

Research and Practice on Talent Training Mode in Applied Universities with Multi-subject Participation

Hongxia Wang^{a,*}, Xueliang Zhou^b, Aihua Ren^c

Faculty of Mechanical Engineering, Hubei Institute of Automotive Technology, Shiyan, China

^a20040013@huat.edu.cn, ^b33840656@qq.com, ^c1529263262@qq.com

*Corresponding author

Keywords: multi-subjects, applied universities, talent training

Abstract: Aiming at the problems of single subject of talent training in applied colleges, ambiguous powers and responsibilities, and insufficient integration of production and education, the talent cultivation methods of applied colleges and universities with multi-subject participation are studied in this paper. By defining the composition of multiple subjects, clarifying the relationship between multiple subjects, constructing a collaborative education mechanism in applied universities, and researching and implementing collaborative education methods, a multi-subject participation approach to talent training in applied colleges and universities is proposed, and applied to education practice, which effectively improves the students' autonomous learning and social service ability, and provides a realistic path for our country to cultivate high-level talents with both political integrity and ability.

1. Introduction

With the rapid development of the economy, the demand for applied talents is increasing in all walks of life, and the state also attaches great importance to the quality of training applied talents. In recent years, many scholars have carried out a series of researches on the application of multi-subject collaborative education in education. Professor Etzkowitz from the United States and Leydesdorff from the Netherlands proposed the triple helix model of "government, industry and academia"^[1]. Germany's "dual education" is an innovative model in which schools and companies work together to educate students in a professional manner^[2], and Japan's "government-industry-academia cooperation" education model aims to develop new technologies and industries through cooperation between universities and industry, with the support of the government and public bodies^[3]. Domestic scholars have mainly conducted research on the model of collaborative education^[4-6], the reform and practice of collaborative education in applied universities^[7,8], and the model of cooperation between universities and enterprises in the cultivation of professional degree master students^[9]. Scholars have conducted more comprehensive research and practice on collaborative nurturing, however, the role of students and family participation in nurturing is often neglected in terms of nurturing subjects, and students are only regarded as the recipients of nurturing, and the nurturing power of parents in higher education is often neglected. In this paper, we will discuss the mode of cultivating talents in applied colleges and universities with the participation of multiple subjects, and apply it to the cultivation practice to achieve the goal of cultivating high-level applied talents.

2. Main problems in the cultivation of application-oriented talents

China has indeed made significant achievements in the training of applied talents, however, the following problems still exist.

(1) Applied colleges and universities mainly train people for enterprises, however, enterprises are not sufficiently involved in nurturing people, resulting in graduates not being able to adapt quickly to the needs of work, the role of family and student participation in nurturing people is

ignored, students are in a passive position, failing to fully stimulate students' interest in learning, lack of communication, classmates do not communicate, do not know each other, do not communicate with teachers, between teachers and students, students and teachers, parents do not participate in their children's learning and growth lack of deep integration of student participation, focus on form lack of classroom belonging.

(2) Multiple subjects are subjects with different aspirations and goals, which easily leads to unequal power and responsibility and inconsistent goals in the collaborative process, and has not yet become the ideological consensus and conscious action of all subjects in the education process, thus giving rise to problems such as weak will, insufficient motivation, insufficient input and ineffective collaboration among subjects in collaborative education, which cannot effectively promote common development.

(3) The collaborative education mechanism of applied colleges and universities is not sound, and there is a lack of effective incentive and mutually beneficial education mechanism among multiple subjects, the training mode still needs innovation, and the training quality needs to be improved.

3. Reform and practice of talent cultivation in applied universities with the participation of multiple subjects

3.1. Multiple Subjects Defined and Explored

At this stage, China's universities focus on cultivating applied talents, and multiple subjects mainly involve teachers, students, parents, managers, faculty development personnel, researchers, industry, government and other multiple subjects. The state is the main body of education, the export of high-level applied talents is enterprises, enterprises are the main body, colleges and universities are the main battlefield for cultivating talents, schools are the main body, families have the advantage of mobilizing affection and ethics for education, families are the main body, students are the objects to be educated, their learning interests are crucial, and students are pulled into the main body of education.

3.2. Clarifying the Linkage of Multiple Subjects

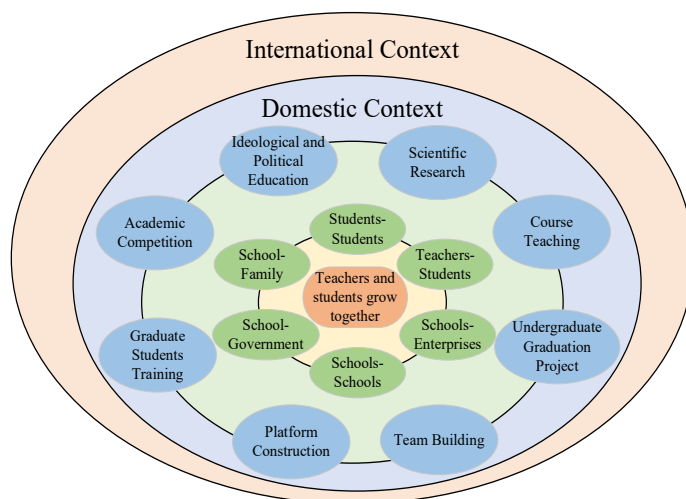


Figure 1 The correlation between the subjects of developmental education in applied universities.

In today's world, all countries are interdependent and interdependent. Under the international national environment of building a new type of international relations with win-win cooperation at its core and creating a community of human destiny, multiple subjects are defined and the correlation between the development and nurturing subjects is clarified. In the initial stage of nurturing talents in applied colleges and universities, when postgraduate and undergraduate talent training programs are formulated, parents, enterprises, students and schools formulate training objectives and curriculum systems according to their respective demands, and internship and practical training sessions introduce enterprises. In the initial stage of talent cultivation in applied

colleges and universities, parents, enterprises, students and schools formulate the cultivation objectives and curriculum system according to their own demands, and introduce enterprises and teachers to participate in the practical training, and educate talents together with the platform and scientific research projects jointly declared by enterprises and schools.

3.3. Building a Collaborative Education Mechanism for Applied Universities

Collaborative parenting mechanisms are the mechanisms by which all parties in a community are bound to each other and to each other's incentives. This study explores what kinds of mechanisms can enhance the collaboration and communication of the community, the reasons for their construction, the relationships between them and the roles they play in collaborative parenting, and the ways and means to maximize the effectiveness of the mechanisms for collaborative parenting. The mechanisms of collaborative education in this study include management mechanisms, incentives, communication mechanisms, evaluation mechanisms and continuous improvement mechanisms. The management mechanism is the framework and is the core mechanism for collaborating with all subjects. The incentive mechanism mainly conducts research on how to collaborate with each subject (e.g. training people to meet the needs of enterprises in advance, building research platforms and sharing resources between the university and enterprises, collaborating on graduation design and joint training of postgraduates, joint declaration of projects, evaluation of titles of enterprise tutors, declaration of high-tech enterprises, etc.), collaborative teaching between teachers and students, joint projects, etc., and parents' participation in the process of nurturing and keeping abreast of their children's situation. The communication mechanism is to achieve barrier-free communication and immediate information feedback from all parties in the community, thus improving the efficiency of cooperation. The evaluation mechanism is used by enterprises and the community to monitor, evaluate and adjust the effectiveness of talent training to ensure the effectiveness of cooperation and the quality of education. The continuous improvement mechanism collects opinions and continuously improves the cultivation methods through post-course and end-of-course exchanges, on-site discussions and exchanges on practical training, and the participation of each subject in the defence and opening.

3.4. Implementation of a Collaborative Approach to Education Involving Multiple Subjects

The method of collaborative education in applied colleges and universities with the participation of multiple subjects is used in the whole process of education, which is specifically implemented in the process of education in all aspects of cultivation programme formulation - teaching design - teaching implementation - teaching feedback. The classroom is a common stage for teachers and students, and students are encouraged to actively participate in the teaching activities, and students are encouraged to create and explain courseware, so as to change passive learning into active knowledge acquisition, thus stimulating students' interest in learning and increasing their participation in teaching to Improve teaching effectiveness. Students appreciate the hard work of the teacher and value the time spent in the classroom, which is also conducive to continuous improvement of teaching later on. At the same time, students were encouraged to work in groups to conceive patents, search for patents on the spot using mobile phones and explain on stage to master patent search and writing methods. The brainstorming method was used for everyone to participate in critique and suggestions, and some innovative ones were selected for patent application. The classroom atmosphere was good and the teaching content was informative. The number of students participating in answering questions after class is gradually increasing, and there are very few late arrivals or looking down at their mobile phones in class. All students are encouraged to participate in the research on the teaching effectiveness of the course, and a course feedback mechanism is set up to exchange their learning experience of the course on an anonymous basis, to put forward ideas for improvement from the students' perspective, and to do closed-loop feedback on teaching, with on-site communication between lecturers and students, so as to continuously improve the quality of teaching. It also lays the foundation for continuous improvement of teaching methods and content for the next session. They have become a mentor to students by providing psychological education and guidance to students' characteristics while imparting theoretical knowledge. The teachers play a

nurturing role by explaining design ideas and design methods based on knowledge and national development and engineering cases, cultivating in students a sense of family and nation and the ability to consider social, health, safety, legal, cultural and environmental constraints in the design and development process, and to reasonably analyse and evaluate the social, health, safety, legal and cultural implications of solutions to professional engineering problems in the context of engineering. The course will be able to analyse and evaluate the social, health, safety, legal and cultural implications of solutions to professional engineering problems in an engineering context and understand the responsibilities involved. In conjunction with the content of the course, Civics elements are organically integrated into the curriculum to educate students about the tremendous changes in the development of science and technology in China and to enhance national self-confidence. Students are encouraged to take the responsibility of achieving national prosperity, national rejuvenation and people's happiness, and to continuously enhance the spirit of innovation. Through QQ platform, WeChat, email, course centre and other methods and all lecture students zero distance communication, no matter study, life and thought to achieve timely service students, at any time communication to make bad ideas nipped in the bud, through multiple ways to help train students, so that they can better serve society, return society.

4. Effectiveness of the implementation of talent cultivation mode of applied colleges and universities with the participation of multiple subjects

The talent cultivation model of applied colleges and universities with the participation of multiple subjects has been promoted and applied in our university, and certain results have been achieved in the construction of textbook research platform, the construction of talent cultivation model, the construction of teachers and the quality of student cultivation.

4.1. The University and Enterprises Jointly Build a Textbook Research Platform to Achieve a Win-win Integration of Enterprise R&D and Talent Training

Relying on Dongfeng Motor Company, the university has adhered to and inherited the "school-enterprise cooperation, industry-academia combination" mode of training applied talents, given full play to the advantages of school-enterprise cooperation, and has established six academician (expert) workstations, more than 30 school-enterprise R&D centers and six high-end think tanks with local characteristics with Dongfeng Motor Company and Shiyan City. The university has built 13 postgraduate workstations in Hubei Province, 46 provincial-level science and technology innovation platforms and provincial humanities and social science key research bases, and 195 off-campus internship and training bases for university students, exploring new ways to combine education and production practice.

4.2. Continuous Optimization of Talent Cultivation Model

The school and the enterprise jointly formulate the training programme, jointly implement the training process and jointly evaluate the quality of training; the school's training programme is aligned with industrial development, the professional construction is aligned with industrial needs, the training process is aligned with vocational requirements, the subject research is aligned with engineering practice, and the long-term close integration between the school and the industry, university and research of Dongfeng Motor Co.

4.3. "Double-teacher" Construction with Outstanding Practical Skills

Through a series of measures such as employing part-time professors, "visiting researchers" and young teachers' internship in factories, a two-way exchange and collaboration community of school and enterprise personnel have been continuously strengthened, the teaching team combining of full-time and part-time positions is constantly optimized.

4.4. Continuous Improvement in the Quality of Talent Development

The employment rate of our graduates has remained above 94% for a long time, ranking among

the top universities in the province for many years. So far, the university has trained more than 100,000 professionals for the automotive industry and social development, and a number of alumni have grown into technical management backbones, leaders and executives in the automotive industry, and employers are highly satisfied with our graduates.

5. Conclusion

The implementation method of multi-subject participation in talent cultivation applied to cultivation practice effectively enhances the association between students, teacher-student association, and stimulates the motivation of multiple subjects such as enterprises, parents, students and teachers to educate people, thus enhancing students' independent learning and service to society, and proposing practical ways and means and realization paths for the cultivation of high-level talents of both virtues and talents in China. This paper was funded by projects DXS2021024, 2020557, 2020MSA256, JY2020017, Y202110, 2021383, Y201903 and JY2020064.

References

- [1] Yu Lisheng. Research on the cooperative education model of industry-university-research in applied undergraduate colleges and universities-taking the University of New Orleans in the United States as an example[J]. Strait Science, 2018(07):69-73+90.
- [2] Zhang Zicheng, Li Peng, Li Panping, Ma Jingtian. A study on the reform of automotive teaching driven by the German "dual system" model[J]. Journal of Automotive Engineering, 2022(06):105-107.
- [3] Li Bo. A practical model of higher vocational education in Japan based on "industry-university-government cooperation"[J]. Education and Career, 2017(13):104-109.
- [4] Zhang Chengjiang. Exploration of order-based training mode under the innovation of industry-education combination mechanism[J]. Industrial and Information Technology Education, 2020(06):86-89.
- [5] Lian Jiankong. Research on talent cultivation mode of applied undergraduate conference and exhibition majors under diversified project-driven mechanism[J]. Journal of Sichuan Tourism College, 2022(01):1-5.
- [6] Bao Yibei, Xie Enpu. Cultivation mode of top-level internship for higher vocational talents based on modern apprenticeship system[J]. Logistics Technology, 2021, 40(02):151-155.
- [7] FANG Sanhu, ZHANG Yongliang, XIE Qingmei. Reform and practice of applied talent cultivation in universities under the perspective of collaborative education[J]. Laboratory Research and Exploration, 2016, 35(04):219-222.
- [8] Zhang Jun. Research on the innovation of the integration of industry and education in applied colleges and universities under the perspective of collaborative education[J]. Education and Vocational, 2020(19):51-55. DOI:10.13615/j.cnki.1004-3985.2020.19.008.
- [9] Peng Fei, Liu Dan. Research on the cultivation mode of professional degree graduate students in mechanical disciplines based on the combination of industry-university-research[J]. Agricultural Technology and Equipment, 2021(11):119-120+123.