

Research on Construction of Cross-border Innovative Teaching Team in “Double First-Class” Universities

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Abstract: *The cross-border innovative teaching team in colleges and universities can integrate the resources and advantages of different disciplines, form complementarity and synergy, and then stimulate innovative thinking and innovation ability. The cross-border innovation team can provide a more comprehensive and in-depth teaching and education program through a comprehensive multidisciplinary perspective. Strengthening the construction of cross-border innovative teaching team is not only the need of the development of domestic higher education, but also the inevitable choice to integrate with international higher education.*

Keywords: *Teachers’ cross-border development; Interdisciplinary integration; Innovative teaching team*

1. Introduction

In 2015, the State Council issued the “Overall Plan for Promoting the Construction of World-class Universities and First-class Disciplines” (hereinafter referred to as the “Overall Plan”), marking that China's higher education has entered a new stage of development. This is another national strategy for the construction and reform of China's higher education after the “211 Project” and “985 Project”. It aims to promote the transformation of China's higher education from a big country to a powerful country, and provide a solid support for the realization of the “Two Centenary Goals” and the Chinese dream of the great rejuvenation of the Chinese nation. The plan emphasizes the importance of building a first-class teaching staff, and proposes to optimize the growth environment of young and middle-aged teachers and cultivate innovative teams with interdisciplinary and cross-disciplinary capabilities to enhance the sustainable development ability of the talent team. This goal is very important for the construction of “Double First-Class” universities. In 2020, the Central Committee of the Communist Party of China and the State Council issued the “Overall Plan for Deepening the Reform of Education Evaluation in the New Era”, clearly proposing to formulate an evaluation method for the effectiveness of “Double First-Class” construction, highlighting the cultivation of first-class talents, producing first-class achievements, and actively serving the needs of the country, and guiding universities to strive for world-class.

Jiang Aihua, Shi Daning et al. (2019) believed that crossover is a way of thinking, and the “crossover” is not the boundary of technology, but the boundary of ideas. Therefore, “cross-border training” is to break the original discipline boundary, professional boundary and social boundary, and form a set of talent cross-border training framework that meets the needs of society and industry through inter-disciplinary, inter-disciplinary, inter-school and inter-school collaborative training methods^[1].

Under the background of accelerating the construction of “Double First-Class” universities in China, it is particularly important to effectively build a cross-border innovative teaching team. First of all, innovation is the core driving force for the development of higher education, and interdisciplinary and cross-disciplinary collaboration is the key to promoting innovation. The cross-border innovative teaching team in colleges and universities can integrate the resources and advantages of different disciplines, form complementarity and synergy, and then stimulate innovative thinking and innovation ability. Secondly, in the face of increasingly complex social problems and scientific challenges, the traditional disciplinary boundaries are not enough to cope with. The cross-border innovation team can provide a more comprehensive and in-depth teaching and education program through a comprehensive multidisciplinary perspective, which is crucial to the construction of “Double First-Class” universities.

Furthermore, world-class universities generally focus on interdisciplinary research and teaching, especially on the cultivation of innovative ability. Therefore, strengthening the construction of cross-border innovative teaching team is not only the need of the development of domestic higher education, but also the inevitable choice to integrate with international higher education.

2. Opportunities and Challenges of the Connotative Development of Higher Education

The connotative development of higher education refers to the internal improvement and development of education through deepening education reform on the basis of the quality and efficiency of higher education. This development model emphasizes the improvement of quality rather than simple quantity expansion, and its core is to improve the quality of education and cultivate high-quality talents. In the context of globalization and informatization, the field of education is undergoing unprecedented changes. With the in-depth development of scientific and technological revolution and industrial transformation, the contradiction between education demand and supply has become increasingly prominent. The contradiction between people's desire for high-quality education and the imbalance and inadequacy of education development has become one of the main social contradictions. In this context, the reform of teacher team construction is particularly important, especially the cultivation of teachers' cross-border development ability, in order to meet the diversified needs of education in the new era.

The intensification of the competition pattern of international higher education has also brought opportunities and challenges for the connotative development of higher education. On the one hand, globalization has promoted international academic exchanges and cooperation, providing a platform for China's higher education to learn and learn from; on the other hand, international competition also forces China's higher education to enhance its competitiveness and accelerate the pace of connotative development of colleges and universities. Moreover, the connotative development of higher education is also facing the inevitable challenges of resource allocation and institutional innovation. How to rationally allocate education and teaching resources, optimize education structure and improve education efficiency is a problem that must be faced by the current development of higher education. In addition, the current education system and management mechanism also need further reform and innovation to meet the requirements of the connotative development of colleges and universities.

3. The Need for the Construction and Development of High-quality Innovative Teachers

In the wave of the fourth industrial revolution, the world is undergoing unprecedented changes, and the requirements for talents are also increasing. This era not only requires talents to have a solid disciplinary foundation, but also emphasizes their ability to cross-border integration and innovation. The core goal of the construction of first-class disciplines and first-class universities is to cultivate first-class talents who can adapt to this change. A first-class teacher team is undoubtedly the key to achieving this goal. The establishment of a cross-border innovative teaching team has become the primary task of the reform of teacher team construction.

With the rise of the fourth industrial revolution, the speed of knowledge renewal is accelerating, and the iteration speed of posts and technologies is also accelerating. Some professional talents trained in colleges and universities have seriously lagged behind industrial development (Zhao Limin, Ren Yunhui, 2023)^[2], and there is a structural contradiction between talent supply and demand. At present, China's higher education is facing a breakthrough in the boundaries of disciplines. From a horizontal perspective, many colleges and universities in China have begun to break the boundaries of colleges, specialties and disciplines, and support students' cross-departmental, cross-disciplinary and interdisciplinary learning (Wang Kai, Sun Fang, 2019)^[3]; from a vertical perspective, some colleges and universities are also trying to break the boundary between undergraduate and graduate students, implement the integration of undergraduate, postgraduate and doctoral education, and create conditions for students to choose courses across different stages and levels (Cao Yan, 2022)^[4]. In the future economic and social development, a large number of innovative and compound talents are urgently needed. These talents not only need to have a broad vision, a deep discipline foundation, but also need to have a strong cross-integration ability. The current exploration of "cross" in colleges and universities is to make efforts at the same time in cross-integration and depth (Zhang Jiande, Chen Xing, 2023)^[5]. Colleges and universities need to actively adjust their professional settings and introduce new majors such as artificial intelligence, cyberspace security, new energy vehicles, and intelligent construction. These majors need to build a teaching team with cross-border, integrated, and innovative characteristics

in order to cultivate compound and innovative talents with their interdisciplinary characteristics. This team must not only have profound subject knowledge, but also have interdisciplinary, cross-organizational, cross-thinking, and cross-time and space capabilities, in order to take on the responsibility of guiding students to cross the boundaries of traditional disciplines and cultivate the ability to solve complex problems.

The establishment of cross-border innovative teaching teams is not only an inevitable choice for the construction of first-class universities, but also a strategic measure to meet the challenges of the fourth industrial revolution and cultivate first-class talents in the new era. Through the diversified teaching team, colleges and universities can better meet the needs of innovative talents training and contribute to the future development of the country.

4. The Practical Needs of the Construction of Cross-border Innovative Teaching Team

4.1 Analysis of the Current Situation of the Construction of Cross-border Innovative Teaching Team

The construction of cross-border innovative teaching team has become an important strategy to promote the excellent development of “Double First-Class” universities. As the leader of China's higher education, the tasks faced by “Double First-Class” universities include not only making important breakthroughs in discipline construction, but also carrying out cross-foot innovation in teaching. “Double first-class” universities have made some remarkable progress in discipline integration, diversity of team members, output of innovation achievements, organizational culture and resource support, but they still face many problems in the challenges of team management, limited resources and flexibility of administrative management.

First, the preliminary practice of discipline integration. As one of the core mechanisms to promote cross-border innovation, discipline integration is experiencing the stage of preliminary practice in “Double First-Class” universities. The practice of interdisciplinary integration is usually reflected in the joint research between different disciplines, joint curriculum design and sharing of teaching resources. Many universities encourage teachers to carry out collaborative research in different fields by setting up interdisciplinary research centers and sharing laboratories, so as to promote knowledge exchange and integration among disciplines.

Second, the challenges and opportunities of team members' diversity. The construction of cross-border innovative teaching team inevitably involves the diversity of team members. Colleges and universities have introduced team members with different academic backgrounds, teaching experience and professional skills, which also brings challenges in team management. How to effectively coordinate members from different disciplines and ensure the collaborative efficiency of the team is an urgent problem to be solved.

Third, the innovation achievements of cross-border cooperation projects. Through cross-border cooperation projects, “Double First-Class” universities have achieved a series of remarkable innovation results, such as the innovation of teaching methods, the successful implementation of new curriculum design, and the productivity of academic papers and patents. These achievements not only promote the teaching level of colleges and universities, but also provide strong practical support for the intersection and integration of disciplines.

Fourth, the influence of organizational culture and atmosphere. Double first-class universities gradually pay attention to the cultivation of organizational culture and atmosphere in the construction of cross-border innovative teaching teams. Some universities actively encourage collaboration within the team and advocate open communication and information sharing. At the same time, in order to stimulate the innovation vitality of team members, some universities have also strengthened the reward mechanism for team internal innovation and promoted the formation of innovation culture.

Fifth, resource support and the challenge of school administration. Although Double First-Class universities have made some progress in the construction of cross-border innovative teaching teams, they still face the challenges of resource support and school administration. Cross-border projects often require a lot of money, equipment and technical support, and the investment of universities in this area still needs to be further strengthened. In addition, the rigidity of the school administrative system may also affect the flexibility of teamwork.

4.2 The Need to Promote the Connotative Development of Higher Education and Focus on Improving the Ability of Teachers

The need to promote the connotative development of higher education and improve the ability of teachers is urgent and clear. Double first-class universities should focus on cultivating teachers' innovative thinking and practical ability, strengthen the cultivation of multidisciplinary knowledge, pay attention to cultivating students' innovative ability, improve the ability to adapt to the needs of diversified education, and emphasize effective teamwork and leadership.

First, innovative thinking and practical needs. The connotative development of higher education requires teachers to have innovative thinking and practical ability. The construction of cross-border innovative teaching team makes teachers need to jump out of the boundary of traditional disciplines and pay more attention to innovative teaching methods and curriculum design. Therefore, improving teachers' innovative thinking and practical ability has become an urgent need to promote connotative development.

Second, the knowledge needs of multidisciplinary integration. Connotative development requires better integration between disciplines to provide students with a more comprehensive knowledge experience. This requires teachers to have the background of multidisciplinary knowledge and be able to participate in multidisciplinary cooperation. Therefore, improving teachers' multidisciplinary knowledge needs has become an urgent need to promote connotative development.

Third, the urgent need to cultivate students' innovative ability. One of the goals of connotative development is to cultivate students' innovative ability. Building a cross-border innovative teaching team helps to create an educational environment with a more innovative atmosphere, but it also requires teachers to have corresponding educational concepts and methods. Therefore, the need to improve teachers' ability to cultivate students' innovative ability has become an urgent need to promote connotative development.

Fourth, adapt to the needs of diversified education needs of teaching ability. The diversification of student groups makes higher requirements for teachers' teaching ability. Teachers not only need to be able to cope with the teaching needs of traditional disciplines, but also need to be able to deal with cross-border teaching issues in multidisciplinary cooperation. Therefore, improving teachers' teaching ability to meet the needs of diversified education has become an urgent need to promote connotative development.

Fifth, effective teamwork and leadership needs. Building a cross-border innovative teaching team requires teachers to have stronger teamwork and leadership. In multidisciplinary cooperation, teachers need to effectively coordinate team members to promote the smooth implementation of the project. Therefore, improving teachers' teamwork and leadership has become an urgent need to promote connotative development.

4.3 The Need to Strengthen the Construction of High-quality Innovative Professional Teachers in the New Era

With the development of society and the continuous improvement of the higher education system, the demand for high-quality innovative professional teachers is increasingly urgent. The construction of cross-border innovative teaching team puts forward higher requirements. Therefore, in order to meet the needs of the new era, strengthening the construction of high-quality innovative professional teachers has become the key to promoting connotative development.

First, the guidance of innovative education concept. The new era puts forward higher requirements for higher education, not only to transfer knowledge, but also to cultivate students' innovative spirit and practical ability. Under the guidance of innovative education concept, teachers need to have stronger innovation ability, can use multidisciplinary knowledge to carry out teaching research, and stimulate students' innovative potential.

Second, the cultivation of multidisciplinary comprehensive literacy. The construction of cross-border innovative teaching team requires teachers to have multidisciplinary comprehensive literacy. In the new era, education is no longer a single transmission of traditional disciplines, but needs to integrate the advantages of various disciplines and provide a more comprehensive and diverse knowledge experience. Therefore, teachers need to cultivate multidisciplinary comprehensive literacy to better adapt to the needs of teaching innovation.

Third, the comprehensive development of students' individual needs. In the new era, education pays attention to the comprehensive development of students' personalized needs, and high-quality innovative professional teachers should have stronger personalized teaching ability. Teachers need to better understand students' interests and specialties, guide them to find their own positioning in cross-border innovative teaching, and achieve personalized development.

Fourth, the cultivation of international vision. Strengthening the construction of high-quality innovative professional teachers also needs to pay attention to the cultivation of international vision. Teachers need to understand the international advanced educational concepts and methods and introduce them into teaching practice to improve the international level of education. At the same time, cultivate students' international competitiveness, so that it has a broader space for development.

Fifth, cultivate teamwork and leadership. The construction of cross-border innovative teaching team emphasizes the importance of teamwork and leadership. High-quality innovative and professional teachers need to have a stronger sense of teamwork, be able to coordinate various resources in the team, and promote the successful implementation of the project. At the same time, it is necessary to cultivate the backbone of leadership in the teaching staff to lead the team to achieve greater achievements.

Sixth, the renewal of educational values. The new era puts forward higher requirements for educational values, and pays more attention to cultivating students' innovative spirit and social responsibility. High-quality innovative professional teachers need to update the educational values, pay attention to the cultivation of students' independent thinking ability, creativity and practical operation ability, so that students can better adapt to the needs of social development.

5. The Significance of the Research on the Construction of Cross-border Innovative Teaching Team

5.1 Contribute to the Enrichment of the Theory of Innovative Development of Higher Education

This study highlights the key role of innovative teaching teams in promoting the quality of education in Double First-Class universities, cultivating innovative capabilities, and responding to the needs of social and economic development. It not only reveals how the innovation team works within the education system, but also explores its impact on the broader socio-economic environment, providing some unique theoretical contributions to understanding the role and function of higher education in modern society.

5.2 Be Helpful to Improve the Teaching Quality and Effect of Colleges and Universities

Through the in-depth study of the cross-border innovative teaching team in "Double First-Class" universities, this study provides effective team building and management strategies for universities, which can promote the application of knowledge integration and innovative teaching methods among different disciplines. For example, cross-border teacher teams can create a richer and more challenging learning environment for students by sharing resources and professional knowledge. This teaching mode helps to improve students' critical thinking ability, innovation ability and practical application ability, so as to improve the overall quality of education and the employment competitiveness of graduates. At the same time, by building a cross-border teaching team, it can also bring new vitality to the traditional education model of colleges and universities, and promote students' in-depth understanding and comprehensive application of subject knowledge through the combination of practice and theory.

5.3 Be Helpful to Promote Internal Management and Organizational Innovation in Colleges and Universities

Through this study, it can provide specific guidance for "Double First-Class" universities on how to effectively organize and manage interdisciplinary teams. For example, how to balance disciplinary differences among team members, how to establish effective communication mechanisms and decision-making processes, and how to create an organizational culture conducive to teamwork and innovation. These management and organizational innovations are essential to enhance the comprehensive strength of "Double First-Class" universities in teaching and scientific research. It not only helps to improve the quality and efficiency of teaching and scientific research in "Double First-Class" universities, but also promotes "Double First-Class" universities to better adapt to the

rapidly changing educational environment and social needs, and enhances the overall competitiveness and influence of “Double First-Class” universities.

6. Conclusions

In the face of the requirements of comprehensively improving the quality of higher education personnel training in the new era, “Double First-Class” universities are carrying out various cross-departmental, cross-disciplinary, interdisciplinary, cross-section, cross-level, and cross-country teaching reforms and explorations based on the implementation and in-depth advancement of a number of policies at the above-mentioned national and Ministry of Education. In order to cross the gap of talent training under the current situation of popularization of higher education in China, break through the existing discipline pattern, so as to cultivate a large number of innovative and compound high-quality talents that are more in line with the needs of national construction and the times. In view of the current in-depth promotion of “Double First-Class” universities, the rapid popularization of artificial intelligence applications, the extensive and in-depth application of information-based teaching in the post-epidemic era, and the rapid cross-integration of emerging disciplines and specialties, based on the current situation of teaching team construction, cross-border teaching research results, cross-border innovative teaching exploration and application under the background of “Double First-Class” university construction, this paper explores and focuses on the construction of cross-border innovative teaching team in “Double First-Class” universities and its influencing factors, and puts forward effective team construction strategies on this basis. It may provide useful exploration for the in-depth study of the construction and reform of cross-border innovative teaching teams in “Double First-Class” universities.

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