

Vocational Education from a Cross-national Perspective: Comparative Analysis of China, Germany, and the United States, with a Case Study of Zhaixing Academy

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ABSTRACT

This study delves into the current state and challenges of vocational education through a comparative study of cross-national vocational education and an analysis of the Zhaixing Academy case. The research reveals that vocational education reform can draw on the experiences of the German dual system, American community colleges, and Chinese vocational education reforms, with a focus on informal education pathways, practice-oriented teaching, and flexible training methods. The Zhaixing Academy case demonstrates the application of practice-oriented teaching approaches in the field of vocational education, emphasizing individual student development needs and the advantages of education outside formal institutions, offering new insights and references for the current Chinese education system. The study proposes that governments and education departments should increase investment in vocational education, encourage collaboration between enterprises and vocational education institutions, and support innovative practice-oriented education. In the future, Zhaixing Academy can continue to focus on education reform, expand the realm of practice-oriented education, promote its educational philosophy and methods, and contribute to the diversification and sustainable development of education.

1. Introduction

In the context of globalization and technological advancements, vocational education is playing an increasingly significant role in cultivating skilled and innovative talents. Faced with the critical challenge of skill gaps in the labour market, quality vocational education can help narrow these gaps, enhancing both individual and overall employability^[1]. This study explores the strengths and weaknesses of vocational education systems in China,

Germany, and the United States through international comparative analysis and examines the advantages and challenges of the practice-oriented education model through the case study of Zhaixing Academy. The research aims to offer valuable insights and inspiration for vocational education reform, promoting access to high-quality vocational education for more students and improving their employability.

This study will be discussed in three parts: (1) evalu-

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ating the strengths and weaknesses of current vocational education systems and their performance in meeting societal and corporate needs; (2) examining the educational philosophy, methods, and operational model of Zhaixing Academy, exploring its impact on student growth and development, as well as potential implications for the entire vocational education system; (3) proposing policy recommendations for enhancing vocational education quality, strengthening corporate collaboration, and encouraging innovative practice based on the analysis of the Zhaixing Academy case.

To achieve this goal, two research methods were employed: (1) Comparative analysis: By conducting a literature review, the researcher analyzed national vocational education policies, systems, and practices in the German dual system, American community colleges, and Chinese vocational education reform, revealing challenges faced by each country in labour market demand, skill training, and education equity, offering insights and inspiration for vocational education reform. (2) Case study method: Using the Zhaixing Academy project as a case, the researcher described and analyzed the project's background, objectives, implementation, and outcomes, exploring the application and advantages of practice-oriented education in vocational education through an in-depth study of the project's training methods, curriculum design, and evaluation results.

2 Comparative Analysis of Vocational Education Systems: Experiences from China, Germany, and the United States

2.1 Challenges and Development of Vocational Education

Vocational education is playing an increasingly important role in contemporary society and is considered an attractive alternative to four-year universities^[1]. However, it faces challenges in labour market demand, skill training, and education equity. Firstly, in terms of the labour market, vocational education graduates need to confront the challenges of adapting to shifts in cognitive skill demand^[2]. Secondly, in skill training, project-based learning is regarded as an effective method for fostering the skills students need in the 21st century, but factors such as teachers' and students' roles, equipment, and environment may limit the implementation effectiveness^[2]. Lastly, in education equity, vocational education participants often come from relatively disadvantaged family backgrounds, with a negative correlation between parental education levels and participation in vocational and technical education^[3].

2.2 Transnational Comparison of Vocational Education Systems

In the international comparison of vocational education, the German dual system, American community colleges, and Chinese vocational education reforms each possess unique features^[4,5]. The German dual system combines theoretical education in vocational schools with practical training in enterprises, providing a highly skilled workforce that contributes to Germany's economic success^[6,7]. American community colleges offer students educational and vocational opportunities in various ways, including liberal arts transfer-oriented programs and terminal vocational programs^[8]. In recent years, China has implemented a series of vocational education reform measures, such as the "double reduction" policy and the concept of quality education, promoting the integration of talent chains and industry chains, as well as the strategy of industry-education integration^[9]. These reforms have created favourable conditions for cultivating high-quality skilled talent^[10].

Specifically, the German dual vocational education system has been promoted and implemented in multiple countries, emphasizing the high standardization and stratification of vocational education and training systems. However, it faces challenges from other training pathways such as higher education and struggles to increase its appeal to young women^[7]. In contrast, the Career and Technical Education (CTE) programs of American community colleges are regarded as attractive alternatives to four-year universities^[1], providing an active learning mode for vocational education graduates through project-based learning, thereby enhancing their cognitive skills for the 21st century workforce demands^[2].

Simultaneously, Chinese vocational education reform should focus on the transition from examination-oriented curricula to learner-centred approaches, with attention given to teaching methods and media^[11]. Research also reveals that Chinese high school Technical and Vocational Education (TVE) yields relatively high private returns, particularly for academically underperforming students^[12]. To better promote the development of higher vocational education, China needs to explore research from multiple disciplines and perspectives, including socioeconomic, technological industry, historical-cultural, and management policies^[13]. German and Chinese vocational education and training schools exhibit both similarities and differences in teaching traditions, classroom organization, and modern media usage^[11]. German schools, influenced by constructivist dialogue models, place greater emphasis on student-led learning, while Chinese schools, influenced

by Confucian philosophy, stress teacher-led learning ^[11]. Additionally, there are no fundamental differences between the two countries in digital media usage, with primary functionality limited to information display ^[11].

2.3 Innovative Practices and Vocational Education Reform

Innovative vocational education practice cases highlight the significance of informal education, project-based learning, and interdisciplinary training. Informal education demonstrates potential, as evidenced by formal, non-formal, and informal vocational education and training within the German vocational education and training system ^[14]. Project-based learning, an active learning mode, has been applied in the field of vocational education, and research indicates its positive impact on cultivating students' 21st century skills, aligning with contemporary competency frameworks ^[2]. Interdisciplinary training plays a crucial role in Vocational Education and Training (VET) systems, with findings from VET research connected to comparative political economy, comparative education research, and international human resource management. This highlights the central position of the VET system's transferability in international comparative studies ^[15].

2.4 Summary

In summary, the international comparison of vocational education between the German dual system, American community colleges, and Chinese vocational education reforms reveals each system's strengths and challenges, offering insights and guidance for vocational education reform. These innovative practices provide valuable inspiration for the reform of vocational education, enriching the application scope of informal education, project-based learning, and interdisciplinary training, ultimately serving as essential references for improving the quality and adaptability of vocational education.

3. Case Study: Zhaixing Academy – Innovative Practices in Vocational Education

3.1 Project Overview and Core Objectives

Zhaixing Academy is an educational project that employs practice-oriented teaching methods, focusing on providing upward mobility opportunities for students unable to participate in the college entrance examination and addressing the practical ability requirements of enterprises for their employees ^[16]. This research project aims to help potential students overlooked by the traditional examination-oriented education system realize their self-worth and

develop their independent thinking and problem-solving abilities through a three-stage educational process.

3.2 Project Stages

The project is divided into the following three stages ^[16]:

- Stage 1: Identifying underappreciated talents buried in examination-oriented education. The project focuses on students restricted within the traditional examination-oriented education system, providing an alternative choice for these non-test-oriented students. The objective of this stage is to discover students with innate talent and potential, allowing them the opportunity to showcase their abilities.
- Stage 2: Cultivating Designers. During this stage, students will learn design thinking and related professional knowledge to gain the ability to live independently. The project encourages students to solve real-life problems through innovation and exploration. This teaching approach fosters critical thinking and problem-solving abilities.
- Stage 3: Training Barbarians. This stage requires students to leave the classroom, venture into the wilderness, and discover problems. The project encourages students to adopt wild thinking, exercise their physical prowess, and cultivate strong willpower to develop "barbarians" capable of independent thought and problem-solving.

3.3 Training Methods and Curriculum

Zhaixing Academy utilizes workshop-style project-based learning, emphasizing the master-apprentice relationship and accumulating experience on actual worksites ^[16]. Teaching methods include project-based, exploratory, and task-based instruction, with a focus on developing practical skills and abilities while granting students ample freedom ^[16]. Zhaixing Academy highlights the advantages of education outside formal institutions, such as flexible curriculum design and teacher resources. It employs scenario-based exploratory learning, treating students as adventurers and teachers as guides. Various scenarios are provided for students to choose from, including universities, design agencies, rural investigations, non-profit organizations, and enterprises.

3.4 Student Progress and Achievements

Zhaixing Academy's pedagogical approach cultivates students' observational and critical thinking capacities, facilitating their comprehension of the real-life applications of acquired knowledge. Students exhibit divergent thinking in practice, summarizing experiences and enhancing skills through divergence, accumulating practical experi-

ence, and promoting professional development. Zhaixing Academy aims to foster “savages”, characterized by curiosity and critical thinking ^[16]. Students engage in various workshops, field investigations, peripatetic activities, and design agency events, fostering interdisciplinary knowledge, practical skills, and innovative thinking.

3.5 Outcomes Presentation and Impact

Through Zhaixing Academy’s training, students accumulate substantial experience in practice, achieving remarkable outcomes. Their work has received acknowledgement and praise in various local exhibitions. Furthermore, a number of graduates have found employment, making their own impact within their respective industries.

Zhaixing Academy’s success stories have had a positive influence on the field of vocational education. An increasing number of educational institutions are embracing practice-oriented pedagogical methods, integrating these concepts into their teaching processes. Furthermore, Zhai Xing Academy’s success provides exemplars for other non-examination-oriented students, inspiring confidence in the pursuit of self-worth.

3.6 Summary

As a case study in the realm of vocational education, Zhaixing Academy demonstrates the effectiveness of practice-oriented educational methods in nurturing architects possessing practical abilities. Through three stages of training, Zhaixing Academy assists potential students overshadowed by traditional examination-oriented education in realizing their self-worth, cultivating individuals capable of independent thinking and problem-solving. This educational model provides valuable reference for the vocational education field, bearing positive implications for reforming traditional educational systems and enhancing educational quality.

4. Discussion and Analysis

4.1 Enlightenment from Cross-national Comparisons of Vocational Education Systems

In the literature review, the characteristics and challenges of the German dual system, American community colleges, and Chinese vocational education reforms were discerned. These international experiences may offer valuable insights for vocational education reform, particularly regarding the application of non-formal education, project-based learning, and interdisciplinary training. Concurrently, attention can be devoted to the challenges faced

by these countries’ vocational education in labour market demands, skill training, and educational equity, to better address potential issues in domestic vocational education reform.

4.2 Enlightenment from the Case Study of Zhaixing Academy

4.2.1 Practice-oriented Teaching Method

The case study of Zhaixing Academy demonstrates the application of practice-oriented teaching methods in the realm of vocational education. This approach accentuates the individual developmental needs of students, focusing on cultivating practical and tangible abilities while affording ample latitude. Through this pedagogical method, students can foster interdisciplinary knowledge, practical capabilities, and innovative thinking. This provides fresh perspectives and reference points for the current Chinese educational system.

4.2.2 Advantages and Challenges of Non-formal Education

The case study of Zhaixing Academy underscores the merits of the non-formal educational system, including the flexibility of curriculum design and the diversity of teaching resources. However, in China, non-formal education likewise confronts numerous challenges, such as resource scarcity and the impact of success-oriented ideology on age-related anxiety. To gain a deeper understanding of this field, future research can focus on the acceptance of the “gap year” phenomenon in Chinese society and how resource scarcity and success-oriented ideology influence age-related anxiety. A gap year refers to an interval, typically lasting one year, during which a student pauses their academic pursuits between secondary education and higher education or between undergraduate and graduate studies, engaging in activities such as travel, employment, or volunteering.

4.3 Case Analysis and Discussion

The success factors of Zhaixing Academy include open, exploratory, and practice-oriented teaching methods. In the face of challenges, Zhaixing Academy openly discusses and embraces diverse perspectives. In the future, Zhaixing Academy can continue to focus on education reform, expand the realm of practice-oriented education, and promote its educational philosophy and methods. Discussion directions may include personal growth in different educational systems and environments, addressing age-related anxiety and societal expectations, and differ-

ences between formal and informal education systems within the Chinese education system.

4.4 Insights from the Integration of International Experiences and Case Studies

Based on the literature review and Zhaixing Academy case study, several insights can be derived:

1) To improve the quality of vocational education, governments and education departments should prioritize its development, increase investment, and enhance teaching quality. Practice-oriented educational projects, such as Zhaixing Academy, should receive more attention and support, fostering higher quality vocational education for students and increasing their competitiveness in the job market.

2) To strengthen collaboration with enterprises, policies should encourage partnerships between businesses and vocational education institutions, providing students with internship and employment opportunities. This would facilitate the application of theoretical knowledge to practical work, improving students' abilities while enabling businesses to cultivate and select outstanding talent, achieving mutual benefits.

3) To encourage innovative practices, policies should support inventive, practice-oriented education, such as the project-based, exploratory, and task-oriented teaching methods utilized by Zhaixing Academy. Financial and policy support for such education encourages more institutions to adopt similar practice-oriented teaching approaches, fostering talent with innovative thinking and practical skills.

4.5 Summary

In summary, existing vocational education systems have achieved certain results in terms of regulations, government support, and corporate participation. However, to further improve the quality of vocational education, attention should be given to informal education pathways, practice-oriented teaching, and flexible training methods. The Zhaixing Academy case provides a valuable reference, and by learning from its successful experiences, countries can explore more vocational education reform measures suitable for their national conditions, offering students higher quality education resources and cultivating more competitive talent.

5. Conclusions

This study has conducted an in-depth exploration of the current state and challenges in the field of vocational education through a comparative study of international voca-

tional education and an analysis of the Zhaixing Academy case. The research indicates that vocational education reform can draw on the experiences of the German dual system, American community colleges, and Chinese vocational education reforms, focusing on informal education pathways, practice-oriented teaching, and flexible training methods. Moreover, the analysis of the Zhaixing Academy case reveals the importance of practice-oriented teaching approaches, individual student development needs, and the advantages of education outside formal institutions, providing new insights and references for the current Chinese education system. In the future, Zhaixing Academy can continue to focus on education reform, expand the realm of practice-oriented education, and promote its educational philosophy and methods, contributing to the diversification and sustainable development of education.

Nonetheless, certain limitations exist within the research process of this paper. Firstly, the research scope is limited. The paper primarily focuses on the vocational education systems of Germany, the United States, and China, without considering the current status and experiences of other countries and regions. Secondly, there are limitations in the case selection. Although Zhaixing Academy has been chosen as the case study subject, and its educational philosophy and practices are somewhat representative, more similar cases should be investigated to support the conclusions in the future.

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