Theoretical Logic and Practical Approach to the Construction of Major Groups in Local Applied Undergraduate Colleges

Xiaoya Wang[1,2], Hailong Zhang[2,*]
[1]*Shaanxi Normal University, Xi'an, Shaanxi, China*
[2]*Shangluo University, Shangluo, Shaanxi, China*
**Corresponding Author*

Abstract: Actively promoting the construction of professional groups is an important means to optimize the professional structure of local applied undergraduate colleges and improve the effectiveness of education. This study aims to explore the theoretical foundations and practical pathways of constructing professional clusters in local applied undergraduate institutions, with a particular focus on how the construction of professional clusters can improve the quality of talent cultivation in colleges and meet the demand for applied talents in society. Exploring the theoretical basis and principles of organization for the construction of professional clusters in application-oriented undergraduate colleges, analyzing various practical problems in the process of professional cluster construction, proposing solutions and construction paths, can provide decision-making basis for the reform and development of professional settings in local universities. Thus promoting the integration of local universities into the overall development of regional industrial clusters, activating the endogenous driving force for sustainable development of applied undergraduate universities, and further improving the quality of talent cultivation.

Keywords: Local; Application-Oriented; Professional Groups; Industry Chain

1. Introduction

Local applied undergraduate institutions primarily include higher education institutions with an "applied" orientation located in specific regions. These institutions are an important component of higher education in China, sharing common aspects such as talent cultivation, scientific research, social service, and cultural heritage. However, they also possess unique characteristics rooted in the local economy and society, serving local industrial development and meeting regional talent demands. Industries are products of the ongoing development of social division of labor and social productive forces, and the social division of labor is the foundation for the existence of majors. Innovations and transformations in industrial structure directly influence the personnel needs of enterprises and also provide direction for the adjustment of university major structures. Majors are the basic units of talent cultivation and serve as educational carriers based on vocational division and analysis. A professional cluster is a group of related majors established around a particular industry to respond to regional economic development under the new economic development context [1]. Local applied undergraduate institutions, with a clear regional service orientation, closely align with local industrial chains, and gradually build characteristic professional clusters by leveraging their strengths in specific majors to cultivate high-quality applied talents. This is of significant importance for promoting the integration of local universities into regional industrial clusters and enhancing the social service capacity of local institutions.

2. The Generative Logic of Professional Cluster Construction Theory

The generative logic of professional cluster construction theory primarily refers to the application of industrial cluster theory, synergy theory, and the theory of external relations of education to the field of higher education, specifically to the practice of constructing professional clusters in local applied undergraduate institutions. This involves using theory to guide practice and treating the guiding and normative role of theory on practice as the fundamental support for professional cluster construction. This mainly includes the following three aspects.

2.1 Application of Industrial Cluster Theory in Higher Education

The theoretical basis for constructing professional clusters originates from industrial cluster theory in the field of economics. Industrial cluster theory is a Western economic theory established in the 1980s by scholar Michael Porter. In his book The Competitive Advantage of Nations, Michael Porter outlined the meaning of clusters and deeply analyzed the phenomenon of clusters emerging under the modern global economy. He pointed out that a cluster refers to a specific area within a particular region, consisting of a group of interrelated companies, suppliers, related industries, and specialized institutions and associations. He analyzed that once an industrial cluster is formed, the industries within the cluster develop mutual assistance relationships, helping industries overcome internal inertia and rigidity, solving the crisis of overly subdued competition, and transforming these phenomena into upgraded competition. It encourages industries to continuously diversify, accelerates the flow of information, and the competitiveness of an industrial cluster exceeds the sum of its parts [2].

Applying Michael Porter's concept of clusters and cluster phenomena to the field of higher education leads to the emergence of professional cluster theory. As local applied institutions serving regional development, guided by market demand and strengthening professional cluster construction, it enables mutual assistance or competitive relationships among various majors, accelerates the upgrading and replacement of majors, improves the level of professional construction, and allows professional clusters to exert a greater cumulative effect than the sum of individual professional construction levels. This forms a brand-new educational philosophy and talent cultivation model.

2.2 Application of Synergy Theory in Talent Cultivation in Local Universities

Synergy theory was first proposed by Professor Hermann Haken, a renowned physicist from the University of Stuttgart in West Germany, who systematically discussed synergy theory in 1976. Synergetics can be understood as the study of coordination and cooperation. It examines how subsystems within a system collaborate to generate macroscopic spatial, temporal, or functional structures. In other words, synergetics aims to discover the universal laws upon which structures are formed. Subsystems within a system influence and coordinate with each other, leading the entire system to transition from a state of disorder to order, potentially forming new structures or generating new overall effects [3]. Because the structures in synergy theory are based on universally applicable laws, synergetics is also built on relatively universal principles, such as a series of phenomena discovered in fields like physics, chemistry, biology, and medicine, all of which fall within the scope of synergy theory. Therefore, this theory has been widely applied.

Applying synergy theory to talent cultivation in local universities involves considering schools, enterprises, industries, and governments as various subsystems involved in education. These subsystems interact and resonate with each other, potentially forming a pulling effect that significantly enhances the quality of talent cultivation. When applied to the construction of professional clusters in local applied institutions, on one hand, the institution's professional clusters and the industrial chains in the local and regional economy belong to two different subsystems. These two subsystems may form interactive effects, interfacing, adapting, and promoting each other through their interactions. On the other hand, each major within a professional cluster belongs to different subsystems, and these subsystems, through resource sharing, complementary advantages, and competition, ultimately achieve a synergistic interactive effect, jointly promoting the improvement of the institution's professional construction level.

2.3 Application of the Theory of External Relations of Education in the Social Service Functions of Universities

The function of universities serving society makes higher education more widely involved in social development, which is even more evident in local universities. Mr. Pan Maoyuan proposed the theory of external relations of education, which remains an important theoretical guide in higher education research to this day. The theory of external relations of education emphasizes that education must adapt to social development, presenting a symbiotic and synergistic relationship between people, education, and society [4].

Therefore, local universities should break away from the self-centered mindset, consider themselves within the context of society, and gradually establish new concepts of other-centeredness. By establishing professional clusters that align with regional industrial clusters and proactively building reciprocal partnerships with local governments and enterprises, universities can fully leverage their social service functions and contribute to the development of the local economy and society.

3. Practical Obstacles in the Construction of Professional Clusters in Local Applied Undergraduate Institutions

3.1 Ideological Obstacles: Unclear Logic in the Formation of Professional Clusters

Establishing correct educational philosophies is essential to ensure scientific objectives, methods, and values, thereby guiding proper teaching practices. In the process of forming professional clusters, only by adhering to correct, scientific, and innovative philosophies and logics can advantages and characteristics be manifested. However, in practice, issues such as outdated philosophies, unclear logic, and blind following in formation exist. Specifically: first, the construction of professional clusters in applied undergraduate institutions cannot be completely distinguished from that in vocational colleges and research-oriented institutions. It is not entirely clear how to balance an industry chain-oriented approach with a discipline knowledge system-oriented approach in professional cluster construction. Second, the goals for forming professional clusters are overly broad and grand, lacking specificity. Some majors are merely grouped together based on the current organizational structure, appearing as professional clusters but actually being very loose, failing to truly align with the positioning of applied institutions and their talent cultivation objectives. Third, there is no dynamic mechanism for professional cluster formation. Methods and paths for timely adjustments and precise alignment based on industry clusters and job clusters are not clear, leading to talent cultivation not being guided by industry chain demands and not resonating with industry transformation, upgrading, and innovative development [5]. As a result, once a professional cluster is formed, it signifies completion, and the mutual assistance or competitive relationships among majors within the cluster have not been established, rendering the role of the professional cluster not significantly realized.

3.2 Curriculum Obstacles: Difficulties in Scientifically Setting up the Curriculum System for Professional Clusters

In constructing talent cultivation programs guided by Outcome-Based Education (OBE), curriculum design directly corresponds to the achievement of graduation requirements. The formation of professional clusters also requires a scientific and rational curriculum system as support. The correspondence between curriculum design and industry demands and job capabilities directly determines whether the talent cultivation objectives of the professional cluster are achieved. Therefore, the curriculum system is the internal framework supporting the professional cluster, curriculum content acts as the adhesive that breaks down barriers between majors, and curriculum implementation becomes the link connecting teachers from different majors [6]. In practice, there are issues such as difficulties in managing curriculum types, quantities, and content. Specifically: first, a professional cluster consists of several majors, requiring effective integration while reflecting each major's characteristics and advantages. If each major continues to set curricula as before the cluster formation, there is no need for forming clusters. Thus, how to break the original curriculum settings, achieve an organic combination of courses from different majors, and fully leverage the advantages of the professional cluster's curricula is a major challenge. Second, adjusting teaching content based on the latest developments and demands in industries and sectors to meet the differences among majors has become a new challenge for teachers. Third, selecting different curriculum systems based on different models is necessary. Professional clusters formed by aligning with job clusters generally have similar disciplinary backgrounds and technical fields, but those formed by aligning with industry chains are based on these majors jointly serving a specific industry, often belonging to different disciplines and having dissimilar technical fields, making curriculum design relatively more challenging.

3.3 Faculty Obstacles: Difficulty in Building a Teaching Team for Professional Clusters

Building a teaching team plays a key role in professional reform and construction. It not only strengthens integration among majors but also promotes interdisciplinary research and collaboration. The level of the teaching staff directly affects the development and effectiveness of the professional cluster construction. However, in the process of constructing professional clusters, building the teaching team is extremely challenging. First, the requirements for professional cluster leaders are high. They must possess rich teaching experience, understand the basic situation of each major, and be familiar with industry development trends. They need to demonstrate excellent competence in professional cluster construction to lead the cluster towards better development. This places higher demands on the leaders' theoretical level, industry experience, and practical abilities. Second, attracting outstanding talents is difficult. Local applied institutions are often in a passive position in terms of talent recruitment due to geographical limitations, and the stability of the teaching staff is insufficient. Long-term employment of part-time teachers can temporarily alleviate the shortage but also hinders the sustainable development of the teaching team. Finally, coordinating internal teachers with external industry mentors is challenging, often resulting in unsmooth alignment mechanisms and insufficient integration, making it difficult to enhance intrinsic motivation and empower teacher development.

3.4 Planning Obstacles: Lack of Systematic Planning for Training Bases

The construction of training bases can promote deep collaboration among industry, academia, and research, continuously strengthening the alignment between the school's talent cultivation education chain and the enterprise's industrial chain, thereby establishing training bases that align with the characteristics of their professional clusters and forming new pathways for talent cultivation. However, the biggest problem in current professional cluster construction is the lack of systematic planning for existing training bases [7]. Each major within the professional cluster lacks unified planning in constructing training bases, does not adhere to the principle of co-construction and sharing within the cluster, and fails to integrate practical teaching resources, instead operating independently. This is especially evident in interdisciplinary majors, where there is no coordination or collaboration. Consequently, the professional cluster's efforts to expand training bases externally are significantly insufficient, and the training bases for professional clusters have not achieved coordinated planning and co-construction and sharing.

3.5 Practical Obstacles: Lag in the Construction of Majors and Professional Clusters

First, according to current regulations, establishing a new major from initial proposal and application to approval takes at least a year, and then forming a professional cluster and training students for four years until graduation is a lengthy process. Meanwhile, industry and technology developments are rapidly changing, making the support provided by majors for industry development significantly lagging. Second, the application for new majors in local institutions is often influenced by local economic and social development, and the construction and development of professional clusters are in a passive adaptation process, significantly hindering their effective support for industry development. Additionally, due to long-term historical reasons, local institutions have a weak awareness of serving industry development, ultimately leading to a severe lack of support capability in professional settings for industry development [8].

4. Practical Pathways for the Construction of Professional Clusters in Local Applied Undergraduate Institutions

4.1 Establishing New Concepts for Professional Cluster Construction and Clarifying Formation and Governance Logic

4.1.1 Determining the direction of professional cluster positioning

The construction of professional clusters in local applied undergraduate institutions must have a clear talent cultivation orientation and service focus. It is essential to recognize that the key to the formation and development of professional clusters does not lie in the novelty of the cluster names or the number of majors, but in the accurate assessment of job requirements, correct interpretation of the industrial chain, and scientific analysis of students' professional capabilities. This requires local applied

undergraduate institutions to conduct field research on the key and characteristic industries of local and regional development, gain an in-depth understanding of the specific structure and form of local industrial chains, and perform feasibility studies on the formation of professional clusters based on factors such as industry scale, specific job requirements, and market talent demand before establishing the clusters. Each major within the cluster should firmly align with the same industrial chain, job cluster, or specific technical field under the unified talent cultivation orientation, without deviating or diverging.

4.1.2 Clarifying the formation logic of professional clusters

When forming professional clusters, it is necessary to consider numerous factors, including whether the industries targeted by the majors are similar or can achieve complementary advantages, and whether resources can be shared. The formation of professional clusters can involve strong partnerships or complementary strengths, but it must follow a certain formation logic.

First, break down the barriers of forming clusters based on "colleges" and achieve cluster formation based on "chains." Traditionally, forming clusters based on "colleges" limits the construction of professional clusters to the disciplinary platforms and the administrative authority of secondary college deans, severely affecting the alignment between professional clusters and industrial clusters. The "chain-based" cluster formation model should emphasize that the setting and layout of majors closely align with the industrial chain and innovation chain, achieving the alignment of the professional chain with the industrial chain [9]. First, based on the development direction of the local characteristic and key industries where the university is located, analyze the talent demand status and development trends within the same industrial chain over a specific period. Use the industry and job requirements with strong development potential and prospects as important criteria for forming professional clusters. Select a core major within the university that has strong correspondence, distinct characteristics, and high employment rates, and combine it with several related majors that share the same foundational basis, similar work targets, and related technical fields. These majors can conduct experiments on a common experimental platform, undertake the same practical training tasks, share laboratories and practical teaching bases, accurately focus talent cultivation on industry orientations, and have clearly corresponding job clusters.

Second, overcome the dispersal of clusters by adhering to "specialization" in cluster formation. Each major in a university has its own characteristics, and simply forming clusters based on "specialization" can lead to relatively dispersed professional clusters, making it difficult to establish core majors within the cluster. By focusing on the university's educational positioning and highlighting first-class and specialized majors that emphasize the university's educational characteristics, and by leveraging advantages such as educational history, distinctive strengths, and social reputation to form professional clusters, the university can further enhance its brand value. Based on the similarity in the formation of professional clusters, educational positioning, regional development proximity, and the comparability of industry and enterprise orientations, compare and benchmark similar professional clusters from different domestic and international universities. Learn from their strengths, retain unique characteristics, summarize and identify suitable development points and construction paths for the university, and ultimately achieve an overall improvement in the construction level of the university's professional clusters.

Third, consider the school's circumstances and base cluster formation on "adaptation." Improving teaching quality relies on the support of teaching resources. Most applied undergraduate institutions are local colleges, some even located far from provincial capitals, with overall relatively scarce educational resources. Regional differences also mean that each institution has varying levels of educational resources. Therefore, the process of forming professional clusters must be based on the institution's actual conditions, considering whether the school's teaching resources align with the construction of dual-qualified teaching teams, experimental and training facilities, and practical teaching bases. It is necessary to consider how to transform the results of industry-education integration, how to establish deep and good cooperative relationships with local governments and enterprises, and how to convert government and social resources into

important driving forces for the construction and development of the institution's professional clusters.

4.1.3 Clarifying the governance logic of professional clusters

Governance refers to ensuring that the construction of professional clusters is effectively implemented, achieving a balance of interests among all parties. As a grassroots organizational unit within the university, the institution should promote the decentralization of management focus for professional cluster construction, define the powers of professional cluster leaders, protect their rights, and enhance the coordination and synergy of professional clusters in terms of reform and innovation. Professional cluster leaders should lead their teams to establish a "cluster" mindset. Not only should they develop growth plans and clarify development goals during the initial formation stage, but they should also collaborate with various majors within the cluster in project construction, daily operations, and specific teaching activities to develop the connotations of the majors. They must balance the interests of the university, enterprises, bases, teachers, and students, ensuring that the overall effectiveness of the professional cluster exceeds the sum of its parts. This approach verifies the scientific basis of forming professional clusters and ultimately achieves tangible results in talent cultivation.

4.2 Reconstructing the Curriculum System of Professional Clusters to Effectively Support the Clusters

Curricula are effective supports for majors, and the achievement of curriculum objectives directly impacts the realization of major cultivation goals. Based on industry demand logic, with a focus on industrial chains, enterprise transformation and upgrading, and technological innovation and development, the curriculum system is reconstructed. The curriculum system for professional clusters, adhering to the traditional principles of "bottom-level sharing," "middle-level integration," and "top-level elective," aims to cultivate "high-quality applied talents." It constructs a distinctive curriculum system for professional clusters characterized by "platform + module + direction + mainline," which includes "using foundational cluster courses as a platform, skills expansion as modules, innovation and entrepreneurship as directions, and labor education as the mainline."

Cluster foundational courses include both public foundational courses and professional cluster foundational courses. Public foundational courses are applicable to all professional clusters and mainly include general education courses such as ideological and political theory, university physical education, military theory, mental health education, university Chinese, university English, advanced mathematics, and computer fundamentals. Professional cluster foundational courses are foundational courses designed based on the common knowledge, skills, and qualities that all majors within the cluster need to master. These courses play an important role in enhancing students' humanistic literacy, mental health, psychological resilience, and ability to cope with professional stress. Both public foundational courses and professional cluster foundational courses are part of the cluster foundational course platform, and their teaching content and course objectives should mutually promote and integrate with each other.

Skills expansion module courses are designed to address the latest development trends in industries, job requirements, and cutting-edge technological demands. These module courses primarily include quality expansion courses and professional expansion courses that can be cross-selected by various majors within the cluster. Students can flexibly choose professional expansion courses that cultivate their ability to transfer knowledge and adapt to cross-position employment based on their individual circumstances, thereby broadening their employment prospects after selecting quality expansion courses that focus on developing professional knowledge and skills.

Innovation and entrepreneurship courses are the core of the school's innovation education. The design of these courses must align with the development goals of higher education's innovation and entrepreneurship education while also considering the unique characteristics of each major within the school when selecting teaching content and methods. Therefore, different directional courses can be set up based on the three directions of technological innovation, social innovation, and cultural and creative industries in innovation and entrepreneurship. Each directional course is further divided into theoretical courses and practical courses. Theoretical courses primarily cultivate students' awareness, methods, and

thinking related to innovation and entrepreneurship, while practical courses provide students with the process of applying theory to practice, helping them understand the opportunities and challenges in the innovation and entrepreneurship process.

Labor education courses are established by the school to implement the guiding principles and basic principles of labor education for university students in the new era. These courses balance daily life labor for students, focus on production labor and service-oriented labor needs, aim to enhance students' comprehensive labor literacy, and promote their overall development. The courses are divided into theoretical courses and practical courses. Through a labor education model that integrates theory and practice, the courses aim to expand students' professional hands-on abilities and operational skills, achieving a unified approach to theoretical learning and practical training.

4.3 Strengthening Faculty Development and Cultivating Excellent Teaching Teams

4.3.1 Cultivating leaders for professional clusters

The capabilities of leaders for professional clusters should consist of strong business perception abilities, scientific market analysis and research capabilities, and internal coordination and construction abilities within the cluster. Firstly, they must be able to conduct regular market research, perform data analysis, and timely perceive industry development trends. Secondly, they should have a macro grasp of the development direction of the professional cluster, conduct in-depth analysis of the commonalities and differences among majors, design distinctive cluster formation logic, innovatively construct the curriculum system for the professional cluster, systematically design the practical training system, flexibly deploy and reasonably allocate existing teaching staff and other educational resources within the cluster, while also bearing the important responsibility of mentoring and guiding others.

4.3.2 Detailed and clear division of labor within the teaching team

For the construction of professional clusters to be effectively implemented, there must be a teaching team characterized by high moral standards and professional ethics, a scientifically structured mix of full-time and part-time teachers, complementary teaching skills, and a reasonable age distribution. A two-way flow mechanism between university teachers and industry experts can be established to complement each other's strengths, forming a part-time teacher resource pool that is regularly updated. Based on the unique characteristics of the professional cluster, a refined division of labor should be implemented according to the different abilities, specialties, and developmental aspirations of the teachers. This involves determining multiple types of teachers, such as those focused on teaching and research, technological development, and social services, to maintain team vitality. Additionally, equipping the team with mental health educators and dedicated counselors provides effective psychological support to students, allowing teachers to leverage their strengths in their respective roles and thereby driving the high-quality development of the entire professional cluster.

4.4 Internal Sharing and Co-Construction, Building High-Level Training Bases

In the construction of professional clusters, schools can adhere to the principles of "comprehensive planning, resource sharing, integration of virtual and physical resources, and gradual improvement." Comprehensive planning can effectively break the situation where each major independently manages experimental equipment configuration and the operation and management of training bases, maximizing the potential of limited financial investments. Resource sharing can be implemented not only within professional clusters for training rooms but also extended to cross-professional cluster levels at the departmental level. Based on comprehensive planning and resource sharing, the construction of training bases should be implemented in stages, with timely adjustments and gradual improvement of the training base functions.

Laboratory and training are important components of the school's practical teaching system, essential for enhancing students' practical abilities and cultivating professional qualities. They can provide students with abundant practical opportunities, effectively alleviate employment pressure, and enhance students' professional identity and psychological adaptability. In terms of the functions and equipment configurations of laboratory and training rooms, task-driven and project-oriented approaches should be encouraged, integrating

virtual and physical methods to enhance students' practical abilities and professional levels. Schools should actively explore new models where the construction of training bases is linked with curriculum system reform, deep school-enterprise cooperation, industry-education integration, mutual promotion among different professional clusters, and among majors within clusters. This ensures that training bases closely revolve around regional economic and social development and industry enterprise structural adjustments, serving the local community.

Establish a scientific "approval-construction-assessment-evaluation-feedback" assessment and evaluation system for training bases. From construction application to acceptance, operation, and management, implement a dynamic assessment mechanism for training bases, and promptly rectify any identified issues.

4.5 Developing Educational Digitalization to Empower Professional Cluster Construction

4.5.1 Digital empowerment for dynamic adjustment of professional clusters

Based on technologies such as big data and artificial intelligence, construct a big data system to establish connections between majors and industries. Provide data-specific services for industry analysis, job analysis, employment situation analysis, and market research during the construction of professional clusters using big data technology. Through information platforms and data visualization, help schools understand dynamic data on industry development. Empower institutions to dynamically adjust professional clusters by utilizing data analysis, construction task control, and automatic report generation technologies.

4.5.2 Digital empowerment for teachers' teaching abilities

To enhance students' digital literacy, teachers must focus on cultivating digital new thinking, comprehensively apply digital technologies and tools in professional teaching, and strengthen digital application skills such as digital expression, digital display, and digital circulation relevant to professional clusters. Teachers can better guide students to internalize and externalize digital literacy by improving their own digital teaching levels through various methods and approaches, thereby cultivating applied talents suited for the new era.

4.5.3 Deep transformation of teaching Methods through Digital Empowerment

To meet the needs of digital production, teachers need to integrate multiple teaching spaces such as school classrooms, enterprise practice classrooms, and virtual simulation classrooms. They should reconstruct teaching content and methods to achieve a classroom revolution centered on acquiring digital knowledge and skills, using teaching methods with obvious information and digital characteristics. Actively explore the integrated use of blended classrooms, flipped classrooms, and digital classrooms, continuously innovate teaching methods, and improve classroom teaching quality.

4.5.4 Enhancing the educational environment through digital empowerment

Teachers should value the positive role of mental health education. Based on students' learning conditions, utilize knowledge graph technology to dynamically and intelligently analyze multiple knowledge points, empowering the reconstruction of teaching content. Use smart teaching environments and online learning platforms to dynamically collect data from the entire classroom teaching process, forming student characteristic data sets and learner profiles to achieve integrated teaching and assessment. Understand students' psychological characteristics, alleviate students' psychological pressure, and optimize the school's educational environment.

4.6 Innovating Governance Methods to Promote the Sustainable Development of Professional Clusters

The development of professional clusters breaks the original classification and construction rules for majors, which poses new requirements for the school to further innovate governance methods. First, establish new forms of governance. Fully leverage the important roles of modern industrial colleges, future technology colleges, and other institutions in the construction of professional clusters. Encourage social forces to participate in the construction of professional clusters, establish multi-stakeholder participation mechanisms, balance various interests, compensate for the lag in education, and jointly promote the healthy development of professional clusters. Second, improve the functions of the school's professional institutions. Emphasize the important role of multi-governance organizations in professional

cluster management, adhere to the functions and roles of organizational structures such as professional construction committees, teaching work committees, teacher congresses, and student congresses, grant professional cluster leaders the authority in specific affairs such as teaching staff development, goal and plan formulation, and task allocation, and empower them with the actual power to coordinate internal and external resources and manage the majors within the cluster. Pay attention to ensuring smooth channels for student evaluation and feedback, ensuring students' right to be informed and to participate in major decision-making processes, and enhancing students' professional identity and psychological adaptability. Third, build governance platforms for universities and industry enterprises to discuss together. The knowledge spillover of local applied undergraduate institutions has locality and regional characteristics [10]. Schools should fully recognize the importance of government-industry-academia cooperation, continuously improve mechanisms for introducing various external resources, maximize the functions of cooperating enterprises from the school's perspective, align with the cultivation of compound talents within the school, truly form a good ecological environment where "industry drives talent cultivation and talent feeds back into industry development," and promote the enhancement of the professional cluster's service capabilities [11].

5. Conclusion

The generative logic of professional cluster construction theory is the theoretical foundation for constructing professional clusters and serves as the scientific basis for local applied undergraduate institutions to carry out professional cluster construction. Professional cluster construction mainly includes updating philosophies, constructing curricula, building faculty teams, and developing practical teaching systems. In the specific construction process, various practical obstacles exist, severely hindering the development of professional clusters and the maximization of talent cultivation effectiveness. Institutions need to further establish new concepts for professional cluster construction, clarify formation and governance logic; reconstruct the curriculum system to effectively support professional cluster construction; strengthen faculty development and cultivate excellent teaching teams; implement internal sharing and co-construction to build high-level training bases; develop educational digitalization to empower professional cluster construction; and innovate governance methods to promote the sustainable development of professional clusters. This provides decision-making bases for optimizing and reforming the professional structure of local institutions, promotes the integration of local institutions into regional industrial cluster development, activates the internal driving force for sustainable development, and improves the quality of applied talent cultivation.

Acknowledgments

2023 Key Project on Undergraduate Education and Teaching Reform in Shaanxi (23BZ068); Shangluo University Education and Teaching Reform Research Project (22jyjx107).

References

[1] Luo Q., Xie Y.C. Construction of Teaching Innovation Teams under the Background of "Three Education" Reform in Professional Clusters. Education and Teaching Forum, 2023, (51): 37-40.

[2] [USA] Michael Porter. The Competitive Advantage of Nations. Translated by Li Mingxuan, Qiu Rumei. Beijing: CITIC Press, 2012.

[3] Rowthorn R., Coutts C. Deindustrialization and the Balance of Payments in Advanced Economies. Cambridge Journal of Economics, 2004, 28(5): 767–790.

[4] Li X., Yuan K., Tang D. The Transdisciplinary Thought of the Laws of External and Internal Relations in Education and Its Theoretical Value. Jiangsu Higher Education, 2021, (01): 1-6.

[5] Zhang A.F., Zhang S.Y., Yang W.T. Training Applied Innovative Talents by Aligning with the Industrial Chain. Research on Higher Engineering Education, 2022, (05): 87-92.

[6] Yang Y.Z, Xu W. Research and Practice on the Construction of Characteristic Major Clusters in New Era Applied Undergraduate Universities. Journal of Higher Education, 2023, 9(15): 135-139+144.

[7] Niu J.Y., Liu Q., Tang Y.T. Application Research of Virtual Simulation Technology in the Construction of Urban Rail Transit

Training Centers. Modern Vocational Education, 2023, (36): 106-109.
[8] Yang L.F. Reflections on Professional Cluster Construction—A Case Study of the Electrical Automation Technology Professional Cluster. Education and Teaching Forum, 2023, (47): 61-64.
[9] Gu Y.A., Fan X.X. Thoughts on Mechanism Innovation for Promoting Professional Cluster Construction in Applied Institutions. Journal of the National Academy of Educational Administration, 2020, (08): 25-33.
[10] Xu Panpan, Kang Yixuan. Research on the Cultivation Path of Applied Undergraduate Talents under the New Normal of Regional Economy. Finance Guest, 2025, (02):76-78.
[11] Zang X.L. Returning to Student-Centeredness: Reconstructing the Transformation Path of Local Undergraduate Universities. Chongqing: Southwest University, 2021.

