

THE ROLE AND FUNCTION OF TEACHERS IN IMPROVING THE QUALITY OF HIGHER EDUCATION IN GUANGDONG ENGINEERING POLYTECHNIC

Huiyan Luo¹, Ganratchakan Lertamornsak²

¹Graduate School, Suan Sunandha Rajabhat University, Bangkok, Thailand,

E-Mail: s67561802119@ssru.ac.th

²Graduate School, Suan Sunandha Rajabhat University, Bangkok, Thailand,

E-Mail: ganratchakan.le@ssru.ac.th

ABSTRACT

This study aims to identify and analyze the current situation of teachers' role and function in improving higher education quality at Guangdong Engineering Polytechnic, and explore its optimization path under industry-education integration and digital transformation. Taking 328 teachers of the college as research subjects and 5 core faculty members as interview samples, a "fourfold embedding" (curriculum, industry, education, institutional) role function framework for higher vocational teachers was constructed. The results show that teachers' overall role function exertion reaches the highest level (Mean= 4.35, S. D.= 0.38), with outstanding performance in knowledge imparting and practical teaching guidance. Scientific role positioning, systematic support mechanisms and in-depth industry-education integration are confirmed as the key to giving play to teachers' role functions. Targeted optimization strategies are proposed to solve problems such as uneven industrial embedding and insufficient institutional participation of teachers, providing practical reference for the high-quality development of higher vocational education.

Keywords: Higher vocational education; Teachers' role and function; Education quality improvement; Industry-education integration

INTRODUCTION

In the context of globalization and the knowledge economy, higher vocational education undertakes the mission of supplying technical and skilled talents, and the adaptability of teachers' roles and functions has become the core factor determining the alignment between vocational education and industrial needs. UNESCO's 2022 Global Report on Vocational Education and Training points out that vocational education's core value has shifted from "skill training" to "competency and literacy cultivation". Developed countries have reshaped teachers' roles and strengthened industry-education collaboration to improve vocational education quality.

China's higher vocational education is in a transition from "scale expansion" to "connotative quality improvement". The "Double High Plan" (2019) and the newly revised Vocational Education Law (2022) have clearly defined the "dual-qualified" positioning and industrial adaptability requirements of higher vocational teachers, making teachers' roles evolve into multiple identities such as curriculum developers, industrial collaborators and quality assurers.

As a Class A construction unit of the national "Double High Plan", Guangdong Engineering Polytechnic is rooted in the Guangdong-Hong Kong-Macao Greater Bay Area, with its professional groups closely aligned with regional pillar industries. However, the school faces practical challenges such as the disconnection between some teachers' industrial practice experience and teaching content transformation, insufficient initiative in quality governance participation, and inconsistent digital teaching ability with industrial technology iteration speed. These problems restrict the full realization of the school's construction goals and the accurate alignment between talent training and industrial needs.

Based on constructivist learning theory, AMO framework and organizational support theory, this study constructs a "fourfold embedding" role function framework, incorporating institutional embedding into the core dimension to make up for the deficiency of existing research. Through quantitative and qualitative research, the study analyzes the current situation of teachers' role functions in the school, explores its influence mechanism on higher education quality, and puts forward optimization strategies. The research not only provides precise guidance for the school's teaching team construction, but also offers a replicable practical model for similar higher vocational colleges, promoting the overall high-quality development of higher vocational education.

This study focuses on three core research questions: 1) What is the current situation of teachers' "fourfold embedding" role functions at Guangdong Engineering Polytechnic 2) What is the influence mechanism of these role functions on higher education quality 3) What feasible optimization strategies can be proposed to improve teachers' role function exertion.

OBJECTIVE

1. To study The Role and Function of Teachers in Improving the Quality of Higher Education in Guangdong Engineering Polytechnic.
2. To propose The Role and Function of Teachers in Improving the Quality of Higher Education in Guangdong Engineering Polytechnic.

METHODOLOGY

This study adopts a mixed research method combining quantitative and qualitative research, with Guangdong Engineering Polytechnic as the research object, to systematically analyze teachers' role and function in improving higher education quality. The research process includes population and sample selection, research tool design, data collection and data analysis.

Population and Sample

Research Population: All 804 teachers of Guangdong Engineering Polytechnic (2025 data).

Questionnaire Sample: 328 teachers were selected using the Krejcie & Morgan sample size determination method, accounting for about 40.8% of the total population, ensuring the representativeness of the sample.

Interview Sample: 5 core faculty members from the school's management team and professional groups were selected by purposive sampling, including the college party committee secretary, dean, deputy party committee secretary, associate dean and office director, all with more than 10 years of educational management and professional teaching experience.

Research Tools

Research Questionnaire: Designed by the researcher, it is divided into two parts. Part 1 collects the basic information of respondents (gender, educational background, work experience, job establishment status, etc.). Part 2 includes 40 items across 5 dimensions: Factors of School Teacher, Factors of School Student, Factors of Teachers' Role and Function, Factors of Higher Education Quality, and Factors of Educational and Teaching Practice, using a 5-point Likert scale for evaluation (1=lowest level, 5=highest level).

Expert Interview Form: Based on the 5 research dimensions of the questionnaire, semi-structured interview questions are designed to explore the practical problems, causes and optimization suggestions of teachers' role function exertion in the school.

Tool Validity and Reliability: The questionnaire was reviewed by 3 experts in higher vocational education, and the Item Objective Congruence (IOC) value was 0.67-1.00, indicating good content validity. A pilot study was conducted with 30 teachers, and the Cronbach's Alpha coefficient of the questionnaire was 0.9316, showing high internal consistency and reliability.

Data Collection

Questionnaire Survey: The questionnaire was distributed to the sample teachers in both paper and online forms, with 328 valid questionnaires recovered, a recovery rate of 99.1%.

In-Depth Interview: Face-to-face interviews were conducted with 5 selected core faculty members, each interview lasting 40-60 minutes. The interviews were recorded with permission, and the interview content was sorted out and coded for content analysis.

Data Analysis

Quantitative Analysis: Using statistical software, the basic information of respondents was analyzed by frequency and percentage; the 5 research dimensions were analyzed by mean and standard deviation, and the exertion level of teachers' role functions was judged according to the mean value (1.00-1.50=lowest, 1.51-2.50=low, 2.51-3.50=moderate, 3.51-4.50=high, 4.51-5.00=highest).

Qualitative Analysis: The interview content was coded and categorized according to the 5 research dimensions, and the practical problems and optimization suggestions of teachers' role function exertion were summarized through content analysis, so as to supplement and explain the quantitative research results.

RESULTS

Basic Information of Respondents

The 328 valid respondents show the following characteristics in basic information (Table 1):

Gender Distribution: Relatively balanced, with 172 males (52.44%) and 156 females (47.56%).

Educational Background: Mainly master's degree, accounting for 64.94% (213 people); doctoral degree accounts for 20.12% (66 people); bachelor's degree accounts for 14.94% (49 people), reflecting a high overall educational level of the school's teachers.

Work Experience: 28.05% (92 people) have 11-15 years of experience, 27.13% (89 people) have 6-10 years of experience, and the team has a reasonable age and experience structure.

Job Establishment Status: Contract preparation is the main type, accounting for 51.14% (167 people); tenured accounts for 26.14% (86 people); non-tenured and temporary account for 22.72% in total.

Table 1 General Data Analysis of Respondents (n=328).

General Information	Frequency	Percentage (%)
Male	172	52.44
Female	156	47.56
Bachelor's Degree	49	14.94
Master's Degree	213	64.94
Doctoral Degree	66	20.12
≤5 years of work experience	61	18.60
6-10 years of work experience	89	27.13
11-15 years of work experience	92	28.05
16-20 years of work experience	53	16.16
>20 years of work experience	33	10.16
Non-tenured	19	5.68
Tenured	86	26.14
Contract preparation	167	51.14
Temporary preparation	56	17.04

Analysis of Mean and Standard Deviation of Research Dimensions The overall mean value of all research dimensions is 4.18 (S.D.=0.44), at a high level. The mean values of each dimension are ranked from high to low as follows: Factors of Teachers' Role and Function (4.35, highest level) > Factors of School Teacher (4.26, high level) > Factors of School Student (4.18, high level) > Factors of Educational

and Teaching Practice (4.12, high level) > Factors of Higher Education Quality (4.09, high level) (Table 2). Table 2 Mean and Standard Deviation Analysis of All Research Dimensions (n=328)

Research Dimensions	Mean	S.D.	Evaluation Level
Factors of School Teacher	4.26	0.42	High
Factors of School Student	4.18	0.45	High
Factors of Teachers' Role and Function	4.35	0.38	Highest
Factors of Higher Education Quality	4.09	0.48	High
Factors of Educational and Teaching Practice	4.12	0.47	High
Total	4.18	0.44	High

1. Factors of School Teacher (Mean=4.26, S.D.=0.42, High Level)

Teachers perform the best in "possessing professional knowledge and industrial practical experience" (4.52, highest level), followed by "mastering modern educational technologies" (4.41, highest level). The lowest score is "the school provides comprehensive training and resource support for teachers' professional development" (4.02, high level), indicating insufficient institutional support for teachers' professional development (Table 3).

Table 3 Mean and Standard Deviation of Factors of School Teacher (n=328)

Evaluation Items	Mean	S.D.	Evaluation Level
Professional knowledge and industrial practical experience	4.52	0.31	Highest
Mastery of modern educational technologies	4.41	0.35	Highest
Advanced educational and teaching concepts	4.36	0.37	High
Initiative in professional development and teaching research	4.28	0.40	High
Good professional attainments and ethics	4.25	0.41	High
Teaching and research collaboration atmosphere	4.19	0.43	High
Updating teaching content combined with industrial needs	4.15	0.44	High
School's training and resource support for teachers	4.02	0.47	High

2. Factors of School Student (Mean=4.18, S.D.=0.45, High Level)

Students have the strongest "professional learning willingness" (4.33, high level), and the lowest score is "learning foundation and acceptance ability adapting to teaching rhythm" (3.98, high level), reflecting obvious individual differences in students' learning foundation, which restricts the overall teaching effect (Table 4).

Table 4 Mean and Standard Deviation of Factors of School Student (n=328)

Evaluation Items	Mean	S.D.	Evaluation Level
Professional learning willingness	4.33	0.39	High
Initiative in using digital resources for learning	4.29	0.40	High
Attention to practical ability cultivation	4.26	0.41	High
Team cooperation ability	4.18	0.43	High
Cooperation with teaching activities	4.15	0.44	High
Initial career planning awareness	4.09	0.46	High
Initiative in consulting teachers for problems	4.07	0.46	High
Learning foundation adapting to teaching rhythm	3.98	0.49	High

3. Factors of Teachers' Role and Function (Mean=4.35, S.D.=0.38, Highest Level) This dimension is the best performing among all research dimensions. Teachers excel in "knowledge imparting and consolidating professional theoretical foundation" (4.58, highest level) and "practical teaching guidance and improving practical operation ability" (4.51, highest level). The lowest score is "participating in teaching quality evaluation and improvement" (4.08, high level), indicating insufficient exertion of teachers' institutional embedding function and low enthusiasm for participating in quality governance (Table 5). Table 5 Mean and Standard Deviation of Factors of Teachers' Role and Function (n=328)

Evaluation Items	Mean	S.D.	Evaluation Level
Knowledge imparting and theoretical foundation consolidation	4.58	0.30	Highest
Practical teaching guidance and practical ability improvement	4.51	0.32	Highest
Guiding skill competitions and innovation and entrepreneurship activities	4.45	0.34	Highest
Career planning and employment guidance	4.32	0.38	High
Classroom interaction and stimulating learning interest	4.28	0.40	High
Personalized teaching tutoring and considering individual differences	4.23	0.41	High

Evaluation Items	Mean	S.D.	Evaluation Level
Integrating ideological and political education into courses	4.19	0.43	High
Participating in teaching quality evaluation and improvement	4.08	0.45	High

4. Factors of Higher Education Quality (Mean=4.09, S.D.=0.48, High Level)

This dimension is the lowest performing among all research dimensions. The best score is "students' solid grasp of professional theoretical knowledge" (4.21, high level), and the lowest is "students' comprehensive development ability adapting to diversified employment demands" (3.92, high level), indicating that the school's talent training is insufficient in cultivating students' comprehensive ability, and there is room for improvement in employment quality and social adaptability (Table 6).

Table 6 Mean and Standard Deviation of Factors of Higher Education Quality (n=328)

Evaluation Items	Mean	S.D.	Evaluation Level
Solid professional theoretical knowledge	4.21	0.44	High
Professional practical ability meeting industrial post requirements	4.15	0.46	High
Social recognition of talent training quality	4.08	0.47	High
High employment rate and employment quality	4.02	0.49	High
Good professional ethics and occupational literacy	4.00	0.49	High
Teaching quality and talent training mode in line with vocational education development	3.97	0.50	High
Steady improvement of professional construction level	3.94	0.51	High
Comprehensive development ability adapting to diversified employment	3.92	0.51	High

5. Factors of Educational and Teaching Practice (Mean=4.12, S.D.=0.47, High Level)

Teachers perform best in "designing scientific and reasonable teaching plans" (4.26, high level), and the lowest score is "timely summarizing and applying teaching achievements to promote teaching improvement" (3.96, high level), indicating that the school's teaching practice lacks a perfect closed-loop improvement mechanism, and the promotion and application of excellent teaching experience are insufficient (Table 7).

Table 7 Mean and Standard Deviation of Factors of Educational and Teaching Practice (n=328)

Evaluation Items	Mean	S.D.	Evaluation Level
Designing scientific and reasonable teaching plans	4.26	0.41	High
Integrating posts, courses, competitions and certificates in teaching	4.21	0.43	High
Using diversified teaching methods to improve teaching effect	4.15	0.45	High
Complete practical teaching system and perfect equipment	4.13	0.45	High
Updating teaching content according to industrial development	4.08	0.47	High
Diversified teaching evaluation methods	4.02	0.48	High
Organizing classroom interaction and improving student participation	3.99	0.49	High
Summarizing and applying teaching achievements for continuous improvement	3.96	0.50	High

Interview Results and Content Analysis

In-depth interviews with 5 core faculty members further revealed the practical problems and root causes of teachers' role function exertion in the school, and put forward targeted suggestions. The key conclusions are as follows:

Teachers' Professional Development: Insufficient regular enterprise practice mechanism and digital teaching ability training; the identification and management mechanism of "dual-qualified" teachers needs to be improved.

Student Teaching Guidance: Obvious individual differences in students' learning foundation require hierarchical and personalized teaching; students lack clear career planning, and the integration of career guidance and daily teaching is insufficient.

Teachers' Role Function Exertion: Insufficient incentive mechanism for teachers to participate in skill competition guidance and quality governance; the role of teachers as a bridge for school-enterprise cooperation needs to be further strengthened.

Higher Education Quality Improvement: The cultivation of students' comprehensive ability and innovative ability is insufficient; the connection between talent training and high-end industrial post requirements is not close enough.

Educational and Teaching Practice Reform: The update speed of practical training equipment lags behind industrial technology development; the evaluation method of practical teaching is single, and the summary and promotion of teaching achievements are not timely.

CONCLUSION AND FUTURE WORK

Research Conclusion

This study constructs a "fourfold embedding" role function framework for higher vocational teachers, and systematically analyzes the current situation of teachers' role and function in improving higher education quality at Guangdong Engineering Polytechnic through mixed research methods. The main conclusions are as follows:

Overall Exertion Level is High: The total mean value of teachers' role function exertion in the school is 4.18 (high level), and the Factors of Teachers' Role and Function reach the highest level (4.35). Teachers perform outstandingly in knowledge imparting, practical teaching guidance and skill competition guidance, laying a solid foundation for the improvement of higher education quality.

Obvious Advantages in Core Dimensions: Teachers have solid professional knowledge and rich industrial practical experience; students have a strong professional learning willingness and pay attention to practical ability cultivation; the educational and teaching practice closely combines the characteristics of higher vocational education, and the integration of posts, courses, competitions and certificates has achieved initial results.

Outstanding Problems to be Solved: There are deficiencies in teachers' professional development support system and insufficient institutional embedding function; students' learning foundation has obvious individual differences; the cultivation of students' comprehensive development ability is insufficient, which is the weakest link in higher education quality; the educational and teaching practice lacks a perfect closed-loop improvement mechanism, and the summary and promotion of teaching achievements are insufficient.

Key Influencing Factors Confirmed: Scientific role positioning, systematic organizational support mechanisms, in-depth industry-education integration and perfect incentive mechanisms are the core factors for giving play to teachers' role functions and improving the quality of higher vocational education.

Optimization Strategies

Aiming at the problems found in the research, targeted optimization strategies are proposed from five levels to improve the exertion effect of teachers' role functions in Guangdong Engineering Polytechnic:

1. School Teacher Level: Improve the Professional Development Support System

Establish a regular enterprise practice mechanism for teachers, arrange teachers to take temporary positions in cooperative enterprises, and build a platform for industrial technology training.

Strengthen the training of teachers' digital teaching ability, and integrate digital literacy into the teacher development credit bank system.

Improve the "dual-qualified" teacher identification and training mechanism, increase the introduction of enterprise part-time teachers, and optimize the assessment and incentive mechanism.

Increase investment in teachers' professional development, and closely link training credits with professional title evaluation and performance appraisal.

2. School Student Level: Implement Targeted Teaching Guidance

Build a student learning portrait system based on big data, carry out hierarchical teaching and personalized tutoring for students with different learning foundations.

Integrate career planning guidance into daily teaching, and strengthen students' post cognition through school-enterprise cooperation such as order classes and enterprise training.

Design more project-based teaching tasks to cultivate students' team cooperation ability and practical innovation ability.

Establish a student learning support system to provide targeted help for students with learning difficulties and improve the overall learning level.

3. Teachers' Role and Function Level: Optimize the Multi-role Exertion Mechanism

Strengthen teachers' role in knowledge imparting and practical guidance, and improve the incentive policy for skill competition guidance and practical training tutoring.

Give play to teachers' role in curriculum development and teaching innovation, and encourage teachers to update teaching content combined with industrial technology iteration.

Activate teachers' institutional embedding function, improve the teacher participation mechanism in quality governance, and give teachers voting rights in major teaching decisions.

Strengthen teachers' role as a bridge for school-enterprise cooperation, and promote teachers to participate in enterprise technical research and development and curriculum co-construction.

4. Higher Education Quality Level: Focus on Cultivating Compound Talents

Optimize the talent training program, increase the proportion of practical teaching, and build a hierarchical practical teaching platform to improve students' professional practical ability.

Strengthen the cultivation of students' comprehensive ability and innovative ability, and add interdisciplinary courses and innovation and entrepreneurship practice links.

Establish a talent demand feedback mechanism with enterprises, and dynamically adjust the teaching content according to the needs of regional pillar industries and high-end posts.

Improve the employment guidance system, carry out precise employment guidance, and improve students' employment quality and career development potential.

5. Educational and Teaching Practice Level: Deepen the Reform of Teaching Practice

Increase investment in practical training equipment, update training hardware in a timely manner, and build a school-enterprise co-constructed practical teaching base.

Promote the integration of digital teaching and practical teaching, and use virtual simulation and other intelligent tools to improve the teaching effect.

Explore diversified practical teaching evaluation methods, combining process-oriented evaluation and result-oriented evaluation to comprehensively assess students' ability.

Establish a teaching practice achievement summary and promotion mechanism, build a communication platform for teachers, and form a closed-loop improvement of teaching practice.

Future Work

This study takes Guangdong Engineering Polytechnic as a case to explore the role and function of higher vocational teachers in improving education quality, and the research results have certain reference significance for similar higher vocational colleges. However, there are still some limitations in

the study: the research object is a single college, and the research results need to be verified in more higher vocational colleges; the research is a cross-sectional study, and the dynamic change of teachers' role function exertion needs to be further explored through longitudinal research.

In the future, follow-up research can be carried out from the following aspects:

Expand the research sample to include higher vocational colleges in different regions and different types, and explore the regional and professional differences of teachers' role function exertion in higher vocational education.

Carry out longitudinal tracking research to analyze the dynamic change law of teachers' role function exertion under the background of continuous deepening of industry-education integration and digital transformation.

Further explore the mediating and moderating effects in the influence mechanism of teachers' role functions on higher education quality, and construct a more perfect theoretical model.

Conduct empirical research on the optimization strategies proposed in this study, and verify the effectiveness and operability of the strategies through intervention experiments.

ACKNOWLEDGEMENTS

I would like to express my sincere thanks to Suan Sunandha Rajabhat University for invaluable help throughout this research.

REFERENCES

- Barnett, R. (2000). Realizing the university in an age of supercomplexity. Open University Press.
- Biggs, J., & Tang, C. (2011). Teaching for quality learning at university (4th ed.). Open University Press.
- Chen, X. M. (2019). A study on the practical paths of vocational college teachers' role transformation. *Journal of Vocational and Technical Education*, (21), 23-31.
- European Higher Education Area. (2015). Quality assurance standards and guidelines for the European Higher Education Area. EHEA.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3), 607-610.
- Li, Z. T. (2020). The six-dimensional model of vocational college teachers' functions under the background of industry-education integration. *Vocational Education Research*, (7), 29-36.
- OECD. (2026). Vocational education teachers' roles and competencies in the global era. OECD Publishing.
- Schön, D. A. (1987). Educating the reflective practitioner: Toward a new design for teaching and learning in the professions. Jossey-Bass.
- Schultz, T. W. (1961). Investment in human capital. *American Economic Review*, 51(1), 1-17.

- Stes, K. (2019). Industry collaboration and vocational teacher effectiveness: Evidence from Belgian vocational colleges. *European Journal of Vocational Training*, 41(1), 34-49.
- UNESCO. (2022). *Global report on vocational education and training*. UNESCO Publishing.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
- Wang, J. P. (2023). The influence mechanism of vocational college teachers' industrial embedding on students' employment quality. *Journal of Higher Vocational Education*, (6), 32-40.
- Wei, H. (2021). Research on teachers' participation in higher vocational education quality governance: Path and mechanism. *China Vocational and Technical Education*, (15), 45-52.
- Xu, G. Q. (2020). On the professional development of vocational education teachers. *Higher Education Research*, (7), 89-96.