Eurasia Journal of Science and Technology	ISSN: 2663-1024	Volume 1, Issue 1,pp 5-9	March 2019

RESEARCH ON THE TRAINING MODE OF COMPUTER PROFESSIONAL INNOVATIVE TALENTS UNDER THE BACKGROUND OF NEW ENGINEERING

Yunli Cheng
Guangzhou Nanyang Polytechnic, Guangzhou 510925, China

Abstract
Informatization and artificial intelligence have triggered the rise of new industries and new engineering disciplines. Under the background of new engineering construction, higher requirements are put forward for new talents. This paper takes the computer science of Guangzhou Nanyang Polytechnic College as an example, and leads with Li Deshu. Based on the basic ideas of new engineering construction, in order to cope with change and shape the future as the construction concept, the innovation talent training mode was studied with inheritance and innovation, cross and integration, coordination and sharing as the main ways. It mainly studies the connotation and characteristics of new engineering and the orientation of talent cultivation, the computer professional innovation and knowledge system construction under the new engineering mode, how to construct the innovative talent training mode that adapts to the development of new engineering, how to transform and upgrade traditional science and engineering and new The feasibility path of the innovative talent training model under the background of engineering has been further explored, and the basic ideas of how to cultivate innovative and practical talents with sustainable competitiveness are proposed under the new form based on deepening the integration of production and education and the school-enterprise cooperation mechanism.
Keywords: New engineering; Innovative talent training; Model research.

1. INTRODUCTION

On February 20, 2017, the Ministry of Education issued the “Notice on the Implementation of New Engineering Research and Practice in the Department of Higher Education of the Ministry of Education”, High School Letter [2017] No. 6), the main content, organization and time schedule of new engineering research. The lead units and contacts have been carefully deployed. Officially launched a new engineering research and practice construction project.

The connotation of new engineering construction: taking Lidede people as the guide, coping with change and shaping the future as the construction concept, inheriting and innovating, intersecting and integrating, coordinating and sharing as the main way to cultivate future diversified and innovative outstanding engineering talents.In the context of new engineering construction, “engineering” is the essence and “new” is the orientation. The new engineering section includes not only the emerging engineering majors, such as artificial intelligence, intelligent manufacturing, robotics, cloud computing, etc., but also the upgrading of traditional engineering majors. As a new type of engineering education, the new engineering science has not changed the nature of its education, but the requirements for the cultivation of talents have changed.

China has the largest engineering education in the world. In 2016, there were 5.38 million undergraduate students in engineering, 1.23 million graduates, and 17037 professional placements. Engineering students accounted for about one-third of the total number of students enrolled in higher education. However, "the goal orientation of engineering talent training in China is not clear, the science of engineering teaching is scientific, there is a vague understanding of the relationship and difference between general education and engineering education, practical education and experimental teaching. Engineering education and industry enterprises are really out of touch. The engineering sciences suffer from defects in comprehensive quality and knowledge structure."

In the face of the "new engineering" proposed by the state, colleges and universities should clarify their own development orientation, service orientation, and personnel training orientation. Colleges and universities should formulate appropriate action routes, study the development trends of new industries, new industries, and new industries, grasp their regularity, and then propose the talent development action plan for schools to cultivate this trend, and train the "new engineering" talents that the society needs. However, no matter what, new engineering talents should be talents with advanced thinking, and should be talents who can actively perceive and actively adapt to the environment.

2. RESEARCH STATUS AT HOME AND ABROAD

The 21st century is an era of global competition and challenges. With the rapid development of science and technology and the strengthening of its interdependence in recent years, and the role and status of modern technology in social production and life, the connotation of international science education has undergone profound changes. "Science education has evolved into a science and technology education that integrates science

education and technology education.

The world-class university MIT adheres to the philosophy of science and technology, paying equal attention to both arts and sciences, conforms to the trend of the times, evaluates the situation, introduces STS education in a timely manner, and conducts STS and related research and education. + Opens a large number of distinctive STS courses, providing The rich STS curriculum resources have attracted many famous scholars and experts to teach, so that the cultivated scientific and technological elites become a complex talent with humanistic spirit, which has made great contributions to the development of the country and the world, further consolidating the world's first class. The status of the university.

In the past 10 years, China has been exploring new ways of engineering education, such as the construction of the National Demonstration Software Institute and the Microelectronics Institute, the implementation of the Excellence Engineer Training Program and the CDIO Engineering Education, the Accreditation of the Washington Agreement on Engineering Education, and the development of strategic emerging industries. The purpose is to meet the needs of current and future strategic emerging industries to compete for talent.

The research on the innovative talent training mode of new engineering is a major strategic choice for engineering education reform under the new economic background. The new engineering science should be oriented to the future. The new engineering talents should be talents with advanced thinking. They should be talents who can actively perceive and actively adapt to the environment. New thinking and new ways of engineering education development in China.

3. RESEARCH CONTENT

The relevant documents of the Ministry of Education pointed out that the reform and development of China's higher engineering education has stood at a new historical starting point, and it is necessary to speed up the construction of "new engineering". Informatization and artificial intelligence have triggered the rise of new industries and new engineering. Under the background of new engineering construction, traditional teaching concepts, methods and means have not adapted to the needs of future education. In combination with the reality of our hospital, we insist on taking the Lideshu people as the foundation, actively explore the training mode of computer professional innovative talents under the background of new engineering, and cultivate practical and innovative talents with sustainable competitiveness.

3.1. Project Research Framework

The overall framework of the project study is shown in **Fig 1**:

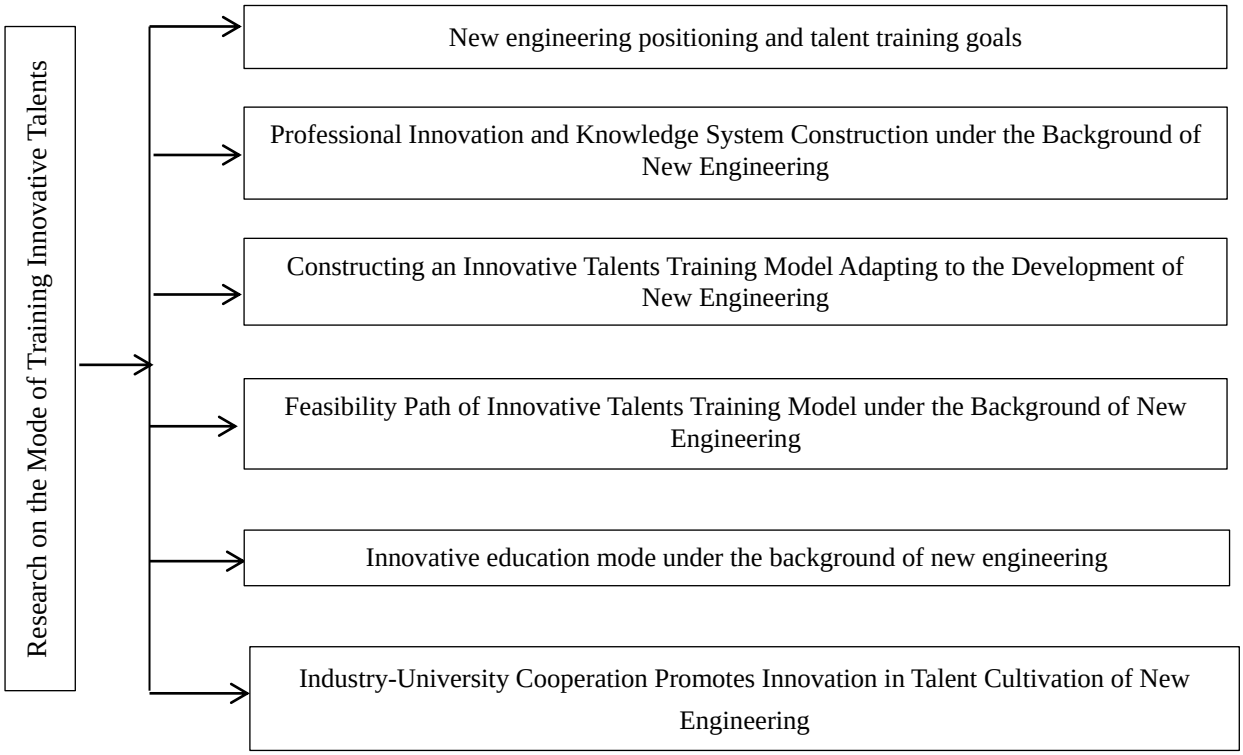

Fig 1. Overall project framework

3.2. Basic Content of Project Research

3.2.1. New engineering positioning and talent training goals

The new engineering majors focus on the professions of emerging industries, with Internet and industrial intelligence as the core, including big data, cloud computing, artificial intelligence, blockchain, virtual reality, intelligent science and technology and other related engineering majors; New technologies such as data, cloud computing, and Internet of Things will

explore new directions and new fields based on the transformation and upgrading of existing engineering majors, and gradually form a new curriculum system; and train high-quality composite new engineering talents with international competitiveness. Focusing on emerging industries and the new economy requires strengthening student practice and innovation.

3.2.2. The connotation and characteristics of new engineering

The connotation of new engineering construction: New engineering calls for new courses, and new courses require new models. "Engineering" is the essence, and "new" is the orientation. Guided by Lideshu people, we will respond to change and shape the future as the construction concept. We will inherit and innovate, cross and integrate, coordinate and share as the main way to cultivate future diversified and innovative engineering talents.

New engineering features:

Strategic: Standing at the height of the overall strategy, deepen engineering education reform with strategic vision and strategic thinking.

Innovation: Innovation is the inexhaustible motive force for the development of engineering education; new engineering needs to reshape China's engineering education, rather than repairing the details of the old paradigm.

Systematization: To address the changes and needs of society, we will develop a new engineering science as a system to design a complete program of education, research, practice and innovation and entrepreneurship.

Open-ended: New engineering is a higher-level open engineering education; it forms a large-scale structure of joint construction and sharing with openness and deep integration.

3.2.3. Computer professional innovation and knowledge system construction under the new engineering mode

New "Computer" Major: Internet of Things Engineering, Cyberspace Security (Information Security), Service Science and Engineering, Robotics, Data Science and Big Data Technology, Digital Media Technology, Intelligent Science and Technology, Network Engineering, Computer Applications Industry/Domain ;

For new technologies such as artificial intelligence, big data, cloud computing, and Internet of Things, we will explore new directions and new fields based on the transformation and upgrading of existing engineering majors, and gradually form a new curriculum system.

3.2.4. New engineering requirements for talents in information technology training

New technology, new economy, new demand, new engineering, deep integration of production and education: According to the requirements of new engineering talent training, integrate, optimize and reorganize the basic curriculum system of engineering majors, improve students' learning efficiency and effectiveness; explore how effective Cultivate engineering students' critical thinking, design thinking, engineering thinking, digital thinking, engineering management thinking, engineering ethics, cross-cultural communication literacy, etc.; study the digital thinking and ability that new engineering talents should possess. The basic requirements for the new engineering are shown in **Fig. 2**.

It is necessary to vigorously promote the deep integration of information technology and traditional industries, and achieve cross-disciplinary integration and cross-border integration. This is the depth and breadth of computer knowledge structure and capability structure that should be possessed by engineering science and technology talents, as well as the integration of information technology and other industries. Higher requirements.

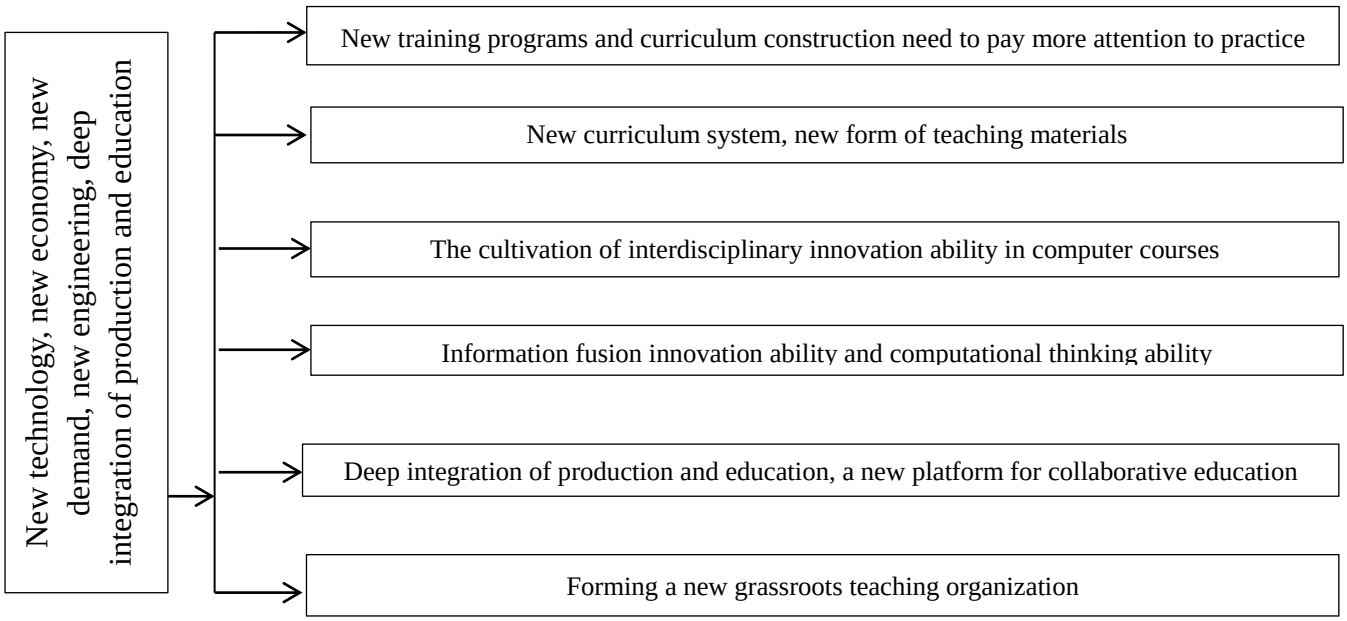

Fig. 2. New requirements for talent cultivation in new engineering

4. THE PROBLEM SOLVED

4.1. The Focus of Breakthrough

New engineering should be oriented to the future. Colleges and universities should define their own development orientation, service orientation, and talent training orientation. They must not only meet the

realistic requirements of talent quality from the times, but also clarify the rich connotation of talent training model innovation, and also combine with concepts and systems. To determine the realistic task of model innovation.

The main points of the project's proposed breakthrough are:

(1) The connotation and necessity of new engineering construction

(2) How to innovate computer major under the new engineering mode

(3) Feasibility path of innovative talent training mode under the background of new engineering

(4) Constructing an innovative talent training model adapted to the development of new engineering

(5) "Convergence + Innovation" emphasizes practical ability

4.2. The Key Issues to Solve

As a new type of engineering education, the new engineering science has not changed the nature of its education, but the requirements for the cultivation of talents have changed. The key issues to be solved by the project are:

(1) Feasibility path of innovative talent training mode under the background of new engineering

(2) How to transform and upgrade traditional science and engineering

(3) Research on education model innovation under the background of new engineering

5. RESEARCH AND INNOVATION

The connotation of new engineering construction is led by Lideshu people, with the concept of coping with change and shaping the future, with inheritance and innovation, cross-over and integration, coordination and sharing as the main ways to cultivate future diversified and innovative outstanding engineering talents. The main innovations of the project are:

5.1. Feasibility Path of Innovative Talent Training Mode under the Background of New Engineering

The new engineering department reflects the form of future engineering education and is an innovative engineering education program that keeps pace with the times and requires new research methods.

(1) Inheritance and innovation: New engineering should be rooted in our historical sedimentation and traditional advantages; new engineering should face the future, respond to the rapid changes in modern society through the sublimation of the concept of talent cultivation, the reform of institutional mechanisms, and the innovation of training models. Unstable transformational challenges of the future.

(2) Cross-fusion: Cross-integration is the focus of engineering innovation talents; it is based on multi-disciplinary intersections, integration of production, education and research (for example, Stanford University's Silicon Valley model). Comprehensive universities should play a leading role in stimulating new technologies and nurturing new industries. Bring into play the comprehensive advantages of disciplines, promote the extension of applied science to engineering, promote cross-disciplinary integration and cross-border integration, generate new technologies, and cultivate new fields of engineering. It is the unshirkable responsibility of our teachers to make college students and graduate students more practical and innovative.

(3) Coordination and sharing: taking the new engineering construction and engineering education reform as the guiding ideology, adhering to the principle of "cultivating people as the foundation and moral education as the first", taking the university as the leading factor and uniting industry enterprises, research institutes and other units to jointly formulate talents. Cultivate programs, supervise the process of personnel training, assess the quality of personnel training, and gradually break through policy barriers, resource barriers, and regional barriers that constrain the quality of high-quality talents in engineering education, and build an innovative talent training model that adapts to the development of new engineering.

5.2. Transformation and Upgrading of Traditional Science and Engineering

(1) Compared with the traditional engineering talents, the new engineering sciences include not only the new engineering majors, such as artificial intelligence, intelligent manufacturing, robotics, cloud computing, etc., but also the upgrading of traditional engineering majors. Bring into play the comprehensive advantages of disciplines, promote the extension of applied science to engineering, promote cross-disciplinary integration and cross-border integration, generate new technologies, and cultivate new fields of engineering.

(2) The development of the new economy calls for "new engineering". Serving the local economy and promoting the development of the industry has become the main direction of China's higher education. In the future, emerging industries and the new economy need high-quality complex "new" with strong engineering practice ability, strong innovation ability and international competitiveness. Engineering talent.

(3) Actively docking local economic and social development needs and enterprise technological innovation requirements, grasping the direction of talent demand in the industry, making full use of local resources, giving play to their own advantages, consolidating the characteristics of running schools, deepening the integration of production and education, school-enterprise cooperation, and collaborative education, and enhancing students The ability of employment and entrepreneurship, training a large number of applied and technical skills talents with strong industry background knowledge, engineering practice ability, and competent development needs of the industry.

5.3. Excellent Engineer/Engineer Leader Training Program Education Model

In the future, emerging industries and new economies need high-quality complex "new engineering" talents with strong engineering practice ability, strong innovation ability and international competitiveness. They not only have a deep academic degree in a certain subject, but also should have "disciplines". The characteristics of cross-fusion. The new engineering education is to cultivate innovative and outstanding

engineering talents with sustainable competitiveness based on new ideas and new models. Therefore, it is necessary to clarify the rich connotation of talent cultivation model innovation from the realistic requirements of the times for talent quality, and to combine with concepts and systems to determine the realistic task of model innovation.

Innovation is the first driving force for development. The fundamental challenge of innovation lies in exploring the ever-changing unknown. New engineering should take the concept of “adapting to society” and take the initiative to shoulder the responsibility of benefiting mankind and shaping the future. In the aspects of the teaching staff, practice platform, industry synergy, etc., we have built a business innovation incubator base, a technology entrepreneurship practice base, and a creative and entrepreneurial platform for the maker space.

6. CONCLUSION

New engineering should be oriented to the future. Colleges and universities should define their own development orientation, service orientation, and talent training orientation. They must not only meet the realistic requirements of talent quality from the times, but also clarify the rich connotation of talent training model innovation, and also combine with concepts and systems. To determine the realistic task of model innovation. The new engineering science should face the future, take the leadership of Lideshu, take the response to change, shape the future as the construction concept, and inherit and innovate, cross and integrate, coordinate and share as the main way to cultivate future diversified and innovative outstanding engineering talents; Through the sublimation of the concept of talent cultivation and the innovation of the training model to cope with the rapid changes of modern society and the challenges of future unstable changes, in order to cultivate more high-quality engineering and technical personnel with innovative thinking, practical ability and scientific research level, effectively promote the higher level The school's engineering education professional certification provides support and guarantee for high-level employment.

7. ACKNOWLEDGEMENT

Fund Project This paper is a phased research result of the 2018 Nanyang Institute of Technology Vocational College 2018 Innovation Strong School Project " Research on the Training Mode of Computer Professional Innovative Talents under the Background of New Engineering " (Project No. NY-2018CQ2JGZD-01)

Fund Project This is the phased research result of the “Study on the Feasible Path of Professional Setting and Curriculum Reform in Guangdong Private Higher Vocational Colleges” (Project No. 2017GWZDXM004-08), a sub-project of the Major Research (Applied Research) Project of Guangdong Province in 2017

REFERENCES

[1]. China's new engineering construction for the future [J]. Lin Jian. Tsinghua University Education Research. 2017(02)

[2]. Accelerate the development and construction of new engineering disciplines to actively adapt and lead the new economy [J]. Wu Aihua, Hou Yongfeng, Yang Qiubo, Hao Jie. Higher Engineering Education Research. 2017(01)

[3]. Reform and thinking on the training mode of computer professional talents in local undergraduate colleges [J]. Wang Guanyu, Shi Yunhui, Li Mingjiang. Journal of Qiannan Normal College for Nationalities. 2016(02)

[4]. The path of innovation of computer students in colleges and universities under the perspective of innovation and entrepreneurship education [J]. Zhang Yongqiang, Chen Jie, He Puzhen. Education Review. 2018(05)

[5]. Research on Computer Basic Courses in Information and Computing Science [J]. WANG Dan, WANG Jibo, WANG Xiaoyuan. Forest District Teaching. 2017(05)

[6]. On the information literacy of computer-based full-time experimental personnel in colleges and universities under the conditions of higher education informationization[J]. Hui Ni.Science and Technology Economics Guide. 2018(5)

[7]. Roundtable: Research Opportunities and Challenges for Emerging Software Systems [J]. Xiangyu Zhang,Dongmei Zhang,Yves Le Traon,Qing Wang,Lu Zhang. Journal of Computer Science and Technology. 2018(5)

[8]. Empirical assessment of machine learning-based malware detectors for Android [J]. Kevin Allix, Tegawende F. Bissyande, Quentin Jérome, Jacques Klein, Radu State, Yves Le Traon. Empirical Software Engineering. 2016(1)

[9]. Eman Hossny. A Case Study for Deploying Applications on Heterogeneous PaaS Platforms [J]. International Conference on C loud Computing and Big Data, 2013:246-253.

[10]. Privacy challenges in Ambient Intelligence systems [J]. Patrice Caire, Assaad Moawad, Vasilis Efthymiou, Antonis Bikakis, Yves Le Traon. Journal of Ambient Intelligence and Smart Environments. 2016(6)