

# Comparative Analysis of the Differences in the Education System in China vs Germany

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**Abstract.** This paper aims to analyze the education systems of China and Germany. While many papers solely focus on the individual nations' education systems, this study compares both countries. It offers comprehensive background information on both systems and statistical data is provided to show an understanding of their structures. As education has become more prevalent today, many discussions are going on about how it should be received. China and Germany are very distinct countries, not only in their history and culture but also in their educational framework. The study also evaluates the strengths and weaknesses of each education system. Furthermore, this study also explores the factors that shape these systems from different perspectives and how they impact societal values and individual aspirations. Moreover, the discrepancies between both education systems are identified, and a future-oriented solution is proposed. The study realizes the need for cross-cultural communication and mutual learning between both countries. Hence, it encourages an exchange of educational practices.

**Keywords:** Education system, China, Germany, higher education, VET.

## 1. Introduction

Education itself is now widely accessible in most parts of the world. The way students receive it, however, differs in every country. This study analyzes China's education system, which is famous for its highly competitive educational landscape, compared to Germany's, a highly developed country.

While both countries have unique approaches and philosophies, this paper focuses on what causes people to prefer higher education or vocational education, distinct education systems prioritizing different teaching values. Higher education includes universities and colleges that offer academic degrees such as bachelor's, master's, and doctoral degrees. This level of education follows the completion of secondary education and aims to provide advanced knowledge and skills in specific professional fields. In contrast, vocational education focuses on providing individuals with the practical skills, knowledge, and training necessary for specific jobs, trades, or professions. Both higher education and vocational education (also vocational education) play an essential role in the education of the youngsters of each country, shaping the academic landscape and preparing individuals for their future careers for their nation. Moreover, while both countries' education systems have their strengths, flaws such as the high-pressure environment of China's competitive college admission exams and anxiety among students to Germany's challenges like high dropout rates are also integral aspects that demand scrutiny.

Although numerous studies analyze China and Germany's education systems and teaching values individually, very few papers aim to compare them. The importance of the dissimilarities and the affinities of the education systems due to each nation's different teaching values, culture, and stage of development is paramount. While individual studies provide valuable insights into the unique characteristics of Germany's and China's education systems, a comparative analysis offers a more holistic understanding that helps to fill the gap. By recognizing the scarcity of research that directly contrasts the distinct features of the learning environment in both countries, this paper aims to examine the similarities, differences, strengths and weaknesses, and cultural underpinnings of China's and Germany's education systems. Furthermore, although both countries seem not to be comparable at all due to their distinct culture, history, economy, educational philosophies, and social values, an integrated examination of their educational differences and similarities provides valuable

perspectives to studying that might aid in shaping the collaborative advancement in the global academic landscape.

China's higher education system proliferated in the latter half of the 20th century, increasing educational opportunities [1]. However, entering higher education in China hinges on the highly competitive Gaokao (National College Entrance Examination). This path has shown academic success but is accompanied by significant stress and pressure [2]. Most Chinese families do not prefer VET. That is mainly because of the predicted job opportunities and unattractiveness [3]. In contrast, Germany has long prioritized vocational education and training (VET). It also gained international acclaim for its dual apprenticeship system [4], while the higher education system has gained popularity recently [5]. In Germany, accessing higher education usually requires the Abitur certification, obtained after upper secondary education [6]. With more pathways available, the academic pressure on German youth is reduced; however, the education system faces challenges like high dropout rates, a shortage of students completing tertiary education, and a lack of support for students from lower-class backgrounds [4]. Therefore, analyzing the main divergences and parallels of the school systems of two different developed countries and the reasons behind them is conducive to a more concrete understanding of their successes and failures in education and instrumental in improving learning in the future.

## 2. Background Information

### 2.1. Background of China's Education System

The world's most extensive education system is found in China [7]. With many students, China has founded the highly competitive and paramount National Higher Education Entrance Examination, known as the GaoKao (GK). This exam provides the pathway for students to enter higher education and VET. For most Chinese families, higher education is the most attractive pathway as it is well-acknowledged that obtaining an education is the most effective means of enhancing one's status [3]. Hence, Chinese students are under immense pressure to gain a good score in GK as the final score determines whether they can continue in higher education or only VET. According to the Ministry of Education of the People's Republic of China [MEPRC], in June 2020, there were 2,740 full-time higher education institutions in China [8]. While recent data indicate that more than 10 million students partake in GK annually [9], only 45.7% to 57.8% of candidates are accepted into universities [10]. On average, 4,679,400 students were enrolled in regular higher education institutions in 2022, and 5,389,800 students were enrolled in higher vocational education institutions, compared to 76,300 students enrolled in vocational colleges.

Furthermore, in 2010, Sina Education and MyCOS Research Institute polled 16,507 parents and 14,892 GK students. They discovered that 79% of parents wish their children to attend top-tier universities, which are elite, while 71% of GK students wanted to enroll in such institutions (Sina, June 2010). However, over 50% of GK students cannot fulfill their dreams of pursuing higher education because only a small proportion are accepted into prestigious universities yearly [8].

In summary, Chinese students have to undergo the competitive GaoKao as it is their only chance to enter higher education, the pathway to a high social status and a well-paid job. However, due to the high number of students, only about half of all GaoKao's participants can receive higher education, while the other half usually enter VET.

### 2.2. Background of Germany's Education System

In contrast, German students have two popular choices: one is to take the Abitur, the academic track since it is the direct pathway to higher education eligibility, and the other is the vocational education training (VET) pathway. While the VET has three different kinds, the dual apprenticeship system is the most popular and essential kind of vocational education. It comprises weekly classes at a vocational school and vocational training inside an apprenticeship [11]. Under the dual apprenticeship system, school-based learning is combined with on-the-job training to provide

practical work experience [12]. It is conspicuous that many German school leavers with higher education entrance qualifications begin an apprenticeship (under the Dual System) after leaving school instead of continuing to university. After completing their apprenticeship, some continue their education at a university [13].

In Germany, students' achievement in primary school determines their eligibility for further education and whether they can partake in higher education or vocational education. German pupils are placed into one of three fundamentally distinct tracks at the age of ten [6]. There are three tracks in the German education system: Hauptschule (5 years) for low-skilled work, Realschule (6 years) for skilled white-collar or service occupations, and Gymnasium (9 years) for university entrance (Abitur) [6].

About 45% of Germany's approximately one million young people chose the dual system in 2017, with one-third choosing the vocational route (Autorengruppe Bildungsberichterstattung, 2018). Moreover, in the last ten years, higher education has also grown in importance. For the first time in German history, more young people enrolled in higher education than dual apprenticeship programs in 2013 [5,14]. They also reflect shifting patterns in the labor market and skill set [5]. Since then, the number of students entering higher education each year has exceeded 500,000, nearly doubling the numbers seen in the mid-1990s [14].

Nevertheless, it is remarkable that the percentage of German students pursuing higher education is relatively low; according to the Federal Statistical Office of Germany, about 46.6% partake in vocational education, 33.5% have a university entrance qualification, and 18.5% have an academic degree.

### **2.3. Comparison and Summary**

As inferred from the information above, China and Germany fundamentally differ in their education systems. With its central focus on Gaokao as the primary pathway, higher education is the most significant and attractive choice for many Chinese families, limiting the encouragement of alternative routes. In contrast, Germans have a relatively diverse education system, stressing the importance of both HE and VET. The disparities in these systems may lead to positive outcomes regarding specialized skills and development of students but also entail negative consequences, such as reinforcing educational inequalities.

## **3. Analysis of China's Education System**

### **3.1. Strengths of China's School System**

In China, a student's score on their Gaokao determines which university they can attend. To simplify, the higher a student's scores, the higher the university ranking they follow [15]. This pathway suggests that students must only focus on preparing for this exam and can put all their effort and time into it. The emphasis on academics provides a transparent framework that emphasizes academic achievement. This clarity allows students to focus their efforts and time on rigorous exam preparation. This not only fosters a competitive environment that encourages academic excellence but also implies the fairness of GK. In other words, as Wang and Ross (2010) claimed, Gaokao provides prospects of social mobility and achievement, which is particularly alluring to students in rural areas who have few options to better their economic situation and general well-being [16]. Furthermore, it is also an efficient way for universities to choose their students according to their Gaokao scores, as it demonstrates students' academic capabilities. Thus, the Gaokao can be seen as a standardized measure for educational attainment and offers all Chinese students a fair and objective selection.

The high amount of competition also spurts Chinese students to perform their best in academics, and that result can be seen in various places. For instance, Shanghai students twice won first place in the OECD's worldwide Program for Worldwide Student Assessment (PISA) in reading, math, and science categories in 2010 and 2013 [17].

### 3.2. Weaknesses of China's School System

One drawback is that exams are only administered once a year. If pupils fail to achieve a high enough score, they must wait another year, retake it [16] or go to work. The most recent data indicates more than 10 million GK applicants annually [9], but only around 45.7 to 57.8% of applicants are accepted into universities [10]. However, most Chinese families prefer the higher education pathway rather than the VET. Hence, many families choose to retake the exam.

Moreover, although Gaokao is a fair exam for Chinese students, meaning it can be taken by everyone without discrimination, students are still constrained by their Hukou or place of registration, which is often their place of birth [18]. Moreover, regional inequalities persist throughout China, and those living in more developed and prosperous cities have a higher chance of getting accepted into higher-ranking universities than those living in less prosperous regions, such as Gansu, Shanxi, and Shandong [18, 19]. Therefore, when the structure of educational opportunity and provision is highly uneven across regions, as in China, striking a balance between increased educational equality and regional equality can be challenging [18]. Another striking point is the mental health of the students. Due to the country's hierarchical university system and emphasis on education, there is an intense rivalry to get into the best institutions in China, with thousands of applicants vying for a single spot. It is rather challenging to be admitted [18]. This immense competition creates an atmosphere of high tension among millions of students studying for the same test. With that, students experience incredibly high levels of exam-related stress, which has become a significant problem in Chinese society. The crippling consequences of academic stress on Chinese pupils have been confirmed by research. Therese Hesketh and her colleagues conducted a study involving 2,191 Chinese children aged 9 to 12 from urban and rural areas. The results showed that 81% of the children worried "a lot" about exams. More than one-third of the kids said they had psychosomatic symptoms once a week or more [17]. A study by the China Youth and Children Research Center in Beijing examined 2,400 pupils from six cities and provinces. According to their study, 76.2% of the kids said that they were in a foul mood due to pressure from their parents and their academics, and 9.1% said they were depressed. Higher academic pressure from middle school to high school has also caused increased suicide attempts among teens, according to a large study.

In summary, the Gaokao, the cornerstone of China's educational system, functions as a demanding course that prioritizes academic achievement and offers a uniform metric for educational success. The system has difficulties even though it promotes competition and provides opportunities for social mobility. The Gaokao exam's one-chance format and regional inequalities create a complicated educational environment. Students are experiencing higher levels of exam-related stress because of the fierce rivalry for the few available spaces in elite universities, which is reflected in psychosomatic symptoms and mental health issues. Finding a balance between educational equality and regional equity in China's educational system continues to be complicated.

## 4. Analysis of Germany's Education System

### 4.1. Strengths of Germany's School System

The German education system, especially the emphasis on vocational education, has been a role model for other countries [4]. The (VET) system attracted significant attention worldwide during the most recent economic crisis since the country's young unemployment rate was surprisingly lower than most European nations. This was ascribed to the dual apprenticeship program in Germany, which has been associated with low rates of young unemployment and a smooth transition from education to the workforce [5]. With three and a half years of dual training and dual study programs, the dual system offers highly skilled young people appealing training possibilities [5], preparing them to be flexible, experienced, and professional workers when entering the workforce and, at the same time, lowering the unemployment rate. Although the number of apprentices has decreased since the mid-1980s, the system still accepts 60% of school leavers between the ages of 15 and 19 pursuing

independent adulthood. This includes 14% of all apprentices who have a higher education entrance qualification (Abitur) [4].

With a reduced emphasis on higher education, German students enjoy increased flexibility and experience less academic pressure during their schooling, contributing to a more well-rounded and versatile German education system.

#### **4.2. Disadvantages of Germany's Education System**

Nevertheless, flaws do exist in this education system. One significant disadvantage in Germany's education system is education inequality. Studies have shown that more socioeconomic disparities in educational attainment exist in Germany than in any other industrialized nation [20, 21]. This disparity persists due to a robust correlation between one's social background and academic achievement [20, 21]. Furthermore, research indicates that the division after primary education into different tracks, such as Gymnasium, Real Schule, and Hauptschule, significantly influences students' prospects for higher education, underscoring the presence of inherent inequalities in this decision-making process [21].

Moreover, the greater the societal standing of parents, the more advanced the abilities demonstrated by their children. Chances for children from lower social backgrounds to get into the higher academic track (Gymnasium) are also considerably lower, even if their academic performance is the same as those of higher social backgrounds [21]. Therefore, the opportunity for children from lower social ranks to get into higher education is eliminated at 10 when they are distributed into secondary schools. This limits students' opportunities to improve and creates injustice within the educational system, discouraging children instead of empowering them.

In conclusion, Germany's educational system has shortcomings even though it has been praised as a global role model due to its emphasis on vocational education. The dual apprenticeship program is attributed to the nation's effective labor transitions and low youth unemployment rates. Nonetheless, social differences in educational attainment are more noticeable in Germany than in other developed countries, and education inequality is still a severe problem. There are inherent disparities in the divide into distinct pathways following primary school, which are shaped by social position and sustained by a strong relationship between social background and academic ability. There is a clear need for improvement in the German education system since children from lower socioeconomic origins have less opportunity to pursue higher education due to the categorization of students based on their socioeconomic level from an early age.

### **5. Reasons**

#### **5.1. Evaluation of China's Education System**

Interestingly, China puts so much emphasis on the Gaokao. While a focus on education might bring many benefits, significant drawbacks also affect the Chinese youth in several aspects, as mentioned above.

It's widely accepted in Chinese society that education is the best way to improve one's position in life. As a result, families are prepared to spend more on education than on others. The GK exam is significant not just for the status and employment prospects that a degree from one of these colleges can offer but also because it can assist the student in updating their residency permit, enabling them to relocate to one of China's elite cities. As a result, the Gaokao is viewed as the essential component of social advancement and personal development, and student families do all within their power to provide their children the best chance to address it. High schools and educational institutions also fight to demonstrate that they give their pupils more significant opportunities for the Gaokao. It can be said that the culture of China and its view on education fostered high competition among students [3].

Moreover, parenting plays a vital role in shaping Chinese students' minds and attitudes to learning. Chinese parents have very high expectations from their children, so high that an A- on a test is a

failure. They demand perfection from their children, starting from grade 1 [22], and continuously observe and correct children's conduct to ensure they are not misbehaving by social norms [23]. Furthermore, in China, parents tend to perform failure-oriented responses to their children (downplaying success and highlighting failures) [3, 22]. Chinese teenagers report that while parents may respond strongly and negatively to a poor grade, they seldom complement an excellent grade [22]. This parenting response might also explain why Chinese students are highly competitive, bolstering the fast-paced and strict educational landscape. For example, by demanding that their child attend additional weekend tutoring sessions to improve the student's academic performance [19], parents' financial commitment to their children's education also puts a great deal of pressure on their offspring to follow in their footsteps and accomplish goals that their parents were not able to achieve a generation earlier [19]. Although it is unclear whether this pressure is a motivation or stressor, the emphasis on studies leaves students in a tight space.

Fu and He (2016) concluded that the unpopularity of VET is influenced by two significant aspects, the most important of which are the attractiveness of predicted employment opportunities and the attractiveness of vocational education itself [3].

## 5.2. Evaluation of Germany's Education System

In contrast to China, Germany puts less importance on higher education, and VET is as popular as higher education, maybe even more. The many choices they have made argue that having a plethora of conflicting and competing cultural models of education all around oneself makes it challenging to create and follow logical educational paths that effectively help teenagers achieve their learning objectives.

However, the most interesting part is that, in Germany, many students who complete the Abitur decide to undergo VET instead of entering higher education. Those with higher education admission qualifications find apprenticeships appealing because of their interest in the course material and the practical experience they provide [24]. Furthermore, because of the country's history of crafting in the Middle Ages, Germany has emphasized the value of having work experience while undergoing training [4].

VET dominates the German market until today. That might be explained by the fact that young people can choose from 350 recognized skilled occupations to pursue an apprenticeship. In Germany, apprenticeships are offered in almost every industry, including the public and professional sectors [4]. With its broad professional orientation, a normative orientation around all-encompassing skilling, and an emphasis on personal development [24], VET significantly shapes the country's education and workforce. Moreover, it offers employment security and a comparatively high status in the labor market. Additionally, it is essential for landing a well-paying, skilled, non-graduate position with opportunities for long-term employment in the labor market [24]. Therefore, the high reputation of VET and the numerous apprenticeship options make VET no less attractive than higher education.

Another reason German families put less emphasis on higher education is that they have lower academic expectations from their children. To avoid the risk of dropping out of school, many families first send their kids to complete a lower track, which also awards a degree, and then use sequential upgrading to obtain the final goal (Abitur). However, it also has drawbacks, particularly as many students abandon their initially lofty goals in favor of non-academic careers. Of course, there are other possible reasons, such as psychological ones or just general ignorance of the German school system [25].

## 5.3. Comparison

In general, China and Germany have different educational approaches. China places great importance on the Gaokao because of the widespread view that education is the route to a high social status. This fosters fierce rivalry among the students and high parental expectations. Moreover, the Gaokao's significance is also increased by the perception that it can be used to promote social mobility and serve as a route to prominent institutions. However, Germany's diverse education system reflects

a long-standing dedication to craftsmanship and practical experience. It places a fair focus on vocational education and training in addition to higher education, making career options for German students more varied and diverse. Its popularity is also attributed to the fact that career alternatives are abundant, solid standing in the job market, and reduced academic standards, which make it an appealing substitute for higher education. All these different influences shape these distinct educational philosophies.

## 6. Solutions

China and Germany have formed distinct education systems based on their cultural and historical contexts; however, there is room for improvement where both countries could foster a more balanced approach. While a balance between intense competition and parental expectations should be found in China, a deeper comprehension of the diverse academic path in Germany could also lead to a more well-rounded and healthy school life for students. Moreover, this study aims to find a way for both to learn from each other's good points and improve their education system. Overall, both academic and vocational paths should be valued, and each student's unique strengths and aspirations should be acknowledged; this way, China and Germany could promote more equitable and flexible education systems.

Regarding their different education systems, there is a tremendous opportunity for both nations to learn and improve, with communication being the key to understanding the strengths and weaknesses of each system. On the one hand, Germany's robust vocational education can provide valuable insights for China. When the VET also gains a higher reputation and status, China can diversify its educational pathways as well as promote practical skills alongside academic achievements. On the other hand, China's standardized higher education entrance exam, the Gaokao, is a model of fairness and equal opportunity that Germany is missing in its education system. Germany could learn from China in this aspect.

Moreover, blending the advantages of both country's education systems might also lead to a more comprehensive and adaptable education framework. Germany's emphasis on vocational education could be integrated into China's system. This approach would provide students with broader skills and numerous career options. This also reduces the high burden on one pathway, which could offer Chinese students a more flexible and less strict schedule, leading to better mental health. Simultaneously, China's commitment to standardized testing could inspire German families to have higher expectations from their children, encouraging more to enter the higher education pathway. Standardized tests also stimulate establishing a more unified and transparent evaluation system.

Furthermore, another way to foster a balanced approach would be cultural exchange programs and collaborative initiatives between China and Germany. Students from Chinese backgrounds get to experience practical training in Germany and numerous career choices with less pressure. German students can understand working and studying under high pressure and competition, which is a good preparation for their future. By understanding each other's educational philosophies, challenges, and successes, China and Germany can work towards a more balanced global education landscape.

In essence, the two nations complement each other. While Germany's strength lies in practical training, China's education system demonstrates high academic excellence, fairness, and equal access. Through open communication and collaborative efforts, China and Germany can collectively contribute to the global discourse on education, shaping a future that embraces diversity, equity, and excellence.

## 7. Conclusion

In conclusion, the distinct education systems of China and Germany prove to be a valuable resource for the interchange of knowledge as the two nations complement each other. While Germany's strength lies in vocational education, China's higher education system demonstrates

fairness and equal access. These strengths could be leveraged through open communication and collaborative efforts, and China and Germany can collectively contribute to the global discourse on education, which shapes a future that embraces diversity, equity, and excellence. This paper is beneficial for deepening the understanding of these educational systems and fostering a constructive dialogue on how to enhance education globally. Therefore, this research serves as a stepping stone for further exploration and engagement in the ongoing discourse on international education, in the hope of fostering a spirit of collaboration and mutual benefit. Nonetheless, it's important to note the limitations of this paper. The comparative analysis of China and Germany's education systems presented here is a broad overview and may not capture all nuanced complexities within each system. There are numerous cultural, regional, and socioeconomic variations within these countries which could warrant a deeper investigation. Additionally, as the nature of education systems and policies is always evolving, the snapshot provided in this study may become outdated over time. To address these limitations, future research could extend beyond the China-Germany comparison. A broader international perspective could be included where insights from diverse education systems worldwide are incorporated. Comparative studies with other countries may reveal common challenges and innovative solutions, contributing to a more comprehensive understanding of global education.

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