

## On the Training Mechanism of Innovative Talents in China

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**Abstracts:** China's economic and social development has entered a brand-new stage, but what does not match with industrial upgrading and value chain climbing is education, especially backward in training innovative talents. In order to adapt to the changes and development of the world economy, education departments and various schools at home and abroad have taken corresponding exploratory measures. China still needs a comprehensive and systematic reform in the education management system and the cultivation of innovative talents.

### 1. Research Background

With the continuous development of China's reform and opening-up and the continuous improvement of its comprehensive national strength, the State Council announced in 2015 the first ten-year plan of action for China to implement the manufacturing power strategy-"Made in China 2025". It emphasizes the important position of manufacturing industry in industrial development, and puts forward the principles, objectives, tasks, priorities and support guarantee, aiming to grasp the development opportunities of high-end manufacturing industry, firmly occupy the new commanding heights of economic growth, and promote industrial power. The change of the society is bound to reflect on college students. The university education should face up to this kind of change, grasps the student thought idea complex change, the analysis question, has the pertinence to do the ideological education work well [1]. However, the reality is that the training of our innovative talents falls behind the actual demand. Premier Wen Jiabao at that time in 2005: "None of the students trained for so many years have achieved academic achievements comparable to those of the masters trained during the Republic of China. Why does our school always fail to produce outstanding talents? "Innovation is an eternal driving force for a country to move forward. Building an innovative country is a major strategic decision for China to comprehensively promote the socialist modernization drive. In the process of building an innovative country, education plays a fundamental, leading and overall role. To enhance the ability of independent innovation, we must vigorously promote educational innovation.

### 2. Innovative Talents and Training.

How to cultivate innovative talents? It is generally believed that with good basic knowledge, it is necessary to further cultivate and develop innovative talents. Because innovation is not a water without a source and a wood without a root, of course, this intermediate needs systematic innovation changes in educational philosophy, management, form, evaluation, etc. The cultivation of innovative talents in the general sense probably goes through several stages:

#### 2.1 The Basic Quality Training Level

Basic quality training is the first level of basic education. No matter what kind of career students will pursue in the future, no matter what their achievements are, good quality and good mentality are the cornerstones of success and will also be the wealth of their life. Basic quality training can

also help students to establish correct life goals and face various ups and downs as easily as possible with optimism. It mainly includes the cultivation of students' willpower, ability to do things as human beings and communication skills.

## **2.2 The cultivation level of advantages and specialties**

Schools can initially judge students' advantages and interests by organizing various activities and interest groups, and then further understand students' advantages and interest levels, and give appropriate guidance to help students understand their own advantages and disadvantages, and consciously improve and improve. The main goal of the second level is to cultivate the ability to find problems, that is, the ability to think independently. Finding one's own advantages and interests can improve students' confidence and provide them with feasible development directions.

## **2.3 Professional Personnel Training Level**

Innovation is not a rootless imagination, nor is it fully reflected by its own advantages, but needs to be based on profound knowledge, experience, skills and other professional foundation. Basic education plays a fundamental role at this level, which can guide students to pursue higher interests and hobbies, and generate the desire and motivation for knowledge learning. The cultivation of professional talents includes two aspects: on the one hand, the study of knowledge and skills in professional fields; on the other hand, the comprehensive study, with unlimited contents, involves the existing knowledge related to the world such as literature and history, common sense of life, etc. In other words, the training of professional talents not only aims at professional depth, but also focuses on the breadth of knowledge, so that students have an open, inclusive and understanding attitude towards different ideas and concepts from the outside world.

## **2.4 Innovation Ability Training Level**

Comprehensive innovation ability can be reflected in all kinds of teaching activities in the basic education stage. There is no unified method to support students to play freely. The fourth level is devoted to training students' ability to take measures to solve problems after autonomous analysis. To cultivate students' ability to get more creative answers according to their own understanding in addition to standard answers; To cultivate students' ability to create and invent according to their own interests or through independent thinking on a problem [2].

## **3. foreign and Domestic Related Practice**

The education and teaching reform aimed at cultivating innovative talents in China has been going on, and some experiences and achievements have been made. Beijing launched the well-received "Flying Plan" in 2007. Its "Selection Criteria for Top-notch Innovative Talents" has eight aspects, which involve "having a solid knowledge base and learning potential beyond peers; Have extraordinary cognitive ability; have extraordinary thinking ability and strong curiosity; having extraordinary sensitivity and creativity; have extraordinary internal motivation to learn; have extensive communication and good communication ability; having outstanding subject specialties or special talents in relevant fields. " Therefore, other requirements can be appropriately relaxed during enrollment. Some high schools with good educational conditions have begun to introduce the global unified curriculum designed by international diploma organizations: IB curriculum, which is a mature and internationalized quality education curriculum system focusing on cultivating world elite talents. Its training objectives are mainly: inquirers, knowledgeable people, thinkers, communicators, principled people, broad-minded people, compassionate people, people who dare to take risks, people who develop in an all-round way, and reflective people.

Foreign countries have also made some educational changes in response to changes in the market situation. The world-renowned Harvard University requested to provide "school report" in the process of enrolling new students, including "additional general ratings", covering a total of 15 aspects. Almost all famous American universities pay attention to these aspects: curiosity (or thirst for knowledge), creativity (or creativity), academic performance, academic prospects, leadership,

sense of responsibility, self-confidence, enthusiasm, sense of humor, caring for others, vitality, maturity, initiative, reaction to setbacks, and the degree of attention paid by teachers[3].

In the face of economic and social development and rapid changes in science and technology, the British government has proposed that higher education should be oriented to economic development and cultivate talents for the society (enterprises) [4]. France's higher education is mainly characterized by its professional training mode, of which the Paris Central University of Technology is the representative. The school attaches great importance to the cultivation and training of students' practical ability and innovative quality in various fields. In the 1930s, Japan began to pay attention to the scientific and technological cooperation between universities and enterprises, and established various forms of horizontal cooperation, such as joint research system, cooperative research system and contract system [5]. For more than a century, Japan has successively developed and reformed its higher education in accordance with the higher education models of France, Germany and the United States, and continuously pushed it towards diversification, lifelong development and internationalization [6].

However, domestic universities have also made useful explorations of innovative personnel training modes in the postgraduate education stage. The "graduate student innovation experiment center" of northwestern polytechnical university adopts the construction model of "experiment center + theme laboratory + virtual laboratory". The three types of laboratories perform their respective duties and complement each other, so they can adapt to various innovative projects applied by graduate students [7].

#### **4. Analysis of the Reasons for Lack of Innovation**

Although China has achieved an overall admission rate of 50% of universities and has the largest higher education in the world, with tens of millions of graduates each year, there is no doubt that we still have few original inventions and subversive creations. Although there are indeed many applied inventions and patents, few nobel prizes are followed by the west academically, and although the industry is catching up with the west, it is not equal to excellence and strength. On the contrary, the internet, which originated from the U.S. military, can spread its branches and link up with other countries and control the industry after industrialization. Qian Xuesen once said: "We must have the spirit of scientific and technological innovation of California Institute of Technology in running schools today to train talents who can think and have extraordinary creative ability. The most important thing is to reform and reconstruct the school culture, form a democratic and tolerant cultural atmosphere, and let the school become the soil for the growth of innovative talents.

##### **4.1 Rigid management system**

The centralized system formed on the basis of planned economy and highly unified political system emphasizes "identity" and "standardization". It directly restricts and stifles the internal power, vitality and creativity of various educational institutions at all levels and at the top level, and must increase the autonomy of various school-running subjects. With the development of market economy and education, the power system derived from management has produced a variety of resource information control and interest chains attached to it. On the contrary, it has strengthened and strengthened this system to a certain extent, deepening and strengthening the rigidity [8].

##### **4.2 Lack of self-construction in colleges and universities**

Colleges and universities are the main force in personnel training, but in addition to their rigid and rigid integrated management, their own internal management also follows the rules and practices, lacks autonomy and vitality, and the problems of too centralized administrative power and too small faculty power have not been well solved, not to mention the functions of the teaching committee.

##### **4.3 Negative Effects of Evaluation Mechanism**

The ranking and assessment mechanism of domestic universities and its internal assessment

mechanism cover short-term indicators such as the publication of papers and the amount of funds, which can certainly explain some problems, but in fact the existence of 369 among universities directly means that it is unfair at the beginning. Besides, as a liberal arts, the value of some spiritual achievements or literary works cannot be measured by the number of papers. What is more serious is that the introduction of foreign standardized tests in the last century has even curbed the cultivation and development of innovative spirit and creativity at the stage of basic education. Its harm is especially extensive and profound.

## **5. Countermeasures and Suggestions**

### **5.1 Further Decentralization of Management, To Stimulate the Vitality of All Levels of the Main Body**

Foreign governments only carry out macro-control on the allocation of funds and teaching quality in the management of colleges and universities, while the school-running philosophy and academic development are independently managed by the school, which enables colleges and universities to have autonomy in running schools, and can plan the talent training mode and the development prospect of the school according to their own ways and ideas, thus promoting the diversification and personalization of the development of university education.

The contradiction between the backward management mode and advanced educational concepts in universities is still very prominent. If the school management system reform cannot be carried out effectively, it will be difficult to promote the cultivation of innovative talents. At present, the teaching management in our country mostly adopts the traditional administrative management mode, that is, the educational administration department of the school is responsible for the teaching organization and management of the school, making various rules and regulations and implementing them through administrative means. In fact, the teaching management department thinks more about teaching problems from the perspective of managers, focusing on formally ensuring that the teaching process is carried out according to predetermined procedures, which is essentially a management method at the table level.

### **5.2 Strengthen Humanistic Education and Cultivate the Basic Ability of Innovation**

China's institutions of higher learning system was formed in the early days of the founding of the People's Republic of China in order to adapt to the highly centralized planned economy modeled on the Soviet Union model. For a long time, it has shown a utilitarian tendency in personnel training. It places too much emphasis on scientific education and ignores humanistic education, especially science and technology institutions. It emphasizes intelligence over morality, professional knowledge over humanistic quality, and traditional teaching over ability training, thus killing students' individuality and creativity. Now is an era of talent competition, which requires high-quality talents to have not only rich scientific knowledge, but also profound humanistic quality. The integration of scientific education and humanistic education has become a major trend in the internationalization of higher education.

The relationship between liberal arts and science is the relationship between the two wings of birds, which complement each other. Insight and selectivity in liberal arts quality are the basic abilities in innovation ability. People with rich life experience can find the key to the problem and find the solution very quickly when facing complicated situations without time to think and reason. This is insight [9]. To cultivate insight, the first point is to pay attention to cultivate the habit of paying attention to reality, the frontier and the pulse of the times. On the basis of insight, selectivity will be generated. How a person chooses the direction or field of his life-long struggle depends on his ability to choose.

### **5.3 Credit System, Double Tutorial System, General Education and All-Round Reform of Education Mode.**

Since the 1950s, undergraduate education in China has followed the education model of the

former Soviet Union, strengthening professional education and emphasizing the cultivation of professionals, while ignoring general education. Students seldom know other professional knowledge, which is narrow in scope, isolated in subject knowledge and especially lacking in horizontal knowledge. General education is a flexible curriculum system without a unified and stylized model. Therefore, colleges and universities should set up courses according to their own development characteristics. Especially in the curriculum of undergraduates, natural science and humanities and social science should be integrated. At present, most 211 colleges and universities in the country agree with and adopt measures of general education, which is indeed a great progress.

The so-called "double tutorial system" means that each graduate student has two tutors, one of whom is a traditional tutor and the other is a cooperative tutor. The cooperative tutor can be a scholar, an expert from an enterprise or a government agency in our school or other universities at home and abroad. The dual tutorial system can give full play to the comprehensive advantages of disciplines, broaden the knowledge vision of graduate students, stimulate innovation in an interdisciplinary atmosphere, and at the same time promote exchanges and cooperation among scholars, scholars and enterprises, scholars and experts in government agencies.

#### **5.4 Abandoning Standardization and Simplification, Advocating Diversity and Individuation**

After the introduction of foreign standardized examination questions, the examination will more easily turn the whole educational activity into a passive chain of obedience. The students trained under this evaluation system are only machines that passively accept knowledge and actively deal with examinations. The school takes the examination score as the standard to evaluate the teachers' work, objectively inducing the teaching work to become the routine for the purpose of pursuing the achievement, and restricting the teachers' innovative spirit.

The basic purpose of evaluation is not to check the development of students, but to admit the differences between evaluation objects and to explore educational methods suitable for the development of different evaluation objects. Facts have proved that this standardized evaluation mechanism can only ensure the relative fairness of students, but is not conducive to the emergence of innovative talents. We must explore a relatively objective, basically fair and diversified evaluation mechanism to promote the development of innovative spirit and the cultivation of creative ability.

### **6. Conclusion**

As a strategic resource, the competition for innovative talents has become the focus of international competition. The key to innovation lies in talents, whose growth depends on education [10]. The era of "wealth comes from material resources" will be replaced by the era of "wealth comes from human resources". In order to be in an invincible position in the fierce international competition, there must be a large number of innovative talents with high specifications and quality as support, and the training of these talents all depends on the development of innovative education. Individuality education, all-round education and innovative education have become the necessity of future education development.

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