

## A comparative study of talent training modes in applied science universities-Taking Zhejiang University of Science and Technology as an Example

Lei Fan

School of Civil Engineering and Architecture, Zhejiang University of Science & Technology, Hangzhou, China  
Corresponding author's (Lei Fan)

**Abstract:** With the popularization of higher education in China, the function of universities to serve the society is becoming more and more prominent. Application engineering education pays more attention to industry, industry and future. As a new type of university, the University of Applied Sciences has become a key research project for the transformation and development of undergraduate universities in China, exploring the training mode of applied talents "Industry-University-Research integration, teaching and learning integration". Through the in-depth analysis of the research on the talent training mode of applied science universities under the background of new technology industry, taking Zhejiang University of Science and Technology as an example, aiming at the modern industrial policy from the perspective of global value chain, the new talent training goal is realized. This paper focuses on the analysis of what changes have taken place in the talent training mode under the background of new technology industry, the factors affecting the changes of the mode and the difficulties encountered in the process of the change of the mode, so as to provide theoretical basis and scientific analysis for the construction and perfection of the research on the talent training mode of applied science universities.

**Keywords:** University of Applied Sciences, Personnel training, Mode change, Countermeasure and suggestion

Date of Submission: 24-07-2023

Date of acceptance: 06-08-2023

### I. Introduction

Scholars have conducted in-depth discussion and research on the talent training model of applied science universities under the background of new technology industry, involving school-enterprise cooperation, talent training, specialty construction, discipline setting, thinking orientation and so on.

German scholar M. Sandra [1] thinks in his works that the talent training goal of German University of Applied Sciences should first face the needs of society and enterprise development, and cultivate students with strong innovation ability and high adaptability in view of the development of new technology industries. Based on this, the training model of applied talents is formulated, which has remarkable industrial dynamics and theoretical practicality.

F. Andrea [2] based on the perspective of enterprise development, thinks that we should promote the integration of production and education, deepen the cooperation and development between schools and enterprises, give play to the leading role of enterprises, and directly transmit the needs of enterprises to the talent training, scientific research and social services of schools.

K. Zeichner[3] believes that the teaching mode of applied talents is practice-oriented. Schools increase the proportion of practical courses in the course setting process, attach importance to the accumulation of students' practical experience, and organically combine theoretical knowledge with practical experience. Since the middle of the 20th century, "project curriculum is the main trend of curriculum reform in international vocational education", which has been regarded as the main method of cultivating applied talents by emerging applied universities such as Germany and Britain, and has entered the field of traditional higher education, and is regarded as "an effective method to improve the quality of training engineering talents".

The application-oriented talents in China are the new training target orientation put forward by some newly-built undergraduate colleges from the perspective of dislocation competition during the popularization of higher education in the late 1990s. J. F. Shi et al. [4] think that the essence of applied undergraduate talents is

demand-oriented professional talents, and their training requirements and processes are typical competency-based. Shi Kai et al. [5] think that students' innovative ability is particularly important in the talent training mode of applied science universities. Q Xu et al. [6] analyzed the current situation of the training mode of applied technical talents in universities, and also thought that the training of talents in applied science universities should be based on the actual situation, and the orientation of talent training should be clear and definite first.

The relevant research on teaching in colleges and universities thinks that teaching is the most important part of the talent training model [7]. M. Y Zhang et al. [8] put forward a four-step practical teaching system to achieve the goal of cultivating applied talents in colleges and universities. Q. Yan [9] believes that cultivating students' innovative and entrepreneurial thinking is an important cornerstone to promote the development of application-oriented universities.

On the research of teachers, X. F. Feng et al. [10] think that the transformation of teachers' team and teachers' quality is the key to the transformation of applied technology-oriented universities. It is in line with engineering experience and teaching level to advocate the construction of teaching staff in pilot colleges and universities and grasp "dual-qualified and dual-capable" talents. Researcher L. Q. Xu [11] proposed the reform of "five in one" experimental teaching system, focusing on teaching content, teaching methods, organizational forms, assessment methods and guarantee mechanisms. It provides a theoretical basis for introducing foreign high-quality education resources and improving the training mode of applied undergraduate talents.

By summarizing the relevant literature at home and abroad, it is found that scholars have studied the talent training mode of applied science universities from a dynamic perspective, and elaborated it from four angles: Relevant research in teaching, majors and courses, teachers' team and personnel training objectives. However, the training mode of talents is dynamic and oriented. If we can't train talents according to local conditions and keep pace with the times, we can't meet the growing needs of the country and enterprises. Therefore, universities of applied science should establish the target system of personnel training from a dynamic perspective, analyze the mode change of personnel training and determine the core influencing factors.

## II. A depth study of talent training modes

The depth study of talent training in applied science universities is mainly divided into three parts: the theory, model and case analysis of talent training mode reform in applied science universities; Analysis on the dilemma of talent training mode reform in applied science universities: Countermeasures and suggestions on talent training mode of applied science universities under the background of new technology industry. The specific research contents are as follows:

(1) The theory, model and case analysis of talent training mode reform in applied science universities.

① Theoretical analysis of the reform of talent training mode: Guided by the basic theory of higher education philosophy and resource dependence theory, this paper explores what changes will take place in the talent training mode of applied science universities under the premise of realizing the new talent training goal when the educational concept changes, and analyzes the necessity of the changes.

② The model construction of talent training mode reform: the concept, subject, way and content of mode reform.

③ Through the methods of literature analysis and case study, taking Zhejiang University of Science and Technology as an example, this paper studies the reform of talent training mode in applied science universities from a dynamic perspective.

(2) Analysis of the dilemma of talent training mode reform in applied science universities.

① Analyze and study the training concept oriented by discipline demand and the training concept oriented by industry demand.

② The responsibility of coordinating and coordinating among reform subjects was studied. The internal correlation mechanism among local government support policies, endogenous motivation of colleges and universities and enterprise participation motivation was expounded.

③ The internal mechanism of the reform of school talent training mode was studied, analyzes the influence of the original system, explores the restriction of management system on the integration of production and education, and expounds the optimization scheme of new ways of collaborative education.

(3) Countermeasures and suggestions on talent training mode of applied science universities under the background of new technology industry

① Focusing on the macro-planning of the state, local governments and enterprises. The top-level design of talent training mode reform is optimized. The internal mechanism of school-enterprise cooperation and talent training driven by policies is clarified.

② The reform content of applied science university under the background of new technology industry was improved. The linkage mechanism between talent training content and industry was established. A practical teaching system throughout the whole process was built.

③A new way to establish an applied science university under the background of new technology industry, a new idea to build a collaborative education platform between schools and enterprises, and a "four-point-driven" talent training reform model around the subject, content, concept and approach of reform.

### III. Conclusion

Under the guidance of the basic theory of higher education philosophy, this paper analyzes the internal essence of the reform of talent training mode in applied science universities under the background of fresh industry, and explores the integrated reform mechanism of enterprise-university-government-talent training mode from a dynamic perspective. On the basis of previous investigation and research, by using the methods of literature analysis and interview, this paper studies the dilemma of talent training mode reform in the process of transformation of applied science universities, and explores specific policies and operational countermeasures that are more in line with local universities, so as to meet the growing demand of new industries and technologies for high-quality applied talents. From a practical point of view, with reference to the mature experimental teaching system of German University of Applied Sciences and the talent training mode of domestic universities of Applied Sciences, based on the dynamic changes of actual teaching, with its own subject and goal orientation as the core, combined with social practice, the characteristics and advantages of universities, this paper explores the commonness, differences and influencing factors of reform. From the perspective of technical route, through factor sensitivity, deep learning and big data, the quantitative analysis of the ways to change the mode of smart education, integration of production and education and talent training has obvious industrial dynamics and guidance and predictability, which provides guarantee for the development and completion of the project. Judging from the subjective conditions of the research, Zhejiang University of Science and Technology is a typical "applied science university" with a good talent training model. Based on the existing training model, the "four-point drive" reform proposed by the project has certain reproducibility and expansibility. It put forward some countermeasures and suggestions for the integration of production and education and the cultivation of applied talents under the "four-point drive" reform in view of the difficulties encountered in the reform of local universities.

### Disclosure statement

No potential conflict of interest was reported by the authors.

### Acknowledgments

This work was supported by a Country and regional research project of German-speaking countries in Zhejiang University of Science and Technology (Project number: 2022DEGB004)

### References

- [1]. M. Sandra. Qualitätssicherung an hochschulen :eine untersuchung zu den folgen der evaluation von studium und lehre. Münster: Waxmann, 2006: 33-46.
- [2]. F. Andrea, M. G. Volker, S. Christoph. Innovationsfaktorkooperation: bericht des stifterverbandes zur zusammenarbeit zwischen unternehmen und hochschulen. Berlin:Stifterverband für die deutsche Wissenschaft, 2007, 96.
- [3]. K. Zeichner. Rethinking the connections between campus courses and field experience in college and university-based teacher education. *Journal of Teacher Education*, 2010, 61(1-2): 89-99.
- [4]. J. F. Shi, F. Zheng, B. Shao, G. J. Liao. Innovation of the cultivation mode of ability-oriented and application-oriented undergraduate talents. *Research in High Education of Engineering*, 2020, 2: 106-112.
- [5]. K. Shi and J. Liu. Research on the classification and pattern of German higher education institutions. *Heilongjiang researches on Higher Education*, 2015, 7: 61-64.
- [6]. Q. Xu, Y. L. Wang, Y. H. Liu, R. S. Hong. Research on talent training mode from the perspective of applied technology university. *Education Modernization*, 2016, 3(10): 17.
- [7]. J. R. Ren. Research on the "Supply-side" training mode of innovative and entrepreneurial talents in applied technology universities. *Journal of Higher Education*, 2016, 19: 191-192.
- [8]. M. Y. Zhang, B. Li, Y. H. Zhu, Y. R. Wang. Exploration on SCCIM-CDIO talent training mode of civil engineering specialty in application-oriented undergraduate universities. *China University Teaching*, 2016, 12: 52-54.
- [9]. Q. Yan. Discussion on innovation and entrepreneurship education in local undergraduate colleges. *Vocational Education*, 2017, 7: 58.
- [10]. X. F. Feng and G. C. Zhang. Exploration on the construction of "Double-qualified and Dual-ability" teachers in "Transformation" pilot universities. *Research in Higher Education of Engineering*, 2017, 3: 140-141.
- [11]. L. Q. Xu, Z. Y. Wang, Z. W. Yang. Reform and practice of experimental teaching system based on Sino-German cooperative education program. *Journal of Zhejiang University of Science and Technology*, 2020, 32(5): 349-354.