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Talent Cultivation Quality Evaluation Mechanism of Vocational Colleges from the Perspective of School-Enterprise Co-operation

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Abstract: *What is the whole process of career planning doing and what are the links? How to enhance the caliber of talent in educational institutions and higher technical schools in all aspects according to the traits of learners at higher education vocational schools and universities? To address these issues, this paper conducts a research and discusses how to use the several plates of career planning to promote students to focus closely on their career roles, and to clarify their learning objectives, goals and plans, in order to enhance the standard of instruction received by pupils in higher vocational institutions. The purpose of this study is to investigate ways to raise the standard of talent development in higher vocational colleges under the perspective of school-enterprise cooperation. Through the research on 50 enterprises and 13 higher vocational colleges in a certain region, the grey correlation analysis was used to calculate the grey correlation of the indicators of teacher level, curriculum, teaching resources, internship opportunities and employment rate, which showed that the employment rate (0.95) and internship opportunities (0.9) had the greatest impact on the quality of talent cultivation. The study found that improving the employment rate and increasing internship opportunities are the key to improving the quality of talent cultivation, which provides scientific basis and practical guidance for higher vocational colleges and universities to optimize the education quality assessment system and deepen the integration of industry and education.*

Keywords: *Higher Vocational Colleges and Universities, Talent Cultivation Quality, School-Enterprise Cooperation, Grey Correlation Analysis, Teaching Resources*

1. Introduction

At present, China's higher vocational colleges and universities are still in the exploratory stage of training at the undergraduate and postgraduate levels. Many universities and vocational colleges concentrate on professional education, mainly responsible for cultivating excellent technical and professional talents for enterprises, especially small and medium-sized enterprises. In terms of the academic system, the duration of specialized education is one to two years shorter than that of undergraduate education. Owing to the quality of students at the time of admission, vocational schools can only find a breakthrough in labour skills in just three years to lay a solid foundation for successful employment. Therefore, the purpose of higher vocational education is very clear, i.e., the employment direction of students should be to hold technical positions or technical management positions in the front line of production.

This paper firstly introduces the current situation of talent cultivation in higher vocational colleges and the background of the research, and then reviews the existing research results and theoretical framework in the related work section. In the method section, the construction of talent cultivation quality evaluation system and the application of grey correlation analysis method are described in detail. Next, the grey correlation of each index is analysed through the research of enterprises, schools and graduates. The experimental data and analysis results are shown in the results section. Finally, the main findings are summarized in the discussion section, the results are interpreted, the implications are discussed, limitations are presented and suggestions are given.

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2. Related Works

Researchers have long conducted specialized studies on talent management and talent cultivation. Kwon K critically reviewed the Talent Management (TM) literature, highlighting the potential drawbacks of exclusive TM approaches and workforce differentiation. Based on these themes, he proposed a conceptual model and feedback loop for improving the existing TM process [1]. Yildiz R O conceptualized the TM function by combining the management function with the HR function. The results of the study showed that talent retention strategies were the most discussed followed by talent planning and development strategies from 2006 to July 2022 [2]. Kravariti F utilized organizational support theory and tactical human resource management literature to explore talent management in government departments in Bahrain, studying the relationship between line managers and organizational support for development [3]. Aljbour A integrated 120 empirical studies to present an evidence-based, multi-level, integrative framework. The results indicate that practice is determined by the perspective of talent management and influences the outcomes of organizations, groups, and employees [4]. Latukha M explored the impact of external environmental complexity on talent migration and examined the role of enterprise-level talent management practices in mitigating talent turnover [5]. Li J explored the contribution of talent cultivation to the creation of elite universities in China from three perspectives of talent cultivation. His research uses policy discourse analysis to reveal that the purpose of talent cultivation is to cultivate students who take on the important task of revitalizing the country, as well as to help students become adults and spread advanced culture and basic values [6].

Ngozi D explored the impact of employee engagement on talent retention and found that cognitive, affective and behavioural engagement of employees had a significant impact on competence, satisfaction and turnover. The study showed that engaged employees experience more positive emotions, better health, improved personal competence and retention [7]. To address the imbalance of academic resources, Zheng Y constructed a subject-author-citation three-dimensional talent evaluation model based on indices and proposed the ZAS (Zheng's Author Citation Score) index [8]. Jooss S explored how small and medium-sized enterprises can solve the talent shortage problem in the hotel industry through cooperative competition. He proposed a framework that emphasized the role of inter organizational talent pools. It was found that traditional talent pools were often unrealistic for small and medium-sized enterprises, but through cooperative competition, these enterprises can more effectively attract, develop, and retain talent [9]. Kraft M A pointed out that in the past decade, teacher evaluation reforms had aimed to promote teacher development through high-quality feedback. The results indicated that due to the lack of time and ability of administrative managers to provide regular and excellent feedback, the evaluation system was difficult to promote professional development [10]. Ngoc N M explored solutions for improving human resources in the industrialized province of Binh Duong in Vietnam based on the practical experience of the author's team [11].

Ajayi FA's research emphasizes the importance of aligning talent management with organizational goals and global standards, professional training and seafarer welfare, as well as the necessity of digital transformation and continuous learning [12]. Al Jawali H explored talent management in the public sector of an emerging economy in Dubai, providing insights into its technical management through 34 executive human resources management interviews, site inspections, and document reviews of procedures and guidelines [13]. Han Y explored the approach of developing applied health talents through sports and proposed a pathway to enhance health talents by incorporating insights from the integration of industry and education, the function of universities to serve the society, the international model of university interactions, and the development of the local economy [14]. Manoharan K developed a mentoring model to train labourers at construction sites through a systematic approach to improve productivity. He developed a training model through expert discussions including training exercises, implementation methods, assessment guidelines, performance scoring, worker grading and training reinforcement [15]. The bottlenecks faced by existing research in talent management and training mainly lie in the disconnect between theory and practice, the lack of comprehensive frameworks, and the difficulty of cross disciplinary and cross-cultural applications. Although some studies have proposed conceptual models, feedback loops, and multi-level frameworks, there is often a lack of specific guidance in practical applications, which makes it difficult to effectively implement management practices. In addition, research is mostly focused on specific industries or regions, with weak universality, and the flexibility and adaptability of existing strategies still need to be improved when dealing with complex external environments, technological changes, and globalization challenges.

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3. Methods

3.1. The Significance of the Construction of Talent Training Quality Evaluation System

China has prioritized higher levels of vocational education more recently, and there has been an unparalleled development in higher vocational higher education. The swift advancement of China's economy and society has given rise to numerous novel challenges in the field of higher educational professional education. At the present stage, many theories of higher vocational colleges and universities need to be further explored and improved, especially the in-depth study of "industry-teaching integration", which is a major problem that higher vocational colleges and universities need to solve urgently.

First of all, this topic belongs to the category of internal management change of higher vocational schools. Through reviewing the relevant policies and literature of the whole country and provinces, we have conducted a comprehensive research and discussion on how to establish a vocational education quality assessment index system, focusing on the perspective of deepening the integration of industry and education. Secondly, designing a standardized and scientific evaluation index system for the quality of vocational education, which will support practical work with theoretical guidance, and provide a theoretical framework for vocational colleges to develop a monitoring and evaluation system for quality education and deep integration of industry, academia, and research.

3.2. Construction of Talent Cultivation Quality Evaluation System

(1) Optimising the curriculum system with output orientation

In order to fulfill both the real demands of the marketplace and the career-related requirements placed on the students, the teaching approach integrates work experiences with course instruction with the goal of serving the community. Taking into account the characteristics of China's national conditions, the core courses and professional foundation courses in the field of exhibition services are deeply explored. At the same time, according to the ability demand on the labour skills website and oriented to talent output, the purpose of talent cultivation is clarified, and the professional skills required for this professional direction and the corresponding curriculum system are clarified. College integrates knowledge, skills, qualities and abilities by combining them with the real needs, using matrix and network topology diagram, and restructuring the structure of the professional courses, reorganising the curriculum system and modularising the courses.

(2) Introducing various certificate systems to cultivate integrative talents

Introducing international certificates in the exhibition industry, such as the Registered Exhibition Manager Certificate, the Exhibition Planner Certificate from the Ministry of Human Resources and Social Security, and the Exhibition Professional Broker Certificate. Through the guidance of these certificates, the education department restructures the curriculum for both domestic and foreign students to expand their employment opportunities and comprehensively improve the quality and level of talent training. The institution integrates the curriculum certification system, combining academic qualifications with skill levels, deepening vocational skills and professional competence, and aligning certificate training with talent development.

(3) Promoting the tracking and evaluation of talent training quality

Carrying out tracking and evaluation of the quality of talent training in a number of areas, including employers, parents, teachers, graduates, students and new students. It also cooperated with Shenzhen Higher Institute of Technology to set up a comprehensive assessment and diagnostic analysis system for teaching quality. Surveys are conducted on the satisfaction of employers, parents, teachers, graduates, students, new students and other aspects. A regular and multi-dimensional campus supervision and assessment is implemented. On the basis of categorical assessment, courses such as ideology and politics, physical education and labour courses are assessed in further detail; full-time and part-time educational supervisors from all faculties and departments are organised to assess the quality of classroom teaching of all teachers; in accordance with the university's system of listening and evaluating lectures, all teachers are organised to carry out mutual evaluation among themselves, and to supervise the listening and evaluating lectures of teachers in real time.

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3.3. Gray Correlation Analysis of Professional Talent Cultivation in School-Enterprise Cooperation Mode

(1) Establishment of gray correlation

Determining the exact difference in value between the subject matter parallel and the item being compared series.

$$\Delta_i(k) = |x'_0(k) - x'_i(k)| \tag{1}$$

Where $\Delta_i(k)$ represents absolute difference, while the comparison sequence is obtained by measuring the evaluation indicators of each evaluated object, which is a measurement sequence composed of elements that affect the system's mode of action [16-17].

(2) Gray coefficient of the indicator system

The Pearson coefficient in gray data analysis measures the geometric separation between the standard and comparison series at each time point [18]. A higher similarity degree between the two indicator series on the relevant indicators is indicated by a bigger correlations parameter value. The calculation formula is as follows:

$$\gamma(x_0(k), x_i(k)) = \frac{\min_j \min_k \Delta_i(k) + \xi \max_j \max_k \Delta_i(k)}{\Delta_i(k) + \xi \max_j \max_k \Delta_i(k)}, 0 < \xi < 1 \tag{2}$$

Where ξ is a constant, usually ξ is taken as 0.5, so in this paper, ξ is equal to 0.5, and $\gamma(x_0(k), x_i(k))$ is the gray correlation coefficient.

The calculation of gray correlation generally includes the following five steps: 1) transforming the original data; 2) finding the sequence of differences; 3) finding the maximum and minimum difference between the two poles; 4) finding the correlation coefficient; and 5) finding the degree of correlation [19-20].

The correlation coefficient $\gamma_{0i}(k)$ and the formula for calculating the correlation degree between parent sequence $X_0(k)$ and subsequence $X_i(k)$ are as follows:

$$\gamma_{0i}(k) = \frac{m + \xi M}{\Delta_i(k) + \xi M} \tag{3}$$

$$\gamma_{0i} = \frac{1}{n} \sum_{k=1}^{n} \gamma_{0i}(k) \tag{4}$$

In the formula (3)~(4), the resolution coefficient is 0.5.$\xi \in (0,1)$. In this paper, the value of 0.5 is taken;$k = 1,2,\cdots,n; i = 1,2,\ldots,j$; $\Delta_i(k)$ is the sequence difference; m and M are the minimum and maximum values of sequence difference, respectively.

(3) Analysis of indicators

According to the principle of gray correlation analysis, the closer the correlation is to 1, the greater the relevance of the indicator for the evaluation of talent cultivation quality of vocational colleges and universities, i.e., the higher the importance of the indicator. Among the indicators selected in this paper, the four indicators of "employment rate of graduates", "professional matching rate", "employer satisfaction" and "comprehensive quality of students" are related to the quality evaluation of vocational colleges and universities. Among the indicators selected in this paper, "employment rate of graduates", "professional matching rate", "employers' satisfaction" and "students' comprehensive quality" are the most closely related to the evaluation of the reputation of specialized institutes and educational institutions in cultivating talent.

4. Results and Discussion

The current situation of talent training for chain operation and management majors under the mode of school-enterprise co-operation is investigated in groups of enterprises, schools and graduates. Through the research on 50 chain enterprises in a certain region, it is clear that chain enterprises need to employ people; through the research on 13 higher vocational colleges and universities in a certain region, it is understood that the current situation of talent cultivation of chain operation and management under the mode of school-enterprise cooperation; through the research on the graduates of chain operation and management from the class of 2014 to the class of 2020 of the City College of

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Vocational Studies, it is examined that the effectiveness of the cultivation of talents under the mode of school-enterprise cooperation is examined.

4.1. Enterprise Research

Through the online distribution of questionnaires, 50 chain enterprises (including Starbucks, Luxi River, Yum Group, Chow Tai Fook, Duke Milk Tea, Ikea, Walmart, Red Star Macalline, etc.) were researched in a certain area to make clear the demand for chain enterprises.This study distributed a total of 50 valid questionnaires, with an effective rate of 100%. The scale of the research enterprises covers large, medium and small enterprises, of which 26 enterprises have more than or equal to 1,000 employees, accounting for 52%; 15 enterprises have more than or equal to 300 employees and less than 1,000 employees, accounting for 30%; 9 enterprises have less than 300 employees, accounting for 18%. The enterprises involved in the research cover various modes of retail chain and service industry, including 22 enterprises of accommodation and catering industry, accounting for 44%; 20 enterprises of wholesale and retail industry, accounting for 40%; and 8 enterprises of other service industry, accounting for 16%.

4.2. Experimental Results

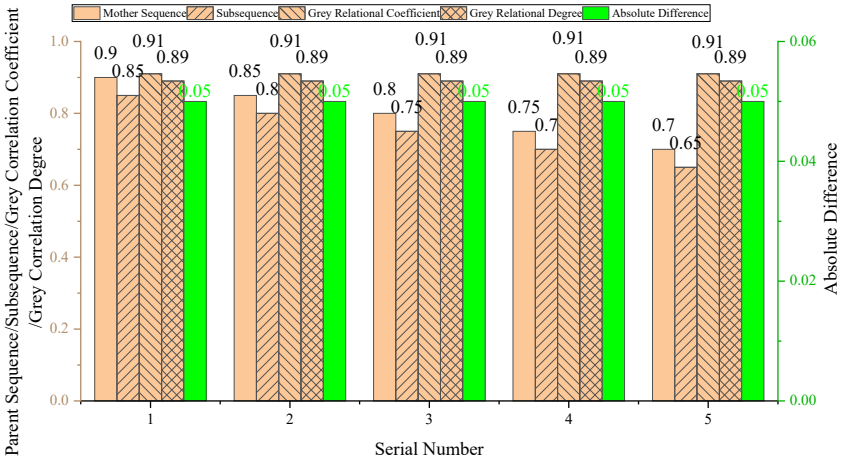

Figure 1: Impact of teacher proficiency on the quality of personnel training in vocational institutions

The grey correlation of teacher level on the standard of talent development at universities and technical colleges is 0.89, indicating that there is a high correlation between teacher level and the quality of talent cultivation. High-quality teachers can provide better educational resources and teaching methods, which can directly improve the learning effect and comprehensive quality of students, as shown in Figure 1.

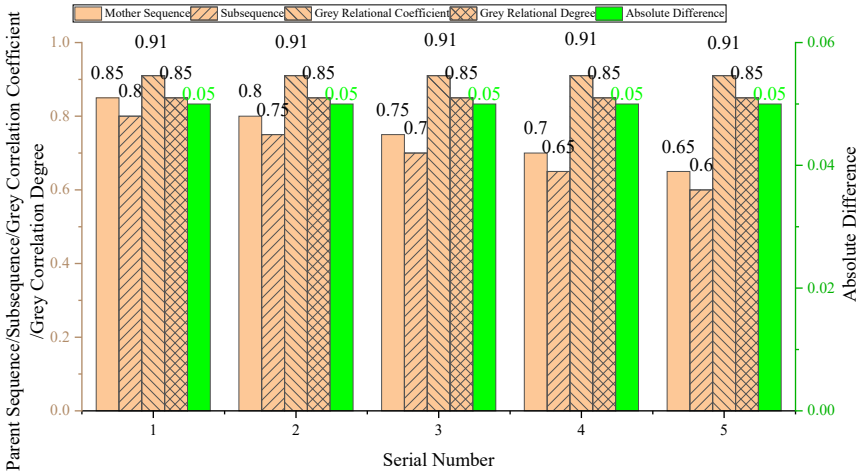

Figure 2: Impact of curriculum on the quality of personnel training in vocational colleges and universities

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The results show that the grey correlation of curriculum on the quality of talent cultivation in vocational colleges and universities is 0.85, indicating that a reasonable curriculum can better meet the learning needs of students and the actual needs of society. The reverse design of the curriculum ensures that students can closely integrate with the actual work scenarios in the learning process, which helps to improve the relevance and effectiveness of vocational education, as shown in Figure 2.

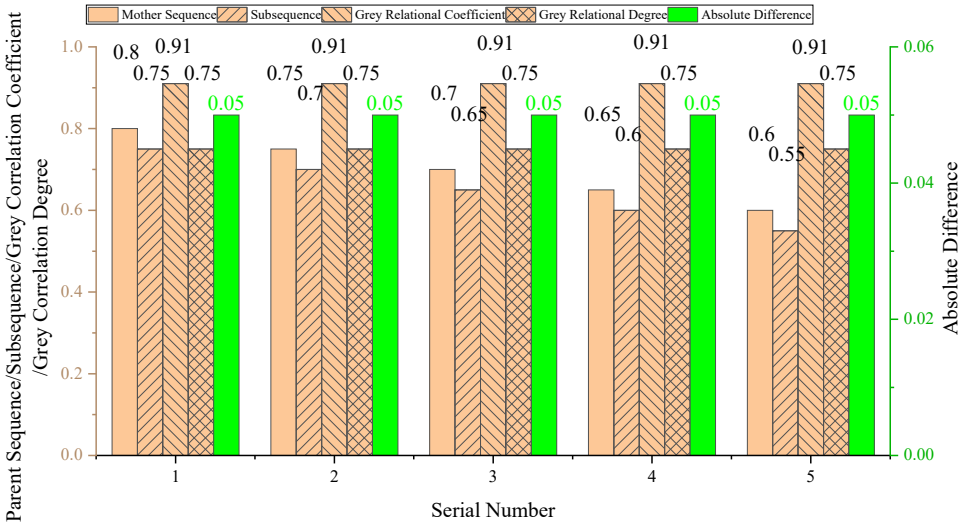

Figure 3: Impact of teaching resources on the quality of personnel training in vocational colleges and universities

The experiment shows that the grey correlation of teaching resources on the standard of talent development at universities and technical colleges is 0.75, which is relatively low, but still indicates that teaching resources affect students' learning effect to a certain extent. Adequate teaching resources can provide students with richer learning materials and practice opportunities, thus enhancing their comprehensive ability, as shown in Figure 3.

Table 1: Impact of internships on the quality of personnel training in vocational institutions

Serial Number	Mother Sequence	Subsequence	Absolute Difference	Grey Relational Coefficient	Grey Relational Degree
1	0.9	0.85	0.05	0.91	0.9
2	0.85	0.8	0.05	0.91	0.9
3	0.8	0.75	0.05	0.91	0.9
4	0.75	0.7	0.05	0.91	0.9
5	0.7	0.65	0.05	0.91	0.9

The results show that the grey correlation of internship opportunities on the standard of talent development at universities and technical colleges is 0.9, which is one of the factors with the most significant influence. Abundant internship opportunities enable students to practice their skills and adaptability in a real working environment, laying a solid foundation for future employment, as shown in Table 1.

Table 2: Impact of employment rate on the quality of training in vocational colleges and universities

Serial Number	Mother Sequence	Subsequence	Absolute Difference	Grey Relational Coefficient	Grey Relational Degree
1	0.95	0.9	0.05	0.91	0.95
2	0.9	0.85	0.05	0.91	0.95
3	0.85	0.8	0.05	0.91	0.95
4	0.8	0.75	0.05	0.91	0.95
5	0.75	0.7	0.05	0.91	0.95

The experiment shows that the grey correlation of employment rate on the quality of talent cultivation in vocational colleges is the highest, which is 0.95. High employment rate not only reflects the quality of education in vocational colleges, but also directly relates to the satisfaction of students and parents to the school. Therefore, improving the employment rate of students is an important goal to

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improve the quality of talent cultivation in vocational colleges, as shown in Table 2.

4.3. Discussion

Through grey correlation analysis, this study reveals the key factors for improving the quality of developing potential in higher vocational schools through the school-enterprise collaboration paradigm, and mainly finds that the employment rate and internship opportunities have the greatest influence on the quality of cultivation, and these factors directly affect the employment and career development of students. Compared with existing studies, this study provides more specific indicator correlations, which provides a scientific basis for the optimisation of education quality assessment system in higher vocational colleges. However, the sample size and regional limitations of this study may affect the generalisability of the findings, and the sample and regional scope should be expanded in the future. The study suggests that universities and higher technical schools ought to concentrate on improving the employment rate and increasing internship opportunities, as well as optimising the teaching staff and curriculum in an effort to raise the standard of talent development overall.

5. Conclusion

The construction of a quality evaluation system for talent cultivation in vocational colleges requires promoting improvement through evaluation, developing a talent cultivation model guided by vocational needs, focusing on practical ability cultivation, and combining industry, academia, and research, continuously strengthening the school's teaching management and practical abilities, and comprehensively improving the quality of talent cultivation. This study explores the evaluation mechanism of talent cultivation quality of vocational colleges under the perspective of school-enterprise cooperation. The results of the study highlight the key roles of employment rate, internship opportunities and students' practical ability in determining the quality of vocational education. Specifically, grey correlation analysis shows that employment rate (grey correlation of 0.95) and internship opportunities (grey correlation of 0.9) have the greatest impact on the quality of talent cultivation. In addition, teacher level and curriculum were also found to be highly influential, with grey correlations of 0.89 and 0.85, respectively. These findings suggest that in order to improve the quality of talent cultivation, educational institutions and technical colleges should prioritize increasing employment rates and providing sufficient internship opportunities. In addition, there is a need to continuously improve the quality of the teaching force and optimise the curriculum to better meet industry demands and student needs. By focusing on these key areas, vocational institutions can significantly improve their ability to produce highly skilled graduates who can better meet the needs of the labour market. In conclusion, the combination of a comprehensive evaluation index system, strong school-enterprise co-operation and targeted educational improvement measures can significantly enhance the quality of talent training in vocational institutions. This study lays the foundation for future research and practical applications aimed at further optimising vocational education quality assessment and improvement strategies.

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