

Exploration and Practice of Disruptive Teaching Reform Path in Vocational Colleges with Enhancing Vocational Adaptability as the Core——Taking Guangdong Lingnan Institute of Technology as an Example

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Abstract: This study focuses on the path and practice of disruptive teaching reform with the core of Vocational College Students' professional adaptability training. Through literature analysis, case study and empirical research, this paper systematically discusses the structural contradictions existing in the current vocational education in the cultivation of vocational adaptability. At the same time, based on the reform practice of Guangdong Lingnan Institute of Technology, a four in one reform framework of "curriculum reconstruction - mode innovation - school enterprise collaboration - Evaluation innovation" is constructed. The study found that the subversive teaching reform needs to break the shackles of the traditional discipline system, take the development of professional ability as the logical main line, and realize the systematic improvement of students' professional adaptability through the deep integration of production and education, the complete transformation of teaching paradigm and the construction of multiple evaluation system. This study provides a theoretical reference and practical paradigm for the teaching reform of Higher Vocational Colleges in the new era.

Keywords: Occupational Adaptability; Higher Vocational Colleges; Subversive Teaching Reform; Integration of Production and Education; Guangdong Lingnan Institute of Technology

1. Introduction

1.1. Research background and significance

Under the background of industrial transformation accelerated by digital and intelligent transformation, the connotation and extension of professional posts are undergoing profound changes. The national vocational education reform implementation plan clearly points out that vocational education needs to "focus on cultivating high-quality workers and technical skilled talents", and vocational adaptability, as the core quality of technical skilled talents to cope with professional changes, has become the key dimension of the quality evaluation of higher vocational education. However, the current teaching system of higher vocational colleges still has some problems, such as "more discipline oriented, less post oriented", "more knowledge transfer, less ability training", "strong teaching in school, weak enterprise practice", which is difficult to meet the industry's demand for compound and innovative talents.

Guangdong Lingnan Institute of Technology, as a model vocational college in Guangdong Province, based on the industrial development needs of Guangdong-Hong Kong-Macao Greater Bay Area, has actively explored the path of vocational adaptability training in the teaching reform in recent years. Taking the school as a case study of disruptive teaching reform, not only helps to enrich the theory of higher vocational education reform, but also provides replicable practical experience for similar colleges, which has important theoretical value and practical significance.

1.2. Research Status at Home and Abroad

1.2.1. Research progress of occupational adaptability

Foreign scholars such as super (1957) first incorporated career adaptability into the theory of career development, believing that it is a collection of abilities for individuals to adjust and develop in the professional environment; Fugate et al. (2004) put forward the "three-dimensional model of occupational adaptability", emphasizing the synergy of psychological capital, human capital and social capital^[1]. In domestic research, longlirong (2002) defined career adaptability as "the ability of individuals to integrate resources and adjust themselves to achieve career development in the face of changes in the professional environment"^[2]. In recent years, research has gradually focused on higher vocational students. For example, wangxueqin (2020) pointed out that higher vocational students' career adaptability is significantly affected by professional identity, practical ability and professional values^[3-4].

1.2.2. Research status of Higher Vocational Teaching Reform

The reform of foreign vocational education, represented by the "dual system" in Germany and the "ability based education" in American community colleges, emphasizes the deep participation of enterprises and the cultivation of practical ability. In domestic research, jiangdayuan (2014) proposed the curriculum development theory of "systematization of working process", which provided methodological guidance for teaching reform; Xuguqing (2016) pointed out that higher vocational education needs to shift from "knowledge transfer" to "professional ability construction", but at the level of teaching implementation, the path of disruptive reform is still lack of systematic exploration.

1.2.3. Research Review

Although existing studies focus on the relationship between vocational adaptability and teaching reform, they lack the construction of a subversive reform framework with vocational adaptability as the core, especially at the practical level, and lack of systematic reform case studies for specific colleges and universities.

1.3. Research Contents and Methods

1.3.1. Research Content

This study takes "theoretical analysis - current situation diagnosis - path construction - practical verification" as the logical main line, and focuses on:

The connotation of vocational adaptability and the training logic of higher vocational education.

The contradiction between the teaching system of Higher Vocational Colleges and the cultivation of vocational adaptability.

Path model and implementation strategy of disruptive teaching reform.

The reform practice and results of Guangdong Lingnan Institute of Technology.

1.3.2. Research Methods

Literature research method: sort out the domestic and foreign literature on vocational adaptability and higher vocational education reform;

Case study method: deeply analyze the reform measures of Guangdong Lingnan Institute of Technology;

Interview research method: semi structured interviews with teachers, students and business partners of the school;

Action research method: participate in the reform practice of some specialties and obtain first-hand information.

2. Core Concepts and Theoretical Basis

2.1. Connotation and Composition of Occupational Adaptability

Career adaptability is the comprehensive ability of individuals to integrate knowledge, skills and

attitudes in the face of environmental changes in their career development, so as to realize the transformation of professional roles and sustainable development. Combined with the characteristics of higher vocational education, its constituent elements include:

Professional core competence: technical skills and knowledge application ability required by the post;

General professional ability: transferable abilities such as communication and cooperation, problem solving, and innovative thinking.

Professional psychological resilience: stress resistance, professional identity and lifelong learning awareness.

Social network ability: industry resource integration, occupation information acquisition and interpersonal relationship construction ability.

2.2. Definition of Disruptive Teaching Reform

The theory of "disruptive innovation" was put forward by Christensen (1997), which refers to breaking the existing market pattern through technology or mode innovation. In this study, subversive teaching reform refers to breaking through the discipline logic and classroom centered mode of traditional higher vocational education, taking the development of professional ability as the guidance, reconstructing the teaching objectives, contents, methods and evaluation system, and forming a new teaching mode of "deep integration of production and education, learning and doing". Its core features include:

Goal Subversion: from "knowledge transfer" to "professional ability construction";

Content Subversion: from "discipline system" to "working process system";

Method Subversion: from "Teacher Center" to "student center";

Evaluation Subversion: from "knowledge assessment" to "ability assessment".

2.3. Theoretical Basis

The constructivist learning theory proposed by Piaget (1970) emphasizes that learning is a process in which learners actively construct meaning in situations, providing theoretical support for "learning by doing" and "project-based learning".

Lifelong learning theory the concept of lifelong learning proposed by UNESCO (1972) emphasizes that education needs to cultivate the ability of individual continuous learning, which is highly consistent with the "lifelong learning consciousness" in vocational adaptability.

The theory of integration of production and education the German "dual system" education mode proves that vocational education needs to achieve the unity of knowledge learning and vocational practice through the cooperation between enterprises and schools.

3. Current Situation and Problem Analysis of Vocational Adaptability Training in Higher Vocational Colleges

3.1. Survey design and Implementation

In order to grasp the current situation of higher vocational education, this study conducted a survey on Guangdong Lingnan Institute of Technology and five similar colleges inside and outside the province. 800 student questionnaires were distributed (756 valid questionnaires were recovered), 50 teachers and 30 enterprise representatives were interviewed. The content of the survey covers the curriculum, teaching methods, practice links, evaluation methods and other dimensions.

3.2. Status Analysis

3.2.1. Curriculum System: Dominated by Discipline Logic and Insufficient Docking of Career Needs

The survey shows that 72% of professional courses are still set according to the traditional system of "public courses - professional basic courses - Professional Courses", and only 31% of courses

contain real work task modules. For example, in a mechanical and electrical professional course, "mechanical principle" and other theoretical courses accounted for 60%, while "intelligent equipment fault diagnosis" and other practical courses accounted for only 25%, which was out of line with the job requirements of intelligent manufacturing enterprises in Dawan district.

3.2.2. Teaching mode: lecture based, single ability training path

In classroom teaching, 85% of teachers still use the mode of "theory teaching+example demonstration", and only 18% of courses regularly carry out project-based teaching. A student majoring in e-commerce said: "sophomores only came into contact with simulated store operations. They didn't see the real e-commerce operation process until internship. There was a big gap between early learning and post practice."

3.2.3. School Enterprise Cooperation: The Form is Greater than the Essence, and the Depth of Collaborative Education Is Insufficient

Although 95% of colleges and universities have signed cooperation agreements with enterprises, 70% of the cooperation remains at the level of "listing practice bases", and less than 30% of enterprises participate in curriculum development and teaching implementation. HR, a cooperative enterprise, pointed out: "the school hopes that we can provide internship positions, but does not want enterprises to participate in the curriculum design. Students still need a lot of pre job training after they arrive."

3.2.4. Evaluation System: Knowledge Assessment is the Most Important, and the Ability Evaluation Dimension is Single

In the students' academic evaluation, the written examination scores accounted for more than 70%, while the process evaluation such as practical operation and project results accounted for only 30%. A nursing teacher said: "students who can score 90 in the final exam will still be at a loss in the face of emergencies during internship in the hospital, indicating that the existing evaluation fails to reflect the real professional ability."

3.3. Cause Analysis

Educational philosophy lags behind: some colleges and universities are still dominated by the thinking of "academic education", ignoring the type characteristics of vocational education.

Obvious institutional constraints: lack of long-term mechanism for school enterprise cooperation and insufficient motivation for enterprises to participate in teaching.

The structure of teachers is unbalanced: the proportion of "double qualified" teachers is insufficient, and some teachers lack practical experience in enterprises.

Limited resource investment: the update of training equipment lags behind the industrial development, and the construction of teaching resources such as virtual simulation is insufficient.

4. Construction of Subversive Teaching Reform Path with the Core of Improving Professional Adaptability

4.1. Reform Objectives and Principles

4.1.1. Target Positioning

Build a teaching system with "professional ability development as the core, production and education in-depth integration as the path, and students' lifelong development as the guidance", so that students can have a progressive career adaptability of "post competency - career migration - development and innovation".

4.1.2. Basic Principles

Demand orientation: meet the industrial upgrading needs of Guangdong-Hong Kong-Macao Greater Bay Area.

Competency based: reconstruct teaching content based on professional competency standards;

Collaborative Innovation: promote multiple synergy among schools, enterprises and industry associations.

Dynamic optimization: establish a teaching adjustment mechanism synchronized with industrial reform.

4.2. Curriculum System Reconstruction: from "Discipline Logic" to "Professional Ability Logic"

4.2.1. Curriculum Cluster Construction Based on Post Group

Taking the medical and Health College of Guangdong Lingnan Institute of Technology as an example, by analyzing the job demand of the biomedical industry in Dawan District, the traditional pharmaceutical professional courses were reconstructed into three course clusters of "drug research and development - production quality control - marketing services", and each cluster contained "basic ability module - core ability module - expansion ability module". For example, the "production quality control cluster" has set up courses such as pharmaceutical preparation technology, GMP practice and quality detection technology, which are integrated into the real production standards of Guangzhou Pharmaceutical Group and other enterprises^[3-4].

4.2.2. Interdisciplinary Integrated Curriculum Development

For complex posts such as intelligent manufacturing and cross-border e-commerce, interdisciplinary courses such as industrial robots and intelligent control and cross-border e-commerce operation and data analysis were offered to break professional barriers. For example, the school's intelligent manufacturing specialty and information technology specialty jointly developed the course of "digital operation and maintenance of intelligent production line", integrated the knowledge of machinery, electricity, software programming and other disciplines, and trained students' ability to respond to the needs of complex positions.

4.2.3. Dynamic Updating Course Content Mechanism

A professional construction committee composed of enterprise technical backbones and industry experts is established to carry out an annual survey of post capacity needs and timely integrate new technologies and processes into the curriculum. For example, in 2023, according to the operation and maintenance requirements of 5g base stations in Dawan District, the electronic information specialty of the university added the 5g network optimization module in the course, and invited Huawei and other technical engineers to participate in the teaching.

4.3. Teaching Mode Innovation: from "Classroom Teaching" to "Situational Construction"

4.3.1. Implement the "Three-Level Project System" for the Global Application of Project-Based Learning (PBL)

Basic projects: small tasks based on course units, such as designing the homepage of the official website of enterprises in the course of web design.

Comprehensive projects: comprehensive tasks across courses, such as the completion of "whole network marketing planning of an agricultural product brand" by e-commerce major.

Real projects of enterprises: practical projects that meet the needs of enterprises. For example, the art and design major of the University cooperated with Guangzhou light industry group to complete the "development of Guangzhou style non heritage cultural and creative products".

4.3.2. Practice Teaching System of Combination of Virtual and Real

Build a three-level practice platform of "virtual simulation training center - school productive training base - real positions in enterprises". For example, the nursing major of the school relies on the national virtual simulation center to simulate the scene of ICU intensive care, combined with the clinical practice in the affiliated hospital to achieve the ability of "virtual training clinical observation independent operation".

4.3.3. Online and Offline Hybrid Teaching Reform

Using superstar learning link, smart vocational education and other platforms, build a hybrid learning closed loop of "pre class Preview - in class interaction - after class development". For example, in the python programming course, the teacher releases the real data processing tasks of enterprises through the platform, the students complete the algorithm design in class, and guide the optimization scheme online through the enterprise tutor after class^[5-6].

4.4 Deepening School Enterprise Collaboration: from "Shallow Cooperation" to "Community of Common Destiny"

4.4.1. Deep Implementation of Modern Apprenticeship

Jointly build "modern apprenticeship class" with Huawei, TCL and other enterprises, and adopt the training mode of "double subjects, double mentors and double places". Taking the school's communication technology major as an example, the apprentice participated in the 5g base station construction project under the guidance of the enterprise tutor, and the school's teachers carried out the teaching of "Communication Principles" and other courses at the same time, realizing "work is learning".

4.4.2. Innovation of Construction Mode of Enterprise College

The "Lingnan College of traditional Chinese medicine" is jointly built with many traditional Chinese medicine decoction pieces factories in Guangdong Province. The enterprise provides production workshops as teaching places. The school teachers and enterprise technicians jointly develop courses such as traditional Chinese medicine processing technology. Students need to complete three production cycles of job rotation practice during the study period, and directly enter key positions in the enterprise after graduation.

4.4.3. Ecological Operation of Industrial College

Relying on the industrial advantages of Guangdong-Hong Kong-Macao Great Bay Area, it has cooperated with industry associations and leading enterprises to build "intelligent manufacturing industry college" and "cross-border e-commerce industry college" to form an ecological chain of "talent training - technology research and development - achievement transformation". For example, the Institute of intelligent manufacturing industry undertakes more than 10 enterprise technological transformation projects every year, and the proportion of students participating in project R&D reaches 80%, which not only improves the practical ability, but also creates value for enterprises^[7-9].

4.5. Innovation of Evaluation System: from "Single Assessment" to "Multi Competency Certification"

4.5.1. Three Dimensional Capability Evaluation Model

Build a three-dimensional evaluation system of "knowledge skills literacy", including:

Knowledge dimension: The researchers assess the application ability through situational testing, such as giving the plant equipment failure scenario and assessing the students' principle analysis ability.

Skill dimension: The researchers adopt the method of "project works+enterprise certification". For example, students majoring in e-commerce need to complete the operation of real stores and achieve certain sales. Literacy dimension: assess professional literacy and collaboration ability through enterprise mentor evaluation, team mutual evaluation and other methods^[9].

4.5.2. Systematic Design of Process Evaluation

The researchers develop "professional ability growth files" to record students' performance in course learning, project practice, enterprise practice and other links. For example, the files of a logistics management major student contain multi-dimensional evidence such as "warehousing operation optimization scheme design", "supply chain simulation software operation" and "deppon logistics internship evaluation", which comprehensively reflect the ability development trajectory^[10].

4.5.3. Integration of Industry Standards into the Evaluation System

The researchers introduce evaluation standards such as professional qualification certificate and industry skill level certification. For example, the computer application major of the vocational colleges of the pilot project integrates the assessment content of "1+x" Certificate (WEB front-end development) into the course evaluation, and students need to pass the course assessment and certificate certification at the same time to obtain credits.

5. Reform Practice and Effectiveness of Guangdong Lingnan Institute of Technology

5.1. College Reform Background and Overall Design

Guangdong Lingnan Institute of Technology was founded in 2001. It has more than 20000 full-time students and has 12 secondary colleges, which are connected with high-end equipment manufacturing, medicine and health, modern services and other industries in Guangdong-Hong Kong-Macao Greater Bay Area. Since 2019, the school has started the subversive teaching reform with the goal of "improving occupational adaptability", formulated the "three education reform" action plan (2019-2023), defined the implementation path of "curriculum reconstruction - mode innovation - school enterprise collaboration - evaluation innovation", and piloted it in medical health, intelligent manufacturing and other professional groups.

5.2. Typical Professional Reform Cases: Taking the College of Pharmacy as an Example

5.2.1. Curriculum System Reconstruction Practice

The college reconstructs the traditional pharmacy professional courses into four ability modules of "drug research and development - production - quality inspection - Marketing" by investigating the job requirements of the biomedicine industry in Dawan District, adds cutting-edge courses such as biopharmaceutical technology and drug clinical trial management, and jointly develops school enterprise cooperation courses such as pharmaceutical equipment maintenance and verification with Guangzhou Pharmaceutical Group and Xiangxue pharmaceutical, with enterprise cases accounting for 60%.

5.2.2. Teaching Mode Innovation Measures

Implement the teaching mode of "college enterprise dual, three-level progressive":

The first stage (freshman): carry out drug preparation simulation experiments in the virtual simulation center;

The second stage (sophomore): complete the real drug production in the GMP Training Workshop on campus;

The third stage (Junior): participate in the actual project in the R&D or production position of the enterprise.

For example, in 2022, students participated in Xiangxue pharmaceutical "antiviral oral liquid process optimization" project, three improvement suggestions were adopted by enterprises, and one invention patent was applied.

5.2.3. School Enterprise Collaborative Education Mechanism

It has jointly built the "Lingnan Institute of modern industry of traditional Chinese medicine" with some traditional Chinese medicine decoction factories in Guangdong. The school has invested 15million yuan to build a pharmaceutical manufacturing simulation GMP productive training base in the school. Enterprise technicians and school teachers teach together. Students need to complete the whole process of "traditional Chinese medicine identification - processing - Preparation". In the past three years, the students of this major have won two first prizes in the traditional Chinese medicine skills competition in the national vocational college skills competition, and the employment rate of graduates in well-known pharmaceutical enterprises in Dawan district has reached 92%.

5.3. Analysis of Reform Effectiveness

5.3.1. Students' Occupational Adaptability Has Been Significantly Improved

Compare the data before and after the reform (2019-2023):

Graduates' satisfaction with enterprises increased from 78% to 94%, among which the scores of "post adaptation speed" and "problem solving ability" increased the most;

The number of students who won awards in vocational skills competitions at or above the provincial level increased by 35% annually, and 12 national awards were won in 2023;

The turnover rate of graduates dropped from 25% to 12% within half a year, and the career stability

was significantly enhanced.

5.3.2. Improvement of Teaching Quality and Social Influence

The school was selected as the construction unit of Guangdong provincial model higher vocational colleges; Two national training bases, three provincial production and education integration bases, and more than 500 school enterprise cooperation enterprises have been built; The reform experience was reported by China Education News, vocational and technical education and other media, and received more than 100 batches of investigation and study from colleges and universities inside and outside the province.

5.3.3. Typical Achievement Cases

The "intelligent control system for small household appliances" developed by students majoring in intelligent manufacturing won the gold medal in the Guangdong "Challenge Cup" vocational college innovation and efficiency competition, and realized technology transformation.

The e-commerce major and vipshop jointly built the "live broadcast e-commerce industry college". The annual sales of the enterprise live broadcast room operated by students reached a record, and 30% of the graduates became the backbone anchors of enterprises.

Nursing graduates won the top three in the nursing skills competition of Guangdong Vocational Colleges in 2023, and were recruited in advance by several tertiary hospitals.

5.4. Summary of Reform Experience

The combination of top-level design and grass-roots Innovation: the reform framework is formulated at the school level, and the secondary colleges and majors are flexibly implemented according to the needs of the industry.

Deep participation of enterprises is the key: stimulate the motivation of enterprises to participate through the benefit sharing mechanism (such as technology transformation dividends and talent directional transmission).

The transformation of teachers is the guarantee: through "enterprise practice+technical training+mutual employment between schools and enterprises", the quality of teachers with double qualifications is improved. During the reform period, five provincial famous teachers were trained, and the proportion of part-time teachers in enterprises reached 40%.

Dynamic adjustment mechanism is the core: establish a closed-loop management system of "industrial demand research - teaching plan adjustment - effect evaluation - continuous optimization".

6. Conclusion and Prospect

6.1. Research Conclusion

Through theoretical analysis and practical verification, this study draws the following conclusions:

Vocational adaptability is the core quality of Higher Vocational Students' response to industrial change. Its cultivation needs to break through the shackles of the traditional teaching system and build a capacity-oriented subversive reform path.

The key to subversive teaching reform is to break the traditional paradigm of "discipline logic", "classroom center" and "school subject", and realize the systematic reconstruction of curriculum system, teaching mode, school enterprise cooperation and evaluation system.

The practice of Guangdong Lingnan Institute of Technology shows that through the "four in one" reform path, students' professional adaptability can be significantly improved and high-quality technical and skilled talents can be provided for regional industrial development.

6.2. Deficiencies and Prospects

Research limitations: This study focuses on the case of a single university. In the future, it is necessary to expand the sample range and compare the reform effects of different regions and majors;

Practical challenges: the disruptive reform puts forward higher requirements for the governance

system and resource investment of colleges and universities, and some small and medium-sized colleges and universities may face difficulties in implementation;

Future direction: The researchers deepen the reform of digital teaching, and explore the application of artificial intelligence and meta universe technology in vocational ability training; Strengthen international comparative research, learn from the experience of Vocational Education in Germany, Switzerland and other countries, and optimize the path of local reform; Pay attention to the long-term development of career adaptability, track the career development trajectory of graduates for more than 5 years, and improve the evaluation system of reform effectiveness.

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