

Research on the Development Path for Training High-quality Application-oriented Talents in New Era

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Abstract: With the increasingly growing of the demand of the regional economic transformation development for application-oriented talents, colleges and universities need to strengthen the reform of talent training mode, educational innovation and service, so as to achieve the transformation from scalable development to connotational development. This paper analyses the main issues existing in the training of application-oriented talents, which go against the achievement of the goal of training high-quality application-oriented talents. It proposes many measures, such as deepening the cooperation between universities and companies; optimizing the structure of discipline and specialty; building the diversified application-oriented teaching team and the platform for practicing and teaching; improving the innovation and entrepreneurship education system; exploring the main path for the training system of high-quality application-oriented talents.

1 Introduction

Since the start of the 21st century, China's rapid economic and social development has placed new and higher demands on higher education. As a result, higher education in China has transitioned from the massification stage to the popularisation stage. The 'Proposal of the Central Committee of the Communist Party of China on the Formulation of the Fourteenth Five-Year Plan for the Development of the National Economy and Society and the Visionary Goals for the 23rd Five-Year Plan' ^[1] was adopted during the Fifth Plenary Session of the 19th CPC Central Committee. The proposal explicitly aims to 'build a high-quality education system'. In the new era of regional economic transformation and development, there is an increasing demand for high-quality applied talents. To meet the requirements of high-quality education development, we need to strengthen the reform of talent cultivation mode and educational innovation and services. This will help establish a high-quality applied talent cultivation system and enable the transformation from 'scale development' to 'connotative development'^[2]. The cultivation of high-quality applied talents should reflect local characteristics and serve regional economic and social development. This can be achieved by deepening university-enterprise cooperation, optimizing the structure of disciplines and majors, innovating talent cultivation programmes, creating a diversified applied teaching team and practical training platform, improving the innovation and entrepreneurship education system, and strengthening the construction of the teaching quality guarantee system.

2 Connotation and Main Characteristics of Applied Talent Training

Pan Maoyuan ^[3] argues that applied undergraduate education should prioritize the establishment of moral values, meeting the needs of local economic development, and cultivating specialists with solid theoretical foundations, extensive professional knowledge, strong practical abilities, and high comprehensive quality. These specialists should be oriented towards the front line of production and have all-round development in morality, intelligence, and physical fitness. Applied talents possess sufficient theoretical knowledge and professional literacy, and are able to apply this knowledge to practice, facilitating technological innovation, promotion, and transformation. Applied talents are not engaged in scientific research but are practical workers in their respective industry fields. They are capable of adapting to rapid technological changes and the needs of local economic and social development, solving practical problems on the production line, and securing direct benefits for society. Therefore, the training of applied talents should have the following five characteristics:

1. **Locality:** Locality is the foundation for the growth and development of applied talents. Applied universities should base their education on the region and root it locally. The construction of academic disciplines and talent training objectives are closely related to local development, connecting with strategic emerging industries and local pillar industries, and supporting regional economic

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development and enterprise technological innovation^[4].

2. **Applicability:** Application ability is the core capability of applied talents. Adhere to the teaching concept of "learning for practical use", and cultivate students' ability to use theoretical knowledge to solve practical problems.

3. **Practicality:** Practicality is the basic attribute of applied talents. Emphasize the integration of teaching and doing, strengthen the training of professional practical operation capabilities, and make students the direct carriers of transforming scientific and technological advances into real productive forces. The main task of applied talents is to directly apply scientific principles or newly discovered knowledge to social practice fields closely related to social production and life.

4. **Innovation:** Innovation is an important characteristic of applied talents. In the current era, innovation and entrepreneurship education is an important guarantee for the construction of an innovative country, emphasizing the cultivation of students' pioneering consciousness and the ability to apply, promote, and innovate technology. Applied talents can not only innovate knowledge and technology but also adapt to rapid technological changes and economic transformation and upgrading.

5. **Comprehensiveness:** To solve application problems in the industry, cross-disciplinary and interdisciplinary professional knowledge and skills are needed for crossing, penetrating, and integrating. Therefore, compound talents who possess multidisciplinary knowledge and skills and have high comprehensive qualities are more likely to be favored by the market.

3 Problems to be Solved in the Training of High-Quality Applied Talents

With the rapid economic transformation and upgrading, structural contradictions in talent, such as "difficulties in university graduates' employment" and "high-level skilled worker shortage", are becoming increasingly prominent. The quantity and structure of high-quality applied talents cannot meet market demand. The pressure and demands from society prompt decision-makers in applied universities to pay more and more attention to the innovation of talent training models^[5]. However, overall, there are some issues that urgently need to be addressed in higher education talent training models.

3.1 How to optimize the student's knowledge system when setting up majors and courses.

As pointed out by Gu Yunhai^[6], some universities undertake "catch-up" expansion development, the establishment of academic disciplines and majors does not match local enterprise demands. Serious problems exist, including homogenization in academic discipline construction and talent training objectives, leading to difficulties in graduate employment. When formulating talent training programs, the fit between talent training specifications and industry job requirements is not high. There is a lack of cross-penetration mechanism between arts and science disciplines, leading to a lack of diversity

and integration in students' professional knowledge, skills, and professional literacy. Students' practical abilities are disjointed from the industry's needs, making it difficult to adapt to new job requirements due to industrial structure adjustment and transformation and upgrading.

3.2 How to deepen the integration of production and teaching in a market economy environment.

Applied undergraduate colleges and universities have been established for a short time, have weak foundations, lack high-quality teaching resources, severely lack practical training bases, and are short of faculty, urgently needing to achieve resource sharing through industry-academia-research collaboration. However, currently, the motivation for industry-academia-research collaboration does not match, there is low resonance between school and enterprise cooperation, universities' technological services provide limited support for enterprise technology transformation, and enterprises' enthusiasm for deeply participating in the whole process of university talent training is not high. Their involvement in school talent training activities is rather scattered, and effectiveness needs to be improved. Some universities have faculty shortages, and the age and title structure of the faculty is unreasonable^[7]. Most teachers lack enterprise work experience and practical innovation and entrepreneurship experience, teacher enterprise practice is nominal, the level of industry-academia-research collaborative education is limited, and the knowledge structure of teachers has limitations such as discipline-based, closed, and single, making it difficult to meet the requirements of the reform of high-quality applied talent training. Innovation and entrepreneurship education is disconnected from professional education, the setting of innovation and entrepreneurship courses lacks systematicity, and a clear, orderly curriculum system from lower to higher grades has yet to be established.

4 Main Pathways to Cultivate High-Quality Applied Talents

Given the new demands of our era, vocational institutions must shoulder their responsibilities and adhere to their original mission. They need to innovate their talent cultivation methods continuously and perfect their systems for training high-quality applied talents.

4.1 Adjust the structure of disciplines and specialties based on local industry needs.

Close ties exist between the development of vocational institutions and local industries^[8]. Guided by regional economic needs and primarily using school-enterprise cooperation, these institutions should adjust and optimize the structure of their disciplines and specialties to meet local socioeconomic needs and supply high-quality skilled talents for regional industrial development. This approach also helps to avoid structural unemployment among graduates and wastage of educational resources^[9].

The focus should also be on enhancing existing specialties. Vocational institutions should actively adapt to the technological needs of emerging industries and adjust the direction of existing specialties to enhance their relevance. Aiming at local strategic industry clusters, they should continuously adjust and optimize specialty directions, add new specialty directions such as "Artificial Intelligence", "Big Data", "New Energy", and "Intelligent Manufacturing", and cultivate urgently needed talents.

4.2 Reform talent training programs guided by learning outcomes.

Based on the basic characteristics of applied talents, guided by learning outcomes, reform talent training programs, and achieve a fundamental transformation of the education model from "focusing on how teachers teach" to "focusing on how students learn". Follow the logical path of reverse design of courses from "industry needs - training objectives - graduation requirements - curriculum system". Construct a matrix supporting graduation requirements and training objectives, a matrix corresponding to graduation requirements and curriculum system, and a matrix corresponding to ability development and curriculum objectives. These three matrices complement each other to achieve consistency between teaching objectives and teaching actions, teaching actions and learning effects, and learning effects and ability development.

According to industry standards and job requirements, adjust and optimize the talent training program and update the curriculum system closely based on the cultivation of application and professional abilities, to achieve the "three unifications" of training objectives and industry needs, curriculum system and job capabilities, and practical training process and production engineering. Pay close attention to regional economic and social development and industry demands, define the professional knowledge, literacy, and skills required by the industry as the expected learning outcomes of students based on industry standards, determine professional talent training goals based on learning outcomes, and decompose them into graduation requirements. Construct a curriculum system based on professional qualification standards and job competency standards, and optimize the curriculum structure. The basic courses of the discipline should be designed according to industry needs, in the form of professional courses, to lay a solid theoretical foundation for the sustainable development of graduates. Professional core courses align with job competenc^[10].

4.3 Integrate industry and education to create multi-level practice-oriented talent cultivation platforms.

Vocational institutions should unite industry demand orientation with educational goal orientation. They should establish professional teaching guidance committees involving local governments, industries, and employers, reform and innovate applied talent cultivation models, and integrate industry-education integration and collaborative

talent cultivation throughout the entire process. They should leverage school-enterprise cooperation to build mechanisms and platforms that improve students' practical skills, comprehensive quality, and social adaptability.

4.4 Design a multi-dimensional innovation and entrepreneurship teaching system centered on capabilities.

The ultimate goal of innovation and entrepreneurship education is to cultivate innovation and entrepreneurship capabilities, which are key aspects of high-quality applied talent cultivation. From the perspective of stakeholders' needs, vocational institutions should adhere to a professional and standardized approach, extract the elements of innovation and entrepreneurship education from various courses, and deeply integrate creativity, innovation, and entrepreneurship. They should build a multi-dimensional and three-dimensional innovation and entrepreneurship education curriculum system for all students, combining theoretical learning with practical training. They should also develop general elective courses for lower-grade students to cultivate basic innovation and entrepreneurship qualities and enhance their awareness of innovation and entrepreneurship^[11].

4.5 Cultivating a Diversified Applied Faculty Team Focused on Holistic Student Development

Pan Xiuhan believes that in the process of cultivating applied talents, the comprehensive development of students should be the goal. Students need not only professional and general knowledge, and professional and developmental abilities, but also a blend of universal and discerning qualities. They should also possess a strong spirit of innovation, a global perspective, and a well-rounded personality. Therefore, teachers must adhere to a "student-centered" educational philosophy, follow lifelong learning principles, enhance their comprehensive qualities through continuous scientific research and social practice, and use their research and practical achievements as materials and case studies to feed back into teaching, thereby promoting the comprehensive development of students.

Strengthening teachers' engineering backgrounds, innovating employment mechanisms, and establishing a team of applied teachers that combines professional and part-time work, complementary advantages, and integration of industry, education, and research. The integration of production and education is the "source of living water" to improve teachers' teaching abilities and comprehensive qualities, which can effectively promote the renewal of teaching content and innovation of teaching models, and solve the problem of traditional teaching models severely lagging behind the needs of social economic development^[12]. Therefore, teachers are encouraged to participate in social industry "double creation" practices, send young teachers to part-time jobs in enterprises for training, accumulate practical experience, and enhance practical abilities^[13]. At the same time, actively introduce excellent innovation and

entrepreneurship education talents from abroad and Hong Kong, Macao, and Taiwan, to build a faculty team with international thinking and an international perspective, serving the cultivation of students' international competitiveness. Make full use of industry resources, actively hire well-known scientists, successful entrepreneurs and other excellent external talents as course professors and project mentors, and regularly hold lectures and forums. College teachers and industry experts jointly form research innovation teams, jointly carry out technical problem tackling, apply for research projects, technology development and services, etc., to achieve shared results and win-win cooperation among talents^[14].

5 Conclusion

In the context of the new era, application-oriented undergraduate universities must seize opportunities and continuously innovate talent cultivation models based on local economic and social development, industry and industry needs, deepen school enterprise cooperation, optimize disciplinary and professional structures, create a diversified application-oriented teacher team and practical education platform, improve the innovation and entrepreneurship education system, create application-oriented characteristics, and continuously improve the quality of talent cultivation.

Funding Projects

2022-2023 Guangdong Province General University Special Innovation Project (Philosophy and Social Sciences) (2020WTSCX143)

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