

## The Cultivation of Innovative Ability of College Students by Fine Teaching Method in the Internet Age

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**Abstract:** In view of the contradiction between the effect of university education on cultivating college students' innovative ability and the requirement of society for innovative talents, the cultivation of college students' innovation ability in the internet age is studied. On the basis of analyzing the present situation of college students' innovation ability, the concept of fine teaching method is introduced and it's developed that the college students' innovative ability training mode based on the fine teaching method during the internet age by analyzing the concept, the characteristics and the action mechanism. At last, the according advice and measures are given on how to put the new mode into effect in colleges and universities.

### 1. Introduction

The Outline of the National Medium-and Long-Term Education Reform and Development Plan (2010-2020) issued in July 2010 pointed out: A strong country must first strengthen education, giving priority to the development of education and improving the level of education modernization, which is of decisive significance for achieving the goal of building a well-off society in an all-round way and building a prosperous, strong, democratic, civilized, and harmonious socialist modern country. In September 2014, President Xi further stated in a discussion with teachers and students representatives of Beijing Normal University: The comprehensive national strength competition in today's world is, in the final analysis, talent competition. Talents are increasingly becoming a strategic resource to promote economic and social development. The basic, pioneering, global status and role of education are more prominent. The realization of the goal of "two hundred years" and the realization of the Chinese nation's great rejuvenation, in the final analysis, depend on talents and education. The steady flow of human resources is an important potential force and latecomer advantage in China's fierce international competition. With the implementation of China's national innovation strategy, countries, societies and enterprises increasingly need innovative talents with a certain professional and technical foundation, broad vision, flexible thinking and strong sense of innovation, and can transform new ideas, new ideas and new ideas into certain actions. What is needed is "Maker". College students are the hope for the future of the country's innovation strategy and should become the mainstay of my country's innovative talents. However, in view of the current status of the innovation ability of college students in China, it is not difficult to find that college students' innovation awareness is weak, and innovation action is urgently needed to be strengthened, and the demand for innovative talents in enterprises is constantly increasing in quantity and quality. The emergence of this contradiction on the one hand makes it difficult for enterprises to select satisfactory talents, and on the other hand it exacerbates the problem of difficult employment for university students. This fundamentally reflects the huge gap between university education for the cultivation of college students' innovative ability and the society's requirements for innovative talents. Now university courses adopt more "full classroom" classroom teaching methods. Although university innovation and entrepreneurship practice projects have been added, the spread is limited, and it is not a necessary way for students to earn credits, and the effects they have achieved are difficult to achieve. Of course, there are some engineering and science courses

that require supporting internships, some of which are used for student experiments. However, compared with the cultivation of students' innovative thinking and innovative ability, these stylized experiments more improve the students' practical ability.

With the rapid and deep penetration of the Internet into all aspects of our daily life and bringing unprecedented tremendous changes, the field of higher education that has always emphasized innovation is also increasingly affected by the Internet. Scholars have studied the cultivation of college students' innovation ability in the Internet era, aiming to discover the mode, law, method and approach of talent innovation training under the new era background. Wang Ying<sup>[1]</sup> put forward suggestions for the development of college students' online autonomous learning ability by investigating and analyzing the status of online autonomous learning of college students in four colleges and universities in Zhejiang; Xie Donghai<sup>[2]</sup> proposed educational strategies to further improve college students' autonomous learning ability by analyzing the problems of contemporary college students' autonomous learning ability; Jiang Xin<sup>[3]</sup> proposed a way to cultivate college students' self-learning ability from the perspective of lifelong learning; Sun Xiaoling<sup>[4]</sup> studied the ways teachers can promote students to develop autonomous learning habits and abilities in classroom teaching; Wang Yongli<sup>[5]</sup> proposed corresponding measures for the current situation of weaker practical innovation ability of engineering college students; Ding Suijuan<sup>[6]</sup> analyzed the main reasons for the low utilization rate of university campus network platforms among students, and proposed measures for setting up pilot network courses and optimizing pilot teaching; Xu Songmei<sup>[7]</sup> studied the current situation, trends and paths of college students' innovation and entrepreneurship under the "Internet+" model under the new normal of China's economy, and proposed that the government should take the lead, colleges should be the main front, enterprises should be the second classroom, and college students should be the path of practitioners to promote innovation and entrepreneurship of college students; Zhang Jinshan<sup>[8]</sup> studied the innovation and entrepreneurship teaching of college students from the perspective of "Internet", and proposed corresponding measures for improving students' innovation ability.

On the basis of studies above, the theories and methods of fine teaching methods are introduced into this paper, combined with the all-round transformation of university education in the Internet era, starting from the concept of fine teaching methods, analyzes the subversive effect of the combination of fine teaching methods and the Internet on the education model. On this basis, by elaborating the Internet era fine teaching method for the cultivation of college students' innovative ability, put forward and analyzed the specific suggestions of Internet era fine teaching method for the cultivation of college students' innovative ability measures.

## **2. The Concept, Characteristics and Development Process of Fine Teaching Methods**

The fine teaching method was proposed and applied in the 1920s, which means that students should fully understand the concepts they have learned before entering the more difficult learning stage. The most important difference between the fine teaching method and the traditional education model is that under the traditional education system, it is generally considered that the constant is the time spent by the student to understand the problem, and the variable is the student's level of understanding of knowledge and concepts, while the fine teaching method It is believed that in education, constants should be students' high-level understanding of knowledge and concepts, while variables are the time students spend to understand problems (see Fig.1).

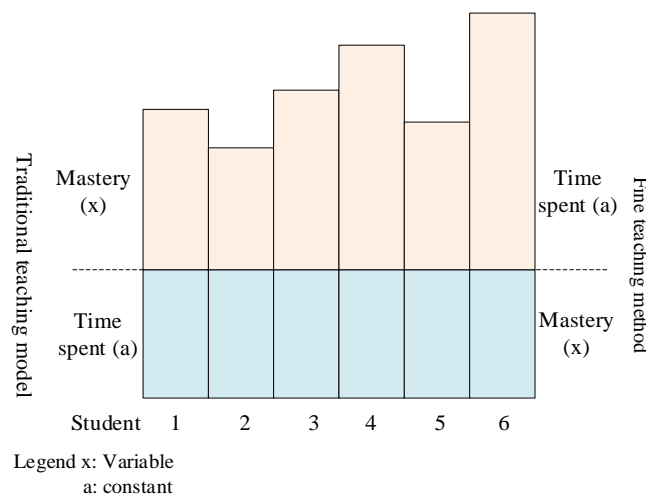


Fig.1 Schematic Diagram of the Difference between Traditional Teaching Methods and Fine Teaching Methods

However, due to the strong inertia of the traditional teaching model and the subsequent severe economic crisis in the capitalist world (1929-1933), this method was not further developed. Since the beginning of the 21st century, the advent of the Internet era has opened a new chapter in fine teaching methods. It profoundly influences and changes the mastery teaching methods from the following two aspects: ①The influence of the Internet revolution has gradually penetrated to the social business field and the human lifestyle field, and then entered the highest level of human consciousness and concept. It breaks people's enthusiasm for classroom teaching mode and makes various online courses and video courses as well as online feedback and tutoring possible. ②The emergence of the Internet has fundamentally reduced the cost of adopting fine teaching methods. With only a computer, students can formulate a learning plan based on their personal learning rhythm, and the cost of transferring these materials to students is very low. The fine teaching method pays more attention to the differences in learning ability and knowledge base of individuals, and reflects the care for each student, which is an effective way to realize the differentiated teaching concept of teaching according to aptitude. Therefore, it can promote the development of learning ability and innovation ability of all students more than the traditional teaching method of cutting teaching time with fixed class hours.

### 3. The Cultivating Mechanism of the Fine Teaching Method in the Internet Age to the Innovation Ability of College Students

(1) It is a cornerstone of innovation ability that helps to improve the mastery of knowledge of college students. As we all know, the development and improvement of capabilities are based on knowledge. Without solid basic knowledge, even if you have good ideas, you cannot achieve them. Innovative capabilities have become a castle in the sky. The combination of advanced teaching concepts of fine teaching methods and the Internet can enable each student to learn according to his own rhythm. Learning anytime and anywhere and controlling the rhythm autonomously can fundamentally stimulate students' enthusiasm for learning, and enable students to efficiently master the basic concepts and basic knowledge of the subject, thus laying the foundation for the cultivation and improvement of innovative ability.

(2) The emphasis on mutual assistance and cooperation helps to stimulate innovative ideas and cultivate team innovation ability. Compared with the traditional teaching methods, the fine teaching method encourages students with fast learning progress to help students with slow learning progress, for example, through the explanation of knowledge points and topics, to discuss problems together, etc. In this process, students with fast progress can understand the knowledge further, while students with slow progress can also better understand the knowledge. In the discussion with each other, the knowledge is gradually integrated and achieved the effect of inconsistency. In addition, in the

process of helping each other, they cultivated and exercised teamwork awareness and cooperation ability, and laid the foundation for going to society.

(3) The released class time can be used for innovative practice activities. After the combination of sophisticated teaching methods and the Internet, courses can be recorded by teachers into a series of 10-15 minutes (each study shows that students can concentrate on 10-18 minutes) of micro-courses on a campus network platform. Students can watch and study on the Internet at any time outside the classroom time, and use the real-time online feedback mechanism (such as online answer bank) to check and fill vacancies in a timely manner, while classroom time is used to answer questions, organize student discussions, and corresponding innovation ability training practice projects designed by teachers, leading students to carry out innovation activities.

#### **4. Suggested Measures for Colleges and Universities to Implement Fine Teaching Methods under the Network Background**

(1) Select some courses from all courses of each major and adopt the “flip class” teaching method of “Khan Academy”, that is, make a series of short videos of 10-15 minutes and upload them to the school network platform. Each student only needs to log in to the campus network to learn and download at any time, which is convenient for students to flexibly arrange the learning time and progress according to their own time and ability. Through the online problem bank and online feedback system, teachers can master the learning status of each student. In the classroom, mainly tutoring and discussing, answering each student’s question, at the same time, students can also help each other and discuss, further deepen the understanding of knowledge, and may be in the process of collision of ideas generate some new ideas. This teaching method can stimulate students’ interest in learning and avoid wasting time in the classroom, thereby improving learning efficiency, using as little time as possible to master as much knowledge as possible, and freeing up time and space for innovation.

(2) Reform the student performance assessment system to adapt it to the training requirements of innovative talents. In the traditional teaching model, the assessment system of student performance generally includes two parts: the scores and the usual scores, and some of them also include practical scores, but they are mainly based on the scores. The scores account for at least 50% of the total score. Such an assessment system is likely to cause students to have a solid grasp of basic knowledge and professional knowledge, because they usually do not pay attention to class, or even skip class. Through the cramming review before the exam, they can still get good scores in the exam. Even after finishing the exam, all the content is returned to the teacher. The accumulation of knowledge is the foundation of innovative ability. If specific knowledge cannot be mastered, how to cultivate innovative ability? The ability to innovate without specific knowledge can only be water without a source, a tree without roots. Therefore, it is recommended to adopt a more flexible examination method, such as allowing students to complete a task that integrates basic knowledge and practical activities within a specified time (such as three days). Several tasks can be formulated for students to choose, and students can use the Internet Retrieve the implementation of similar tasks. This examination method not only examines the students’ mastery of basic concepts, but also trains the students’ hands-on ability, so that the students can truly master the knowledge and exercise the ability to innovate.

(3) Students can use various online public courses to learn the courses they are interested in, as a useful supplement to the prescribed courses, broaden their horizons, cultivate interest, stimulate thinking, and in the process continue to generate new ideas. Many well-known schools at home and abroad have launched open classes, such as Harvard University open class, Yale University open class, etc., many domestic portals have also launched open class channels, the more well-known ones are Netease open class, Sohu open class, Sina open class, etc. Students can also register for “Khan Academy” users for video learning. These open courses not only include some basic courses, but also include research content in many application fields. Many of the speakers are famous scholars. They use humorous language and easy-to-understand principles to expand the students’ horizons, enlighten their thinking, and open up for students. Another innovative window.

## 5. Conclusion

The Internet and the fine teaching method are combined by the paper. The advantages of the fine teaching method in the Internet era in cultivating the innovation ability of college students are analyzed, and specific suggestions and measures for colleges and universities are put forward. The fine teaching method combined with the Internet once again exudes great charm, especially in the cultivation of college students' innovative ability. Compared with the traditional teaching mode such as opening innovative courses, adopting the "flip classroom" model of "Khan Academy", reforming the existing score evaluation system, and supplementing all aspects of knowledge through the learning of open courses on the Internet are closer to the essence of cultivation of innovative ability, and fundamentally and more effectively train college students' innovative ability. There are still some problems to be further discussed in this study, such as how to implement flipped classroom teaching mode in colleges and universities and how to grasp a series of specific problems in the reform of student performance evaluation system in the face of the uneven regional development of China's higher education. These are the directions for further research in the future.

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