

Practice and Exploration of All-Member Training Based on the Cultivation of Engineering Talents in Sino-French Cooperative Education Institutions

Nan Wen, Xiao Li

Paris Curie Engineer School, Beijing University of Chemical Technology, Beijing, 100010, China

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Abstract: Insisting on putting moral education and nurturing talent at the core, promoting the all-round development of all staff in the process of nurturing students is not only a necessary requirement for implementing the spirit of the national conference on ideological and political work in universities, but also the essence of serving the national development strategy of universities and promoting the construction of high-level universities. The Paris Curie Engineer School of Beijing University of Chemical Technology attaches great importance to the quality of undergraduate talent training in its daily teaching and talent cultivation process. All staff members participate in quality monitoring, identify their roles in the overall pattern of teaching, management, and student services, and focus on the quality of talent cultivation. They closely revolve around the school's positioning and training goals, standardize teaching activities, continuously improve talent quality assurance mechanisms, and actively explore new pathways for all-round talent development under the background of Sino-French cooperative education.

1. Introduction

Nowadays, the educational work in universities not only includes imparting knowledge, but also includes enlightening thoughts, cultivating morality, and inheriting culture. In Sino-foreign cooperative educational institutions, students generally have a low interest in ideological education and traditional culture, and there are prominent mental health issues, which have certain particularities. Therefore, the development of talent cultivation in Sino-foreign cooperative educational institutions is not solely the responsibility of the universities. It requires the joint participation of university leaders, administrators, teachers, counselors, as well as families and society to form a collective force, achieving multi-faceted, multi-level, and multi-perspective education.

2. Necessity of All-Member Training in Sino-foreign cooperative educational institutions

In the era of the knowledge economy and global integration, Sino-foreign cooperative educational institutions have become the vanguard of international education, cultivating students with cultural confidence, institutional confidence, theoretical confidence, and confidence in the path,

firm political stance, as well as solid professional knowledge, international vision, and multi-language abilities. This is the common talent development goal of all Sino-foreign cooperative educational institutions [1].

The Fourth Plenary Session of the 19th Central Committee proposed to establish a comprehensive system for educating all faculty and staff, "Three Comprehensive Education" system is an important guarantee for building a university system with Chinese characteristics, improving the modernization level of the governance system and governance capacity of universities in the new era, and it is a practical requirement to comprehensively improve the quality of talent training in higher education in the new era and promote the connotative development of higher education. It is a problem worth exploring for Chinese-foreign cooperative schools to make good use of the concept of "comprehensive education" to solve the existing problems and bottlenecks.

3. Pressure and challenges of nurturing in the process of conducting engineering education in the School

The Paris Curie Engineer School of Beijing University of Chemical Technology is a Sino-foreign cooperative education institution jointly established by Beijing University of Chemical Technology and the Chimie Paristech-PSL in Paris, France. It aims to cultivate high-level engineering talents in the field of chemical engineering who are proficient in multiple foreign languages, have an international perspective, are competent in engineering design, and possess interdisciplinary knowledge, innovation, and communication skills. Under the concept of "elite education," students face significant academic and psychological pressures.

(1) There is a high language requirement and heavy academic workload. The institute adopts a general admission system, and students start with zero foundation in French. After completing 576 hours of French courses in the first year, they will then have to take all their science and mathematics classes in French from the second year onwards. In addition, students must also maintain their English proficiency and pass the university's English proficiency tests (CET-4 and CET-6) as required. The intensity and difficulty of the program are high, and the academic burden on students far exceeds that of other institutes[2].

(2) Students find it difficult to adapt to the cooperative education model. The institute has introduced the advanced French concept of elite engineer training and an innovative talent development model. On one hand, students need to follow the training plan of Beijing University of Chemical Technology and also meet the requirements of French pre-engineering education and engineering education, resulting in a significant increase in the total number of class hours. The undergraduate science and mathematics courses amount to 1792 hours, professional courses to 368 hours, political theory to 406 hours, and internships to 25 weeks. The course schedule is tight, the curriculum is diverse, and there is a high demand for practical innovation, making it difficult for some students to adapt.

(3) The assessment is strict, and the elimination rate is high. The college emphasizes the process of assessment, which includes classroom quizzes, monthly exams, mid-term exams, lab grades, final exams, and class attendance. The last-minute cramming for the final exam is no longer a viable way to pass the course assessment. In addition, the college adopts a two-stage training model. After completing the first three years of basic education, students must participate in the college's cross-stage talent selection and training assessment before entering the engineering education stage for the next three to four years. There is a certain elimination rate.

(4) There are significant cultural differences, and both teachers and students need to adapt to each other. There are inherent differences between Chinese and French cultures. Initially, most students tend to be introverted in the classroom and lack active interaction with teachers. They are used to

passively receiving knowledge and fail to engage in exploratory learning. Their classroom participation is low, and they lack proactive thinking skills. The interaction and feedback between teaching and learning are not very effective.

Students bear a heavy psychological burden, and their adaptability needs improvement. During the transition from high school to university, some students find it difficult to adapt to the changes in their environment. They have poor self-study abilities and lack self-management skills. Coupled with the enormous academic pressure, cultural differences, and a strict assessment and elimination mechanism in the college, there is a tendency for low efficiency in learning and a lack of enthusiasm.

4. Practices of full-staff all-around education in the School

General Secretary pointed out: "To run the education industry well, families, schools, government, and society all have a responsibility." The work of educating people in colleges and universities is not only a process of imparting, instilling, and guiding, but also a process of influencing, nurturing, and cultivating. For this reason, the Paris Curie Engineer School advocates the participation of all staff in talent cultivation, actively establishing a multi-path combination, multi-functional complementary interactive, three-dimensional education pattern[3].

4.1 Taking the lead and reinforcing the model of parenting by the leadership team

In the daily teaching and management activities of the school, the leadership team has always adhered to the task requirements of fostering morality and educating people, and implemented the Party and state's policies. They have vigorously strengthened students' ideological and political education, actively promoted spiritual civilization construction and campus culture construction, and promoted excellent traditional culture and the core socialist values. They are strict in building a positive school atmosphere, academic atmosphere, and examination atmosphere, actively guiding students to develop the correct world view, outlook on life, and values. Every semester, the college leadership team implements the basic requirements of fostering morality and educating people through grade-level meetings on ideological education. They inspire students through vivid and lively thematic education such as "how contemporary youth should behave," "how to be a qualified college student," "cultivating morality, and innovation," reminding contemporary youth to have lofty aspirations, love their country, and refine their character.

At the same time, the school leaders insist on understanding and getting involved in students' lives, caring about students' growth, guiding students to clarify the purpose of their studies, and caring about students' thinking and guide students' learning and life through discussions, and summarize and analyze the overall learning situation of the semester. And the leading group should formulate the Implementation Plan of Ideological and Political Education for students, and strengthen the organizational construction of students' ideological and political work; Supervise counselors to implement the "three-step" project, grasp students' thinking dynamics, and strengthen mental health education. At the same time, the three commitment meetings of "commitment, practice and evaluation" were carried out to guide student party members to speak of political faith, moral conduct, dedication and party quality. In addition, the leading team should promote the construction of ideological and political education on the network, constantly push the latest theoretical learning content and combination activities through the wechat public account, promote the party building work, and promote the construction of student organizations, student unions, student associations, and class organizations of the college.

4.2 Diversified education to improve the effectiveness of education by teachers

The school has always attached great importance to the construction of the faculty team, adhering to the principle of student-centered education and teaching. It continuously improves and optimizes the number and structure of the faculty team to ensure the level of education and teaching, and to build a high-level, internationalized, and professional faculty team for engineering talent cultivation. In the professional courses, experienced engineers from the industry and top international experts in related fields are directly hired to teach students, using vivid and practical examples to deepen students' understanding of the subject knowledge and help them adapt to the corporate atmosphere in advance. The school adheres to the educational concept of "thick in theory, strong in practice, and internationalization," and actively promotes the reform of higher engineering education and training models. Teachers closely integrate teaching and educating students, providing multi-disciplinary and all-round education for students.

In the language course, the basic stage of French teaching in the school is completed by the cooperation of Chinese and foreign teachers. Chinese and foreign teachers are responsible for French grammar and French listening and speaking courses respectively. French teaching uses small class teaching and selects original French textbooks to help students gradually master the basic skills of listening, speaking, reading, and writing in French from scratch. French teachers prepare lessons together and jointly formulate grading criteria for classroom tests and assessments for French speaking and writing. While completing the teaching content specified in the teaching plan, students are actively encouraged to participate in French-related cultural and artistic activities to increase their interest in learning French and deepen their understanding of French culture.

In the basic courses of mathematics, physics, and chemistry, the school mainly uses French pre-university teachers to teach, with Chinese teachers as teaching assistants. Chinese and foreign teachers cooperate to promptly answer students' questions and reduce difficulties encountered due to language problems, helping students transition smoothly to being taught solely in a foreign language. The pre-university basic courses are taught entirely in French using the CTDP teaching model, which integrates theoretical classes, exercise classes, and laboratory classes, emphasizing comprehensive process assessment throughout the course. It focuses on developing students' ability for independent learning, emphasizing cross-integration and connection, cultivating students' ability to analyze and solve problems, and enabling students to proficiently read various experimental materials and reference materials, use instruments correctly with the help of textbooks or manuals, and apply theoretical and experimental methods to practice and analyze the theoretical knowledge they have learned. At the same time, it aims to develop good logical thinking and expression ability, organizational skills, and teamwork spirit, laying the foundation for becoming international engineering talents.

In the field of engineering education, we have hired professors from French engineering schools to teach in China. We are collaborating to create high-quality courses and encouraging professors to give advanced lectures, providing guidance to students in teaching and research. We are also holding various teaching seminars and teacher forums to deeply discuss how to integrate and innovate foreign high-quality resources into local education, and improve the quality of higher engineering education. We have also introduced a course on "Engineering Culture" taught by industry executives, experts, and technicians, allowing students to understand the latest industry developments and cutting-edge technologies from a global perspective, and enhancing their professional skills and national pride.

In addition to teaching, we are increasing French language activities every week to help students improve their oral French skills. Our teachers are guiding students to participate in French dubbing competitions and serving as judges, cultivating students' interest in French culture. We have

organized online cultural forums for Chinese and French students to exchange their learning experiences, discuss effective study methods under high academic pressure, and form language and study partners. Teachers are also serving as mentors for student internships and innovation projects, guiding academic innovation, improving students' teamwork skills, and starting internships and practical work in their professional fields ahead of time.

4.3 Nurturing and strengthening the foundation of human development by Counselors and class teachers

College counselors are a vital force in the construction of the student body. They are key drivers in promoting healthy growth and social stability among college students, and they play a crucial role in coordinating and implementing the ideological and political work of the school. The main goal of today's college counselors is to enhance students' cultural cultivation, moral development, and psychological qualities, helping students make correct life plans and goals.

In the context of the Sino-foreign cooperative education model at the Paris Curie Engineer School, high language proficiency requirements, heavy academic burdens, and significant cultural adaptation difficulties have led to greater psychological pressure on students. Counselors comprehensively supervise and manage students' learning, life, and all daily affairs, gaining a comprehensive understanding of student dynamics. The institute actively carries out counselor work, optimizing the handling mechanisms for psychological crises. It has established a leader for the institute's psychological committee, set up a multi-level psychological intervention system, strengthened prevention and control, and optimized the crisis intervention mechanism for college students. Efforts are made to achieve early detection and prevention. Counselors also actively engage in communication and contact with parents to understand students' psychological and ideological conditions.

At the same time, the institute adopts a collaborative mechanism between counselors and class teachers. Each administrative class in the institute is equipped with one class teacher, providing in-depth academic guidance and real-time supervision of student status. The institute has established a parental contact system, communicating students' academic performance and ideological dynamics with parents at the end of each semester, and generating work reports. Regular grade and class meetings are held to timely understand students' ideological conditions and listen to students' feedback.

Counselors and class teachers, as the closest figures to students' lives and studies, work in a coordinated and complementary manner with clear division of labor and detailed responsibilities, maximizing efforts to prevent students from "going astray".

4.4 Collaboration of all social parties to enhance the thickness of human education

Education outside of school is an important supplement to school education. The small-scale "all-staff education" within the school, with the participation of all sectors of society, fully explores the path of education outside of school, gradually expanding into a more general collaborative education, relying on families and society to jointly complete all-round education.

Social education: The school implements an enterprise mentor system, involving professionals from the industry in the planning, talent development, education, teaching, and research cooperation of the college. In practice-oriented collaborative education, the diversification of educational subjects is promoted, inevitably enhancing the multifaceted nature of educational outcomes, cultivating students' sound character, innovative thinking, entrepreneurial awareness, innovative and entrepreneurial spirit, and social responsibility. Through personalized care for students and career guidance, personalized talent development is achieved.

Family education: The school should build a communication platform for parents and schools, with counselors and class teachers jointly connecting with parents. Efforts are made to establish a linkage between the school and the family, develop the strength of the family in education, play its supporting role, and jointly educate and cultivate students into adults and talents. By gaining a more comprehensive understanding of students' characteristics through the family, teaching is tailored to the individual, increasing the accuracy and effectiveness of education. Communication between students and their families needs to be strengthened to ensure the exchange of information and timely discussion of students' academic, psychological and career development directions. The parent committee system will be gradually improved to allow parents to participate in student management and whole-person education.

In addition, the college invites external individuals who graduated from engineering schools in France to talk about the history of studying in France, soothing students' impatience and confusion, positively demonstrating the correct life path and career choices for students, focusing on future growth; regularly conducting master lectures to enhance students' humanistic literacy and stimulate the academic atmosphere of the school.

5. Conclusion

Since its establishment, the college has been actively promoting a long-term mechanism for educating all staff, involving everyone in talent development, strengthening social interaction, and achieving significant results. How to better integrate and collaborate between Chinese and foreign teams and personnel to improve the quality of talent development, and to enhance the breadth, depth, warmth, and effectiveness of students' growth and success, will be a key focus for Sino-foreign joint educational institutions and international engineering education in the long term.

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