Research on the Cultivation of Applied Talents in Universities under the Perspective of the Education Powerhouse

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Abstract: Under the strategic goal of the Education Powerhouse, the cultivation of applied talents in universities is facing new opportunities and challenges. This article proposes a systematic optimization path across five dimensions: model innovation, curriculum development, faculty capacity building, evaluation reform, and support systems. It aims to promote the construction of an application-oriented talent training system in universities that is demand-oriented, which is characterized by deep industry-education integration. The ultimate goal is to provide high-quality talent support for the construction of the education powerhouse.

***Keywords*:** education powerhouse, applied talents, development pathway

1. Introduction

Nowadays, competition for talent has become central to a nation's overall strength. Scholars worldwide have conducted extensive discussions on the cultivation of applied talents. International countries have formed talent cultivation models such as Germany's "dual system"[1]and the UK's "Problem-Focused Approach" [2]. In China, research focuses on the transformation of application-oriented universities, the integration mechanism of industry and education, and the innovation of talent training models, with a particular emphasis on the challenges of integrating industry and education [3][4]. This article aims to provide reference experience for this research and propose an optimization path with practical operability.

2. The strategic connotation of the Education Powerhouse and its core requirements for universities

2.1 The essence of the Education Powerhouse

The essence of building an education powerhouse lies in achieving an organic integration and coordinated advancement of the three dimensions of scale, quality, and contribution, thus surpassing the traditional development path that relied solely on educational resource investment and scale expansion. The interdependence and collaborative progress of scale, quality, and contribution constitute the internal logical structure and solid core of an education powerhouse.

2.2 New requirements for applied talents in the development of higher education under the strategy of the Education Powerhouse

Higher education serves as the cornerstone in building an education powerhouse [5]. The strategy should encompass the following key areas. Firstly, adhere to the fundamental direction of cultivating virtue and nurturing talents, and shape the core values of applied talents. Secondly, optimize the structural layout of higher education and guide the scientific positioning and characteristic development of applied universities. Thirdly, enhance the core quality of talent cultivation and strengthen the practical ability and innovative competence of applied talents. Fourthly, strengthen the service function of technological innovation and highlight the pivotal role of applied talents in the transformation of achievements and industrial upgrading.

3. The current shortcomings in the cultivation of applied talents in universities

3.1 There is a disconnect between the curriculum system and industry demand

The existing curriculum system still has a tendency to prioritize theoretical teaching over practical application to a certain extent, and the update speed of course content lags behind the pace of industry technological iteration. The curriculum of some universities has not been timely integrated with the new technologies, standards, and processes of the industry, and the proportion of experimental and practical teaching in the total credits is relatively low.

3.2 The practical teaching system is weak and the depth of integration between industry and education is relatively insufficient

Although the coverage of school enterprise cooperation continues to expand, the level and depth of enterprise participation in talent cultivation are still insufficient. The forms of cooperation are mostly limited to elementary interactions such as observational internships and short-term visits, lacking a stable, standardized, and in-depth collaborative education platform. The construction of off-campus internship bases also faces problems such as high intern turnover, informal management, and inadequate evaluation mechanisms, which affect the achievement of practical teaching effectiveness.

3.3 Structural shortage of ' dual-qualified' teaching staff

The "dual-qualified" teaching force with solid theoretical foundation and rich practical experience faces deficits in both scale and competence. Currently, most full-time teachers in universities lack frontline work experience and proficient practical teaching abilities in enterprises. At the same time, the channels for introducing high-level technical and management professionals from industry enterprises as part-time teachers remain underdeveloped, resulting in a serious shortage of teaching staff in the practical teaching process, which is failing to meet the demands of cultivating high-quality applied talents.

3.4 Single teaching and evaluation methods

In the teaching process, traditional teaching methods centered on teachers and knowledge lectures still dominate, while modern teaching methods such as project-based learning, case-based teaching, and seminar-based teaching are insufficiently applied and ineffective. In terms of student assessment and evaluation, the methods are still overly simplistic, focusing on the examination of rote memorization and test taking ability, while lacking scientific and effective diversified evaluation methods for students' comprehensive qualities such as practical skills, innovative thinking, and teamwork spirit.

4. Optimization path for cultivating applied talents from the perspective of the Education Powerhouse

4.1 Mode innovation path, promoting the integration of industry and education towards institutionalization and materialization

Efforts will be made to break through the limitations of previous school enterprise cooperation, such as its fragmented, short-term, and loosely structured nature, and to build an institutionalized and sustainable collaborative education mechanism. We should actively promote the construction of physical platforms such as modern industrial colleges and characteristic demonstration software colleges, and achieve a deep integration model of "Five Co-creation" between schools and enterprises, including jointly formulating training plans, jointly building courses and textbooks, jointly forming teaching teams, jointly building practical bases, and jointly conducting talent evaluations. Furthermore, we should comprehensively promote teaching organizational models such as project-based learning, industry-sponsored "order-form" classes, and work-study rotation, thereby enabling students to enhance their ability to solve complex problems in real production environments.

4.2 Curriculum reconstruction path, constructing an interdisciplinary, project-based, and open curriculum system

Resolutely break down the rigid disciplinary barriers and establish a modular curriculum structure of "shared foundational cores, interdisciplinary major integration, and mutually elective advanced tracks". Include artificial intelligence fundamentals, data science, engineering ethics, and other related topics as general education foundations in various professional training programs, and strengthen the digital literacy and technological ethics awareness of all students. We need to systematically design and develop project-based course groups based on real industry cases and actual projects, vigorously promoting "learning by doing" and "inquiry-based learning". These reforms collectively achieve the organic unity of knowledge imparting, ability cultivation, and quality improvement.

4.3 Teacher development path, creating a high-level "dual-qualified " teaching force

We should improve and implement the system of teachers going to enterprises for practical training and the periodic rotation mechanism, enhance teachers' engineering practice ability and technical application ability. Concurrently, we must actively introduce enterprise experts and seasoned technical professionals as industry mentors, participate in course design, graduation guidance, and innovative practical teaching. Deepen the reform of the teacher evaluation mechanism, incorporate the effectiveness of practical teaching, technological research and development achievements, and contributions to the

integration of industry and education into the performance evaluation and professional title promotion system, and stimulate the endogenous motivation of teachers to participate in the cultivation of applied talents.

4.4 Evaluate the reform path and establish a diversified, process oriented, and competency based evaluation system

It is essential to reform the single-method assessment of written exams, transition from a single exam evaluation to a comprehensive ability evaluation, and build a formative evaluation system that focuses on ability growth and learning process. We should actively adopt multiple evaluation methods — such as project reports, physical works, team collaboration evaluations, and learning portfolios — and shift the evaluative focus toward assessing students' abilities to solve complex problems, critical and innovative thinking, effective communication, and teamwork. This approach transforms assessment into an effective tool for promoting students' comprehensive development and continuous improvement of teaching.

4.5 Ensure support systems, improve institutional design and international resource integration

Strengthen the top-level institutional design and resource coordination in universities, and tilt towards the construction of application-oriented majors and teaching reform in terms of funding investment, management mechanisms, and policy support. At the same time, we will expand high-level international exchanges and cooperation, promote the alignment of talent training standards with international standards, and cultivate high-quality applied talents with a global perspective and international competitiveness.

5. Conclusion

Under the guidance of the strategy of the Education Powerhouse, the cultivation of applied talents in universities is a multidimensional and systematic project. Faced with new situations and requirements, application-oriented universities should proactively respond to changes, continuously optimize talent training models, enhance the adaptability of education supply to economic and social development, and effectively undertake the historical mission of providing talent support for the construction of an educational powerhouse.

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