et al.). However, little research focused on the connection between these national systems with individual experiences in vocational colleges and their effects on students' self-respect and aspirations and occupational satisfaction. So there's limited study on how national systems impact individual vocational students' self-respect, aspirations, and job satisfaction.

Inspired by previous research, this comparative study interviewing vocational college students in both Germany and China represents an attempt to understand how each country's vocational system contributes to the future careers and life satisfaction of their students. Areas of particular interest in which VET programs have been shown to have effects include whether students emerging from vocational education can count on decent living standards, are likely to enjoy their respective employment, and are prepared to stay up-to-date with developments in their profession and industry (Hoffman, 2011). Findings can provide a basis to determine how vocational systems might improve their effectiveness in their national contexts. This is significant as employees' productivity contributes significantly to a country's GDP and makes countries more globally competitive.

2.2. Overview of Vocational Schooling in Two Countries

Due to the increasingly modern society, China's vision for its future economic model is to excel in the manufacturing of high-quality and advanced technological products, as well as to possess an effective service sector. This goal can be achieved by a considerable quantity of skilled workers. Another target the Chinese central government is aiming for is to enhance the quality and the social recognition of VET. The aim is to improve mobility between university studies and higher vocational training. Although China is known for having a large workforce, the number of qualified skilled blue-collar workforce continues to be in a deficient state (Klorer and Stepan, 2015).

China's history and way of thinking also has had a great influence on its national education. Historically, Confucianism has deeply influenced China's vocational education by placing emphasis on theoretical knowledge and standardized exams, now evolved to "gaokao" (Bahtilla & Xu, 2021). Towards the end of the Cultural Revolution in 1976, vocational education was finally acknowledged as one of the key drivers for economic and social change. This later led to the education reformation in 1986 and The Vocational Education Law in 1996 (Chen, 2023).

The 9 year compulsory education is then followed by the high school entrance exam, zhong kao, in which the test score determines high school placement, especially, whether a student can get into a key national high school or, like some, and a vocational high school. After three years of high school, all students must take part in the "gao kao" in which the higher the score, the better a student's chance

at the top universities. However, because of China's great emphasis on the gaokao, students who fall below a certain score point end up in vocational universities, while the students above can choose academic and technical universities and majors accordingly.

In China, vocational schools are often seen as inferior to standard universities, leading many students who fail the gaokao exam to retake their third year of high school. However, vocational students can take the "zhuānshēngběn" (zhuānshēngběn) upgrade exam to attend two years of regular university, enhancing their education and social standing. Alternatively, they can take the "Chénggrén gāokǎo" (Chénggrén gāokǎo) or adult college entrance exam, which is deemed a secondary degree.

Vocational schools' classes in China include three main types: compulsory courses, core courses and lab courses. The compulsory classes included math, English and Chinese. The core classes were different for different majors, providing theoretical knowledge for the students. The lab courses were practical classes in which students experimented with real-life examples and tools under working conditions.

The first year of vocational higher colleges consists mainly of compulsory classes, the second year becomes more specialized, and the third year being mostly internships and apprenticeships, a minimum requirement of 8 months.

Compare to the lower status of vocational schools in China, Germany's vocational system has always been highly respected. Germany's vocational system started in 1969 with its Vocational Training act in which it allowed students the freedom to choose whether or not they would like to enter vocational schools or normal schools (Federal Ministry of Education and Research, 2005). This law, which was amended in 2020, introduced a close alliance between the Federal Government, the federal states and companies, in hopes of providing young people with training in recognized occupations.

Students in Germany follow a free education system compared similar to that China. Starting from the age of six, kids attend four years of primary school - Grundschule - and later get put into secondary school - Weiterführende Schulen - decided by their respective teachers. Secondary education is categorized into four types: Hauptschule, Realschule, Gymnasium and Gesamtschule. Hauptschule and Realschule are in a way the vocational schools, from which students can transfer upon completion to the higher levels of education such as Gymnasium or Gesamtschule (The Federal Government, 2012).

The Gymnasium in Germany is an academic school from grades 5-12 or 13, culminating in the "Abitur" exam, akin to China's "gaokao". After, students can attend various universities, pursue higher vocational training, or enter the workforce. Some states have the Gesamtschule, merging Hauptschule, Realschule, and Gymnasium, offering an alternative education system. A few Berufsschulen, partnered with the federal government and industries, provide specialized training.

In the German education system, great importance is placed on what is known as the dual system, integrating academic and vocational education with work experience in formalized internships at worksites in commerce or industry. The main characteristic of the system is that cooperation is strongly regulated by law, between companies and publicly funded vocational schools. Lasting two-to-three-and-one-half years, trainees in the dual system typically spend part of each week at a vocational school and the other part at a company. This dual system offers an excellent approach to skill development, career choices, employability, occupational competence and identity. Due to the dual system, Germany is currently able to enjoy high skill levels and low youth unemployment. On the whole, the dual system combines theoretical knowledge with practical apprenticeships in the 3 years of vocational education.

In Germany, participants of apprenticeships get a monthly salary and, in most cases, legal access to the German labor market, enabling even non-EU nationals to live and work in the country permanently (Sender, 2023). Almost all skilled blue-collar professions in Germany can be practiced only if workers have successfully completed a vocational training program. The apprentice program lasts between two to three years and offers a great possibility of permanent employment at the apprenticeship site after successful training.

2.3. Method

Data for this study were obtained through interviews with higher vocational college students and graduates in both Germany and China. These results were then compared and analyzed in accordance with each country's vocational system and education history. Interviews were conducted with ethical considerations, with interviewees being offered anonymity, alerted to any risks of participation, and informed how data will be used and analyzed with a qualitative research method.

Interviewees included three people in China and five in Germany. In China, interviewees were found through a snowball sample, after asking staff at a vocational school in Beijing for leads on contacting recent graduates. The sample consisted of two young women in the same vocational program, but with different career aspirations. A teacher was also interviewed from their school, whose job was to tutor students for an elective course also in the aesthetics major. The student interviewees were attending Qilu Institute of Technology, majoring in beauty and aesthetics services.

In Germany, the diverse group of participants were approached randomly among passers-by on a busy shopping street in a suburban neighborhood of Darmstadt, in the southwestern part of the country. Eleven people were approached, and five of these provided usable interview material. They included two males, aged 16 and 52, and three women aged 27, 28, and 49. The younger male was employed as a supermarket cashier after completing Hauptschule, where he had followed an apprenticeship with the same employer. The older man was a graduate of a Gymnasium and an academic university in Munich, working as a self-employed entrepreneur in the consulting industry. Among the women, one, age 27, was completing her first year of vocational college, after leaving a university program following Gymnasium to study the craft of woodworking. The other two women aged, 28 and 52, had followed the vocational path from Hauptschule into retail work. These two women were not ethnic Germans and one wore an Islamic hijab.

In the interviews, participants from both Germany and China were asked about their educational histories, the path they selected within the options their educational systems offered, and the reasons that they made the choices that they followed. Also, they were asked whether they felt comfortable with the paths they had chosen, and if they were interested in pursuing the careers and occupations that their educational choices made available to them. In addition, the content of their learning in their educational program was also asked about, the mix of practical and theoretical knowledge, and whether they felt satisfied with their VET learning. In addition, questions were asked regarding if participants felt respected in their occupational choices and educational pathways, and listened closely to how they reflected on their current standing in their societies and communities.

Listed are the educational profiles of the interviewees from China. The first female interviewee is currently 19 years old and studying aesthetics and beauty at Qilu Technology Institute. Before that, she went to a regular middle school and high school. The second person also in the field of beauty and aesthetics, is now 20 years old and also one of the students in the class of 2021. Besides interviewing students, a third person interviewed was a teacher from the same vocational technical school. She is currently 25 years old, graduated from a normal university and is a teacher of an elective course for the beauty and aesthetics major.

Similarly, listed below are the profiles of the 5 German interviewees. The first interviewee is aged 16, who just finished his Hauptschule education (up to grade 10) and currently works as the cashier at the supermarket Lidl. There seems to be a general trend of fewer apprenticeship days throughout a week, although that may be compensated for having more practical lessons in school. The second interviewee is a young woman in her late 20s who just finished her first year of her vocational education and studies for the major of being a Schreiner, or a highly skilled woodworker. Although she went to a Gymnasium and attended a regular college for 2 semesters. Third is a young woman who graduated from a vocational college almost 10 years ago; current employment not specified, perhaps stay at home parent. Fourth is a middle-aged of 52, who currently works as a staff for the shop Tedi. She finished her vocational education in 1985 (35 years ago) and recalled her experience of attending such schools. Last interviewee was a 50-year old man who is currently self-employed

and an entrepreneur in the field of consulting. He attended a Gymnasium and later attended a regular university in Munich.

Table 1. Summary of educational and employment profile in Germany and China.

Interviewees	Age	Gender	Occupation	Background
C1	19	Female	Student	
C2	20	Female	Student	
C3	25	Female	Teacher at vocational university	
G1	16	Male	Lidl cashier, student	Hauptschule - Vocational
G2	27	Female	Woodworker, student	Hauptschule - Uni - Vocational
G3	28	Female	Tedi cashier	Hauptschule - Vocational
G4	49	Female	Tedi cashier	Hauptschule - Vocational
G5	52	Male	Entrepreneur	Gymnasium - University

Resource: Self-elaborated.

2.4. Findings

The Educational Histories of each country and its system had an influence on students attending vocational colleges. Both Chinese students (C1 and C2) reported entering post-secondary vocational training was because they failed the “gaokao” as their test scores were not enough for admission to academic or technical universities, ranging in the 400s out of 750. Therefore as predicted, they both went to a vocational college, Qilu Technology Institute and accordingly chose the major of beauty aesthetics as limited by her gaokao score. Supported by C3’s statement, she asserted that throughout her years of teaching, only one of her students voluntarily chose vocational education; all the rest were limited due to their gaokao scores, and consequently attended vocational schools. However, compared to three of the interviewees from Germany (G1, G3 and G4), he chose a vocational college was because it was already pre-determined the moment he chose Hauptschule. In other words, it’s part of the education system in Germany. After a thorough interview with G5, he said that decisions about education paths are determined at a young age and that going into which school (which has a big influence in a student’s future) is largely determined by their parents. In turn, the parent’s choice is also substantially affected by their social class and expectations.

There is also a difference between how comfortable students felt regarding the paths they chose. One of the interviewees for China did suggest that if a second chance was given, she would have liked to have worked harder in high school and hopefully have a chance to enter regular colleges. On the other hand, all German interviewees indicated satisfaction with the paths they personally had selected.

In addition, the 2 vocational education also influences their interest in pursuing various careers. Although the first interviewee of Germany is only 16 years old and still a student, he declared that he would probably be still working in the supermarket, maybe as a manager, even after graduating vocational school. Students in Germany can either choose their own apprentice program, which must be approved by the school, or wait for the school to assign the students an apprentice program; no future interest was indicated regarding further studies such as in a regular college. This represents that vocational education is not unrespected and the continuity of apprenticeships in Germany. The second interviewee of Germany also said she would be eager to fulfill interests in engineering through a career as a designer and wood worker, something she still currently doing as a student. However, in contrast, the first Chinese interviewee indicated she would only seek seek employment after graduation in her field of aesthetic cosmetology and is currently unsure of future job choices.

The content of the VET curriculum involves a mix of academic and apprentice-program. Interviewees from Chian revealed that the third year of vocational college, they must attend an eight-month apprenticeship program either provided from the school or a self-chosen one. The university will each year offer 20 hospitals and 5 firms in which students can choose and apply for. One chose

to get apprenticed at Beijing Medical Art Institute, Beijing Medical Art Institute, in which she earns around 4000 rmb per month for her training. In contrast to Germany, apprenticeship programs start as early as before the first semester.

The second interviewee from Germany says she attends only one day of apprenticeship (which is related to being a professional wood workers) every week, while spending the other 4 days in school, though the half of the school classes are also practical classes. The slightly older third interviewee from Germany recalls having 2 days of apprenticeship each week and 3 days of school where she learned both practical and theoretical knowledge. The (oldest) fourth interviewee from Germany remembers that she must complete her Hauptschule education before entering vocational studies and that she had 3 days of apprenticeship and 2 days of school. This implies the gradually decreasing apprenticeship time over the course of a few decades. Furthermore, school usually lasts from 9am to 3pm and sometimes students are called in for extra hours of lessons for courses in Germany.

Future plans seems to have also varied across interviewees, suggesting an influence from the vocational education experience. As the first interviewee from China says, in her future, instead of getting a higher degree of education at a regular university, she hopes to join the workforce directly. However, she also disclosed that her vocational college does not provide any assistance after college in terms of employment and few students continue their jobs at their apprenticeship programs. This is why she will look for a job on her own after college. As for C2, to make up for her loss in attending a vocational college, she hopes to take the Zhuānshēngbǎn, or upgrading exam, to enter a regular college for another 2 years. Compared to China, Germany interviewees seems to be more ready and planned for their future. G1 declared that he would probably be still working in the supermarket, maybe as a manager, even after graduating vocational school. G2 desperately wanted to become a part of the engineering field and transferred out of her gymnasium education to a vocational college to become a craft wood worker or cabinet maker.

Feelings of being respected in occupations and educational path (perceptions of status) seems to have also been affected with the 2 different vocational system. Chinese interviewees have concerns regarding their vocational education not being respected enough in society, and in order to climb higher in the social hierarchy, a higher education should be pursued. The reason for that is because she, including people around her, believes that having a decent education and credentials is highly important in succeeding in life and having a respected place in society. Demonstrated by intervieweeing the teacher in the Chinese vocational college, she declared that there was a slight difference among her vocational and regular students in terms of their learning attitude and efficiency, with the latter being slightly more positive (although the assumption was made on a general level). Germany, on the other hand, maintains that the majority of German society won't undermine or disrespect a person if they went to a vocational college.

2.5. Comparison between German and Chinese experiences of VET

These interviews suggest both differences and similarities between the various vocational systems in China and Germany. Differences are mainly about students' attitudes toward vocational education, time of apprentice program, parents attitudes and? Similarities are both Chinese and German students will choose further studies, the two countries share similar vocational education structure, students' choice of vocational education is influenced by objective factors (e.g. parental status, grades, etc.).

Based on the findings from interviews, it can be indicated that there are 3 main notable differences. First, students in Germany are less disrespected if they attend a vocational college. When German students were asked about their professions and schooling status, they all responded confidently and without hesitation about their choice in going into vocational studies. On the other hand, the Chinese interviewees replied with hesitance, as if unwilling to confess the fact their enrollment in vocational colleges. A reason for this is that apprenticeship programs in Germany for vocational students can start as early as right after finishing Hauptschule / Realschule, while the apprenticeship program for Chinese students start only in the third year of college. The two-year difference partly contributes to the later voluntary interest in continuing their apprenticeship programs.

Second, students in Germany are more likely to continue their apprenticeship programs as possible careers in the future. Out of the five German interviewees, three continued their apprentice program, whereas in China, none of the interviewees continued their apprentice program. Although the future still leaves room for change, the current status remains so.

Third, the education path in Germany is likely determined by the parent's social class, as the parents have the biggest say in deciding whether their child enters Realschule, Hauptschule or Gymnasium. At a maximum age of 10, students will have less of a voice as in most cases, kids will be uncertain of their interests and future choices. As a result, the parents will be the ones making the decision which schooling system their child will be enrolled in. These schooling systems will later determine whether a child enters a vocational college. Compared to China, the choice of entering a vocational college is largely determined by their gaokao scores. Even a child from the lowest class can have a chance in entering the top universities such as Tsinghua and Beijing universities.

Despite these differences, similarities can also be recognized.

First, students from both countries were all able to change education paths later in life, although it requires double the effort to change from a vocational to regular university, there are cases that suggest these transfers do occur.

Second, the general structure to each vocational system were all relatively similar: consisting of practical lessons, theoretics, and an apprentice program.

Third, although slightly less apparent in the German case, a student's choice in entering vocational education in both countries was influenced by academic scores and interest.

Fourth, a student's learning attitude and education choice seems all influenced by their parent's social status and expectation for their child. In the German case, entering a gymnasium school already differs greatly from the experience of a student going to Realschule. In the Chinese case, parents with high expectations will be more willing and able to afford better high-schools and extra tutoring that will give their child an advantage over others.

Summarizing the notable differences and similarities, there are also strengths and challenges of each vocational system, in which the following recommendations could be employed in the respective countries.

In China, with the notion of getting a decent education in order to succeed in life and the gaokao exam being the determinant of it, vocational education is often less respected and inferior in comparison with normal education. On the other hand, in Germany, although vocational schools being less respected is less of a concern, students are forced into these systems at a young age, pre-determining their careers. These different vocational systems play an indispensable role influencing the future of young vocational school students in which on the macro-level affects a country's economic growth and living standards.

To further elaborate, vocational systems, in both China and Germany, have a direct relation with a student's experience in his or her education path and later career in the workforce. Conversely, a student's experience will also shape the characteristics of each vocational education system.

2.6. Reasons for differences and Similarities in National Experiences and Recommendations

However, why do similarities and differences exist between these vocational systems? One reason for its difference is that China and Germany place different levels of importance on test scores. Since history, Confucianism has deeply influenced China's vocational education by placing emphasis on theoretical knowledge and standardized exams. Establishment of the imperial examinations (advocated in the Warring States period, originated in Han, founded in Tang) was instrumental in the transition from an aristocratic to a meritocratic government (Wikipedia Contributors, 2019). This ideology in China likely later shaped the great emphasis on testing in later generations. In addition, the societal status between individuals are more easily shuffled in China compared to Germany. A factor contributing to this is the different political systems, China being a communist party and Germany being a democratic country.

A reason contributing to the similar vocational structure, consisting of theoretical, practical classes and apprenticeship is the underlying fact that it proved most effective out of previous attempts in shaping vocational studies. This probably then passed to other societies where they similarly followed suit.

However, the conceptual framework, the political, economic and social context of each nation, presumably also played a central role in the different vocational systems of China and Germany.

In China, after the success of the Chinese Communist Revolution in 1949, the CCP (Chinese Communist Party) brought the educational system under national control. Improving population-wide literacy was the focus of education in the early years of the People's Republic of China (Tsang, 2000). This political position also shaped its education: with such a large population, standardized textbooks and the same 9 year compulsory education are taught throughout all regions of China. This allows the government to have better control and provide equal chances, improving both its equity and efficiency.

This, however, is not possible in Germany. Having a democratic position, citizens have a larger say and freedom in regards to making national decisions. A decisive factor in the development of the German education system in a similar direction as from 1945 on was the cooperation of the Länder in the Kultusministerkonferenz, or Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany, which was founded in 1948 (European Commission, 2023). These developments can only be accustomed to the Democratic Party in Germany, people's freedom level and suited for a smaller population, like the one in Germany.

At first sight, China's vocational system might seem undeveloped, but deeper investigation reveals that there are numerous strengths that others can benefit from. This includes the establishment of the nine-year compulsory education in which almost all students now complete secondary education. China also has strong arrangements to ensure that teachers in vocational schools remain updated with the requirements of modern industry, requiring them to spend at least one month in industry each year. As a result, China now has a rapidly increasing number of young people staying on in upper secondary education and fast increasing numbers of young people in tertiary education, with more than 20 million students in vocational schools.

In China, the existing laws and regulations have not been updated in accordance with social development, which is limited to the macro level and does not have practical operability for the local department. One limitation is that companies frequently complain that workers lack practical skills, despite having completed vocational education and training, and that training within the VET (Vocational Education and Training) system is too theoretical, bearing no relation to actual working processes. Furthermore, ever since the first establishment of vocational schools in 1866, there has been a strong reliance on government controls and funding, limiting the innovative mindset of respective students. However, the root of these problems arises from the fact that Chinese education places a great emphasis on a standard curriculum and is more output-oriented in terms of student performance on standardized tests, compared to other countries such as Germany.

In comparison, Germany's vocational system is known to be much more developed. The dual system being at the center of it, strategically combines practical experience with theoretical knowledge. Other advantages of the German vocational system include standardization of training requirements for individual professions and careers, state control and the protection of professions with high standards. However, there are also significant disadvantages. The first being low salaries for students in apprenticeships, many of these salaries being far below minimum wage. Also, the company environment often undermines student values and disrespects them in respect to other employees. In addition, the duration of these programs often last a long time, the shortest being 24 months and the longest up to 42 months.

2.7. Conclusion

The comparison of interviews between Chinese and German vocational students reveal that the vocational system in each country has a direct relation with a student's experience in his or her

education path and later career in the workforce. Although the German system may be held in higher recognition, reality suggests that it's only better suitable and applicable in Germany. With a different ideology and mindset in China, implementing the dual system in China will be difficult; conversely, the Chinese vocational system will also face constraints when executed in Germany. This research, based on qualitative interviews, may not encompass the full complexities of each country's vocational system, and cultural differences between Germany and China could limit the generalizability of the findings. So, when certain aspects of each system are taken advantage of, both countries could benefit. This includes an earlier apprentice program (Germany) and a greater emphasis on test scores and a later decision making time (China).

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