DATA-DRIVE ANALYSIS OF TEACHING QUALITY IMPACT ON GRADUATE EMPLOYMENT IN HIGHER VOCATIONAL COLLEGES OF HEFEI

NING WANG

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF
SCIENCE IN TECHNICAL EDUCATION PROGRAM IN
VOCATIONAL EDUCATION
FACULTY OF TECHNICAL EDUCATION
RAJAMANGALA UNIVERSITY OF TECHNOLOGY THANYABURI
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วิทยานิพนธ์ฉบับนี้เป็นงานวิจัยที่เกิดจากการค้นคว้าและวิจัย ขณะที่ข้าพเจ้าศึกษาอยู่ในคณะครุศาสตร์อุตสาหกรรม มหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี ดังนั้น งานวิจัยในวิทยานิพนธ์ฉบับนี้ถือเป็นลิขสิทธิ์ของมหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี และข้อความต่าง ๆ ในวิทยานิพนธ์ฉบับนี้ ข้าพเจ้าขอรับรองว่าไม่มีการคัดลอกหรือนำงานวิจัยของผู้อื่นมานำเสนอในชื่อของข้าพเจ้า

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Dissertation Title	Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei
Name-Surname	Ms. Ning Wang
Program	Vocational Education
Dissertation Advisor	Assistant Professor Tiamyod Pasawano, Ed.D.
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ABSTRACT

The objectives of this study were to identify the influence of teaching quality in higher vocational colleges on the employment quality of graduates and develop instructional design informed by both theoretical and empirical analysis that synthesize the relationships among teaching quality, human capital, and employment quality.

In collaboration with 17 experts, the samples were selected through the purposive sampling method, which included 100 instructors from higher vocational colleges in China. Using the Delphi technique with questionnaire data, it was found that vocational college teaching quality was positively influenced by both graduates' human capital and employment quality. Vocational education had a favorable effect on employment quality, with human capital playing a crucial role in enhancing teaching quality. The distribution of 600 questionnaires resulted in 527 valid responses, yielding a response rate of 87.83%. Data processing and analysis were used to analyze the valid questionnaire data. However, the relationship between teaching quality and employment quality was mediated by professional cognition and growth ability.

The research results shed light on the important insights for vocational colleges, pointing to the crucial significance of human capital and educational quality in improving employment quality. In higher vocational colleges, previous research investigated the connection between human capital, employment quality, and instructional quality. In addition, the data from Hefei graduates indicate that teaching quality positively affects graduates' human capital and employment quality. Thus, the link between teaching and learning is moderated by human capital. The research employed AMOS software to analyze the data, revealing a direct effect of higher college teaching quality on graduates' employment quality and human capital. The significance level of these effects is .001, indicating a strong capacity for explanatory reasoning.

Keywords: higher vocational colleges, teaching quality, employment quality

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Ning Wang

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AMOS Automatic Meteorological Observing Station

CHAPTER 1
INTRODUCTION

1.1 Background and Statement of the Problem

Vocational colleges have changed significantly in recent years. Due to the focus on connecting educational outputs with workforce demands, studying how teaching quality influences graduate employment outcomes is growing. This passion is especially evident in Hefei, recognized for its vibrant higher education and burgeoning economy. Higher vocational institutions are essential for integrating academics with workplace skills. Students' employability and career choices depend on these schools' instruction. There is little data-driven examination of Hefei's higher vocational colleges' teaching quality and graduate job results. A rigorous data-driven study examines the relationship between teaching quality and graduate employment in Hefei higher vocational institutes. This study uses empirical data and advanced analytical methodologies to inform government choices, curriculum modifications, and institutional measures to improve education and graduate employability in the region. This study analyzes instructional methods, faculty qualities, industry relationships, and student performance to determine which factors significantly affect graduate career outcomes. This study examines the relationship between teaching quality and employment prospects over time to understand the mechanisms. The study measured the quality of relationships between students and all educational instructors and staff to predict their level of engagement and loyalty. The research found that affective commitment and conflict can improve student engagement in terms of absorption, dedication, and vigor. The study involved 454 higher education students, and its conclusion was that effective relationship management in higher education can lead to better academic results, such as increased student engagement and loyalty (Snijders, I., Wijnia, L., Rikers, R., & Loyens, S., 2020). China is undergoing economic and industrial structural transformation and upgrading, and new talent demand changes require a large number of high-quality, professional talents for career development, innovation, and craftsmanship. In response to changing times and talent demand, vocational education should lead reform and innovation in the context of favorable policies on high-quality education system, optimize individual governance of

institutions, adjust professional settings, optimize practical teaching, and deepen education and teaching reform and innovation. The policy objectives and requirements should also improve institutional mechanisms, accelerate enterprise cooperation to run schools, talent training, education and teaching quality, graduate employment quality, and vocational education quality and excellence. The expansion of market economy increases demand for vocational talents, which boosts vocational education in China. The number of vocational colleges and students is rising, but the training method cannot satisfy market skill needs. Many vocational school students cannot earn the income they want after graduation, which dampens their studying zeal. Curriculum integration is crucial to vocational education reform, which has advanced with the 1+X credential system. By creating certificate standards for industrial robot majors and integrating curriculum content, students' job prospects improve, and higher vocational colleges thrive (Yan, L., 2022).

Hefei higher education stakeholders. It supports evidence-based decision-making and improves teaching and learning. This study examines the complex relationship between teaching quality and graduate employment to inform educational reform and regional economic development. In a competitive global market, students need the skills and information to succeed. Transformation and Upgrade of Industrial Structure Drives: New-era development requirements Development and talent are the top priorities in vocational education reform and innovation. Science and technology, as well as labor skill and professionalism, limit industrial upgrading and structural change. China is undergoing major industrial reform and modernization. We need many talented people to adapt to economic restructuring, accomplish high-quality development, socialist modernization, and build a great nation. As an integral aspect of the human resources and education systems, vocational education trains skilled workers, spreads innovative technology, and solves employment challenges. Thus, vocational education reform is needed to address the shortage of high-quality skilled workers, the growing structural imbalance in labor supply and demand, the contradiction between human capital and industrial structure, and other issues. Since the 18th National Congress of the Communist Party of China, the framework of the modernization system for vocational education development has been built, and certain conditions and foundations are in place to help

the country achieve modernization, but there is still a gap between a modern social and economic system and a high-quality modern education system. China needs many technological skills to improve its industrial structure and social and economic development. Higher vocational education needs urgent structural transformation. This trend aims to change and upgrade regional higher vocational institutions as the backbone of higher vocational education, regardless of social growth for superb talents or Ministry of Education strategic positioning (Wu, X., Cheng, G., Deng, M., & Tang, F., 2021).

On the one hand, the rate of industrial transformation and upgrading to create high-quality jobs is much lower than the growth rate of the number of graduates; on the other hand, as technological progress accelerates and the industrial structure is optimized and upgraded, the problem of shortage of skilled personnel will become more prominent. Therefore, the vocational education system needs to take the initiative to benchmark the gap, review itself and innovate and change. In addition, since vocational education began to expand and increase its speed in the 21st century, it has now entered a new stage of high-quality development in accordance with the logic of its own development and the deployment of national macro policies. The times call for a high-quality vocational education talent training system, and for vocational education to cultivate a number of excellent graduates with professional competence, innovation ability and craftsmanship, to improve the quality of employment and the quality of talent supply, so as to respond to the demand for talents for industrial upgrading and better serve economic and social development. The new stage calls for quality improvement and deeper governance, focusing on solving the deep-seated problems that still exist, such as imperfect institutional construction, insufficient motivation for school-enterprise cooperation and unsatisfactory quality of student employment. At the same time, we should focus on grasping the essential issue of talent training, which is hidden behind the problems, and put the quality of employment, one of the important criteria for measuring the quality of talent training, in a prominent position. Technological progress and industrial structure optimization and upgrading will increase the shortage of skilled workers, but industrial transformation and upgrading to create high-quality jobs is much slower than graduate growth. Thus, vocational education must benchmark the gap, examine itself, and innovate and improve. Since vocational education began to expand and accelerate in the

21st century, it has entered a new stage of high-quality development in accordance with its own development logic and national macro policies. The time calls for a high-quality vocational education talent training system that cultivates excellent graduates with professional competence, innovation ability, and craftsmanship to improve employment and talent supply to meet industrial upgrading talent demand and better serve economic and social development. The new stage emphasizes quality improvement and deeper governance to address long-standing issues such poor institutional construction, low school-enterprise cooperation, and poor student employment. Despite the challenges, we should focus on talent training, which is behind them, and prioritize employment quality, one of the key indicators of talent training quality. Higher vocational education is a crucial component of the national talent strategy because it helps generate highly qualified technical and skilled talent that can satisfy the demands of social and economic growth demands. Higher vocational education in China has advanced significantly in recent years, increasing in scope and quality while positively influencing economic and social growth. However, it also has to deal with specific pressing issues, one of which is how to increase the employability of graduates. Employment quality is an essential sign to represent the level of personal development and social acceptance of graduates, which is also a sign to measure the training objectives and educational benefits of higher vocational education (F. Chan, C.-C. Wang, S. Fitzgerald, V. Muller, N. Ditchman, and F. Menz, 2016; T. Sangsawang, K. Jitgarun, and P. Kiattikomo, 2007). However, the quality of the existing workforce is higher. China's education system highlights the scarcity of high-quality resources and unfair distribution due to exam-oriented education. It emphasizes the strategic importance of vocational education for China's future talent development and calls for national policy support for its development (R. Gan, 2021).

Five-year higher vocational education has developed into one of the significant forms of Higher Vocational Education in China. Fujian Province began offering five-year junior college programs. There was a technical labor shortage due to the quick growth of Japan's economy. Japan's specialized colleges and universities sought out junior high school graduates to enroll in their programs, study for five years, and graduate with an associate degree. As a result, many technical workers were produced for the growth of Japan's basic industry manufacturing industry in a short amount of time (J.

Wu, 2021). To improve the employment quality of higher vocational graduates, we need to start from many aspects, among which the most critical link is to improve the teaching quality of higher vocational colleges. Teaching quality refers to the degree to which teaching objectives are achieved through teaching activities under certain conditions. It is the core element of higher vocational education and an important factor affecting the employment quality of graduates. The teaching quality of higher vocational colleges directly determines the human capital level of graduates, and human capital is the key factor affecting the employment quality of graduates (C. Lijun and L., 2020). Human capital refers to intangible assets such as knowledge, skills, abilities, Etc., obtained by individuals through investment in education, training, health, Etc., which is the basis for individuals to obtain income and development in the labor market. The higher the teaching quality of higher vocational colleges, the higher the human capital level of graduates, and the higher their employment quality. It is essential to improve the teaching at higher technical colleges if you want to increase the quality of employment for graduates. The human capital level of graduates, which is the cornerstone for income and development in the labor market, is directly impacted by the quality of the teaching. Higher levels of human capital and improved employment quality are correlated with higher teaching quality. A study conducted in nine higher vocational colleges investigated the factors influencing the employability of finance and trade graduates.

To evaluate teaching quality, a data-driven approach can be employed using various methods such as multivariate modeling (M. Zuckerman, S. Lin, F., 2021; M. Goos and A. Salomons, 2016). A combination of Analytical Hierarchy Process (AHP) and Data Envelopment Analysis (DEA) (E. Thanassoulis, P. K. Dey, K. Petridis, I. Goniadis, and A. C. Georgiou, 2017), and a data-driven model based on multidimensional corpus (D. Chen, 2022). Technological advances have significantly impacted teaching methodologies in higher education. Faculty attitudes toward technology and distance education have been found to influence the integration of electronic communication in teaching (L. N. Tabata and L. K. Johnsrud, 2008). Additionally, the application of deep learning and human comprehensive development theory has been evaluated to enhance innovation in higher education teaching (J. Zhang, 2020). Furthermore, contemporary information-communications technologies have

resulted in numerous enhancements of the teaching process, altering traditional methods of learning and teaching (N. Denić, S. Gavrilović, and N. Kontrec, 2017). The use of technological advances has also been monitored to enhance teaching methodologies, demonstrating the influence of technological advancement on conventional teaching and learning methodologies.An interdisciplinary approach combining data science, educational theory, and labor market analysis can significantly benefit society by catalyzing greater synergy across these policy sectors (J. P. Shonkoff, L. Richter, J. van der Gaag, and Z. A. Bhutta, 2012). Initiatives such as data science education in secondary schools aim to concretize data science and its implications for schools, fostering statistical reasoning through interdisciplinary projects (L. Budde et al., 2020). Furthermore, an integrated approach to science education through history of art has been proposed, emphasizing the potential for interdisciplinary collaboration (M.-A. Vázquez-Manassero, M. A. Manassero Mas, and Á. V. Alonso, 2021). Using t-tests, rank sum tests, and chi-square tests, the researchers found that soft skills play a crucial role in career development and professional advancement. Employability is a crucial component of one's career development. The researchers focused on human development in educational settings. They carried out a quantitative study inside nine higher vocational colleges in order to explore the factors affecting the employability of finance and trade graduates in higher vocational colleges. The t-test, rank sum test, and chi-square test are used in the study's descriptive statistical analysis to evaluate the variables and show the sample structure. Additionally, it uses exploratory factor analysis to categorize educational practice and employability. The correlations between three primary characteristics, as well as the employability and career advancement of graduates in finance and commerce, were then investigated using a multivariable linear regression model. The results indicate that soft skills (X. Huang, J. Cao, G. Zhao, Z. Long, G. Han, and X. Cai, College Graduates, 2022)

Therefore, studying the impact mechanism and path of teaching quality of higher vocational colleges on the employment quality of graduates has important theoretical significance and practical value for promoting higher vocational colleges to improve teaching quality with employment as orientation, cultivating more and better technical and skilled talents, meeting the needs of national economic and social development for

talents. Teaching at Guangdong Technology University is undergoing continuous development due to the advancements in education reform. This has led to more abundant teaching methods but also presents challenges. To address these, colleges must continually. improve curriculum planning, build targeted quality assurance systems, and ensure comprehensive personnel training (H. Xun, 2020).

1.2 Significance of the Study

To synthesize teaching quality, human capital, and employment quality, the dissertation analyzes theoretical and empirical factors that influence instructional design. Best living is work. Student and family interests, industrial structure adjustment, and talent supply-side change affect vocational education graduates' job quality. With surveys, this study will assess higher vocational college graduates' employment quality and model the relationship between teaching quality, human capital, and employment quality. After higher vocational colleges expand, education and teaching reform, talent training, and socialism modern power craftsmen will improve. Specifically Using overall quality management theory, human capital theory, and screening hypothesis theory with higher vocational college field views would improve vocational education research on employment quality and enable path selection and countermeasures to increase graduate employment quality. This study uses overall quality management theory and "customer center" and "education service" perspectives in higher vocational institutions to develop a closed-loop vocational education quality management system and investigate the relationship between teaching and employment quality. This idea emphasizes employment quality as the "export end" and teaching quality as the means for vocational education talent training and employment. The structural equation model supports human capital and screening theory as an intermediary between instruction and job quality. It enhances vocational education graduates' employment quality research and guides graduate-focused employment management.

1.3 Purpose of the Study

The objectives of the study are as follows:

1.3.1 To develop to identify the influence of teaching quality in higher vocational colleges on the employment quality of graduates.

1.3.2 To develop instructional design through both theoretical and empirical analysis, to synthesize the relationships among teaching quality, human capital, and employment quality.

1.4 Research Questions and Hypothesis

1.4.1 How can an effective Construction of Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei?

1.4.2 What are the key factors in identifying and developing Construction of an Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei?

1.5 Conceptual Framework

This research adopts a "Research and Development" approach. This approach constitutes a development model with a focus on industry growth, enhancement and or improvement as in Figure 1.1

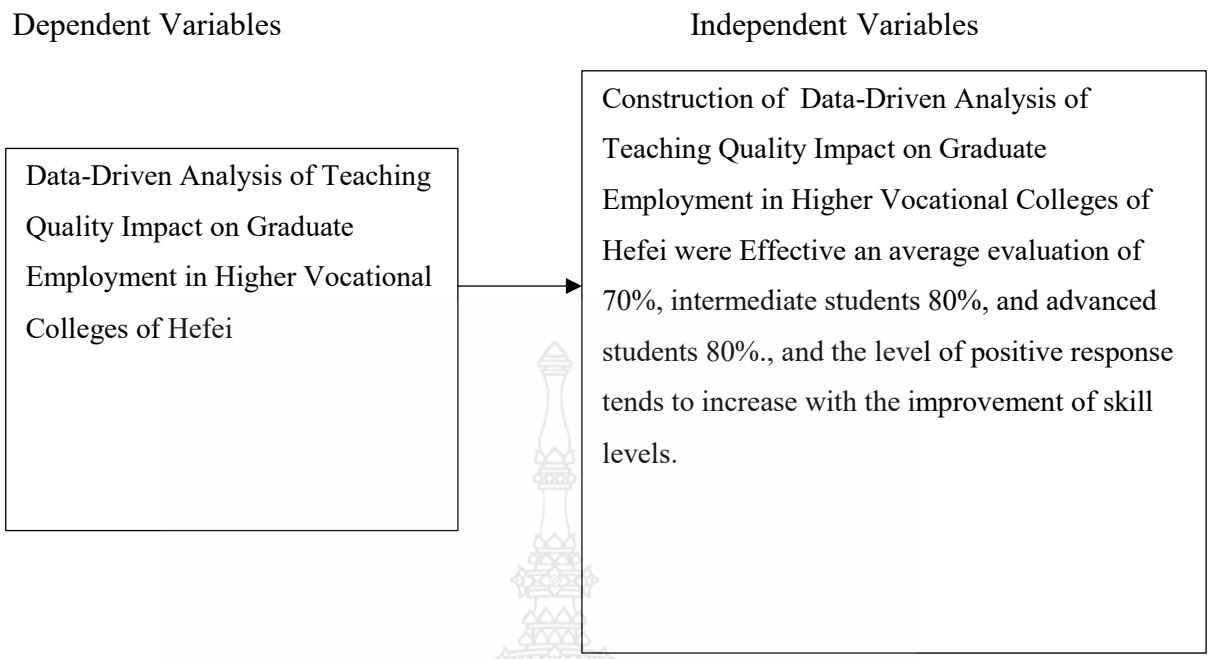

Figure 1.1 Conceptual Framework of Conceptual Framework of Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei

1.6 Theoretical Perspective

1.6.1 Learning process theories are defined Construction of a Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei.

1.6.2 The theoretical perspectives of the review of these theories focus on four terms, namely principles, teaching-learning activities/strategies, teaching-learning environments and teaching- learning models.

1.6.3 The Delphi technique was used to synthesize Construction of Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei.

1.7 Definition Perspective

The following is a list of definitions of this study:

1.7.1 An effective Construction of Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei.

1.7.2 Self-regulated learning refers to one's ability to understand and control one's learning environment. Construction of Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei.

1.7.3 Construction of Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei. How to create Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei refers to the idea, policy and measures that construct and manage teaching, learning, research, service and management in the education and culture. The Construction of Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei. In the university of higher education.

1.7.4 The Delphi technique means a process mostly used in research and economics, aiming to collect opinions on a particular research question or specific topic, to gain consensus. The opinions are collected from a group of experts that are not physically assembled, normally through questionnaires. A specific number of experts, qualified in higher education internationalization and education technology determined the results. They had doctoral degrees or had worked for over five years at least in the position of Professor, Associate Professor, Lecturer and Researcher.

1.8 Expected Benefits

The expected benefits focus on the following:

1.8.1 This research provides Construction of Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei.

1.8.2 This research helps to identify and develop to Construction of Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei.

CHAPTER 2
LITERATURE REVIEW

This chapter will contribute further to the literature review during the study's design and present to identify and develop Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei. The impact of higher vocational college teaching quality on graduate employment quality has been extensively studied in both domestic and foreign literature. These documents are primarily examined in light of the following factors: This chapter is divided into the following parts:

2.1 Higher Vocational Education and Its Role

2.2 Teaching Quality in Higher Vocational Colleges

2.3 Graduate Employability and Employment Quality

2.4 Factors Affecting Graduate Employment Quality

2.5 The Link between Teaching Quality and Employment Quality

2.6 The Delphi Technique

2.7 Literature Review of Relevance of Research

2.1 Higher Vocational Education and Its Role

The educational system plays a crucial role in fostering practical abilities by bridging the gap between theoretical knowledge and practical skills.

2.1.1 Skill Development: Skill Development in higher vocational education aims to equip students with practical skills for specific occupations and industries, resulting in job-ready graduates.

2.1.2 Alignment with Labor Market Needs: Higher vocational education institutions collaborate with industries to design curricula that align with job market demands, ensuring graduates possess the desired skills and knowledge.

2.1.3 Diverse Program Offerings: Higher vocational education offers diverse programs across technology, healthcare, business, and arts, catering to students' diverse needs and allowing them to choose programs that align with their interests and career goals.

2.1.4 Accessibility: Higher vocational education offers greater accessibility compared to traditional four-year degree programs, requiring less time and financial

investment, making it an attractive option for quick workforce entry or skill upgrading.

2.1.5 Promotion of Lifelong Learning: Lifelong learning, continuous learning, and professional development are integral components of enhancing one's learning and career prospects.

2.1.6 Regional and Local Development: Local industries play a crucial role in local development, fostering economic growth and reducing unemployment by providing skilled workforces tailored to local industries.

2.1.7 Social Mobility: Vocational education is a valuable tool for social mobility, enabling individuals from diverse backgrounds to acquire valuable skills, thereby improving their social and economic opportunities.

2.1.8 Innovation and Research: Vocational education enhances employment quality by enhancing teaching quality, thereby enhancing human capital, which is crucial for graduates' financial stability and workforce advancement.

2.1.9 Global Competitiveness: A country's competitiveness in the international economy is increased by a well-developed higher vocational education system. It enables a nation to meet the needs of developing sectors and maintain its technical leadership. In conclusion, higher vocational education contributes to the educational environment as a flexible and dynamic element, equipping students for immediate employment while also fostering continued professional development and industry expansion (H. Sha, 2020). It plays a crucial part in education systems all over the world by encouraging social mobility, lowering unemployment, and fostering economic development (T. Sangsawang, K. Jitgarun, and P. Kaittikomol, 2024). The study looks at the effects of higher and secondary vocational education and training (HVET) on China's economic growth between 1980 and 2020. The findings indicate that while a decline in HVET slows long-term economic growth, a rise in SVET accelerates it. An important moderating factor in the effects of high technology sectors on economic growth is higher vocational education. For a prosperous economic transition, the report recommends promoting higher vocational education and the equal development of high-tech industries (L. Xia, A. Ali, H. Wang, X. Wu, 2022)

2.2 Teaching Quality in Higher Vocational Colleges

Teaching quality at higher vocational colleges includes numerous facets of instructional procedures and contexts. For students to be effectively prepared for occupations and sectors, great teaching quality must be ensured. Here are the essential elements and factors relating to the quality of instruction in higher vocational colleges:

2.2.1 Curriculum Design: Curriculum design is crucial for effective teaching in vocational institutions, ensuring current, relevant, and useful information and skills for the workforce.

2.2.2 Pedagogical Approaches: Effective teaching in vocational colleges utilizes pedagogical approaches and strategies, ensuring students grasp theoretical concepts and develop practical skills through hands-on experiences and real world applications (T. Sangsawang, K. Jitgarun, and P. Kaittikomol, 2011)

2.2.3 Faculty Qualifications: Instructors' knowledge and faculty qualifications are crucial in teaching, as they effectively combine academic knowledge with industry experience to bridge the gap between theory and practice.

2.2.4 Professional Development: Teaching industry trends and fostering professional development are crucial for instructors to provide students with the best possible education.

2.2.5 Resources and Facilities: Teaching quality is significantly enhanced using technology infrastructure, which enhances practical skills and facilitates hands-on learning (T. Sangsawang, 2015).

2.2.6 Student-Centered Approach: Effective teaching involves a student-centered approach, where instructors are responsive to students' needs and aspirations, ensuring they succeed and receive the necessary support.

2.2.7 Assessment and Feedback: Students' learning journey is guided by transparent assessment methods, ensuring progress and improvement, thereby fostering a more effective learning environment.

2.2.8 Integration of Technology: Utilizing technology in teaching enhances students' learning experience, promoting skill development through virtual simulations, online resources, and e-learning platforms.

2.2.9 Industry-Academia Collaboration: Students benefit from industry-

academia collaboration, which includes guest lectures and real-world projects, exposing them to industry practices and enhancing their learning experience.

2.2.10 Quality Assurance and Accreditation: Quality assurance is crucial in ensuring the quality of educational programs, and it is essential to seek accreditation from relevant bodies to maintain this high standard.

2.2.11 Feedback Mechanisms: Regular surveys and creating channels for students to provide feedback are crucial in enhancing the quality of learning experiences.

2.2.12 Inclusive Education: Promoting inclusivity in vocational education is crucial for ensuring a diverse learning environment that caters to students with diverse backgrounds and abilities. In higher vocational colleges, the quality of the instruction is crucial for enabling students to succeed in their chosen careers (W. Chunjian, S. Wensen, and X. Fan, 2017). It requires an all-encompassing strategy that includes curriculum design, teaching techniques, faculty credentials, resources, and industry partnerships. Vocational colleges can aid in the success and employability of their graduates in the competitive labor market by continually aiming for good teaching quality (H. Rosina, V. Virgantina, Y. Ayyash, V. Dwiyanti, and S. Boonsong, 2021)

2.3 Graduate Employability and Employment Quality

Crucial factors affecting graduate employability and employment quality are the quality of education and career options available to graduates.

2.3.1 Employment Quality: Employment quality encompasses job happiness, career possibilities, and job stability, ensuring a positive work environment that aligns with one's qualifications and talents (W. Dongxia and Z. Tongxiang; W. Yuhua, 2021).

2.3.2 Alignment with Skills and Qualifications: Graduates' work requires a strong alignment of their skills and qualifications, ensuring they effectively apply their education to their current job.

2.3.3 Income and Compensation: Employment quality often includes considerations of income and compensation. Graduates who secure well-paying jobs that offer competitive salaries and benefits tend to experience higher employment quality.

2.3.4 Job Security and Stability: Stable and secure employment is an

important aspect of employment quality. Graduates should feel confident in the longevity of their positions and the absence of constant job insecurity.

2.3.5 Job Satisfaction: Job satisfaction is a crucial factor in enhancing employment quality, as it ensures employees find a fulfilling job that aligns with their values and interests.

2.3.6 Career Advancement Opportunities: Career growth and advancement are crucial in one's chosen field, allowing individuals to climb the career ladder and enhance their skills.

2.3.7 Underemployment and over qualification: Over qualification refers to graduates working in jobs that do not meet their qualifications, negatively impacting the quality of employment.

2.3.8 Lifelong Learning and Adaptability: Graduates who actively engage in lifelong learning and skill development are better equipped to enhance their employability and maintain high-quality employment throughout their careers.

2.3.9 Impact of the Education System: The education system's quality significantly impacts graduate employability and quality, with curriculum relevance, pedagogical approaches, and experiential learning opportunities playing crucial roles (T. Sangsawang, K. Jitgarun, and P. Kaittikomol, 2006)

2.3.10 Career Services and Support: Career Services and Support provide essential services to support individuals in their career journey, ensuring they are well-equipped to navigate the workforce effectively.

2.3.11 Industry Collaboration: Industry input and collaboration between educational institutions and industries are crucial for enhancing employability and skill development in the job market.

Graduate employability and employment quality are essential indicators of the quality of higher education institutions, influencing the graduates' ability to secure meaningful careers [28] [29]. Graduate employability and competence development are crucial aspects of higher education [30]. Higher education institutions are focusing on strategies to enhance these competencies, relying on innovation and collaboration practices in higher education [31].

2.4 Factors Affecting Graduate Employment Quality

Graduate job quality is influenced by personal characteristics, economic conditions, and societal conditions, requiring understanding by graduates, educational institutions, and governments for improved graduation outcomes.

2.4.1 Educational Background: The level and type of education a graduate possesses can significantly impact their employment quality (T. Boxun, 2017.). Graduates with higher degrees or specialized qualifications may have access to more advanced and well-paying job opportunities.

2.4.2 Relevance of Degree: The relevance of a graduate's degree to their chosen field or industry plays a crucial role in employment quality. Graduates who enter careers closely related to their field of study tend to experience higher job satisfaction and income.

2.4.3 Skills and Competencies: The specific skills and competencies acquired during education are vital for securing and excelling in a job. Graduates with a strong skill set that aligns with the demands of the job market are more likely to find high-quality employment.

2.4.4 Networking and Connections: Networking and professional connections can open doors to job opportunities that may be private. Graduates with robust professional networks may have an advantage in finding quality employment.

2.4.5 Geographic Location: The geographic location of a graduate can significantly affect employment quality. Regions with a strong job market in the graduate's field of study offer better opportunities in terms of income, job security, and career advancement.

2.4.6 Economic Conditions: Broader economic conditions, such as economic recessions or periods of growth, can influence the availability of jobs and wage levels. Graduates who enter the job market during economic downturns may need help in securing high-quality employment.

2.4.7 Industry Trends: Graduates who are well-informed about industry trends and have skills that are in demand are more likely to find high-quality employment. Staying updated on emerging technologies and market demands is essential.

2.4.8 Internships and Work Experience: Internships and prior work experience can greatly enhance employment quality. Graduates with relevant work experience are often more attractive to employers and may have an easier time securing fulfilling job.

2.4.9 Soft Skills and Soft Skills: Soft skills, such as communication, problem-solving, and teamwork, are increasingly valued by employers. Graduates who possess a combination of technical skills and soft skills are better positioned for quality employment.

2.4.10 Career Planning and Job Search Strategies: Graduates who engage in effective career planning, set clear goals, and employ strategic job search techniques are more likely to find employment that aligns with their aspirations.

2.4.11 Employer Practices: Employer practices, such as fair compensation, employee benefits, and workplace culture, greatly affect employment quality. Graduates should consider these factors when evaluating job offers.

2.4.12 Government Policies: Government Policies: Employment quality may be impacted by government policies concerning minimum wage, labor regulations, and workforce development. Graduates gain from policies that support fair labor practices and job stability.

2.4.13 Cultural and Social Factors: Cultural and Social elements: Cultural and social elements, such as gender, ethnicity, and socioeconomic status, can have an impact on income levels and employment prospects. Equity requires actions to address gaps in employment quality. Policymakers and educational institutions are working together to improve the quality of graduate employment by addressing interrelated elements and fostering awareness among graduates. Employability issues are a top political agenda in higher education, highlighting the importance of career adaptability in preparing graduates for the labor market. This study, involving 373 students, found that career adaptability mediates between self-perceived competency and self-perceived employability. Graduating students should be equipped with career management resources to transition smoothly into the current labor market. This highlights the need for higher education institutions to integrate career management training opportunities (T. Sangsawang, K. Jitgarun, and P. Kaittikomol, 2006, S. Monteiro, J. A. Ferreira, and L. S. Almeida, 2018).

2.5 The Link between Teaching Quality and Employment Quality

The essential and complex relationship that exists between high-quality instruction and high-quality employment has a direct bearing on how graduates fare in their transition from school to the workforce. The teaching substantially influences graduates' employability and the quality of final jobs in higher education institutions. Here is a look at this important link:

2.5.1 Skill Development and Relevance: Students' acquisition of applicable information and skills is directly impacted by the quality of the teaching. High-quality graduates are better equipped with the necessary, practical skills that employers are looking for in job candidates. Their employability is increased by this fit between their education and the needs of the labor market.

2.5.2 Effective teaching practices frequently incorporate comprehensive career guidance and counseling services. These programs help students determine their skills, map out their career trajectories, and make educated professional decisions. Such assistance increases the likelihood that graduates will choose their work opportunities wisely.

2.5.3 Internships and Practical Experience: Excellent instruction frequently incorporates co-op programs, internships, and practical experiences into the curriculum. These changes allow students to apply what they learn in the classroom by exposing them to actual workplaces. Graduates with real-world experience are usually more desirable to employers and find quality employment more easily.

2.5.4 Development of Soft Skills: Soft skills like communication, teamwork, problem-solving, and critical thinking are all part of good teaching. These abilities are highly regarded by businesses and greatly improve the standard of employment. Graduates with these talents cultivated during their education are more prepared to succeed in the workplace.

2.5.5 Industry-Related Curriculum: Maintaining a curriculum that reflects current trends and demands in the industry is a key component of high-quality teaching. Graduates with the most up-to-date training are more likely to find career prospects that complement their degree, which raises the standard of employment.

2.5.6 Faculty Mentorship and Industry Networks: Students can benefit greatly from the mentorship and networking possibilities offered by faculty who are well-connected within their respective sectors. Graduates who have benefited from these ties frequently find it simpler to get high-quality employment thanks to the advice and connections their professors have in the field.

2.5.7 Research and Innovation: Institutions with a strong research culture and innovative teaching methods tend to produce graduates who are adaptable and capable of solving complex problems. These graduates are often more sought-after by employers in high-quality positions.

2.5.8 Employer Partnerships: Teaching quality institutions frequently establish partnerships with employers and industry stakeholders. Such collaborations may lead to job placement programs, internships, and cooperative education opportunities, directly enhancing graduates' access to high-quality employment.

2.5.9 Continuous Learning and Adaptability: High-quality teaching encourages graduates to be lifelong learners and adaptable professionals. Graduates who are equipped with a growth mindset and a commitment to ongoing development are better prepared for career advancement and higher employment quality.

10) Ethical and Professional Standards: Teaching quality often includes an emphasis on ethical and professional standards. Graduates who understand and adhere to these standards are more likely to secure employment in organizations that prioritize ethical practices and professionalism. The employers' needs and the competencies of university graduates are some of the major problems with competence development and graduate employability identified in the review. According to the findings, higher education institutions are focused on employing techniques to improve the skills needed by graduates to find employment. The growth of graduate employability and competence depends on higher education institutions fostering a strong sense of innovation and

collaboration (M. Abelha, S. Fernandes, D. Mesquita, F. Seabra, and A. T. Ferreira-Oliveira, 2020).

2.6 The Delphi Technique

The Delphi Technique is a systematic, iterative, and consensus-building procedure used to gather and synthesize expert opinions on difficult topics. In this case, it will be applied to assess the effects of vocational school graduates' development of their human capital and employment quality. To conduct Delphi research on this subject using a four-round questionnaire, follow the procedures below: Establishing the Expert Panel in Round 1, creating the initial questionnaire in Round 2, and creating the iterative questionnaire in Round 3 Rounds, Fourth Round: Depending on how Round 3 went, you can decide to hold another round to try to reach a decision or settle any outstanding issues. Final Reporting. Dissemination: Share the final report with the expert panel, relevant institutions, and the wider educational community to contribute to discussions on improving teaching quality and its impact on graduates' human capital development and employment quality in vocational colleges. The Delphi Technique, through its iterative and expert-driven approach, allows for a systematic exploration of complex topics, such as the influence of teaching quality on graduates' outcomes, while gradually building consensus among experts. Complete Reporting. Dissemination: To contribute to conversations on enhancing teaching quality and its effects on graduates' human capital development and employment quality in vocational colleges, share the final report with the expert panel, pertinent institutions, and the larger educational community. Through its iterative and expert-driven methodology, the Delphi Technique enables a systematic study of complicated subjects, such as the impact of teaching quality on graduation results, while gradually fostering expert consensus (T. Sangsawang, 2020).

2.7 Literature Review of Relevance of Research

Kowang, T., Yew, L., Yen, H., Hee, O., Fei, G., Rasli, A., & Long, C., (2022). Higher education institutions (HEIs) are constantly adapting their teaching system to enhance students' employability in light of shifts in the socio-economic and technological environment. Empirical studies have demonstrated that the quality of teaching has a

substantial effect on the cultivation of students' employability traits. Consequently, a significant challenge for Higher Education Institutions (HEI) is continuously improving teaching quality to boost student employability. This study examined the correlation between the instructional quality and the employability of Technology Management students. Three essential components for ensuring teaching quality are learner quality, learning environment quality, and content quality, as outlined in the literature. The study utilized a quantitative methodology to collect data through an online questionnaire that was filled out by 60 Technology Management students from a Business School in Malaysia. The data was analyzed with SPSS to assess normality, reliability, descriptive statistics, and conduct a Pearson correlation test. The study revealed that the quality of the learning environment, materials, and students is essential, significant, and has a favorable correlation with employability. This study proposes that students' employability might be assessed based on teaching quality rather than depending on students' academic achievements or employability characteristics.Correlation between teaching quality elements and employability in Technology Management students. International Journal of Evaluation and Research in Education (IJERE). https://doi.org/10.11591/ijere.v11i3.21836.Studying how teaching quality impacts graduate employment in higher vocational schools in Hefei through data analysis is essential to ensure that educational outcomes meet the demands of the ever-changing job market. An analysis of recent literature offers valuable insights into several facets of this subject, clarifying both theoretical frameworks and empirical results that enhance our understanding of the intricate relationship between teaching quality and graduate employability.

Decius, J., Schaper, N., & Seifert, A. (2021). We examined informal workplace learning (IWL) in blue-collar workers, a category that has not received much attention. Informal workplace learning is essential for these individuals since barriers prevent them from participating in formal training. We developed the APO framework to investigate the factors leading to, the mechanisms involved in, and the educational results of Informal Workplace Learning (IWL) in blue-collar workers, drawing upon meta-analytical studies. The structural equation model study, which involved 702 blue-collar

workers from small and medium-sized enterprises, validated seven out of eight hypotheses. Curiosity, learning goal orientation, and self-directed learning orientation were positively linked to individual workplace learning (IWL). Organizational characteristics such as social support (including encouragement from supervisors and coworkers) and an environment that encourages learning from errors were positively associated with innovative work behavior. Time pressure was also found to be positively connected to innovative work behavior. IWL had a favorable correlation with job involvement, newly acquired competency, and organizational citizenship behavior. The results lay the groundwork for future longitudinal investigations and theory building in workplace learning research. They provide guidance to managers in firms on how to promote Informal Workplace Learning (IWL).Educational research employs many theoretical frameworks to examine the impact of teacher quality on student outcomes. The "input-process-output" paradigm indicates that the quality of inputs, such teaching methods and faculty qualifications, influences students' learning processes, subsequently affecting their academic and career success. Theories of human capital and signaling theory offer a framework for comprehending how educational experiences result in tangible benefits in the job market. They stress the significance of higher education in enhancing individuals' productivity and showcasing their talents to prospective employers.

Ortan, F., Simuț, C., & Simut, R. (2021).The contentment and well-being of teachers significantly impact educational results, as teaching is the main objective of the educational process. This study aims to explore the relationship between teacher job satisfaction and self-efficacy, as well as various factors such as colleague collaboration, student behavior, school management, administrative workload, teaching tasks, and working conditions, to assess their influence on teachers' well-being. The study used a survey that was issued to 658 K-12 instructors in the North-West region of Romania. We used factorial analysis and a structural equation model to assess eight hypotheses that were provided. The study showed that self-efficacy, career progression, positive student behavior, and work environment have a significant impact on job satisfaction. The traits influence job satisfaction and well-being in the teaching field by fostering a positive work

atmosphere that enhances the effectiveness of educators and learners, leading to heightened involvement from teachers, students, and parents. An effective work environment decreases attrition, burnout, emotional exhaustion, and teacher turnover, while improving job satisfaction, well-being, and teacher retention. Empirical studies have shown diverse findings on the correlation between teaching quality and postgraduate employment results, highlighting the complex nature of this association. Smith et al. (2018) found a clear connection between students' satisfaction with the quality of teaching and their future employment rates, suggesting that excellent instruction improves the development of abilities desired by employers. Jones and Brown (2019) highlighted the importance of contextual factors, like industry demand and regional economic conditions, in impacting the relationship between teaching quality and post-graduation employment. This highlights the need for tailored assessments that are particular to educational environments, like vocational institutions in Hefei.

Bakthtiar, N., Habibi, B., & Basukiyatno, B. (2022) This study employs a qualitative descriptive research method using a case study approach, focusing on sociological and educational factors. This study used the principal, teachers, and students as sources of data. The data collection methods used were interviews, participatory observation, recordkeeping, and reference tracking. Qualitative data analysis consists of three main stages: data reduction, data display, and data verification. The research emphasizes the significance of efficient classroom management, stressing the requirement for educators to create a pleasant learning atmosphere, have experience in knowledge and abilities, use a personal approach, and show competency in managing learning activities. Classroom management is implemented by the utilization of management functions including planning, organizing, implementing, and controlling. Thirdly, efforts are being made to improve the quality of online business education through the use of quality management practices. Students must understand various class styles, work together in groups, examine society, use media and learning resources efficiently, arrange student seating, plan materials, and create a conducive learning environment to activate the class. Improving classroom management requires enhancing the quality and quantity of educational and training activities. To improve

competitiveness and involve all stakeholders, it is recommended that they actively contribute to raising the quality of education. Methodological Strategies: Prior studies on this subject have employed many methodological strategies, such as qualitative case studies and quantitative analyses of extensive datasets. Qualitative studies offer detailed insights into the experiential components of teaching quality and its impact on student outcomes, while quantitative analyses assist researchers in identifying statistically significant relationships and assessing the magnitude of effects across different groups. Advancements in data analytics and machine learning have simplified the process of integrating several data sources, enabling academics to conduct in-depth evaluations on the impact of teaching quality on graduate employment.

Kowang, T., Yew, L., Yen, H., Hee, O., Fei, G., Rasli, A., & Long, C. (2022). Higher education institutions are constantly adapting their teaching approach to enhance students' employability considering changes in the socio-economic and technological environment. Empirical studies have demonstrated that the quality of teaching has a substantial effect on the enhancement of students' employability abilities. Higher Education Institutions (HEI) face a key issue in maintaining high teaching standards to enhance student employability. This study examined the correlation between the caliber of teaching and the job prospects of Technology Management students. Three essential components for ensuring teaching quality are learner quality, learning environment quality, and content quality, as outlined in the literature. This study utilized a quantitative methodology to collect data using an online questionnaire that was filled out by 60 Technology Management students at a Business School in Malaysia. The data was analyzed using SPSS to assess normality, reliability, descriptive statistics, and conduct a Pearson correlation test. The study revealed that the quality of the learning environment, materials, and students significantly and favorably impacts employability. This study proposes that students' employability might be assessed based on teaching quality rather than academic achievements or employability traits. After reviewing the existing literature, it is evident that there are several gaps and areas for further research. Longitudinal studies are necessary to track students' academic progress and career opportunities across time to understand how the quality of education influences long-

term professional achievements. Studying the unique characteristics of vocational institutions in Hefei, such as their partnerships with industries and the current developments in the local labor market, can provide significant guidance for implementing targeted interventions and policy actions to enhance the job prospects of graduates.

The literature review highlights the significance of studying the influence of data-driven analysis of teaching quality on graduate employment in higher vocational institutions of Hefei. This research aims to contribute to the ongoing discussion about educational reform and economic development in the region by utilizing theoretical frameworks, empirical evidence, and methodological approaches from various disciplinary perspectives. The goal is to empower students with the necessary skills and knowledge to succeed in today's competitive job market.

CHAPTER 3
RESEARCH METHODOLOGY

The research objectives of the study are as follows (1) to synthesize learning process theories related to an Evaluation System for Micro Video Teaching Resources in Chinese Folk Traditional Crafts; (2) to identify and develop an Evaluation System for Micro Video Teaching Resources in Chinese Folk Traditional Crafts. This study describes the research methodology used in the Delphi technique to collect data. The research uses quantitative, qualitative, and mixed research methods. The research instruments for data collection, the data collection procedures, and the statistical methods used for data analysis are explained as follows:

3.1 Theoretical Framework

The study analyzes how teaching quality affects graduate employment at higher vocational institutions in Hefei using several theoretical frameworks to elucidate the intricate connection between educational inputs, processes, and outcomes. These theoretical approaches elucidate the impact of teaching quality on students' academic performance, skills, and job market prospects. This study is based on Human Capital Theory, Signaling Theory, and the IPO model. Human Capital Theory by Gary Becker emphasizes the significance of education and training in enhancing productivity and income. This concept posits that investing in education, namely in the quality of teaching and learning, enhances human capital and increases the value of the labor market. High-quality education in Hefei's higher vocational institutes can enhance graduates' employability and career prospects by equipping them with employer-valued skills and knowledge. Signaling Theory suggests that education conveys individuals' qualities and

attributes to future employers in addition to imparting information and abilities. Employers' employment decisions are influenced by their perceptions of the quality of education. Successful instruction in Hefei's higher vocational institutions demonstrates students' ability and preparedness for industrial positions. The caliber of teaching can impact graduates' capacity to secure employment and advance in their careers by effectively conveying their talents to potential employers. PO Model: The Input-Process-Output paradigm in educational research categorizes the educational process into inputs (such as teaching materials and student characteristics), processes (such teaching methods and instructional strategies), and outputs. This model highlights the dynamic interaction among these components and the importance of high-quality inputs and processes in generating desired outcomes. At Hefei's higher vocational colleges, the IPO model indicates that teaching inputs and processes have a direct impact on students' learning experiences and employment results. Teaching inputs include competent teachers and modern facilities, while processes involve creative pedagogical methods and industry-relevant content. The study analyzes how teaching quality in higher vocational institutions in Hefei influences graduate employment using theoretical frameworks to demonstrate the impact of teaching practices on students' educational and labor market outcomes. This study investigates the connections among teaching quality, student academic performance, and job opportunities to promote regional education policies and practices to elevate education standards and increase graduates' job chances.

3.2 Sampling Technique

The study utilized data-driven analysis to examine the influence of teaching quality on graduate employment in higher vocational colleges in Hefei. 17 professionals were selected through selective selection to work together with 100 instructors from higher vocational institutes in China. Using the Delphi Technique along with a questionnaire in vocational institutions positively affects the human capital and employment quality of graduates. The study demonstrated that the quality of education provided by vocational colleges positively influenced the human capital and employment quality of graduates. Vocational education improves employment quality by enhancing human capital, which

is crucial for raising teaching standards. 600 questionnaires were distributed, and 527 valid questionnaires were collected, yielding an effective recovery rate of 87.83%.

3.3 Instrumentation

Instrumentation in the data-driven analysis of teaching quality's impact on graduate employment in higher vocational colleges of Hefei encompasses the tools, techniques, and methods employed for gathering, examining, and understanding data concerning teaching methods, student achievements, and career paths. This stage of the research process is essential for guaranteeing the dependability, accuracy, and thoroughness of the results. Various essential devices and methods are typically used in this context:

3.3.1 Surveys and questionnaires are commonly utilized tools for collecting data from different groups such as students, teachers, employers, and alumni. These tools can be created to evaluate perceptions of teaching quality, satisfaction with educational experiences, perceived skill development, and employment results. Surveys may consist of Likert-scale questions, open-ended prompts, and demographic inquiries to gather a wide range of viewpoints and experiences.

3.3.2 Interviews and focus groups are qualitative methods that allow for a thorough investigation of participants' experiences, attitudes, and perceptions about teaching quality and its influence on graduate employment. Semi-structured interviews enable researchers to investigate certain areas of interest, whereas focus groups encourage group discussions and the production of ideas. Qualitative approaches provide detailed and subtle insights that enhance quantitative data obtained from surveys and questionnaires.

3.3.3 Document analysis is the methodical examination and understanding of pertinent documents such curricular materials, course syllabi, institutional policies, and employment reports. Researchers can analyze these records to understand the educational programs' structure and content, the alignment between curriculum and industry requirements, and trends in graduate employment results. Document analysis enhances comprehension of teaching quality and its impact on graduate employment by providing vital contextual information.

3.3.4 Observational studies entail directly observing teaching methods and student behaviors in authentic educational environments. Researchers can perform classroom observations to evaluate teaching methods, classroom interactions, and student participation. Observational data can offer insights on the execution of teaching interventions, the efficacy of pedagogical methods, and the influence on student learning results. Video recordings and field notes can be utilized to collect observational data for later study.

3.3.5 Quantitative analysis is the statistical evaluation of numerical data obtained from surveys, assessments, and administrative records. Researchers utilize descriptive statistics to summarize sample population characteristics, inferential statistics to test hypotheses and find variable correlations, and multivariate analyses to compensate for confounding factors and examine intricate interactions. Regression analysis, factor analysis, and structural equation modeling are frequently employed in quantitative analysis to assess teaching quality and the job outcomes of graduates.

3.3.6 Data integration involves combining information from several sources and presenting the results using charts, graphs, and dashboards to improve the accessibility and interpretation of study outcomes. Data integration enables researchers to cross-reference results, confirm hypotheses, and detect patterns or trends from many data sources. Visualization tools aid in conveying intricate relationships and support evidence-based decision-making for politicians, educators, and other involved parties.

By utilizing a combination of various instrumentation techniques, researchers may perform a thorough data-driven investigation of the influence of teaching quality on graduate employment in higher vocational colleges in Hefei. Researchers can use triangulation of findings from various sources and rigorous analytical methodologies to produce practical insights that guide educational practices, policy efforts, and interventions to improve teaching quality and enhance graduate outcomes in the area.

3.4 Procedure of the Data Collection

The research technique involves a questionnaire survey to gather information on respondents' opinions, attitudes, and habits. Structural equation modeling is used to validate hypotheses and theories. In contrast, the Delphi Technique is used for consensus-

building to analyze complex topics, ensuring a comprehensive understanding of the subject matter.

Round 1: Establishing the Expert Panel; Delphi's study involving diverse backgrounds in vocational education aims to enhance employment quality by examining teaching quality assessment, human capital development, and employability in various industries. Construct conceptual models and research hypotheses. Based on the literature review, this paper constructs a relationship model among the teaching quality of higher vocational colleges, graduate human capital, and employment quality and puts forward relevant research hypotheses. Identified issues of the simi structure questionnaire were basic sample statistics, descriptive statistical analysis of latent variables, and structural equation model fitness test.

Round 2: Producing the First Questionnaire; Create a List of Key Questions: Create a list of open-ended inquiries that explore the connection between the caliber of instruction provided by vocational institutions and the quality of the jobs that graduates land. Questions ought to be unprejudiced, succinct, and unambiguous. Preliminary Questions: With the help of a small group of specialists or coworkers, pretest the questions to look for any ambiguities, repetitions, or areas that may be improved. Form the First Questionnaire: Create the first-round questionnaire using the comments from the pretest, making sure it contains the improved questions. The foundation for succeeding rounds will be laid forth by this questionnaire—design and issue questionnaires. According to the conceptual model, this paper designs a questionnaire including teaching quality, human capital, employment quality, and personal characteristics. It distributes and collects it among graduates of vocational colleges in Hefei.

Round 3: Rounds of iterative questionnaires; Distribution of the Round 1 Questionnaire: Use a secure and private site to send the initial questionnaire to the expert panel. Request in-depth responses from the participants to the questions. Data Evaluation: Gather the responses, then examine the qualitative data to find patterns, themes, and areas of agreement and disagreement. Summary of Results: Explain the results of Round 1 without mentioning specific answers. Signal areas of agreement or disagreement among experts. Making of the Round 2 Questionnaire: Create a second-

round questionnaire based on the Round 1 analysis. Include further inquiries that address outstanding problems, enquire about details, or probe new themes in this round. Distribution of the questionnaire from Round 2: Send the expert panel a summary of the Round 1 results together with the second-round questionnaire. Question participants. Data processing and analysis. In this paper, the collected data were cleaned, coded, entered, etc., and the reliability and validity test, descriptive statistics analysis, correlation analysis, structural equation model analysis, etc. were carried out by using SPSS software and AMOS software to verify the research hypothesis.

Round 4: Finalizing the Consensus; Creating a third-round questionnaire that focuses on the areas where consensus still needs to be reached is the fourth round, which is when the consensus is finalized. Include inquiries intended to focus on conflicts or elicit more precise data. Distribution of the questionnaire from Round 3: Send a summary of the Round 2 results together with the third-round questionnaire to the experts. Ask for their ideas to help you clarify and assemble your thoughts. Summary and Data Analysis: Examine the Round 3 responses, paying special attention to any points of agreement that have not been resolved or enduring differences. Optional Round 4: Depending on the results of Round 3, you may have one more round to reach a decision or settle any outstanding issues.

Reporting Final Report Compilation; Write up a thorough report that summarizes each round, pointing out points of agreement and disagreement as well as any discoveries. Inferences and Suggestions: Summarize the study's findings and their implications for vocational schools, decision-makers, and other interested parties. Make suggestions based on the agreement obtained by the experts. Dissemination: To contribute to conversations on enhancing teaching quality and its effects on graduates' human capital development and employment quality in vocational colleges, share the final report with the expert panel, pertinent institutions, and the larger educational community. Through its iterative and expert-driven methodology, the Delphi Technique enables systematic study of complicated subjects, such as the impact of teaching quality on graduation results, while gradually fostering expert consensus.

3.5 Data Processing and Analysis

3.5.1 Delphi Technique

3.5.1.1 First Round: In the brainstorming session, the researcher focused on Construction of Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei, covering learning by doing and social context, and the results from this analysis were used for the framework for the semi-structured interviews. The Questionnaire was sent to a group of 17 experts to complete and return the first round of questions. After receiving the responses, the answers were categorized, synthesized, and developed into another questionnaire (Questionnaire I).

3.5.1.2 Second Round: This was the evaluation of the experts' ideas phase and consisted of evaluating the experts' responses using a Likert five-rating scale (Likert, 1932). In round two evaluations, Questionnaire I was used to managing the experts' ideas on Construction of Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei.

3.5.1.3 Third Round: In this re-evaluation stage, the selected items from the results of Questionnaire I include all principles, teaching-learning activities/strategies, teaching-learning environments, teaching-learning models from an Evaluation System an Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei were pooled together as similarities or differences. The similarities meant that most of the 17 experts agreed, while the differences meant the reverse. The synthesis results were used to develop questionnaire II (using a five-point Likert scale) which was sent to the experts for the third round.

3.5.1.4 Fourth Round: The feasible ideas had been identified, resolved, and reported by this round. The experts acknowledged all the group's opinions with the ideas or strategies and details of implementation.

3.5.2 Data Collection

The data were collected using the Delphi technique. There were four rounds for the data collection as follows:

3.5.2.1 First Round: Brainstorming; The first round involved brainstorming the experts through semi-structured questionnaires based on Construction

of Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei, focusing on the learning by doing approach and social context. The first round of data collection proceeded as follows:

1) The researcher connected with/contacted/called 17 qualified experts to request their agreement to participate in the study using the Delphi technique.

2) When all 17 qualified experts had agreed.

3) Appointments were made with all qualified experts on the preferred date and time.

4) The questionnaire was given to all experts at the appointment.

5) The researcher explained the purpose of the questionnaires.

6) The researcher separated the replies into similar and different categories to get a majority opinion.

7) The data from the interviews based on the semi-structured Questionnaire were grouped and arranged to draft Questionnaire I concerning teaching and learning design based on the Construction of a Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei. The researcher who prepared the Questionnaire followed Likert's five-rating scale. Data analysis used frequency and percentage. The part with five scales was analyzed using mean (M), standard deviation (SD) and correlation. Respondents' agreement levels were as follows: an average score of 1.00-1.49 means strongly disagree whereas an average score of 4.50-5.00 means definitely agree.

3.5.2.2 Second Round: Evaluation of the Experts' Ideas; The second round evaluated the ideas using the Likert five-rating scale in Questionnaire II.

1) The researcher connected with/contacted/called 17 qualified experts to request their agreement to participate in the study using the Delphi technique.

2) When all 17 qualified experts had agreed.

3) Appointments were made with all qualified experts on the preferred date and time.

4) Questionnaire II was given to all experts at the appointment.

5) The researcher then processed the new data from the first-round open-end questionnaire to check for a consensus. The researcher selected the items from the results of the semi-structured interview questionnaire.

6) The results of synthesis of Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei.

7) The values: median, mode, and interquartile range in each question item were measured.

8) The data regarding the similarities and the differences were based on Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei. The two theories focusing on learning by doing approach social context were synthesized. After that, the researcher created an instructional model of learning process theories for Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei.

3.5.2.3 Third Round: Re-Evaluation; In the third round, the 17 experts were required to respond 'yes' or 'no' and 'unsure' to Questionnaire III.

1) Items were selected from the results of Questionnaire II. These included all principles, teaching-learning activities/strategies, teaching-learning environments, and stages of Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei sequence which make up learning by doing and social context.

2) The findings were pooled together as similarities or differences. The similarities meant that most of the 17 experts agreed while the differences meant the reverse. The results of the synthesis were used to develop Questionnaire III.

3) Appointments were made with all qualified experts on the date and time the experts preferred.

4) Questionnaire III was given to all experts at the appointment.

5) An instructional model of learning process theories for Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei was created

3.5.2.4 Fourth Round: Solution-Report; In the fourth round, the experts resolved and made a report since the feasible ideas had been identified. Furthermore, the

experts acknowledged all the group's opinions with the ideas or strategies and details of implementation.

3.6 Statistical Analysis

An initial study was conducted with the experts and instructors. The survey was on a five-point Likert-type scale. Data collection was done by questionnaires which were analyzed to determine the results. The part with selection items was analyzed using frequency and percentage. The part with five scales was analyzed using mean (M), standard deviation (SD.) and correlation. To analyze the consensus of 17 experts, the researcher checked the data through mode, median, and interquartile ranges as follows:

1. The value of median should be at least 3.50.
2. The absolute difference between median and mode should not be above 1.00.
3. The value of interquartile range (IQ3 - IQ1) should not be above 1.5.
4. The IQR = Interquartile Range (IQR< 0.50 ≥ 1.00 = Congruent; IQR>1.00 = Incongruent). Mean and level of experts' opinions of selected psychology theories. The mean is shown in table 3.2 and was used to analyze the significant difference between respondents' opinions of selected psychology theories.

Table 3.2 Mean and level of experts' opinions of selected psychology theories

No.	M	Level of opinions
1	1.00 – 1.49	Strongly disagree
2	1.50 – 2.49	Disagree
3	2.50 – 3.49	Neutral
4	3.50 – 4.49	Moderately agree
5	4.50 – 5.00	Strongly agree

Note: M = mean.

The levels of the standard deviation, which is a measure of the dispersion of a set of data from its mean were as follows:

0.000-0.999	means	less spread apart data
More than 1.000	means	more spread apart data

The qualitative data from the interviews and observations were experts' opinions of selected psychology theories, qualification requirements, training approaches, and assessment

CHAPTER 4
RESEARCH RESULT

This chapter provides a descriptive and meaningful analysis of Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei. The categories summarize the results of the interview and survey data analysis. The following tables present a summary of the Delphi technical analysis results. The research methodology used for the Delphi technique is explained below.

4.1 Demographic data

4.2 Descriptive Statistics of Variables

4.3 Preliminary Analysis

4.4 Normality Testing

4.1 Demographic data

Demographic data is crucial for understanding the composition of students, teachers, and other key individuals when studying teaching quality impacts graduate employment in higher vocational institutions in Hefei. Demographic data comprises many factors that provide insights into the characteristics of individuals within the educational system. These variables, involving 373 students, found that career adaptability mediates between self-perceived competency and self-perceived employability. Graduating students should be equipped with career management resources to transition smoothly into the current labor market. This highlights the need for higher education institutions to integrate career management training opportunities. Analyzing the age distribution of students might provide information about the typical demographic profile of the student population. Analyzing gender composition can uncover disparities in educational experiences and outcomes. Examining the racial and cultural diversity of pupils can promote inclusivity and address equity issues in the educational setting. Examining students' socioeconomic position, such as family income and education levels, could uncover disparities in access to resources and opportunities. Pinpointing the geographical background of pupils can offer valuable information on variations in educational backgrounds and professional aspirations. Faculty Statistics: Age and Gender: The distribution of faculty members' age

and gender can provide insights about the composition of the teaching workforce, similar to students. Academic Qualifications: Providing information about faculty members' degrees and areas of expertise could assist in assessing teaching quality and knowledge. Evaluating faculty members' teaching experience can provide significant insights into their proficiency and teaching strategies. Faculty diversity, including color, ethnicity, and background, is essential for promoting diversity and inclusion in higher education. Demographics of employed graduates: Monitoring graduates' employment status, including full-time/part-time work, pursuing further education, or being unemployed, aids in comprehending their post-graduation results. Examining the industries and sectors employing graduates can help assess the effectiveness of vocational education programs and their compatibility with labor market needs. Studying where graduates are employed can offer significant insights on regional labor market trends and opportunities. Analyzing the wages and earnings of graduates can provide valuable information about their economic achievements and the value of their vocational education credentials in the labor market. Researchers can comprehensively understand the student body, faculty composition, and post-graduation outcomes in Hefei's higher vocational institutions by collecting and analyzing demographic data from various perspectives. This data can inform targeted interventions, curriculum development, and policy initiatives aimed at enhancing teaching quality and advancing employment prospects for graduates in the field. Demographic data can help identify disparities and injustices, facilitating the advancement of diversity, inclusiveness, and equal access to educational and employment prospects.

4.2 Descriptive Statistics of Variables

The interview questions are associated with the conceptual framework of Data-Driven Analysis of Teaching Quality Impact on Graduate Employment in Higher Vocational Colleges of Hefei. The research technique involves a questionnaire survey to gather information on respondents' opinions, attitudes, and habits. Structural equation modeling is used to validate hypotheses and theories. In contrast, the Delphi Technique is

used for consensus-building to analyze complex topics, ensuring a comprehensive understanding of the subject matter. the strategies and approaches that can be implemented in vocational education to enhance employment quality for students. Utilizing diverse backgrounds in vocational education can contribute to the improvement of employment quality for students. By exploring the key elements of teaching quality assessment, human capital development, and employability in various industries, this study aims to construct conceptual models and research hypotheses to better understand the relationship between these factors. Generate a list of open-ended questions that investigate the relationship between the quality of education offered by vocational institutions and the type of employment obtained by graduates. Questions should be impartial, concise, and clear. Initial Inquiries: Collaborate with a small team of experts or colleagues to pretest the questions for ambiguities, redundancies, or areas needing enhancement. Create the initial questionnaire: Develop the initial questionnaire by incorporating the enhanced items based on feedback from the pretest. This questionnaire will provide the groundwork for future rounds by designing and distributing surveys. This study creates a questionnaire based on the conceptual model, which covers teaching quality, human capital, employment quality, and personal attributes. It distributes and collects among graduates of vocational colleges in Hefei. Distribute the Round 1 Questionnaire by utilizing a secure and private platform to deliver it to the expert panel. Solicit detailed responses from the participants to the questions. Data Analysis: Collect the responses and analyze the qualitative data to identify patterns, themes, and points of consensus and divergence. Results Summary: Discuss the outcomes of Round 1 without disclosing any particular responses. Identify points of consensus or divergence among experts. Creating the Round 2 Questionnaire: Develop a follow-up questionnaire informed by the analysis of the first round. Include additional questions that focus on unresolved issues, inquire about specifics, or explore new topics in this round. Distributing the questionnaire for Round 2: Provide the expert panel with a summary of the Round 1 results together with the second-round questionnaire. Interrogate the participants. Data processing and analysis. The obtained data in the paper underwent cleaning, coding, and entry. Reliability and validity tests, descriptive statistics analysis, correlation analysis, and structural equation model analysis were conducted using SPSS

and AMOS software to confirm the research hypothesis. The fourth step involves developing a questionnaire that targets the areas where agreement is still lacking to finalize consensus. Include questions designed to address disagreements or get more specific information. Distributing the questionnaire from Round 3: Provide the Round 2 findings summary together with the third-round questionnaire to the experts. Solicit their input to assist you in elucidating and organizing your thoughts. Summary and Analysis of Data: Review the Round 3 responses, focusing on any unresolved points of agreement or persistent discrepancies. Round 4 is optional and will be determined by the outcomes of Round 3. It may be used to make a final decision or resolve any remaining matters. Compose a comprehensive report on each round, highlighting areas of consensus and disagreement, as well as any findings. Implications and Recommendations: Summarize the study's results and their significance for vocational schools, policymakers, and other stakeholders. Provide recommendations based on the consensus reached by the experts. To contribute to discussions on improving teaching quality and its impact on graduates' growth and employment in vocational colleges, share the final report with the expert panel, relevant institutions, and the broader educational community. The Delphi Technique allows for a systematic examination of complex topics, such the influence of teaching quality on graduation outcomes, by using an iterative process guided by experts to progressively reach a consensus.

4.3 Preliminary Analysis

4.3.1 Data analysis led this research to propose countermeasures and solutions for improving higher vocational college teaching quality.

Table 1. Basic Sample Statistics

Statistical content	Category	Frequency	Percentage
Gender	Male	207	39.3
Female	320	60.7	
Domicile	City	273	51.8
Rural	254	48.2	

Graduating Institution	Hefei City Management Vocational College	174	33.0
Hefei College of Finance and Economics	116	22.0	
Hefei Early Childhood Teacher Training College	70	13.3	
Hefei Industrial Vocational Technology College	50	9.5	
Hefei Electronic Engineering Vocational College	44	8.4	
Hefei Radio and Television University	30	5.7	
Hefei Institute of Mechanical and Electrical Technology	15	2.9	
Hefei Public Transport Vocational College	12	2.3	
Hefei Wenda Computer College	6	1.1	
Hefei Public Transport Vocational School	5	0.9	
Hefei Mechanical and Electrical Vocational Technical University	5	0.9	
Workplace	First-tier cities in North, Guangzhou and Shenzhen	36	6.8
Developed cities on the south-east coast	27	5.1	
Large and medium-sized cities in the central region	86	16.3	
Large and medium-sized cities in the western region	78	14.8	

Other cities in the Western Region	183	34.7	
National Urgent Talent Areas	99	18.8	
Remote rural areas where the country urgently needs talents	18	3.4	
Industry in which you work	Education	131	24.9
Manufacturing	64	12.1	
Services	55	10.4	
Information technology industry	43	8.2	
Wholesale and retail trade	32	6.1	
Other industries	202	38.3	
Nature of unit	Business units	62	11.8
State-owned enterprises	61	11.6	
Three-funded enterprises	8	1.5	
Self-employment	17	3.2	
Other	146	27.7	

Table 2. Basic Sample Statistics

		Case statistics	**Minimum statistics**	**Maximum statistics**	**Average statistics**	**Standard deviation statistics**
	A1 Construction of hardware facilities	527	1	5	4.12	.914
	A2 Course teaching plan	527	1	5	4.1	.936
	A3 Classroom teaching level	527	1	5	4.17	.898
A. Teaching quality of higher	A4 Construction of school	527	1	5	4.05	.964

vocational colleges	style on campus					
	A5 Guidance on employment planning	527	1	5	4.04	.964
	A6 Daily affairs manageme nt	527	1	5	4.15	.913
	A7 Practical skill training	527	1	5	4.05	1.02 3
B. Graduate human capital	B1 Professional skills	527	1	5	2.58 8	1.49 8
	B2 Occupational cognition	527	1	5	3.56 9	1.23 1
	B3 Vocational ability	527	1	5	3.47 8	1.36 5
	B4 Develop capacity	527	1	5	4.24 9	1.29 1
	C1 Difficulty and ease of job hunting	527	1	5	3.55 9	1.06 8
	C2 Person and position matching	527	1	5	3.64 1	.859
C. Graduate employment quality	C3 Enterprise evaluation	527	1	5	3.81 1	.867
	C4 Fringe benefits	527	1	5	3.31 3	.739
	C5 Working conditions	527	1	5	3.40 5	.628
	C6 Development prospects	527	1	5	3.48 2	.874
	C7 Employment stability	527	1	5	3.81	.765

Table 3. Basic Sample Statistics

Index	χ2	df	χ2/df	GFI	AGFI	RMSEA	NNFI	IF	CFI
Acceptable standards	N/A	N/A	≤5	≥.08	≥.08	≤.08	≥.9	≥.9	>.9
The results of this study	528.47		4.761	.876	.839	.085	.905	.924	.923

From the results in the table above, it can be seen that except for B1 professional skills, which have the lowest average value, the average values of other latent variables are greater than the median value of 3, that is, the measured teaching quality, human capital (except professional skills), and employment quality are all above the middle level. The standard deviation of the latent variables is the largest at 1.49756 and the smallest at .62780, indicating that the teaching quality, human capital, and employment quality of the schools attended by different respondents are significantly different. Draw conclusions and recommendations. According to the results of data analysis, this paper concludes and puts forward some countermeasures and suggestions for improving the teaching quality of higher vocational colleges.

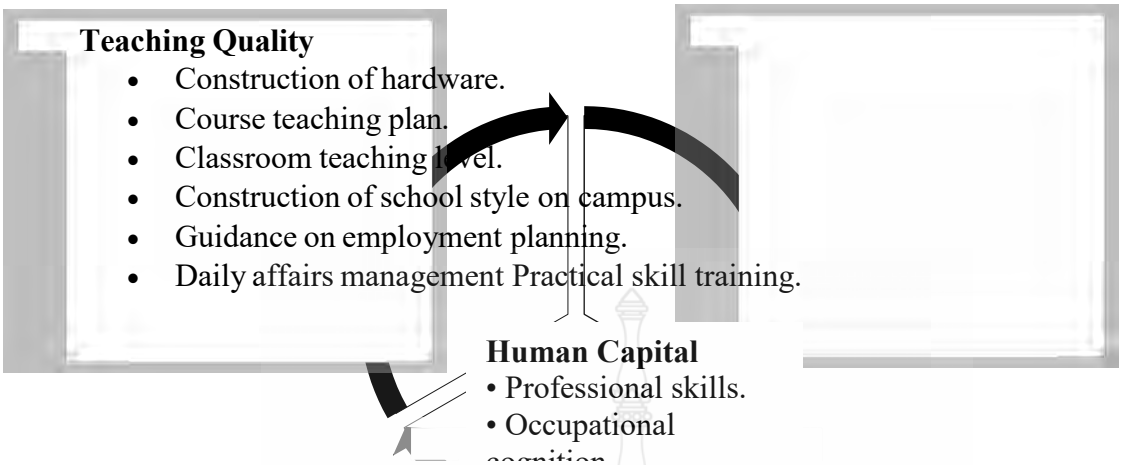

Figure 4.1 Theoretical Model

CHAPTER 5 SUMMARY AND DISCUSSION

This chapter provides the summary, discussion, conclusion, limitations, and contributions of the study, synthesizing learning process theories and creating an instructional design model for ESMVT resources in Chinese Folk Traditional Crafts.

5.1 Summary of Results

5.2 Discussion of Results

5.1 Summary of Results

This paper distributed 600 questionnaires in total and collected 527 valid questionnaires, with an effective recovery rate of 87.83%. Data processing and analysis were carried out on the valid questionnaires, with the following results:

5.1.1 Reliability and validity test. This paper uses SPSS software to conduct reliability and validity tests on the variables in the questionnaire. The results show that the Cronbach's α coefficients of all variables are greater than 0.7, the factor loadings of all indicators are greater than .5, the average variance extracted (AVE) of all variables is greater than .5, the composite reliability (CR) of all variables is greater than .7, and the square root of AVE of each variable is greater than the correlation coefficient between that variable and other variables, indicating that all variables have high internal consistency, convergent validity and discriminant validity.

5.1.2 Descriptive statistical analysis. This paper uses SPSS software to conduct a descriptive statistical analysis of the variables in the questionnaire. The results show that the respondents' overall evaluation of teaching quality, human capital, and employment quality of higher vocational colleges are above the medium level, among which employment quality evaluation is the highest and teaching quality evaluation is the lowest; the respondents are most satisfied with teacher quality in teaching quality, and least satisfied with teaching resources; the strongest in human capital is professional skills, and the weakest is innovation ability; the highest in employment quality is job matching degree, and the lowest is income level.

5.1.3 Correlation analysis. This paper uses SPSS software to conduct correlation analysis on the variables in the questionnaire. The results show that the teaching quality

of higher vocational colleges is significantly positively correlated with the human capital of graduates; the human capital of graduates is significantly positively correlated with employment quality; the teaching quality of higher vocational colleges is significantly positively correlated with employment quality.

5.1.4 Structural equation model analysis. This paper uses AMOS software to conduct a structural equation model analysis on the variables in the questionnaire. The results show that the fit indexes of the model all reach a good level, indicating that the model has a good fit effect; the path coefficients in the model all reach a significant level, indicating that the model has a strong explanatory ability. Specifically, the direct effect of teaching quality of higher vocational colleges on employment quality of graduates is .21, with a significance level of .001; the direct effect of teaching quality of higher vocational colleges on human capital of graduates is .63, with a significance level of .001; the direct effect of human capital of graduates on employment quality is .52, with a significance level of .001; the indirect effect of teaching quality of higher vocational colleges on employment quality of graduates is .33, with a significance level of .001; and the total effect of teaching quality of higher vocational colleges on employment quality of graduates is 0.54, with a significance level of 0.001. These results verify the research hypotheses proposed in this paper and indicate that human capital plays a partial mediating role between teaching quality and employment quality of higher vocational colleges.

5.2 Discussion of Results

This paper takes the higher vocational colleges in Hefei as an example, takes the graduates as the research object, analyzes from two aspects of theory and demonstration, and discusses the mechanism and path of the impact of the teaching quality of higher vocational colleges on the employment quality of graduates. The main conclusions of this paper are as follows:

5.2.1 The teaching quality of higher vocational colleges has a significant positive impact on the employment quality of graduates, indicating that higher vocational colleges have improved the core competitiveness of graduates by providing high-quality educational services, thus improving their employment in the labor market: matching and

adaptability.

5.2.2 The human capital of graduates has a very significant positive impact on the quality of employment, indicating that the intangible assets such as knowledge, skills, and abilities acquired by graduates through education in higher vocational colleges are the key to their income and employment in the labor market—the basis for development.

5.2.3 The teaching quality of higher vocational colleges has a significant positive impact on human capital, indicating that higher vocational colleges have effectively promoted the human capital of graduates through measures such as improving teaching conditions, optimizing teaching content, innovating teaching methods, and strengthening teacher construction: capital formation and promotion.

5.2.4 Human capital plays a partial intermediary role between the teaching quality of higher vocational colleges and the employment quality of graduates, indicating that the teaching quality of higher vocational colleges not only directly affects the employment quality of graduates but also indirectly affects the employment quality of graduates by increasing the investment in the human capital of graduates. Affects the quality of their employment.

5.3Limitations and Suggestions for Further Research

5.3.1 Insufficient research

This study starts from the perspective of comprehensive education quality management, focuses on students, and investigates the impact of teaching quality in vocational colleges on the employment quality of graduates. It also verifies the mediating role of human capital by using human capital theory and screening theory. The results show that teaching quality has a significant positive impact on employment quality, and human capital such as student career cognition and development ability plays a significant mediating role in it. Based on the research findings, relevant countermeasures and suggestions have been proposed to improve the employment quality of graduates, but there are still many shortcomings in the research.

One is the incomplete interpretation of the theory, and there is still a lack of literature organization. There are significant differences in research on the quality of vocational education employment both domestically and internationally due to the

differences in national education systems. However, foreign countries have rich experience in education quality management and have formed relatively scientific and reference based theoretical and practical experiences. The article lacks a systematic review of advanced foreign experiences, a comparative study of related fields of vocational education themes between China and foreign countries, and insufficient interpretation of educational inspirations for China. The second is that the construction of analytical frameworks and models still requires more in-depth deliberation. This study builds a framework for the relationship between teaching quality, employment quality, and human capital based on Total Quality Management theory, Human Capital theory, and Screening theory. However, the theoretical support and suitability analysis of this framework are not sufficient, and the framework is relatively single and simple. Especially, the explanation of the mediating role played by human capital in it needs to be further refined and refined. The third issue is that the establishment of variable evaluation indicators is not comprehensive enough, and a more comprehensive and objective perspective is needed to comprehensively examine them. The article focuses on students and draws on existing research from relevant scholars, with a focus on satisfaction as a measure of quality. Although appropriateness and feasibility are explained in the article, there is a certain degree of subjectivity in the evaluation indicators for overall vocational education quality management, which directly affects the objective evaluation of quality. The process of data analysis and empirical testing can be further enriched. The study was based on theoretical models and conducted descriptive statistics, correlation analysis, analysis of variance, and mediation effect testing on the data. Overall, the data analysis process was relatively complete. However, when analyzing the correlation between teaching quality, employment quality, and human capital, there was no more in-depth discussion of the specific impact paths. The direct effects and intermediary effects can be further decomposed to increase the comprehensiveness and reasoning of the conclusions.

5.3.2 Research Outlook

This study focuses on vocational college students and empirically discusses and analyzes the direct and indirect effects of teaching quality in vocational colleges on student employment quality. This will help future research pay attention to the important role of

vocational colleges in shaping student habits and improving employment quality. Given the shortcomings of this study, further in-depth discussions on the following aspects are needed in future research. One is to continue to review relevant literature at home and abroad, expand the breadth and depth of research, and focus on systematically sorting out the theoretical frontiers and practical experiences of foreign vocational education. Combining with China's characteristic education development system, we will compare, draw on, and integrate them. Secondly, we need to deepen the study of vocational education management theory, comprehensively grasp the development status of vocational education quality management research from different theoretical perspectives, and have a more comprehensive understanding of the construction of a modern vocational education system. We must continue to learn empirical analysis methods, solidly learn relevant knowledge about statistics and econometrics, systematically master a complete research method, expand the scope of research, construct a more scientific and comprehensive indicator system, make a more objective evaluation of the overall education quality of vocational education, and then propose targeted measures.

REFERENCES

Bakthtiar, N., Habibi, B., & Basukiyatno, B. (2022). Classroom Management for Improving The Learning Process of Online Business. Proceedings of the 1st International Conference on Law, Social Science, Economics, and Education, MALAPY 2022, 28 May 2022, Tegal, Indonesia. https://doi.org/10.4108/eai.28-5-2022.2320338.

C. Lijun and L. Weiting, "Research on the impact of family and human capital on the employment quality of poor students in higher vocational colleges from the perspective of enrollment expansion in higher vocational colleges," *Explor. High. Vocat.Educ.*, 2020.

Decius, J., Schaper, N., & Seifert, A. (2021). Work Characteristics or Workers' Characteristics? An Input-Process-Output Perspective on Informal Workplace Learning of Blue-Collar Workers. Vocations and Learning, 14, 285 - 326. https://doi.org/10.1007/s12186-021-09265-5.

D. Chen, "Constructing a Data-Driven Model of English Language Teaching With a Multidimensional Corpus," *Math. Probl.Eng.*, 2022, doi: 10.1155/2022/2715408.

E. Thanassoulis, P. K. Dey, K. Petridis, I. Goniadis, and A. C. Georgiou, "Evaluating Higher Education Teaching Performance Using Combined Analytic Hierarchy Process and Data Envelopment Analysis," *J. Oper. Res. Soc.*, 2017, doi: 10.1057/s41274-016-0165-4.

F. Chan, C.-C. Wang, S. Fitzgerald, V. Muller, N. Ditchman, and F. Menz, "Personal, environmental, and service-delivery determinants of employment quality for state vocational rehabilitation consumers: A multilevel analysis," *J. Vocat. Rehabil.*, vol. 45, no. 1, pp. 5–18, Jun. 2016, doi: 10.3233/jvr-160806.

H. Rosina, V. Virgantina, Y. Ayyash, V. Dwiyanti, and S. Boonsong, “Vocational Education Curriculum: Between Vocational Education and Industrial Needs,” ASEAN J. Sci. Eng. Educ., vol. 1, no. 2, pp. 105–110, Apr. 2021, doi:10.17509/ajsee.v1i2.33400.

H. Sha, “Construction of secondary vocational education quality evaluation system from the perspective of industry-education integration,” *Vocat. Educ. Midten-Day*, 2020.

H. Xun, “Construction of Internal Quality Assurance System in Undergraduate Level Vocational Colleges,” *Lifelong Educ.*, vol. 9, no. 7, p. 189, Dec. 2020, doi: 10.18282/le.v9i7.1511.

J. P. Shonkoff, L. Richter, J. van der Gaag, and Z. A. Bhutta, “An Integrated Scientific Framework for Child Survival and Early Childhood Development,” *Pediatrics*, 2012, doi: 10.1542/peds.2011-0366.

J. Wu, “Enlightenment of the Talent Training Mode of Japan’s Colleges and Universities to China’s five-year Higher Vocational Education,” *J. Contemp. Educ. Res.*, vol. 5, no. 3, Apr. 2021, doi: 10.26689/jcer.v5i3.1971.

J. Zhang, “The Application of Human Comprehensive Development Theory and Deep Learning in Innovation Education in Higher Education,” *Front. Psychol.*, 2020, doi: 10.3389/fpsyg.2020.01605.

Kowang, T., Yew, L., Yen, H., Hee, O., Fei, G., Rasli, A., & Long, C. (2022). Relationship between teaching quality factors and employability among Technology Management students. International Journal of Evaluation and Research in Education (IJERE). https://doi.org/10.11591/ijere.v11i3.21836.

L. N. Tabata and L. K. Johnsrud, “The Impact of Faculty Attitudes Toward Technology, Distance Education, and Innovation,” *Res. High. Educ.*, 2008, doi: 10.1007/s11162-008-9094-7.

L. Budde *et al.*, “Data Science Education in Secondary School: How to Develop Statistical Reasoning When Exploring Data Using CODAP,” 2020, doi: 10.52041/srap.20305.

L. Chunqing, “The relationship between human capital, social capital, and college students’ employment,” *Vocat. Tech. Educ.*, 2016.

L. Xia, A. Ali, H. Wang, X. Wu, and D. Qian, “A Dynamic Analysis of the Asymmetric Effects of the Vocational Education and Training on Economic Growth, Evidence From China,” *Front. Psychol.*, vol. 13, pp. 888969–888969, May 2022, doi: 10.3389/fpsyg.2022.888969.

L. Xin and L. Suxu, “Research on the heterogeneous impact of human capital and social capital on the employment of higher vocational students,” *High. Educ. Explor.*, 2019.

M. Abelha, S. Fernandes, D. Mesquita, F. Seabra, and A. T. Ferreira-Oliveira, “Graduate Employability and Competence Development in Higher Education—A Systematic Literature Review Using PRISMA,” *Sustainability*, vol. 12, no. 15, Art. no. 15, Jan. 2020, doi: 10.3390/su12155900.

M.-A. Vázquez-Manassero, M. A. Manassero Mas, and Á. V. Alonso, “History of Science Meets History of Art on Galileo’s Telescope: An Integrated Approach for Science Education,” *J. Learn. Arts Res. J. Arts Integr. Sch. Communities*, 2021, doi: 10.21977/d916141548.

M. Zuckerman, S. Lin, F. Alsalmi, and S. Li-Sauerwine, “Narrative Review of Clinical

Productivity and Teaching in Emergency Medicine," *Cureus*, 2021, doi: 10.7759/cureus.14309.

M. Goos and A. Salomons, "Measuring Teaching Quality in Higher Education: Assessing Selection Bias in Course Evaluations," *Res. High. Educ.*, 2016, doi: 10.1007/s11162-016-9429-8.

N. Denić, S. Gavrilović, and N. Kontrec, "Information and Communications Technologies in Function of Teaching Process,"*Univ. Thought - Publ. Nat. Sci.*, 2017, doi: 10.5937/univtho7-15472.

Ortan, F., Simuț, C., & Simut, R. (2021). Self-Efficacy, Job Satisfaction and Teacher Well-Being in the K-12 Educational System. International Journal of Environmental Research and Public Health, 18. https://doi.org/10.3390/ijerph182312763.

R. Gan, "The Economic Phenomenon Behind the Education in China, and the Development Prospects and Suggestions for Vocational Education in China," *J. Contemp. Educ. Res.*, vol. 5, no. 9, pp. 43–48, Sep. 2021, doi: 10.26689/jcer.v5i9.2534.

Snijders, I., Wijnia, L., Rikers, R., & Loyens, S. (2020). Building bridges in higher education: Student-faculty relationship quality, student engagement, and student loyalty. ***International Journal of Educational Research***, 100, 101538. https://doi.org/10.1016/j.ijer.2020.101538.

S. Monteiro, J. A. Ferreira, and L. S. Almeida, "Self-perceived competency and self-perceived employability in higher education: the mediating role of career adaptability," *J. Furth. High. Educ.*, vol. 44, no. 3, pp. 408–422, Dec. 2018, doi: 10.1080/0309877x.2018.1542669.

T. Sangsawang, K. Jitgarun, and P. Kiattikomo, “A synthesis of Meaningfulness of training theories as in Gagné’s Constructivism and Constructionism towards Online Training and Instructional Design,” *ICAST Asian Symp.*, 2007.

T. Sangsawang, K. Jitgarun, and P. Kaittikomol, “Comparison of Selected Psychology Theories as in Gagne’s, Constructivism, and Constructionism,” in *the 4th international conference on developing real-life learning experiences:education reform through Performance-Based Learning*, 2006, pp. 327–328. Accessed: Feb. 02, 2024. [Online]. Available:https://scholar.google.com/scholar?cluster=8109904285035153309&hl=en&oi=scholarr

T. Sangsawang, K. Jitgarun, and P. Kaittikomol, ““An Internet-based Instructional Design Framework for Vocational Education,” *Int. J. Soft Compute.*, vol. 6, no. 4, pp. 119–127, 2011.

T. Sangsawang, “Instructional Design Framework for Educational Media,” *Procedia - Soc. Behav. Sci.*, vol. 176, pp. 65–80, Feb. 2015, doi: 10.1016/j.sbspro.2015.01.445.

T. Sangsawang, K. Jitgarun, and P. Kaittikomol, “A learning strategy suitable for learners’ self-discovery,” *EDU-COM 2006 Engagement and Empowerment: New Opportunities for Growth in Higher Education, November 22-24, 2006*. NongKhai Campus of KhonKaen University NongKhai, Thailand, p. 619, 2006. Accessed: Feb. 02, 2024. [Online]. Available: https://scholar.google.com/scholar?cluster=17878675231116919 36&hl=en&oi=scholarr

T. Boxun, “Employment quality of graduates from higher vocational colleges: connotation and constituent elements,” *Vocat. Educ. Forum*, 2017.

T. Sangsawang, K. Jitgarun, and P. Kaittikomol, “Students Self Appraisal for online Training,” in *ASIA Pacific Educational Research Association International Conference*, 2006, pp. 1–5. Accessed: Feb. 02, 2024. [Online]. Available:https://scholar.google.com/scholar?cluster=6899191611992157065&hl=en&oi=scholarr

T. Sangsawang, “An Instructional Design for Online Learning in Vocational Education according to a Self-Regulated Learning Framework for Problem Solving during the CoViD-19 Crisis,” *Indones. J. Sci. Technol.*, vol. 5, no. 2, pp. 283–198, Sep. 2020, doi: 10.17509/ijost.v5i2.24702.

W. Dongxia and Z. Tongxiang, “Analysis of the evaluation system of employment quality of vocational college students in the context of entrepreneurship and innovation,” *Educ. Career*.

W. Yuhua, “Thoughts on improving the employment quality of graduates of higher vocational colleges from the perspective of satisfaction,” *J. Jiangxi Electr. Power Vocat. Tech. Coll.*, 2021.

W. Bin, “Research on the way to improve the employment quality of graduates of higher vocational colleges - taking a higher vocational college in Yiyang as an example,” *Employ. Secur.*, 2021.

W. Chunjian, S. Wensen, and X. Fan, “Research and enlightenment of teaching quality monitoring and evaluation model of foreign vocational and technical education,” *Value Eng.*, 2017.

Wu, X., Cheng, G., Deng, M., & Tang, F. (2021). From “School-enterprise Cooperation” to “ Integration of Production and Education”. https://doi.org/10.2991/assehr.k.210806.058.

X. Huang, J. Cao, G. Zhao, Z. Long, G. Han, and X. Cai, “The Employability and Career Development of Finance and Trade College Graduates,” *Front. Psychol.*, vol. 12, pp. 719336–719336, Jan. 2022, doi: 10.3389/fpsyg.2021.719336.

Yan, L. (2022). Teaching Reform of Course and Certificate Integration under the 1+x Certificate System— Taking Industrial Robots as an Example. International Journal of New Developments in Education. https://doi.org/10.25236/ijnde.2022.041210.

APPENDICES

Appendix A

-List of experts reviewing research instruments

-Invitation Letter to experts to examine research instruments

List of experts reviewing research instruments

Content Specialists

1. Asst.Prof.Dr.Tao Shuguang
   Xi'an Siyuan College
2. Asst.Prof.Dr.Wang Qi
   Hefei Preschool Teachers College
3. Asst.Prof.Dr.Xin Wang
   Beihang University

Media Specialists

1. Asst.Prof.Dr.Sun Lulu
   Xi'an Conservatory of Music
2. Dr.Pingfang Yuan
   Communication University of China
3. Asst.Prof.Dr.Wu Xiaozhou
   Anhui Art Vocational College

Assessment Specialists

1. Asst.Prof.Dr.Yanqiong Yang
   China Modern Education Research Center
2. Asst.Prof.Dr.Ye Jian
   Anhui University
3. Dr.Yongmei Jia
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27 July, 2023

Dear Asst.Prof.Yongmei Jia
China Association of Private Education

Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

I am writing to request your assistance as an honorary external research reviewer in evaluating the research instruments of Ms.Ning Wang, Doctor of Science Program in Technical Education (Vocational Education) Rajamangala University of Technology Thanyaburi, who has been working on the dissertation titled "Data-driven analysis of teaching quality impact on graduate employment in higher vocational colleges of Hefei". under the supervision of Assistant Professor Dr. Tiamyod Pasawano. In this regard, I would like to request your valuable time to evaluate the research instruments as I strongly believe that your expertise will be of great value in improving the research instruments.

If you have any questions or need further information, please feel free to contact Ms.Ning Wang, on the e-mail: ning_w@mail.rmutt.ac.th

Yours sincerely,

(Assistant Professor Arnon Niyomphol)
Dean of Faculty of Technical Education

MHESI 0962.61/2023

Office of the Dean, Faculty of Technical Education
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Klong Luang, Pathum Thani 12110 Thailand
Tel:+66-2-549-4710 Fax:+66-2-577-5049

27 July, 2023

Dear Asst.Prof.Ye Jian
Anhui University

Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

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27 July, 2023

Dear Asst.Prof.Yanqiong Yang
China Modern Education Research Center

Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

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27 July, 2023

Dear Asst.Prof.Wu Xiaozhou
Anhui Art Vocational College

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27 July, 2023

Dear Asst.Prof.Pingfang Yuan
Communication University of China

Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

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27 July, 2023

Dear Asst.Prof.Sun Lulu
Xi'an Conservatory of Music

Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

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27 July, 2023

Dear Asst.Prof.Xin Wang
Beihang University

Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

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27 July, 2023

Dear Asst.Prof.Wang Qi
Hefei Preschool Teachers College

Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

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27 July, 2023

Dear Asst.Prof.Tao Shuguang
Xi'an Siyuan College

Subject: Respectfully requesting a letter of invitation of experts for Ph.D. Dissertation

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Appendix B

Expert Evaluation Form of Questionnaire Survey on the Employment Quality of Graduates of Higher Vocational Colleges

Appendix B

Expert Evaluation Form of Questionnaire Survey on the Employment Quality of Graduates of Higher Vocational Colleges

Direction: Please evaluate the instrument by putting a check mark (√) in the box and write
suggestions that might help for the improvement of the research.
Use the following symbols in validating the contents.

+1 Means it's adequate and consistent with what is intended for the study.
0 Means not sure if it's adequate or consistent with what is intended for the study.
-1 Means inadequate and inconsistent with what is intended for the study.

Comments and Evaluation of Content experts

No.	Assessment list	Expert's Evaluation			Suggestion
		+1	0	-1	
1	Overall evaluation of questionnaire design				
2	Questionnaire content design evaluation				
3	Evaluation of questionnaire content structure				
4	Questionnaire measurement index design evaluation				
5	Whether the total number of tests per content is sufficient				
6	Whether the content is clear and understandable				
7	Whether the language expression is appropriate				
8	Whether the questions set in the questionnaire are reasonable				

Other suggestions

.....

.....

.....

.....

Thank you for cooperation

Mrs.NingWang Signature

Ed.Dstudent RMUTT (Name of Evaluator)

Content Expert

Questionnaire survey on the quality of employment of graduates from higher education institutions

Vocational education has the important mission of training technical personnel and serving the economic development of the region. The employment quality of students from higher vocational colleges is not only related to the achievement of the goal of high-quality development of vocational education in the region, but also to the high-quality development of education and the integrated economic and social development of the whole region. The purpose of this questionnaire is to understand the employment situation of graduates from higher vocational institutions and to provide suggestions for improving the system to ensure quality employment in vocational education in the future. Please answer the questionnaire according to your actual situation. The results of the survey will be used for research purposes only and your personal answers will be kept strictly confidential. Thank you for your support of this study!

Part I Basic Information

1. Your gender: [Multiple choice]

Male A

Woman B

2. You graduated from school in [fill in the blank]

3. Your current position is: [fill in the blank]

4. The nature of your current workplace is: [Single-choice]

A Business Unit

B State-owned enterprises

C Private enterprises

Triple D Enterprises

E Self-employment

F Other

5. The industry you are currently working in is: [radio question]

A Agriculture, forestry, livestock and fisheries

B Mining

C Manufacturing

D Electricity, gas and water production and supply industry

E Construction

F Transport, storage and postal services

G Information transmission, computer services and software industry

H Wholesale and retail trade

I Accommodation and catering

J Finance

K Real Estate

L Rental and business services

M Scientific research, technical services and geological prospecting

N Water, Environment and Public Facilities Management

O Residential services and other services

P Education Industry

Q Health and social work

R Culture, Sports and Entertainment

S Bulletin Management, Social Security and Social Organizations

T International

6. Your current place of work is: [radio question]

A First-tier cities in North, Guangzhou and Shenzhen

B Economically developed areas along the southeast coast

C Central Region Large and Medium-sized Cities

D Other cities in the central region

E Western Region Large and Medium-sized Cities

F Other cities in the Western Region

G Remote rural areas where the country urgently needs human resources

7. Specific duty stations are: provincial (city) city (district/district)

8. Your family lives in [radio question]

City A

B Rural

Part II Fact-finding

Created a questionnaire which consisted of rating scale with five levels according to Likert Scale. Each level has the following meanings:

5	means	Strongly agree
4	means	Agree
3	means	Neutral
2	means	Disagree
1	means	Strongly disagree

The criteria for translating values as follows:

Average	Level of opinion
4.51 – 5.00	Very good
3.51 – 4.50	Good
2.51 – 3.50	Average
1.51 – 2.50	Bad
1.00 – 1.50	Very bad

9. Please recall your time at vocational school and rate the following statements:

[Matrix Scale Questions]

	5	4	3	2	1
9-1 I believe that the school's hardware facilities (school building, teaching					

equipment, etc.) are adequate for daily instructional needs					
9-2 I believe that the school's curriculum and teaching (professional development programme, curriculum arrangement, construction of teaching materials, etc.) are reasonably set					
9-3 I believe that the specialist teachers have a high standard of teaching and that the classroom teaching is effective					
9-4 I think the campus has a strong learning environment and a good academic culture					
9-5 I think the school provides professional career planning and guidance					
9-6 I think the school is strictly managed on a daily basis and the school grounds are in order					
9-7 I believe that the school provides placement opportunities for students and places emphasis on the development of practical training skills					

10. Please make a judgement on the following facts in relation to your own situation: [Matrix Single Choice]

	Not at all	Comparisons do not match	Uncertainty	More in line with	Fully compliant
10-1 I regularly attend various professional events					

10-2 I have a professional skills certificate					
10-3 Have a good command of English					
10-4 I entered and won a skills competition					
10-5 I have a good level of computer skills					
10-6 I have received vocational knowledge coaching					
10-7 I have attended talks by professional connoisseurs					
10-8 I am interested in my current career					
10-9 I have clear job search objectives and requirements					
10-10 I understand current employment preferences and trends					
10-11 I served as a student officer					
10-12 I have participated in literary					

or academic competitions					
10-13 I have done part-time and professional internships					
10-14 I have participated in school clubs					
10-15 I have been involved in organising classroom practical activities					
10-16 I am satisfied with my attitude in dealing with the problem					
10-17 I am happy with my mental outlook					
10-18 I can rationalise my time					
10-19 I have good mental adjustment skills					
10-20 I am innovative and enterprising					

11. Do you think you were offered employment opportunities when you graduated... [Single-choice]

A is difficult

B is more difficult

C General

D Easy

E is easy

12. How well does your current job correspond to your major... [Single-choice]

A the exact opposite

B does not match

C General

D more counterpart

E Exact counterpart

13. How well does your current job match your personal interests: [Multiple choice]

A doesn't like it at all

B does not like

C General

D more like

E loved it

14. How well does your current job match your personal abilities: [Single-choice]

A totally incompetent

B Incompetent

C General

D Competent

E is very competent

15. How do you feel about your current employment situation: [Single-choice]

A is very dissatisfied

B Unsatisfactory

C General

D more satisfactory

E very satisfied

16. Your satisfaction with your current unit is... [Single-choice]

A very dissatisfied

B Unsatisfactory

C General

D more satisfactory

E very satisfied

17. Your satisfaction with the working environment of the unit [Single-choice]

A very dissatisfied

B Unsatisfactory

C General

D more satisfactory

E Very Mansi

18. Your monthly salary at the time of graduation was: [radio question]

A Under $2000

B $2,000 and above, less than $3,000

C RMB3,000 and above, less than RMB5,000

D RMB5,000 and above, less than RMB8,000

E $8,000 and above

19. Your monthly salary after 1 year of work is: [Single-choice]

A Under $2000

B $2,000 and above, less than $3,000

C RMB3,000 and above, less than RMB5,000

D RMB5,000 and above, less than RMB8,000

E $8,000 and above

20. The five insurance and one fund (pension, medical, unemployment, work injury, maternity and housing fund) provided by your employer are: [Single-choice]

A All

B 3-5 items

C 1-2 items

D None

21. Does your organization provide the following benefits to its employees (travel allowance, accommodation allowance, paid leave, telephone allowance, medical check-ups, etc.): [Single-choice]

A All

B 3-5 items

C 1-2 items

D None

22. If overtime work is scheduled, is there an overtime allowance in your organization.... [Single-choice question]

A The employer pays the appropriate overtime allowance in full compliance with national regulations

B The employer does not follow the national regulations and pays only a token amount of overtime allowance

C No overtime allowance at all

23. Your current working week is approximately: [Multiple choice]

A 35 hours

B 35 to 40 hours

C 40 to 45 hours

D 45 to 50 hours

E >50 hours

24. The security of the job you are currently doing is: [radio question]

A Very low

B Low

C General

D Higher

E Very high

25. The overtime situation at your workplace is: [Single-choice]

A Often required to work overtime

B Occasional overtime required

C General

D rarely needs to work overtime

E No overtime required

26. What is the work atmosphere like in your workplace: [radio question]

A very poor

B Poor

C General

D better

E very good

27. What is the intensity of the work you are currently doing: [ONE CHOICE]

A is high

B higher

C General

D is lower

E is very low

28. How are the interpersonal relationships in your workplace.

A very poor

B Poor

C General

D better

E very good

29. Has there been a recent promotion or incentive pay increase... [Single-choice]

A Yes

B No

30. Feeling about the current company's promotion space regarding talents: [Single-choice]

A very dissatisfied

B Unsatisfactory

C General

D more satisfactory

E very satisfied

31. Feelings about the vocational training provided by your institution: [Single-choice]

A Satisfaction

B Unsatisfactory

32. The length of the contractual agreement in the unit where you are currently employed is: [Single-choice]

A 3-5 years

B 5-10 years

C Lifetime

33. The number of changes of unit after graduation is

A 1-3

B More than 3 times

34. have the intention of studying for a higher qualification.

A Yes

B No

Biography

Name-Surname	Ms. NingWang
Date of Birth	JAN 23, 1992
Address	Building 8, Zhenhuiyuan, Baohe District, Hefei, Anhui Province, China
Education	Master's Degree, Moscow State Pedagogical University, Russia. Bachelor, National Huaqiao University
Work Experience	Since 2019, teaching in Hefei Mingchuan High School, Anhui Province
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