Research on The Construction and Practice of Professional Teaching Team in Vocational Colleges under The Background of "Double High Program"

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Abstract. Building a high-level professional teaching team is an inevitable requirement to promote the reform and innovation of teaching mode in Vocational Colleges and test the actual effect of the construction of teaching staff. Taking the teaching team construction of automotive electronic technology specialty in Hunan Automotive Engineering Vocational University as an example, this paper expounds the development measures of building a high-level and high-quality professional teaching team, and discusses the construction practice of team construction from five aspects: team teachers' ability construction, professional construction and innovation, modular teaching reform, teaching method innovation and technical skill innovation, and refines the characteristics and innovation of professional teaching team construction, so as to provide reference for the construction of similar professional teaching teams.

Keywords: Professional Teaching Team; Teacher Capacity Building; Technical Skill Innovation.

1 Introduction

As the core element to promote the development of vocational education, talents are always the first resource[1]. To build a high-quality professional teacher team with noble professional ethics, exquisite professional ability, reasonable team structure, outstanding teaching level, outstanding practical ability and full of innovative vitality is not only the key support for vocational colleges to achieve high-quality development, but also the core driving force to promote the cultivation of high-end skilled talents[2]. Therefore, under the background of the "double high plan", it is of great practical significance to explore the construction methods and practice paths of professional teaching teams[3].

After in-depth investigation by the research group, it is found that the current professional teaching team construction faces multiple constraints, which are mainly reflected in the following aspects: first, teaching tasks are fragmented and long-term, teachers generally lack systematic enterprise practice experience, and the overall level of the team is difficult to meet the requirements of "high-level" construction; Second, there are shortcomings in the configuration of team structure, the proportion of "double

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qualified" teachers is insufficient, and the two-way flow mechanism between schools and enterprises is not perfect, which can not meet the "structured" construction standard; Third, teachers' teaching innovation ability needs to be improved, the reserve of professional teaching resources is insufficient, and the systematic refinement of theoretical research and practical experience is relatively weak; Fourth, the innovation of teaching mode and method is insufficient, and the ability of teachers to use modern educational technology to implement efficient teaching is weak[4]; Fifth, the depth of the integration of industry and education needs to be expanded, the supporting mechanism of science and education integration is not perfect, and the international development faces the dual constraints of resources and platforms[5].

Based on the national high-level professional group "automotive intelligent technology professional group", this paper selects the teaching team construction of automotive electronic technology as a research case, and focuses on exploring the construction path and practical experience of high-level professional teaching team.

2 Practice of Professional Teaching Team Construction -- A Case Study of Automotive Electronic Technology Professional Teaching Team

2.1 Team Teacher Capacity Building

1. construction scheme

With the core goal of improving the overall ability and quality of the teaching team, the implementation plan for the ability construction of the teaching team and the annual training plan were formulated to refine the access standards, post appointment, assessment and other system specifications. By strengthening the team's cultural identity, cultivating noble teachers' ethics, improving academic literacy and comprehensive ability, building a collaborative innovation mechanism to promote the systematic and high-quality development of teachers' ethics, scientific research ability, teaching level optimization, curriculum system improvement and teaching resource development.

2. talent team

Select multi-level teachers such as professional leaders, famous teachers and young backbone teachers with noble ethics and outstanding "Three Abilities", build a "mentoring" training program for "old, middle-aged and young" age echelon teachers, covering topics such as "three complete education", "three education" reform, "double teacher" quality improvement, standard development, and technical skills innovation services. Organize and carry out activities such as famous teacher demonstration teaching, thematic discussion and exchange, teaching observation and learning, and public demonstration classes to help young teachers cultivate good ethics and improve their teaching and research abilities. The team members include young teacher mentors and industry mentors, and carry out activities such as "mentoring" and "mentoring".

3. "double division" team

Through flexible introduction, project cooperation and other ways, we will build a new talent introduction mechanism with market regulation, intellectual flow and

contract management as the core, dynamically recruit leading talents and senior technical personnel of enterprises as enterprise mentors, continue to optimize the structure of full-time and part-time teachers, and promote the high-quality construction of "double qualified" teaching teams. At the same time, teachers' enterprise practice norms are formulated to ensure the effective implementation of the enterprise practice content of team teachers' members.

4. structural stability

The team members' age gradient is reasonable, their professional titles are linked up between middle and high, and their professional advantages are complementary, including public basic courses, professional basic courses, professional core courses and internship instructors. Enterprise experts with more than 5 years' working experience are employed as part-time teachers, forming a team structure of "leading by famous teachers, backbone support, combination of full-time and part-time work, and reasonable gradient".

5. leading by famous teachers

The team leader has achieved fruitful and outstanding results, and has a certain influence in the field of vocational education. During the construction period, the team leader presided over the national professional teaching innovation team and provincial quality online courses, and won the first and second prizes of national teaching achievements, with strong innovative ideas. The person in charge led the team members to apply for key projects such as the construction of national teaching resource bank, provincial demonstration specialty, provincial "first-class" specialty group, provincial demonstration specialty and so on, and accumulated rich team management experience.

2.2 Specialty Construction and Innovation

1. development of training program

Employ industry experts, business masters and team members to jointly form a "professional construction Steering Committee" to benchmark the teaching standards for automotive electronic technology in higher vocational colleges. In combination with the professional competence standards for vehicle electrical assembly and debugging workers, automotive maintenance electricians, electronic device manufacturers, and electronic special equipment installation and debugging workers, by analyzing the industry development trend and the talent demand of industry enterprises, accurately define the knowledge system, ability structure, and professional quality required for the corresponding professional posts and job groups of the major. Based on the professional post needs and technical competence standards, both colleges and enterprises jointly develop forward-looking and clearly oriented teaching documents such as the talent training plan and the implementation plan for students' post practice, so as to support the professional talent training.

2. establishment of education mechanism

According to the professional standards and vocational skills standards, we should improve the matching degree of professional settings and industry needs, build the standards of practical teaching conditions, and reconstruct the "1+n" curriculum system to meet the diversified needs of schools and enterprises. Docking with the main posts

of automobile parts and accessories manufacturing, automobile electronic and electrical components manufacturing, R&D, installation and commissioning, integrating the new process, new technology and new specification of automobile production, building a visual two-way linked knowledge map, developing ability oriented and reasonably structured professional courses, trying to "self-help and open" practical teaching, using spare time to exchange students' skill growth space, implementing "skill unified examination", and promoting the modular teaching design and implementation of the course.

3. smart platform construction

Relying on the smart teaching platform, it has built a national teaching resource library, an online learning platform for superstar courses, an automotive digital museum, etc., and connected digital textbooks, quality courses, etc. to the National Smart teaching platform. Connect with the post demand and develop the digital curriculum resources of "virtual and real combination". Integrate the new generation of information technology, carry out teaching activities such as virtual simulation and on-site recording and broadcasting teaching through a series of classes such as "online and offline" and "integration of theory and practice", and effectively improve the digital literacy of team teachers.

2.3 Modular Teaching Reform

1. curriculum system construction

Improve the dynamic adjustment mechanism of professional construction and adjust the talent training plan and curriculum system according to the professional talent training specifications. Combined with the typical jobs in enterprises, the guiding opinions on the reform of course assessment and evaluation methods are developed. Analyze the professional ability of the post, determine the professional talent training specification, integrate the skill assessment standard into the talent training scheme, and integrate the skill assessment items into the curriculum content, break the original professional curriculum system framework, and ensure that it matches the talent training objectives.

2. courses and teaching resources

According to the professional ability requirements of major posts such as automobile parts and accessories manufacturing, automobile electronic and electrical components manufacturing, R&D, installation and commissioning, the original curriculum system framework is broken and the "1+n" curriculum system that meets the diversified needs of schools and enterprises is constructed. Integrate the resources of many cooperative automobile enterprises such as GMAC Zhilian and Huawei, build a visualized and two-way linked knowledge map, develop digital resources such as courseware, graphics/images, video, animation and virtual simulation, create a progressive teaching scene of "virtual simulation resources - simulation production line - virtual factory", and promote the implementation of theory practice integration and modular course teaching.

3. Course Ideological and political construction

According to the guiding documents such as the implementation plan for comprehensively promoting the ideological and political construction of the curriculum and the guide to mining the ideological and political elements of the curriculum, the school has built a "curriculum ideological and political" system covering ideological and

political theory courses, general education courses and professional courses, giving full play to the synergistic effect of the explicit educational function of Ideological and political courses and the implicit educational function of professional courses, strengthening the ideological guidance of team teachers, establishing the concept of "great ideological and political education", establishing an "Ideological and political education community" with the ideological and political course team and counselor team, organizing members to participate in the curriculum ideological and political training, building the curriculum ideological and Political Research Center, and creating the "curriculum ideological and political" model courses and "curriculum ideological and political" model cases, so that teachers can become "golden teachers", classrooms become "golden Courses", and majors become "golden Colleges".

4. post course competition certificate accommodation

According to the management measures for the implementation of the "1+x certificate" system, strengthen the coordination and cooperation with training and evaluation organizations, promote the reform and innovation of training mode and evaluation mode, develop the implementation plan for the pilot work of the "1+x certificate" system, and promote the implementation of 1+x certificates such as the certificate of professional skills for vehicle application and maintenance and the certificate of professional skills for testing, installation and adjustment of intelligent connected vehicles. Refine the practical experience of "post course competition certificate" integration, organically integrate the industry technical specifications, vocational skill level standards and typical cases of enterprises into the teaching content, and promote the deep integration of vocational skill level certificates and academic certificates.

5. curriculum and textbook construction

Relying on the function of "superstar" virtual teaching and research room, the team uses digital technology to realize the smooth connection between virtual and real space, establishes a virtual teaching team, and carries out distance teaching activities such as teaching reform research, joint training of teaching teams, and co construction and sharing of high-quality teaching resources. Apply the "three visibility and one accuracy" monitoring platform to collect teachers' multidimensional data information, establish teachers' personalized digital portraits, innovate classroom teaching evaluation mode, strengthen process evaluation, explore value-added evaluation, improve comprehensive evaluation, and drive the growth of teachers and the overall improvement of teaching quality.

2.4 Teaching Method Innovation

1. teaching mode reform

Facing the real production environment and jobs of automobile parts and key system assembly manufacturing enterprises, we will carry out the teaching mode reform of hybrid, theory practice integration and modularization of the courses such as automobile electrical equipment maintenance and automobile sensor technology and application, and actively adopt diversified teaching methods such as heuristic, inquiry, discussion and participation, so as to promote the reform of project oriented, case driven, scenario simulation and work process oriented teaching methods.

2. reform of teaching organization form

According to the characteristics of different professional courses and the differentiated teaching needs of different teaching stages, 10 teaching organization forms have been formed, including "productive training", "special training", "theory practice integration", "virtual reality combination", "5E Teaching Classroom" and "split classroom", to support teachers' practice of modular teaching reform. According to their professional background, teaching style, personality characteristics, etc., select the appropriate teaching mode, customize personalized learning programs for students, and focus on cultivating students' learning ability, practical ability and application ability.

3. innovation of Hybrid Teaching Mode

Focus on the teaching needs of automotive electronic technology, and apply ar/vr/mr AI, Digital twin and other new technologies, develop virtual simulation training teaching software, create a new virtual learning environment of "classroom+teaching and training area+virtual training area+training operation area", deeply integrate digital, virtual resources, simulation system and training base facilities and equipment, rely on the "three visibility and one accuracy" big data analysis platform, realize the incidental collection process "data", real-time push learning information and evaluation results, accurately formulate diagnosis and improve teaching plans and teaching methods, and enrich the education and teaching ecology.

4. teaching evaluation reform practice

The school issued the guiding opinions on the reform of curriculum assessment and evaluation methods to systematically promote the transformation of evaluation, management and service, reform the evaluation and management methods, build a "six dimensional evaluation system" for schools, majors, courses, teachers, students and projects in accordance with the concept of "data-based, intelligent analysis and targeted push", integrate information means to promote the "visual" evaluation of teachers' ability, and form typical teaching cases.

2.5 Technical Skill Innovation

1. technical skills innovation platform Co Construction

Aiming at the cutting-edge technology of the automotive industry, gathering outstanding talents from the industry, scientific research institutes and universities, giving full play to the leading role of industry leaders, enterprise technical experts and teachers' teaching innovation teams, and jointly building an industry education integration community, an industry college, a skill master studio and a municipal joint laboratory with well-known enterprises and key universities.

2. promotion and application of social services

Facing the fields of automobile manufacturing, communication and other electronic equipment manufacturing, the joint venture carried out technology development, technical services, technical consulting and product upgrading in the aspects of automobile intelligent terminal debugging, sensor detection, etc., completed horizontal service projects and invention patent transfer, and effectively improved the ability and level of the team to serve the output of scientific research achievements, talent training and social needs. We will promote the training of technical and skilled personnel and the

continuing education of employees, carry out national teacher training and enterprise personnel training, and give play to the radiation and driving role of the team. Relying on the national automobile science popularization base, we will regularly carry out public welfare activities for the popularization of automobile science and technology in primary and secondary schools and surrounding communities.

3 Characteristic Innovation of Professional Teaching Team Construction

1. developed the "five in one" teaching resource system. Introduce a new generation of information technology, visualize the knowledge of industrial development, promote the establishment of the "five in one" professional teaching resource system of personnel training standards, school running conditions, curriculum construction, teachers' team and scientific and technological innovation platform, and narrow the problem of mismatch between professional talent training specifications and enterprise post technical skills requirements.

2. implemented the "cross progressive" compound talent training mode. Based on the post driven reconstruction of the curriculum system, it realizes the intersection of courses, the "cross sharing" of teachers, platforms and venues carrying the implementation of courses, explores the implementation of modular courses, serves the compound cultivation of talents, and meets the requirements of industrial upgrading.

3. the intelligent evaluation mode of "three links and two platforms" has been created. In accordance with the concept of "data based, intelligent analysis and targeted push", relying on the "three visualizations and one precision" big data analysis platform, the data in the process of professional construction and operation are collected in an accompanying manner, and the evaluation results are accurately analyzed, presented and pushed in time.

4 Conclusion

The construction of professional teachers' team in vocational colleges is an important driving force to promote the high-quality development of vocational education. The overall quality of teachers' team is directly related to the overall effectiveness of vocational colleges, and team construction is the key way to enhance the core competitiveness of colleges. Through the construction practice of the teaching team of automotive electronic technology specialty in Hunan Automotive Engineering Vocational University, it can be seen that the construction of professional teachers' team is not only a systematic innovation project, but also an important part of "building a high-level double division team" under the background of the "double high plan". Facing the needs of building a powerful country in the new era, vocational colleges need to combine their own school running orientation, start from the construction dimension of high-level professional groups, rely on team advantages and professional characteristics, explore the team building innovation mechanism that suits their own development, focus on

strengthening the cultivation of teachers' ability of "Four Unifications", deepen the education effect of "four guides", so as to lead the teaching innovation reform in the school, radiate and drive the construction of professional teaching teams in relevant colleges, build a "community of action" for teaching innovation, and finally form a high-level professional teaching team with the role of benchmarking and demonstration.

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References

1. Mitchell R, Boyle B. Understanding the role of profession in multidisciplinary team innovation: Professional identity, minority dissent and team innovation[J]. British Journal of Management, 2021, 32(2): 512-528.
2. Abdolmaleki J. The role of team leadership in team performance mediated by team learning (case study: teams of secondary school teachers in Kurdistan Province)[J]. Journal of Managing Education in Organizations, 2022, 11(1): 69-98.
3. Liuzilin, zhanghuimin Connotation requirements, construction bottlenecks and development path of high-level international "double teacher structure" teaching team in Higher Vocational Colleges [j]. education and career, 2024, (12):99-105.
4. Wang Yanan, Wang Bin, zhangxiaochao, et al Empirical research on the operation status of professional teaching teams in Higher Vocational Colleges under the project task [j]. Vocational Education Forum, 2022, 38 (11): 83-90.
5. Liyuzhen, xiaohuaiqiu, Xiao Ying Development status and Countermeasures of teaching team in "double high" Vocational Colleges [j]. vocational education communication, 2022, (10): 87-92.

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