

Research on the Construction and Characteristic Development of Disciplines and Professions in Local Industry Universities

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Abstract: *The paper discusses the guiding ideology of disciplines and professions development in local industry universities, the opportunities and challenges faced as well as the common problems that generally exist, establishes the development ideas and development goals of disciplines and professions on the basis of digging deeper into the disciplines and professions of local universities, and puts forward the countermeasures to promote the construction and characteristic development of disciplines and professions in local industry universities, which helps to improve the overall strength of disciplines and professions in local industry universities, realize university function, connotative development and characteristic development, and enhance the core competitiveness of local industry universities.*

Keywords: *disciplines and professions; integrated construction; strengthening characteristics; structure of disciplines and profession; serving regional and industrial development*

1. Introduction

Local industry universities mainly refer to those higher education institutions that originated from industry management and were transferred to the local management of provinces, regions and municipalities during the three large-scale management system reforms of higher education from 1998 to 2000, especially those former industry departments that were jointly managed by the Ministry of Education and provinces and municipalities (such as the former Ministry of Railways, Ministry of Industry, Ministry of Transportation, etc.)^[1]. Since their establishment, local industry universities have been important bases for talent cultivation in various national industries, and have made outstanding contributions in serving, supporting and leading the development of the industries through the cooperation between industry, university and research, and are an important part of China's higher education system.

2. Opportunities and challenges faced by local industry universities

2.1. The construction of double first-class universities

The role of higher education in the process of building a strong country in modern socialist education is constantly highlighted. "Accelerating the construction of first-class universities and first-class disciplines and realizing the connotative development of higher education" proposed by the 19th National Congress has become the new mission entrusted to higher education in the new era.

2.2. "Double ten thousand plan"

Under the new circumstances, the Ministry of Education has implemented the "double ten thousand plan", fully implemented "four returns based on undergraduate education", built high-level undergraduate education, and comprehensively improved the ability to cultivate talents. Building first-class courses and majors is an important basis for accelerating the construction of first-class disciplines and implementing connotative development, as well as an inevitable choice for comprehensively revitalizing undergraduate education, improving the talent cultivation ability of local industry universities, and realizing connotative development of higher education^[2].

2.3. The construction of new engineering courses

Facing the challenge of a new round of scientific and technological revolution and industrial transformation, it is necessary to take the construction of new engineering courses as an important starting point, continue to deepen the reform of engineering education, and accelerate the training of outstanding engineering talents. The construction of new engineering courses is to serve the needs of a series of national strategic development and the guarantee of enhancing the national hard power and international competitive advantages, so the construction of new engineering courses is imperative.

2.4. Services for regional and industrial development

In order to serve the development of regions and relevant Chinese industries, and to meet the demand of cultivating high-quality applied and international talents, it is necessary to further optimize the structure of disciplines and professions, promote the integration of professions, highlight characteristics, and build a professional structure that matches the economic and social development structure of the regions. Laying out shortage disciplines, comprehensively dovetailing with industrial and innovation chains, and building a discipline and profession system with complementary advantages, mutual support, complete system and complete functions have again put forward new requirements for local industries.

3. Main problems of local industry universities

The ecological system of coordinating symbiosis and supporting development of disciplines and majors is not perfect, and the connotative construction of disciplines and professions to adapt to the new era needs to be strengthened.

The overall strength of disciplines and majors is generally not strong, and the construction of first-class disciplines and majors needs to be strengthened; the structure of disciplines and professions needs to be further optimized, and the process of integration construction of disciplines and majors needs to be further accelerated.

The construction of discipline professional clusters is not close enough, the characteristics are not distinctive enough and need to be further improved; the interdisciplinary integration is not enough, the construction of new engineering courses needs to be strengthened; the cultivation of new interdisciplinary majors needs to be further increased.

The support degree of high-level landmark achievements to the construction of disciplines and professions is not enough.

The institutional mechanism for the construction of disciplines and professions is not sound enough.

4. Development ideas of local industry universities

Focusing on the orientation of school operation and market demand and dovetailing with the development of national industries and regional industrial demands, we should take the construction of double first-class universities and "double ten thousand plan" as the lead, take connotative development as the main line, aim at cultivating application-oriented and application-innovation talents, increase the construction of discipline and profession, strengthen the connotative construction of disciplines and professions, promote the optimization and adjustment of the structure of disciplines and professions, condense the directions, give full play to the advantages and highlighting the characteristics, and build an ecological system of disciplines and majors with complementary advantages, mutual support, complete system and complete functions, and promote the high-quality development of local higher schools.

5. Goals of development

Local industry universities should strengthen the internal construction of disciplines and professions, improve the overall strength of disciplines and majors, build an ecological system of coordinated symbiosis and support development of disciplines and majors to adapt to the new era, and serve the development of regional and Chinese industries.

5.1. Strengthening the construction of first-class disciplines and first-class majors

Local industry universities should focus on building the existing national and provincial first-class disciplines of the university, strive to have characteristic and strong disciplines selected as national and provincial first-class disciplines, focus on cultivating high-level landmark achievements, constructing discipline peaks, and strive for first-class disciplines to enter the forefront of discipline ranking at home and abroad. It is necessary to create brand majors with local industry university characteristics and to be approved as national first-class undergraduate majors and provincial first-class undergraduate majors.

5.2. Optimizing the structure of disciplines and professions

Local industry universities should explore the mechanism to promote dynamic adjustment of disciplines and majors, promote interdisciplinary integration, and build a system of disciplines and professions that can adapt to the economic and social development of industries and regions. And the universities should accelerate the construction of degree points, and strive for a breakthrough in the number of authorized points for doctoral degrees, authorized points for doctoral professional degrees, authorized points for master's degrees and authorized points for master's professional degrees; and the universities should control the total number of full-time undergraduate majors, renovate and upgrade traditional engineering majors, cultivate and develop new engineering majors, deepen the reform of talent training mode, and vigorously cultivate high-quality talents urgently needed to serve the development of modern industries in the country and the region.

5.3. Promoting the process of integration construction

Local industry universities should create the four-in-one cooperative construction mode of "discipline professional group - disciplines and professions - platform - team" and accelerate the process of integrated construction of disciplines and majors. It organically integrates the disciplines and professions of local industry universities with complementary functions into clusters, builds a grid management system of discipline leaders, academic leaders and heads of undergraduate majors, sorts out the correspondence between teams and platforms, and improves the management service capacity.

5.4. Strengthening the connotative development of disciplines and professions

Local industry universities should taking quality as the fundamental, strengthen the internal construction of disciplines and professions. And the universities should do a good job in the periodic qualified assessment of degree authorization points, undergraduate major assessment and engineering education accreditation. And the universities should achieve the improvement of the ranking of participating disciplines in the national discipline assessment and the increase of the number of majors certified by engineering education.

5.5. Enhancing the level of serving industries and regional development

Local industry universities should encourage collaborative innovation and open development, strengthen university-enterprise collaboration, university-institute integration and inter-university cooperation, and enhance the ability to serve the regional economy and the development of related industries in China.

6. Initiatives of the construction and characteristic development of disciplines and professions

6.1. The construction of discipline and profession ecosystem

6.1.1. Optimizing the layout of disciplines and professions

Aiming at national strategies, regional and industrial demands, the universities actively promote the integration of disciplines and professions, implement the construction of "new engineering courses", independently set up secondary disciplines outside the catalog, and implement dynamic adjustment of degree points and undergraduate majors. Combining the development basis and characteristics of disciplines and majors, the universities actively declare degree authorization points and transfer and increase undergraduate majors. And the universities establish a tiered construction mechanism for

disciplines and majors, enlarge and strengthen disciplines and professions with advantages and characteristics, actively cultivate and support disciplines and majors that are urgently needed and in short supply for social development, strengthen the development foundation of weak disciplines and majors, and gradually form a system of special disciplines and professions that closely matches with the regional industrial structure and industrial demands.

6.1.2. Promoting the integrated construction of disciplines and majors

The construction of disciplines and majors are mutually based, work together and support each other. The universities should strengthen the concept of collaborative development of disciplines and majors, break the barriers of management system and mechanism, gradually build the four-in-one collaborative construction mode of "discipline professional group - disciplines and professions - platform - team", enhance the ability of disciplines and majors to educate and innovate people, effectively collaborate the construction of disciplines and majors with personnel training, faculty construction, scientific research and innovation, and construction of teaching and science platform, etc., form a discipline and major construction system with the grid management of discipline leaders, academic leaders and undergraduate major leaders, and create a teaching and research team with up and down linkage, build experimental bases and scientific and technological platforms with outstanding characteristics, improve the target and effectiveness of the construction of disciplines and majors, and strive to produce landmark results.

6.1.3. Deepening the construction of discipline professional clusters

According to the constructive foundation of disciplines and professions, and the development idea that disciplines and professions connect with industry chain, the universities accelerate the construction of discipline professional clusters. The integration of disciplines and professions is encouraged, which promotes the combination of science and technology, industrial-industrial crossover, industrial-textual penetration and management-industrial integration, and then a perfect discipline professional cluster covering the whole life cycle of design, manufacturing, operation and maintenance, control and testing of related industries is formed. And the universities should make a in-depth discussion on the construction content of the cluster, guide by clear construction direction, implement management responsibilities, build a communication platform, establish a scientific operation mechanism, put the construction work into practice, and improve the level and quality of discipline construction.

6.2. The connotative construction of disciplines and professions

6.2.1. Strengthening characteristic construction and building first-class disciplines

Industry universities should take the frontiers of disciplines, interdisciplinary and national strategic demands as the guide, condense research directions, highlight disciplinary characteristics, construct research platforms, gathering disciplinary teams, carry out personnel training and scientific research, focus on improving the construction level and domestic influence of national and provincial first-class disciplines in local universities, build disciplinary peaks and making strong disciplines more outstanding. And the universities allocate resources reasonably, cultivate disciplines with strong characteristics to declare doctoral degree authorization points to be selected as the ranks of first-class disciplines, so as to consolidate the characteristics of industries in local colleges and universities. The universities are inspired and led by first-class characteristic disciplines to build an efficient discipline construction management system and form effective linkage among disciplines to improve the overall level of discipline construction. A number of first-class disciplines with good foundation that adapt to the development of regional economy and industry are constructed to form new disciplinary advantages and help the development of first-class disciplines.

6.2.2. Optimizing cultivation mode and create first-class majors

The universities define the positioning of majors, strengthen the characteristics of majors, improve the training quality, and strive to create first-class majors. Industry standard and professional core technology are introduced to optimize talent cultivation mode and to improve curriculum system construction and to strengthen process assessment. Industry and enterprise experts are introduced to participate in professional construction, comprehensively implement comprehensive professional reform and promote coordinated professional development. The three-dimensional radiation is highlighted to drive the construction of application-oriented majors with the same common technology [3]. The universities actively promote professional evaluation and professional certification of engineering education, and expand the coverage of professional certification. And building more

national and provincial first-class undergraduate majors can continuously improve the competitiveness of majors and talent training quality.

6.2.3. Establishing a scientific and efficient management mechanism

The team of discipline leaders, academic leaders, heads of undergraduate majors and teachers will be selected to form an efficient management team of disciplines and majors, forming a grid management model of discipline leaders, academic leaders and heads of undergraduate majors, to establish a management mechanism with clear division of labor, implementation in place, up and down linkage and scientific operation, and the task of integrated construction of disciplines and majors is implemented.

6.2.4. Concentrating characteristic discipline research directions

Taking the selection of discipline leaders, academic leaders and teachers' teams as an opportunity, the universities further sort out the foundation of discipline construction, establish research directions, highlight construction characteristics, and clarify the current goals and key tasks of discipline construction. The team of teachers led by the leader will carry out teaching and scientific research work closely around the research direction, continuously precipitate and accumulate strength, steadily promote the condensation of characteristics, and concentrate on accelerating the construction of the discipline.

6.2.5. Increasing the construction of landmark achievements

The universities take the landmark achievements as the main grasp, and grasp the discipline construction with the point. And they further improve the construction of the project bank of first-class disciplines, do a good job in project planning and management, reasonably allocate special funds for the construction of first-class disciplines, and cultivate landmark achievements in the form of projects. In due course, the universities will establish an incentive mechanism, strengthen the leading role of attracting and nurturing high-end talents and national major key projects, increase the support for key projects, and make a breakthrough in the quantity and quality of landmark achievements. And the universities should concentrate on investment, focus on cultivation, wait patiently, dare to try and make mistakes, also respect the law of discipline construction development while actively cultivating landmark achievements, and continuously improve the ability and level of discipline construction in exploration.

6.2.6. Strengthening the construction of teams and platforms to promote the internal development of disciplines and professions

The universities actively organize the selection of discipline leaders, academic leaders, heads of undergraduate majors and teacher teams, and give full play to the leading role of leaders and the clustering effect of teacher teams. And the universities build high-level teaching and scientific research platforms, gather talents based on the platforms and landmark achievements, give priority to attracting and nurturing leading talents, focus on cultivating outstanding talents and excellent young talents, form teaching and scientific research echelons, strive for more high-level teaching and scientific awards, national major key projects and major horizontal projects, cultivate high-level papers, promote the transformation of scientific research results, and strongly support the internal construction of disciplines and professions.

6.3. Accelerating the development of emerging disciplines and professions

The universities accelerate the cultivation of emerging cross-disciplinary majors. Facing the major demands of regional leading industries, emerging industries and industries, the universities carry out interdisciplinary research and collaborative innovation, actively cultivate interdisciplinary fields and directions, and form interdisciplinary platforms, teams and high-level think tanks. The universities break down the barriers of disciplines and professions, actively layout new engineering majors, upgrade and transform traditional engineering majors, build new engineering courses and new liberal art courses with the integration of multiple disciplines, and drive the adjustment and optimization of professional structure and internal improvement.

7. School-enterprise synergy and inter-school cooperation for serving industry and regional development

7.1. Strengthening school-enterprise synergy

The universities focus on serving the regional economy and China's industry development, cultivate high-quality applied and innovative talents, and strengthen the construction of disciplines and majors to adapt to industrial development. A professional structure that matches the structure of regional economic and social development is constructed and shortage disciplines are laid out, to comprehensively dovetail with the industrial and innovation chains [4]. The universities declare university-enterprise and inter-university cooperation projects in talent training, mutual employment of teachers, platform sharing, scientific research cooperation, and collaborative innovation, and implement them to the ground, and make every effort to promote the overall improvement of the construction level of disciplines and majors, and improve the ability to serve the regional economy, society and industry.

7.2. Strengthening inter-school cooperation

A mechanism for the integration and development of inter-school disciplines and majors is established. Relying on advantageous disciplines and professions, the universities deeply promote inter-school and school-institute (institute) cooperation in school operation. And they jointly offer high-quality courses and promote the common construction, sharing and mutual recognition of credits for high-quality educational resources. The Universities should explore the development of cross-campus mutual employment of teachers and promote mutual employment in teaching. And the universities should build inter-university cooperative teaching alliances and promote exchange and training of undergraduate students and joint training of master's and doctoral students. Also, the universities should explore the establishment of inter-university science and technology cooperation linkage mechanism, actively promote the common construction and sharing of science and technology platforms, jointly declare major science and technology projects and carry out technical research with partner universities, and improve the ability to serve regional economic and social development and industry.

8. Conclusion

The paper illustrates the problems in the construction of disciplines and professions in local industry universities, puts forward important initiatives such as the construction of ecological system and connotative construction of disciplines and professions and the development of emerging disciplines and majors, and constructs the four-in-one cooperative construction mode of "discipline professional group - disciplines and professions - platform - team", to promote the integrated construction of disciplines and professions, and to help the construction and characteristic development of disciplines and professions in local industry universities.

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