

# Systematic Design of Undergraduate Vocational Education for Analysis and Testing Technology Majors

Daming Yong, Chengjia Xie, Chen Qian

Yangzhou Polytechnic Institute, Yangzhou, Jiangsu, China, 225127

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**Abstract:** The systematic design of undergraduate vocational education in the field of analysis and testing technology is beneficial for improving students' employment level, strengthening the school's ability to run schools, and responding to national education policies. However, there are currently problems in the systematic design of undergraduate vocational education for technical majors, such as the lack of rationality in curriculum design, the low quality of student recruitment, which hinder the further development of undergraduate vocational education for technical majors. Based on this, it is proposed to construct a curriculum system that combines theory and practice, implement a hierarchical approach to introducing high-quality students, and work together to create an integrated industry education training base, in order to empower vocational education at the undergraduate level of technical majors.

**Keywords:** Technical major; Systematic design; Undergraduate level; Vocational education

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In January 2021, the General Office of the Ministry of Education issued the "Management Measures for the Establishment of Undergraduate Vocational Education Majors (Trial)", which clearly stated that "the establishment of undergraduate vocational education majors should reflect the characteristics of vocational education types, adhere to the positioning of high-level technical and skilled talent cultivation, and carry out systematic design". The technical major plays an important role in undergraduate vocational education and is the key to building a skilled society in China. Therefore, analyzing the necessity, existing problems, and improvement strategies of the systematic design of undergraduate vocational education in the field of testing technology is of great practical significance.

## 1. The Necessity of Systematic Design for Undergraduate Vocational Education in the Analysis and Testing Technology Major

### 1.1 Important measures to improve the employment level of students

The systematic design of undergraduate vocational education in the field of analysis and testing technology is conducive to achieving a dual track parallel between general education and vocational education, enhancing students' professional relevance, and ultimately improving their employment level, mainly manifested in the following aspects. On the one hand, strengthen the adaptability of emerging fields. The systematic design of undergraduate vocational education in the field of analysis and testing technology in higher vocational colleges is conducive to grasping the talent needs of modern service, manufacturing, and strategic emerging industries, adjusting the direction of graduate training, further improving the adaptability of talent capital and social job demands, and effectively improving students' employment level. On the other hand, the systematic design of undergraduate vocational education in the field

of analysis and testing technology in higher vocational colleges can help position talent cultivation towards high-quality workers and highly skilled talents, meet China's transformation from a manufacturing powerhouse to a manufacturing powerhouse, and solve the structural contradiction between talent supply and demand, thereby increasing student employment.

## **1.2 The only way to strengthen the ability of school's educational capacity**

The systematic design of undergraduate level vocational education in the field of analysis and testing technology is beneficial for strengthening the school's educational ability, which is manifested in the following two aspects. Firstly, the systematic design of undergraduate vocational education in the field of analysis and testing technology in higher vocational colleges is based on the common progress of high-end industries and low-end manufacturing industries, and can incorporate new technologies, methods, standards and processes into the curriculum system. This is conducive to increasing economic development oriented new courses, expanding the scope of teaching resource sharing, further improving students' knowledge absorption and teachers' research capabilities, and effectively strengthening the school's educational ability. Secondly, in the systematic design process of undergraduate vocational education in the field of analysis and testing technology, higher vocational colleges apply digital technology to adapt to the new development trend of smart education. This can improve the fun of teaching activities, create immersive classrooms, further enhance students' digital application abilities, and thus strengthen the school's educational ability.

## **1.3 Key links in responding to national education policies**

In December 2022, the General Office of the Communist Party of China and the State Council issued the "Opinions on Deepening the Reform of Modern Vocational Education System Construction", which clearly pointed out that "facing new formats, new professions, and new positions, extensively carry out technical skill training to serve the lifelong learning of the whole people and the construction of a skilled society", further pointing out the direction for the reform of modern vocational education system construction. The systematic design of undergraduate level vocational education in the field of analysis and testing technology in higher vocational colleges can respond to China's requirements for the construction of a modern vocational education system. Specifically, the systematic design of undergraduate level vocational education in the field of analysis and testing technology in higher vocational colleges, with innovative thinking and practical actions, can contribute to the upgrading of the industrial structure of the service industry and the happiness index of people's livelihoods by implementing the policy direction of modern vocational education system construction.

# **2. Existing problems in the systematic design of undergraduate vocational education for technical majors**

## **2.1 Lack of rationality in curriculum design**

Firstly, the systematic design of undergraduate vocational education for technical majors in higher vocational colleges fails to fully consider teaching conditions, student quality, and enterprise needs. There are more public theoretical courses and fewer professional theoretical courses, resulting in limited space for technological application and difficulty in improving students' innovation ability. Secondly, in the systematic design process of undergraduate vocational education for technical majors, the practical training content carried out by higher vocational colleges is detached from real life needs, making it difficult to effectively enhance students' practical abilities and learning interests, and affecting the overall strength of the discipline. Thirdly, in the systematic design process of undergraduate vocational education for technical majors, it is difficult for higher vocational colleges to balance the status of theoretical and practical courses, which hinders the cultivation of composite high-quality talents.

## **2.2 There is a phenomenon of low quality in the introduction of students**

Firstly, the introduction of students is showing a downward trend. In the systematic design of vocational education at the undergraduate level of technical majors, due to the inclination of educational resources and uneven regional development, some higher vocational colleges find it difficult to introduce high-quality talent resources, resulting in a lack of corresponding talent cultivation quantity in the field of technical majors, which restricts the top-level design of education. Secondly, the mechanism for introducing students is not sound. When carrying out systematic design of undergraduate vocational education for technical majors in higher vocational colleges, there is a lack of appropriate and scientific mechanisms and tools, which leads to the inability to attract high-quality students and suppress the development of the internet and financial industries in the region. Thirdly, the admission score line has been decreasing year by year. When carrying out systematic design of undergraduate vocational education for technical majors in higher vocational colleges, there is a phenomenon of decreasing undergraduate admission scores year by year, which squeezes the technical majors in higher vocational education and leads to the introduction of low-quality students.

### **3. Improvement Strategies for Systematic Design of Undergraduate Vocational Education in Technical Majors**

#### **3.1 Construct a curriculum system that combines theory and practice**

Firstly, vocational colleges should innovate the positioning of professional courses, develop practical theoretical courses, avoid piecemeal tasks due to insufficient advanced practical theories, promote students to carry out subsequent practical training, and effectively improve the systematic design and practical level of undergraduate vocational education in technical majors. Secondly, vocational colleges should create public basic courses that combine theory and practice, improve students' adaptability to the core practical course modules of their majors, work together with students to build a course system that combines theory and practice, and strengthen the practicality of systematic design of vocational education at the undergraduate level of technical majors.

#### **3.2 Implement a hierarchical approach to introducing high-quality students**

On the one hand, vocational colleges should formulate appropriate admission score lines to avoid significant changes in undergraduate score lines that may affect the quality of their student sources, and strive to recruit students with stable knowledge structures and solid theoretical foundations. On the other hand, vocational colleges should conduct student selection within the school, select high-quality students with strong skills, learning willingness, and theoretical knowledge, and carry out undergraduate level training to improve the overall teaching level of the school.

#### **3.3 Jointly building an industry education integration training base**

The systematic design of vocational education at the undergraduate level for improving technical majors in vocational colleges should fully investigate and analyze the development needs of regional industries, conduct talent demand analysis and prediction, and combine with the actual educational conditions of higher education institutions to jointly build a practical training base for industry education integration. On the one hand, vocational education should fully position itself in the direction of talent cultivation, and use industrial education integration training bases to cultivate craftsmen and technicians from major countries, further achieving the leap of educational class. On the other hand, vocational colleges should improve the systematic design of undergraduate vocational education for technical majors by focusing on the development of practical training courses for local industries, cultivating practical talents under the principle of "five in one" of teaching, internship, practical training, entrepreneurship, and employment, improving the employment quality of college students, and assisting the development of industries in the region.

### **References:**

- [1]Xie Q.Y, Wang X.Y. (2023). Exploration and Practice of Classroom Revolution in Information Security Technology Major in Vocational Colleges, *Journal of Shandong Electric Power College*, (04): 69-72+80.
- [2]Yang D. ( 2023). On the Construction of High Level Professional Group Resources in the Background of Skilled Society: Taking the Professional Group of "Intelligent Manufacturing Technology and Application of Ice and Snow Equipment" as an Example, *Journal of Mudanjiang University*, (08): 90-95.
- [3]Han P.F. (2023). Innovative Research on the Talent Training Mode of Intelligent Connected Vehicle Technology in Vocational Colleges, *Automotive Maintenance and Repair*, (16): 39-42.