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EXPLORING PATH OF BUILDING "DUAL-QUALIFIED TEACHER" TEAM IN LOCAL APPLIED UNIVERSITIES

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Abstract: This study explores the challenges and optimization paths in building "dual-qualified teacher" team in local applied universities, with a focus on the deep integration of theoretical and practical capabilities. By systematically analyzing the current situation, it has been found that the core obstacles are the imbalance in faculty structure, capability gaps, and insufficient institutional support. From the perspective of university-enterprise collaboration and policy linkage, this study proposes a quad-driven training framework, emphasizing the necessity of a diversified evaluation mechanism, in-depth integration of industry and education, and a tiered training system. The research shows that through structured team building, university-enterprise cooperation platforms, and innovations in incentive mechanisms, the effectiveness of "dual-qualified teacher" team can be enhanced, meeting the regional economy's demand for application-oriented talents.

Keywords: "Dual-qualified teacher" team; Applied education; Integration of industry and education; Teacher evaluation; Local universities

1. INTRODUCTION

Local applied universities play a crucial role in serving regional industrial upgrading, making it imperative to cultivate applied talents with both theoretical and practical abilities. In 2015, the Ministry of Education, in conjunction with multiple departments, issued the Guidance on Steering Local Regular Undergraduate Universities Toward Applied Education, further clarifying the requirements for local applied undergraduate institutions in cultivating applied talents 0. In 2019, the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council promulgated the Implementation Plan for Accelerating Education Modernization (2018-2022), which emphasized deepening industry-academia integration in higher education [2]. It requires local applied universities to achieve specified proportions for: dual-qualification faculty (holding both academic credentials and industry certifications) among full-time teachers, and practical training hours within the total professional curriculum hours. To cultivate specific talents, corresponding teachers are needed. A "dual-qualified teacher" team with teaching qualifications and industry practice ability is the core support to achieve the goal of applied talent cultivation.

However, existing research indicates that the development of "dual-qualified teacher" team in local applied universities still faces issues such as insufficiency in number, structural imbalance, and disconnection between industry and education [3-4]. Thus, it is necessary to explore the construction path of "dual-qualified teacher" team based on actual situations. This article combines case studies of regional universities in central and western China to explore feasible paths for building "dual-qualified teacher" team, providing reference for policy formulation and institutional practice.

2. Problems in cultivating "dual-qualified teacher" team

The "dual-qualified teacher" team concept stems from Germany's "dual system" education model, emphasizing collaborative talent cultivation between schools and enterprises[5]. The Chinese Ministry of Education defines "dual-qualified teacher" as two types: Firstly, teachers holding teaching certificates and industry skill certificates; secondly, teachers with lecturer titles and engineering technology titles, corporate experience, or applied research capabilities[5]. Despite increased policy promotion efforts, there is a relative shortage of teachers in local undergraduate universities who possess both theoretical knowledge and practical abilities. Due to the limitations of industry scale and technological barriers, the industry-education integration through university-enterprise collaboration is not prominent, resulting in problems such as inadequate proportion of "dual-qualified teacher", fragmented training systems, and low industry participation [6].

Overall, there are common misconceptions in the construction of teaching staff in local applied universities, such as "emphasizing academic qualifications over abilities" and "emphasizing theory over practice". The construction of the "dual-qualified teacher" team lacks a comprehensive top-level design and scientific, systematic training

strategy. Teachers have weak initiative to adapt to the strategy of integrating industry and education. The mechanism for introducing and evaluating teaching staff is not perfect.

3. Solutions

This study adopts a qualitative research method to analyze policy texts, practice reports, and interview data of 30 "dual-qualified teacher" in applied universities in central and western China. Based on the results of the investigation and research, a path for cultivating applied talents is proposed through three major means: "holistic tackling", "hierarchical cultivation", and "evaluation reform".

3.1. Adopting holistic tackling to solve fundamental problems of "dual-qualified teacher" team

3.1.1. Fundamental issues of "dual-qualified teacher" team

Imbalance between quantity and quality: Only 40% of the sample universities meet the requirements of the Ministry of Education for the proportion of "dual-qualified teacher", and 60% of the "dual-qualified teacher" have undergraduate degrees, which is difficult to support high-level teaching and research needs.

Skills disconnection: 55% of "dual-qualified teacher" are good at theoretical teaching, but 70% lack cutting-edge industrial technological experience, causing a disconnect between teaching and job requirements.

3.1.2. Solutions: Four key plans

Fig.1 is a logical framework of the four key plans to solve the fundamental problem of building "dual-qualified teacher" team.

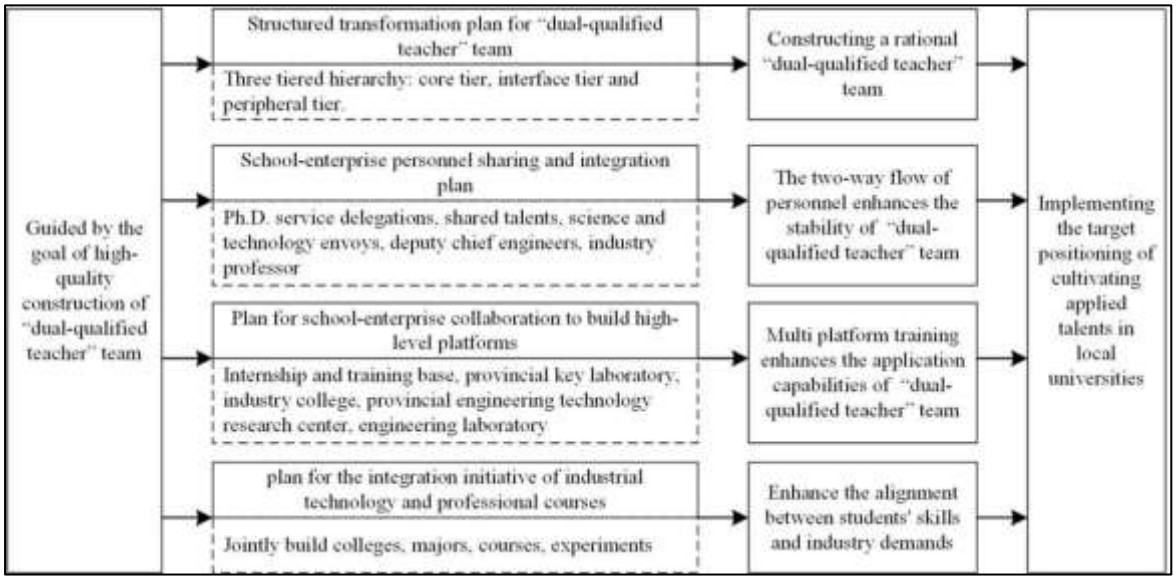

Fig. 1. Logical framework of four key plans to solve fundamental problem of building "dual-qualified teacher" team.

Firstly, structured transformation plan for "dual-qualified teacher" team. "Dual-qualified teacher" must not only possess dual competencies (theoretical knowledge and practical skills) as individuals, but more importantly, the focus is on building a dual-capable teaching workforce proficient in both theoretical instruction and practical guidance. Under the framework of the education system that requires students to develop comprehensively in morality, intelligence, physical fitness, aesthetics, and labor skills, the importance of structured construction of the teaching staff has become increasingly prominent. Through school enterprise cooperation, we aim to jointly cultivate a team of structurally sound "dual-qualified teacher" and enhance their practical teaching and professional skills. The teaching workforce is explicitly stratified into a three tiered hierarchy: core tier, interface tier and peripheral tier. The core tier interfaces with specialized curricula, the interface tier connects to practicum-based modules, and the peripheral tier aligns with professional development trajectories.

Secondly, school-enterprise personnel sharing and integration plan. This plan promotes mutual part-time work and two-way flow between school and enterprise personnel, fostering a regular rolling exchange mechanism. It strengthens the steady building of "dual-qualified teacher" team that combines full-time and part-time staff. By allowing teachers to deeply understand and collaborate with enterprises, it trains and exercises numerous "dual-qualified teacher". This improves specialized construction, boosts teaching quality, enhances teachers' practical skills, strengthens schools' and enterprises' sense of social responsibility, and drives local economic growth.

Thirdly, plan for school-enterprise collaboration to build high-level platforms. Integration of industry and education is a dynamic process, it aimed at equipping university students with the ability to identify, think about, and solve problems in engineering practice. Universities and enterprises can jointly build high-level research and practice platforms. Relying on these, teachers constantly update their knowledge in industry-education integration and turn the experience into teaching cases. Full- and part-time teachers from both sides participate in specialized

construction and technological break-throughs. While supporting the development of schools and enterprises with intellectual resources, this approach improves teachers' practical skills and achieves mutual benefits.

Fourthly, plan for the integration initiative of industrial technology and professional courses. Joint university and enterprise expert task forces will conduct in-depth research and collaborative restructuring to develop region-specific core curricula targeting critical sectors, enhancing students' applied competencies and ensuring industry-validated knowledge and skill alignment.

3.2. Adopt stratified training path to enhance the capability of "dual-qualified teacher" team

3.2.1. Stratified and classified cultivation

As shown in Fig.2, it illustrates the three tiered structure of the "dual-qualified teacher" team. Core tier teachers handle theoretical courses, interface tier teachers focus on training guidance, peripheral tier teachers manage industry connection. This structure aims to enhance talent cultivation quality. Also, adopt specific training strategies for teachers of different structural types.

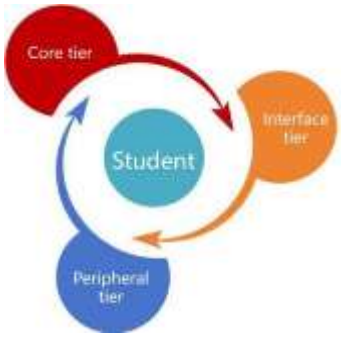

Fig. 2. Three tier teaching staff structure.

3.2.2. Development path: Five empowerment initiatives for teachers based on industry- education collaboration

The tiered cultivation path for teaching staff is shown in Fig.3. For the peripheral tier teachers, implement the Leading Talent Pioneer Project to bridge industry tech and academic fields. For the interface tier teachers, implement the Part-time Teacher Enhancement Project to connect theoretical teaching with enterprise practice. For core tier teachers, implement three initiatives: Elite Teacher Cultivation, Talent Sharing, and Mentorship Inheritance projects [8]. Implement the interaction between curriculum content and industrial demand through the Elite Teacher Cultivation Project. Enable the integration of social service and scientific research through the Talent Sharing Project. Promote the integration of talent recruitment and dual-ability cultivation through the Mentorship Inheritance Project.

Fig. 3. Tiered cultivation path for teaching staff based on industry-education collaboration.

- Leading Talent Pioneer Project: Recruit leading talents with authority and international influence from industries and enterprises, hiring them as distinguished professors like "Chutian Scholars" or "Dongchu Scholars". These talents collaborate with on campus teachers to form an expert team, participate in the formulation and revision of professional talent training programs, and offering advice for professional development.

- Part-time Teacher Enhancement Project: Bring in industry skilled talents as part- time teachers. Universities should train these teachers in teacher ethics, teaching standards, vocational education concepts, and teaching methods, helping them translate practical experience into teaching content effectively.
- Elite Teacher Cultivation Project: Select elite teachers for oversea research, degree advancement, and skills training. Enhance their ethics, global vision, teaching ability, practical skills, and curriculum development capacity. This enables teachers to better grasp industry demands, refine curriculum content, and improve the match between students' skills and industry expectations.
- Talent Sharing Project: Under government-university-enterprise policy support, universities launch talent sharing programs to deepen industry-education integration. Assign highly trained talents to enterprises as "Ph.D. Service Delegations", "Shared Talents", "Science and Technology Envoys", or "Deputy Chief Engineers" for technological breakthroughs and innovation. Also, recruit industry technicians passionate about education as full-time teachers. Enhance teachers' social service capacity through the Talent Sharing Project, and leverage corporate platforms to stay updated on the latest industrial tech trends.
- Mentorship Inheritance Project: Selecting backbone teachers to pair up with newly hired teachers to pass on knowledge and experience. The newly introduced high- level talents can not only quickly integrate into teaching and research teams, but also enhance their abilities in education, teaching, and engineering practice in practice, achieving dual ability cultivation. While promoting the comprehensive development of high-level individuals, it also injects a continuous stream of vitality into the long-term development of the "dual-qualified teacher" team.

3.3. Adopt diverse evaluation and incentive mechanisms to ensure the sustainable development of "dual-qualified teacher" team

The integration of industry and education highlights the cultivation of application abilities, which has new requirements for teachers' abilities and qualities. The transformation of pressure into motivation requires the establishment of a teacher evaluation mechanism guided by the integration of industry and education[10]. The teacher evaluation mechanism is a barometer and has a strong guiding role in the professional development of teachers. Introduce diverse participants, highlight output orientation, and stimulate teachers' enthusiasm to become "dual-qualified teacher" through effective evaluation. In response to main contradictions in improving the capabilities of "dual-qualified teacher" team, we will implement full process management of teachers according to the "four haves" standard, establish mechanisms from the four levels of "attracting, employing, educating, and managing". With the quad-driven, the team's vitality can be fully stimulated. Fig.4 shows the diversified evaluation incentive mechanism and quad-driven framework.

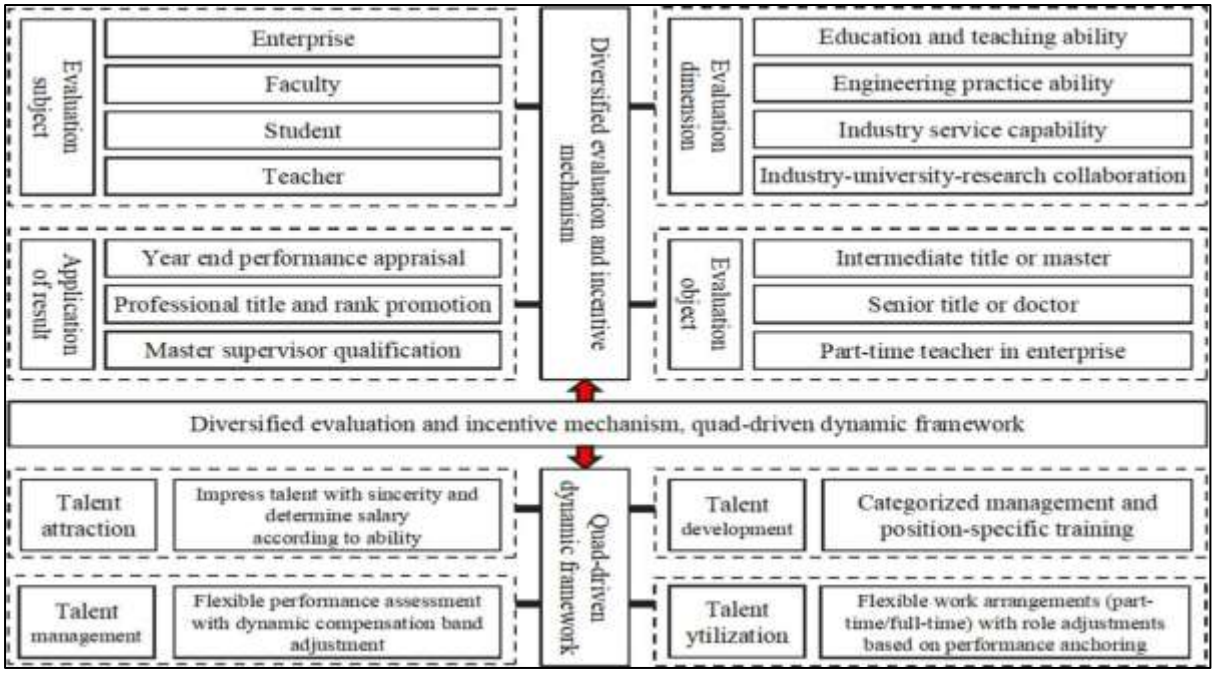

Fig. 4. Diversified evaluation incentive mechanism and quad-driven framework.

4. Practice of cultivating applied undergraduate talents

The ultimate goal of establishing a "dual-qualified teacher" team is to cultivate applied talents. Based on the team building plan constructed in this article, the talent cultivation path covering the entire process, all elements, and all platforms can effectively equip students to tackle complex problems. Fig.5 shows the path of cultivating undergraduate applied talents.

Fig. 5. Undergraduate applied talent training path.

Firstly, carry out project-based teaching throughout the entire process to enhance students' engineering application abilities. From introductory, basic and core courses to in class experiments, course designs, practical training courses, then to extra curricular competitions and innovation entrepreneurship training projects, and finally to graduation designs (papers) and internships, project driven teaching is implemented throughout the four year training period. This step by step approach helps to cultivate students' engineering practice and application abilities effectively.

Secondly, the full elements of the project are deeply integrated with the teaching con- tent to enhance students' engineering literacy. During the teaching process, project-based teaching is relied upon to effectively integrate key project elements with teaching content. Engineering elements mainly include engineering background analysis, economic analysis, engineering design, technology development, on-site implementation, system debugging, system operation and maintenance, etc., in order to enhance students' engineering literacy.

Thirdly, the entire platform supports the cultivation of application-oriented talents and enhances students' innovation and entrepreneurship abilities. Using on campus and off campus platforms such as student internship and training bases, provincial key laboratories, and industry-academia institutes, we respond to the demands of local economic transformation and industrial upgrading, by engaging with local leading industries, introducing real industry scenarios, processes, and projects, and integrating government, school, and business educational resources for collaborative education, effectively support the training of applied talents and enhance students' innovation and entrepreneurship skills.

5. CONCLUSIONS

In conclusion, local applied universities must break through structural and institutional barriers to build "dual-qualified teacher" team. A stratified training system can effectively boost the professional development of "dual-qualified teacher". By creating "quad-drive" training system, practical teaching skills of teachers are enhanced, and a long term school- enterprise collaborative training mechanism is established. This model offers replicable experience for similar universities, particularly in optimizing teacher structure and integrating industry-education resources.

Data Sharing Agreement: The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing Interests: The authors have no relevant financial or non-financial interests to disclose.

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