Research on the Cultivation Mode of Innovative Talents under Basic Education—Taking Beijing No. 4 High School as an Example

Chen-Yang ZHANG\(^{1,a}\), Yang REN\(^{2,b,*}\) and An CHEN\(^{3,c,*}\)

\(^{1}\) College of Emergency Management, Henan Polytechnic University, Jiaozuo
\(^{2}\) Beijing Xicheng District Education Trade Union Chairman, Professor, Beijing
\(^{3}\) Chinese Academy of Sciences, Science and Technology Strategic Consulting Institute, Beijing

\(^{a}\) 1195414807@qq.com, \(^{b}\) renyang69@163.com, \(^{c}\) change1970@163.com

*Corresponding author

Keywords: Cultivation Mode, Innovative Talents, Basic Education, Beijing No.4 High School.

Abstract. Talent training is an important part of the comprehensive competitiveness of the country. Basic education plays an important role in cultivating innovative talents as the foundation project of talents and improving the quality of the people. In today's world, more and more countries see the basic education reform and development as a training of innovative talents, enhance the comprehensive strength of the country's forward-looking options.

Introduction

At present, China's economic development in the "four superposition" of the key transition period, population, resources, environmental problems is increasingly prominent, which become a bottleneck restricting the sustainable development of China's economy and society. How to effectively resolve these constraints to achieve the transformation from "Made in China" to "China to create", the key depends on a large number of innovative talents. Human resources is the most important resource, is the source of the never-ending power, related to the rise and fall of a country or nation. The degree of talent development determines the breadth and depth of other resource development. To this end, the party and the state proposed that to 2020 China will build as a human resources and innovative countries, innovative personnel training work has been referred to the strategic level of national development.

Talent training by education. China has launched a number of programs such as "973 Program", "211" Project, "985" Project, "Cross-century Talent Training Program", "Innovation Team International Cooperation Plan", "Four Groups" Talent Training Project. "Why cannot cultivate outstanding talent in our school?" [1] "Qian Xuesen asked" once again to our country's education, especially innovative talents and innovative ability to sound the alarm, we need to seriously consider the problems and deep causes in the development of innovative talents in China.

The Definition of Related Concepts

Basic Education

Basic education is a dynamic concept, is that people in the growth in order to obtain more knowledge and in advance to master the knowledge, there are two kinds of broad and narrow interpretation. Generalized basic education is to guide the education system at all levels of education needs to be generally implemented, people accept the specialized education before the acceptance of the basic stage of education.

Basic education in the narrow sense is to guide children and adolescents to implement a certain period time of the general education, which aims to promote the physical and mental development of students and improve the national ideology and morality, science and culture, labor skills, physical quality for the purpose of quality education, mainly refers to primary and secondary education. In China, the main body of basic education is nine years of compulsory education,
including early childhood education, special child education and general high school education.

Talent

The word of talent, more and more fashionable, almost every unit, department or organization are advocating "people-oriented", emphasizing "attention to talent" and "attract talent". As a result, talent is increasingly scarce, at the same time, the price of talent soared all the way. "Go too far, so forget why the starting", what is the talent, there is no clear measure, most people do not have a clear understanding, talent is only a vague concept exists in people's minds.

With regard to talent, different organizations give different definitions. The government department thinks that the person who obtains the secondary professional education is the talented person. Companies believe that talent is those who agree with the company's core values, with professionalism and higher work skills, can continue to create value for the enterprise. We believe that talent refers to those who have a certain degree of professional knowledge or expertise, able to meet the job capacity requirements, to carry out creative work and contribute to social development, human resources in the ability and quality of social workers. Talent should be a neutral concept, in the definition cannot be attached to the class, political and other subjective factors, scientists, artists, workers, farmers and so may be their own jobs or areas of talent.

Innovative and Innovative Talents

Innovation refers to the needs of people in order to develop, the use of known information, and constantly break the convention, to find or produce a new, unique social values or personal values of new things, new ideas activities. The essence of innovation is a breakthrough, that is, breaking the old mindset, the old conventional discipline. The understanding of the connotation of innovative talents is not the same, but are primarily for creative thinking from the perspective of psychology, the study of personality characteristics of creativity, generally emphasized the comprehensive development of the human personality, at the same time stressed the need to cultivate awareness of innovation and ability to innovate.

In the mid-1980s, Chinese scholars began to study the cultivation of innovative talents. Although the views of different, generally defined innovative talents mainly refers to a sense of innovation, innovation, innovative thinking, innovation and innovation The results of the talent [2].

A New Probe into the Daoyuan Cultivation System of Beijing No.4 High School

In 2010, Beijing No.4 High School (BHSF) set up the "Outstanding Innovation Talent Training Daoyuan Class", referred to as "Daoyuan Class." "Daoyuan Class" aims to explore the future of a subject in the field of innovation with outstanding ability to prepare outstanding talents and methods, research and explore the "Qian Xuesen" problem. In order to carry out the relevant educational policy requirements to promote the development of diversification and characteristics , from 2010 to 2014 on the basis of the work related to Daoyuan Class, SHSF actively explore the top-notch innovative talents to cultivate the comprehensive integration model of junior high school, explore the characteristics of curriculum construction as the core, with excellent students diversified development-oriented school characteristics development model, the formation of the new situation in Beijing four educational characteristics of the brand.

The Overall Goal of the Daoyuan Program

To cultivate top-notch innovative talents as the core, the BHSF in the initial completion of basic education reform innovation experimental base. In all aspects of personnel training innovation experimental research, and strive in the following four areas to obtain preliminary theoretical and practical results, including:

1. Perfect the way of identifying and selecting extraordinary children in some academic fields.
2. Based on the existing Daoyuan Class , the development of the Daoyuan training program is "Daoyuan College", which is mainly established a top-notch innovation reserve talent training model from the curriculum, classroom teaching mode, class organization mode, evaluation, student...
management, junior high school integration, secondary education and university, foreign convergence, and many other comprehensive innovation.

(3) Reserve the op-notch innovation talents’ extraordinary potential into the reality ability to initially build from junior high school, high school to university, from domestic to foreign one-stop green talent channel.

(4) Through a large number of teachers to participate in the trial, a wide range of BHSF’s outstanding teachers to promote the forefront of quality education concept of renewal and behavior model changes, and strive to complete the end of the trial phase of some teachers related academic monographs, and cooperation with colleges and universities to coordinate education and scientific research personnel training.

Beijing No.4 High School in the overall development goal is to become a world-class schools, so that the BHSF could become a spiritual life of teachers and students and the rich starting point of life, so that teachers and students get the opportunity to develop, enjoy the growth of pleasure, know responsibility and conscience, perseverance explore potential, positive and optimistic to face the future.

On this basis, the establishment of student training objectives, summarized as "cultivating outstanding Chinese", so that they become "tens of millions of specialized personnel" and "top-notch innovative talent". Through the comprehensive system of scientific reform, to maximize the excitement and nurture students' points of interest, so that each student in their own areas of interest form a solid foundation to cultivate students in a field of outstanding top-notch reserve talent. At the same time, through the joint development of teachers and students, the construction of schools to become innovative learning organization, the construction of a high-quality, innovative education personnel, creating a group of educators, subject teaching teachers and the formation of a new era with BHSF characteristics of the school curriculum culture.

The Basic Assumptions of the Daoyuan Program

(1) The Basic Characteristics of Top-notch Innovative Talents

It is generally believed that top-notch innovative talent refers to individuals who have significant high achievements in intelligence, creativity, art, leadership, or an academic field. Obviously, top-notch innovative talents play an important role in the development of the country and society. At present, there is no authoritative definition of top-notch innovative talents. Generally, it can judge from the basic qualities of talents and the value of talents. The purpose of this study is to explore the training model of top-notch innovative talents, so it is more meaningful to study the basic quality judgment criteria of the talent itself.

American psychologist Gilford to the creative personality characteristics summarized as eight aspects: with a high degree of independence; have a strong curiosity; a strong curiosity; a wide range of knowledge, good at observation; stress rational, accurate and strict; with rich imagination, like abstract thinking; rich sense of humor; can be a long time to focus on a particular interest. Barron and Harrington argue that innovative talent should have a stable mood; a high level of self-control; strong independent demand; beyond the general level of intelligence; love abstract thinking; more willing to be alone; face obstacles to show great Interest and so on.

(2) The Growth of Top-notch Talent

Top-notch talent is the emergence of innate generation or acquired? This question has always been controversial. Piaget thinks that the level of personal endowment in the embryo has been stereotypes, the external environmental factors is only to gradually expand the existing talent [3]. In the bestseller "heterogeneous", the author Gladwell will be the result of top-notch innovation talent is more due to family, geographical or even birth time and other external factors. He points out that the "practical" wisdom of the individual is more important than the "talent" wisdom. In other words, the individual through training and training to obtain a good connection with the environment, for their own development to create a smooth external conditions.

In the field of educational practice, we cannot deny the important role of day-to-day training, and thus have a lot of external conditions based on the growth of innovative talent research.
studies have basically gained consensus and summed up similar laws. In addition to the family background, these laws point to the higher stage of higher education, the key to the growth of top-notch talent, especially academic growth. But the same cannot be ignored is that the basic education stage of the top-notch innovation talent growth key role, at least firm formation of learning motivation is often in the middle school stage.

(3) The Construction of Top-notch Innovative Talents

Based on the research on the personal characteristics of the top-notch talent and the study of the law of talent development, there are some new training programs and curriculum design in the higher education stage and the basic education stage.

In China's universities are more representative, including "Yuanpei Plan", "Tsinghua School", "Zhu Kezhen College" and so on. Peking University's "Yuanpei Plan" to "strengthen the foundation, dilute the professional, individualized, diverted training" 16 words for the education reform policy, in the lower grades of the implementation of general education, in the senior implementation of wide-caliber professional education for national socialism Modernization has cultivated a group of some basic knowledge of generous, strong sense of innovation, in all industries play a leading role in top-notch innovative talent. At the stage of basic education, the main contents of the early training plan for top-notch innovative talents include shortening the academic system, implementing compulsory courses and elective courses in combination with curriculum setting, increasing independent research activities, and jointly with universities and research institutes.

The Insufficiency of Innovative Talents Training Model in China

Lack of Knowledge of the Status and Role of Basic Education in Cultivating Innovative Talents

When it comes to the cultivation of innovative talents, people are habitually think that this is the responsibility of higher education, the mission of the university, ordinary primary and secondary students because of the knowledge and ability is not enough to carry out innovative activities, so there is no need for primary and secondary school students To carry out innovation and training. Indeed, basic education is the key to the growth of innovative talents. This stage of the young people are in the critical stage of the formation of innovative personality, but also innovative thinking and creative skills to develop training in the golden age. Students' innovative consciousness, innovative spirit and innovative personality cultivation, as well as the cultivation of innovative ways of thinking, related to their future to accept higher education and engage in innovative work potential and development foundation. Therefore, it is urgent to cultivate innovative talents to construct the basic education system which is beneficial to the development of students' innovation potential. Innovative cultural construction from the doll began to start from the kindergarten to carry out inquiry-based science education activities, science as the core curriculum of primary school.

Basic Education and Higher Education in the Training of Personnel Failed to Effectively Link

As a result of the understanding of the status and role of primary and secondary schools in the cultivation of innovative talents is not enough, in the policy orientation, funding, public opinion construction, public resource construction and so on to the higher education tilt, failed to establish a sound basic education and higher education joint education mechanism, innovation and education of the overall force failed to form. The problems that exist in the convergence of the two major education are the most concentrated in the goal of cultivating the target system. Middle school education and university education lack of communication, the former is concerned about how to improve the rate of enrollment, the latter is concerned about how to select high scores of students and improve the employment rate, which making the two education’s coordination is not enough and big education failed to effectively link and rational integration, undermine the integrity of innovation education, leading to China's lack of innovation.
Conceptualization of Innovative Talents Cultivation

At present, China's basic education or higher education, only the innovative education as a fashionable slogan [4], or just as an educational thought exists, the innovation education to a large extent still in the idea of propaganda level, and did not make some real exploration and thinking, nor through its innovative talent training process in all aspects, not from the basic education and higher education education objectives, educational concepts, educational content, education, Education methods, educational evaluation and other aspects of collaboration and innovation. But only to the innovative label affixed to the original traditional training measures, educational goals, curriculum, teaching content and methods, examination and evaluation system and so did not produce a fundamental change, so into the concept of innovation and innovation of the misunderstanding.

The Reference Significance of Daoyuan Plrogram to Cultivate Innovative Talents in China

School Education and Campus Culture Should Meet the Requirements of Scientific and Technological Development and Talent Competition

The current competition of the international community is a comprehensive national strength of competition, is the competition of science and technology. In the final analysis is the competition of education, is the talent competition. The cultivation of innovative technology reserve talents has become a hot topic in the 21st century basic education research. It is also the basic work of establishing an innovation-oriented country, which is related to the future development of the country and the improvement of comprehensive national strength. Therefore, to improve the scientific and technological awareness of primary and secondary school students and scientific and technological literacy for their future to adapt to the development of modern society is an urgent matter. Therefore, in primary and secondary schools to vigorously carry out science and technology education is the rapid development of science and technology and fierce competition for talent on the objective requirements of education, of course, science and technology education has become an important project in the development of education.

Science and technology is a very sharp double-edged sword. Beneficial technology behavior can benefit all mankind, the whole nation. On the contrary, it is a curse. So science and technology also has moral responsibility. In the rapid development of science and technology today, humanistic education is more important than ever before and meaningful. Sound personality education must be based on humanistic culture education. The lack of humanities scientists more terrible.

The Implementation of the New Curriculum, the School Top - Notch Talent Education and Campus Culture Construction Organic Fit

High school curriculum reform, in a number of areas to achieve a breakthrough, in particular, to select the necessary basic content for lifelong learning, enhance curriculum and social progress, technological development, student experience, expand their horizons, guide innovation and practice; Reasonable and adequate curriculum autonomy, the implementation of the national curriculum for the school, according to local conditions to develop school curriculum for students to effectively select the curriculum to provide protection [5] - [6]

Narrow the Digital Divide to Promote the Balanced Development of Basic Education

Promote the fairness of education and improve the quality of education is the fundamental task of education development and reform, but also the ultimate pursuit of educational information. China currently has nearly 10,000 primary and secondary schools, mostly in rural areas, school conditions, teacher level, quality of education and urban schools compared to unfavorable. In order to promote the balanced development of basic education, the "ten-year plan" proposed to take a number of measures to support the underdeveloped areas of information technology, focusing on supporting rural areas, remote areas of poverty, minority areas of school information. In addition, through the establishment of public service platform to promote quality education resources sharing efforts to narrow the regional, urban and rural areas and the digital gap between schools.
Traditional Education to Individualized Education

Personalized education runs through the individual's growth at all levels of education, so that students from childhood to form a variety of concepts and value system, in the future education process to further deepen and develop.

In the primary school stage, attention to children's self-expression ability and positive initiative to develop and develop[7]; in the middle school stage, emphasizing students according to their actual needs, to adapt to their hobbies for independent study, pay attention to the instructor's teaching, student personality development and performance, not emphasis on test scores. Teaching methods, to take heuristic teaching as one of the main models of classroom teaching, with questions and discussions to encourage students to express their views, while advocating self-learning method to promote the development of the whole brain development of disciplines, cognitive, skills and Life combined with learning method, group cooperative learning method. Course settings, students can decide how to learn from their own, and learn their own learning from passive learning by others. Students should take their own studies based on their academic performance, competency level, ideal goal, potential specialty, hobbies and graduation Credit requirements, autonomy to determine the course of each semester.

Adhere to Long-term Training, Diversified Development, the Principle of Development Together to Cultivate Innovative Talents

Innovation is a comprehensive ability, it is impossible to create innovative talent overnight, it is a long process of accumulation, the need for subtle education. The evaluation of education should be diversified to replace the single, from basic education to higher education to multi-standard, wide-angle, multi-dimensional and comprehensive evaluation of students, creating and providing a good atmosphere and conditions to promote the development of students' potential for innovation, all aspects of quality improvement. Basic education, like higher education, is the main force of cultivating innovative talents and the main battlefield. Only two areas of education can be effectively connected and take the road of common training in order to realize the overall goal of cultivating new talents.

Acknowledgement

This research is supported by the National Natural Science Foundation of China with the title (number: 71173010)

References


