

# Research on Cultivation of Top-notch Innovative Talents' Core Literacy under the Background of New Engineering Construction

Hui Hongzhong<sup>1</sup>, Chen Lian<sup>2</sup>

<sup>1</sup>Liaocheng University, Liaocheng, 252000, China

<sup>2</sup>Shandong College of Engineering Technicians, Liaocheng, 252000, China

**Keywords:** New engineering construction; Top-notch innovation; Cultivation of core quality of talents

**Abstract:** With the increasing economic rise of countries all over the world, the competition is becoming more and more fierce; The arrival of knowledge economy further promotes the profound changes of economy and society, and the demand and evaluation criteria for talents also tend to be diversified. The construction of new engineering is a major action plan to meet the challenges of the new economy, serve the national strategy, meet industrial needs and face future development, and promote the reform of higher engineering education. An important connotation of the construction of new engineering is talent training. Cultivating high-quality new engineering talents, adapting to the development of the new economic form characterized by the integration of knowledge and the requirements of the transformation and upgrading of China's economic structure, is an important mission for colleges and universities to implement the fundamental task of Building Morality and cultivating people. By analyzing the core qualities of top-notch innovative talents in the four dimensions of knowledge, ability, thinking and values, this paper puts forward that engineering education should be based on the major strategic needs of the country, innovation and entrepreneurship education, the advantages of comprehensive universities and the collaborative education of industry, University and research, so as to provide necessary support for the cultivation of new people in the era who bear the great responsibility of national rejuvenation. Based on the problem of talent training in the construction of new engineering, from the perspective of the core quality of talent training, this paper defines the ability structure of engineering talents facing the future, and explores and designs the cultivation path of the core quality of new engineering talents, so as to cultivate high-quality new engineering talents to adapt to the new era.

## 1. Introduction

At present, engineering education is related to the development trend of the whole society and country. With the development of the world economy, "new products, new models, new formats and new platforms" are emerging [1]. The construction of new engineering is a major action plan to meet the challenges of the new economy, serve the national strategy, meet industrial needs and face future development, and promote the reform of Higher Engineering Education [2]. The talents trained by engineering education should jump out of the narrow dimension of the vision of a single discipline. They should not only have solid basic knowledge and rich practical experience, but also have forward-looking scientific perspective, broad global vision, strong feelings of home and country, etc. [3]. Core literacy is not only conceptual innovation, but also the embodiment of the diversity, diversification and connotation of the quality and ability of top-notch innovative talents under the background of new engineering construction [4]. By analyzing the construction objectives of new engineering, this paper studies the importance of training new engineering talents and what qualities new engineering talents need to have [5]. Taking the talent training in the construction of new engineering as the foothold and the core literacy as the breakthrough point, this paper explores and designs the cultivation path of the core literacy of new engineering talents [6].

The construction of new engineering focuses on strategy, innovation, openness and interconnection, and emphasizes intersection and integration, coordination and sharing. It is rooted

in China and goes to the world. The author starts from the dimensions of knowledge, ability, thinking and values [7]. With the advent of knowledge economy and the changes of the times, the standards of global demand for talents tend to be diversified. The essence behind its competition is science and technology, and the key of science and technology lies in talents [8]. The core literacy is divided into "using tools interactively, interacting in heterogeneous social groups and acting independently", highlighting self reflection, social interaction and interdisciplinary literacy. Subsequently, countries or regions around the world successively started the research on core literacy and put forward the index system of core literacy according to local conditions. For the core quality of new engineering talents, it is proposed to strengthen the national feelings, global vision, legal awareness and ecological awareness of engineering students, cultivate design thinking, engineering thinking, critical thinking and digital thinking, and improve innovation and entrepreneurship, interdisciplinary cross integration, independent lifelong learning, communication and negotiation ability and Engineering Leadership.

## 2. New engineering construction

### 2.1. Core Literacy Framework of New Engineering Talents

Cross major refers to allowing students to gallop in a broader professional field and fully extend the chain of innovation: first, the cross compounding of existing engineering disciplines; Second, science and engineering complement and learn from each other. If science is weak, it is difficult to support the solution of complex engineering problems; Third, promote the cross integration of engineering and other disciplines under the guidance of problems. Without the cross integration of multiple disciplines, it is difficult to make a path choice of "new engineering" beyond routine and creativity. General education emphasizes the shaping and personalized teaching of "people", and improves the philosophical and social science literacy, humanities and Art Literacy, scientific and technological literacy of talents. The future mission of new engineering talents is not limited to a single engineering skill, but also needs the cultivation and edification of humanities, social sciences and arts such as management, economics and sociology. New engineering talents should be guided by scientific and Technological Development and economic development, from adapting to social changes to leading the progress of the times. As shown in Figure 1, the core literacy framework of new engineering talents:

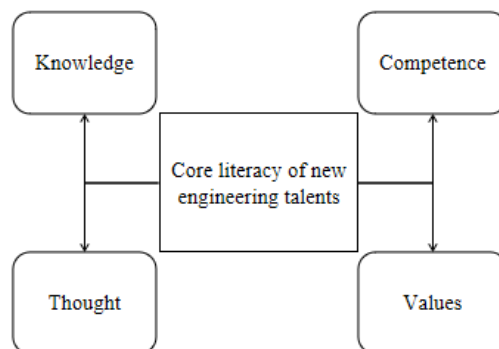


Figure 1 Framework of core literacy of new engineering talents

The cultivation of new engineering talents is in line with the needs of modern industrial development and the economic development of the times. The development of emerging trend industries and new economy in the future needs high-quality compound new engineering talents. Strengthen and improve the ideological and political work in Colleges and universities, actively practice the socialist core values, and cultivate new engineering talents to inherit and carry forward the national culture, red gene and scientific spirit. New engineering talents should have the spirit of rule of law, moral realm and social responsibility. They should trigger students to calmly think about the impact of new technology on society, law and ethics, so as to achieve the coordinated development of scientific and technological progress, social development and human civilization.

## 2.2. Cultivation Path of Core Literacy of New Engineering Talents

From the perspective of improving the core literacy of new engineering talents, this paper optimizes the existing training path of new engineering talents, and puts forward relevant countermeasures for the training of core literacy of new engineering talents. Training concept, supported by the people-oriented value concept of new engineering, and exploring student-centered. Exploring the reform of education and teaching methods under the background of new engineering should be based on the transformation of education and teaching ideas. The cultivation of the core quality of new engineering talents adheres to people-oriented and highlights the role of education in promoting people's own improvement and development. Change the single teaching mode, highlight students' subjectivity and initiative in the teaching process, and then improve their ability of independent learning and independent thinking. Guided by learning output, that is, the cultivation of new engineering talents should be guided by cultivating students' ability to solve complex engineering problems. The cultivation of new engineering talents' ability to solve complex engineering problems should be included in the whole talent cultivation scheme, which should be used as an important basis for curriculum system setting and education and teaching reform, and the top-level design of core literacy cultivation should be carried out. New engineering focuses on talents with interdisciplinary integration. Because the existing curriculum system can not meet the training requirements of new engineering talents, we propose to build a new curriculum system and take the main measures of interdisciplinary integration. Deepening the integration of industry and education is a necessary measure to cultivate new engineering talents. School enterprise cooperation is the premise of the integration of industry and education. On the basis of the combination of schools and enterprises, we must strengthen the organic linkage and collaborative innovation of industry, University and research, and highlight the dual subjectivity of college and enterprise education. In the process of training new talents in the whole industry, we must track the dynamic changes of science and technology and effectively train talents in the future.

## 3. Measures to Cultivate the Core Literacy of Top-notch Innovative Talents

### 3.1 Improve the social adaptability of talent cultivation

The training of new engineering talents should be guided by the major strategic needs of the country, and strengthen the reform and innovation of advanced disciplines to meet the challenges brought by the industrial revolution in the new era from the height of serving national development, meeting industrial needs and facing future challenges. We should focus on the national development strategy, study the laws and prospects of the current industry development, capture the new direction of future development, carry out professional optimization around the needs of the industrial chain, closely track the latest trends of employers, and achieve organic connection with industry enterprises. We should change the traditional subject content oriented curriculum construction, strengthen the reform and innovation based on the construction of subject system, and cultivate a group of young people in the new era who closely link their personal development future with the fate of the motherland. Innovation and entrepreneurship education is an effective starting point of engineering education. Under the new economic form, the construction of new engineering must be led by innovation and entrepreneurship education. As shown in Figure 2, the core qualities of top innovative talents are:

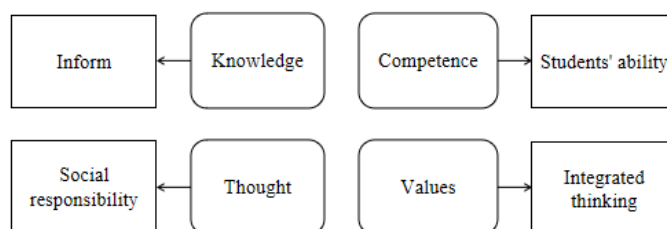


Figure 2 Core qualities of top innovative talents

Fully tap social needs. Reflect the innovation consciousness in the design link, design and develop innovative and applied products, and analyze the competitive advantages and disadvantages of products. From the perspective of talent training, innovation and entrepreneurship education starts with the supply side reform of talent training and focuses on cultivating students' core competitiveness to meet future challenges. Colleges and universities should strengthen the construction of teaching experiment, scientific practice, enterprise practice and maker space, establish a talent training mode of industry university research cooperation and innovation and entrepreneurship guidance, and completely break the barriers and barriers restricting the cultivation of innovation and entrepreneurship talents.

### **3.2 Build a common governance system for talent cultivation**

In the current society, making cars behind closed doors and fighting alone have been eliminated by the rapid development of industrial economy. Building a multi-directional collaborative education system of government, universities, society, enterprises and industries is an inevitable requirement to break the institutional constraints and promote the integration of industry and university. The construction of new engineering is an important part of the supply side structural reform in the process of talent training. The construction and development of new engineering is not only the inevitable trend of the transformation and upgrading of China's industrial structure, but also the need to deepen the reform of Engineering Education in Colleges and universities, but also the major strategic deployment of the country's future industrial development. Be able to conduct reasonable analysis based on relevant background knowledge of the project, analyze and evaluate the impact of the solution on society, culture, economy and law. Explore the reform of teaching management systems such as student registration, credit recognition, curriculum training and teaching evaluation, open up the credit conversion between schools and majors, and facilitate students' free choice among different disciplines, so as to promote the diversified development of students. Break the constraints of the traditional education system and encourage colleges and universities to establish new cross-border research institutions with governments, enterprises and scientific research institutions. Understand not only natural science, but also social science; It can not only deal with the current scientific and technological challenges, but also have a certain ability of prediction and research and judgment in unknown subject fields. Facing the major development needs of economy and society, we should vigorously develop new engineering courses, promote China's transformation from a large country of higher education to an educational power faster and better, and provide talent support with international competitiveness in the future global competition.

## **4. Conclusion**

The construction of new engineering is an education reform and development strategy proposed to adapt to the development of new economy and new industry. It is an important force to promote national and social progress. Cultivating high-quality and compound new engineering talents is also one of the primary tasks of the country. The quality of new engineering talents is the basic guideline for cultivating new engineering talents. Starting from improving the core quality of new engineering talents, this paper optimizes the existing training path of new engineering talents, and promotes and integrates each other from the five aspects of training concept, curriculum system, teacher guarantee, production and education integration and quality evaluation. From the perspective of the reality of classroom teaching reform, this paper puts forward the wind vane in the new thinking of classroom teaching reform of cultivating the core literacy of middle school politics, which makes a modest contribution to enriching the national theoretical research on the core literacy. Maintaining a smooth information flow channel, establishing a supporting consulting service system and improving the flow supervision mechanism will promote the efficient operation of the feedback channel. The research on the cultivation of core literacy in the teaching reform of middle school politics is only a preliminary discussion, and there are still many problems worthy of further in-depth research in the future. Design the excellent training path of new engineering talents to adapt

to the personalized development of students, and strive to achieve a new situation of successful training of new engineering talents.

## References

- [1] Guo H . Research on the influence of university education system reform on college students' innovation ability. *International Journal of Electrical Engineering Education*, vol.20, no.72, pp.9, 2021.
- [2] Du R , D Zhong, Yu J , et al. Construction Simulation for a Core Rockfill Dam Based on Optimal Construction Stages and Zones: Case Study. *Journal of Computing in Civil Engineering*, vol.30, no.35, pp.52, 2016.
- [3] Kuznetsov D V , Polyakov F A , Shandybin M I . Investigation of Relationship Between Vibration State of Core and Frame of Stator in Turbogenerators with Tangential Construction of Elastic Suspension. *Power Technology and Engineering*, vol.53, no.44, pp.55, 2019.
- [4] Abbas A , Din Z U , Farooqui R . Integration of BIM in Construction Management Education: An Overview of Pakistani Engineering Universities. *Procedia Engineering*, vol.45, no.51, pp.57, 2016
- [5] Subbotin A S , Zharkov I G , Ratnikov I E . The peculiarities of construction organizing of wind farms as a part of environmental engineering. *IOP Conference Series: Earth and Environmental Science*, vol.81, no.30, pp.36, 2022.
- [6] Lu Z . Research on Location Characteristics of UCF Layout Based on DNSCAN Algorithm. *Mathematical Problems in Engineering*, vol.20, no.2, pp.12, 2022.
- [7] Li Z , Ren M , Chen Z , et al. A Biproportional Construction Algorithm for Correctly Calculating Fourier Series of Aperiodic Non-Sinusoidal Signal. *Engineering*, vol.13, no.10, pp.53, 2021.
- [8] Lin L . Optimization of core talent ecological environment in an enterprise based on job embeddedness. *Chemical Engineering Transactions*, vol.51, no.13, pp.18, 2016.