ISSN (ONLINE): 2454-9762
ISSN (PRINT): 2454-9762
Available online at www.ijarmate.com

International Journal of Advanced Research in Management, Architecture, Technology and Engineering (IJARMATE)
Vol. 7, Issue 12,December 2021

The Relationship between Scientific Research Activities in Colleges and Promoting the Cultivation of Innovative Talents

Yun Li
College of Mathematics and Statistics, Taishan University, 271000, Tai'An, ShanDong, China
Email:guigongliyun@126.com

***Abstract*—Cultivating student with innovative ability is an important task of higher education in China. Letting college students participate in real scientific research projects is an effective way to enhance their innovation ability. This method maximizes students' learning enthusiasm, broadens students' vision and promotes the development of College Students' innovative ability. Scientific research activities in Colleges and universities complement the cultivation of innovative talents. The essence of scientific research activities is the cultivation process of innovative talents.**

***Index Terms*—Scientific research, Innovative talents, Culture**

I. INTRODUCTION

Although scientific research is not the initial choice of universities, with the increasingly close relationship between universities and society, the function of scientific research has been gradually established and developed in universities [1-3]. It can be said that scientific research is not only the inevitable choice of the university's own development, but also the objective requirement of the society for the university. Engaging in scientific research to meet the social needs has become an unavoidable responsibility of the university. Genuine knowledge comes from practice; only by participating in some scientific research and social service practice can college students be conducive to the cultivation of creative ability and comprehensive quality. In a survey of college graduates, it is found that those graduates who are quick at work, have strong comprehensive analysis, organization and coordination ability and good quality are often students who have participated in some teachers' scientific research work or actively participated in extracurricular scientific and technological activities at school.

II. THE RELATIONSHIP BETWEEN SCIENTIFIC RESEARCH ACTIVITIES IN COLLEGES AND UNIVERSITIES AND THE CULTIVATION OF INNOVATIVE TALENTS

A. The process of scientific research activities is essentially the process of cultivating innovative talents

The cultivation of innovative talents is closely related to the new principles, new effects and new technologies of scientific research. The integration of the cultivation of innovative talents and scientific research is the inevitable trend of the development of colleges and universities. The cultivation of innovative talents belongs to the cultivation of high-level talents. The cultivation way can only explore high-tech knowledge through scientific research activities, and in the process of scientific research activities, cultivate the quality and skills of scientific research through the combination of scientific and technological theory and practice, Achieving high academic attainments and strong scientific research ability is also the goal of cultivating innovative talents. Otherwise, it will be empty talk to talk about the cultivation of innovative talents without scientific research.

B. Scientific research promotes the cultivation of innovative talents, and the cultivation of innovative talents drives the development of scientific research

The cultivation of scientific research and innovative talents promote each other and complement each other. Generally speaking, the larger and higher level of scientific research, the stronger the ability to cultivate innovative talents. First of all, through the cultivation of scientific research ability, scientific researchers continue to innovate, explore new disciplines, change their way of thinking, create new disciplines, determine the development direction, gradually build an innovative knowledge structure and an agile and innovative way of thinking, be good at observation, thinking, analysis and synthesis in scientific research practice, and constantly create new laws of new disciplines Direction and research field, which also drives the development of scientific research. Therefore, scientific research in Colleges and universities is not only a means to cultivate innovative talents, but also further promote the development of scientific research ability, bring out innovative talents with scientific research achievements, and take the cultivation of innovative talents as a breakthrough to drive the development of scientific research.

ISSN (ONLINE): 2454-9762
ISSN (PRINT): 2454-9762
Available online at www.ijarmate.com

International Journal of Advanced Research in Management, Architecture, Technology and Engineering (IJARMATE)
Vol. 7, Issue 12,December 2021

III. THE IMPORTANCE OF CARRYING OUT SCIENTIFIC RESEARCH PRACTICE

A. It is conducive to cultivating college students' innovative ability

The achievement of scientific research practice itself is the most innovative performance of college students. Therefore, in talent training, we must pay attention to students' innovation and scientific research ability and cultivate innovation ability. Innovation ability refers to the ability to put forward new ideas and solve new problems. It is the ability to use all known information to produce some novel, unique and valuable products and intangible ideas, theories and technologies according to certain goals and needs. Innovation is not a castle in the air imagination, but to summarize new theories and ideas according to many regular facts in practical activities in the real world. The first step of cultivating innovative ability is to cultivate students' ability to find problems, and the second is to cultivate students' ability to analyze and solve problems. The first step of cultivating innovative ability is to cultivate students' ability to find problems, and the second is to cultivate students' ability to analyze and solve problems. The scientific research practice plan of college students is actually to make college students exercise through the above two links. College students can get more practice and exercise opportunities by participating in scientific research and practice activities, which is helpful to cultivate students' ability to find and solve problems, improve their ability to master and understand professional basic theories, understand the methods of scientific research and problem analysis, learn to think independently, strengthen their practical ability, broaden their horizons, and make college students adapt to social needs.

B. It is conducive to cultivating college students' independent thinking ability

Independent thinking ability is an important symbol to measure the quality of contemporary college students. However, under the existing education mode, students have poor adaptability and insight into problems, and cannot find things that do not belong to the scope of existing knowledge and ideas from daily phenomena. Scientific research practice puts forward higher requirements for college students' professional learning, and we should work hard on "depth" and "penetration". With the rapid development of society and the accelerated renewal of knowledge, there are no ready-made answers to the problems encountered in work and study in books. Generally, teachers do not have ready-made answers. Wegener creatively put forward the idea of continental drift through his direct impression of the coincidence between the two sides of the Atlantic and the paleontological result of the existence of a land channel between Brazil and Africa. From the process of scientific research practice, we should first find problems, and then continue to research and think [2]. Without independent thinking, we can't solve these new problems. Scientific research practice is the development and exercise of College Students' independent thinking ability.

C. It is conducive to cultivating college students' practical ability

Organizing research on the combination of theory and practice among college students can make them adapt to the new environment as soon as possible and improve their competitiveness in society. Scientific research practice is the exercise of individual innovation ability. It is one thing for a person to have the ability to innovate, and it is another thing to innovate. If people with innovative ability do not practice often, this ability will shrink. On the contrary, if they practice often, their innovative ability will be strengthened and improved. Newton can find the law of gravitation from the habitual phenomenon of Apple landing, which is the result of the great practice of people's innovative ability. The establishment of Newton's theory is by no means a simple summary of Kepler's three laws and Galileo's law of object motion, but creatively put forward the law of universal gravitation. It can be said that every major scientific research practice will produce new knowledge. Knowledge innovation is an important quality that innovative talents should have and a great driving force to promote social development.

IV. WAYS TO IMPROVE COLLEGE STUDENTS' SCIENTIFIC RESEARCH LEVEL

A. Turn the teacher's monologue classroom into a discussion and research forum for teachers and students

In the traditional teaching mode, students' classroom teaching is centered on imparting knowledge. Teachers pay attention to imparting classroom knowledge, and students simply accept it passively. This is not conducive to the improvement of students' scientific research consciousness and scientific research ability. Therefore, to change this situation, the combination of teaching and scientific research plays a prominent role. This teaching mode requires teachers to summarize their teaching contents into some enlightening and academically valuable problems based on the conditions of scientific research and teaching, so that students can independently consult materials after class, prepare by themselves, and then discuss in class. Combining teaching and scientific research, it emphasizes the penetration of scientific research in teaching and the teaching with scientific research as the background. In the whole link, students turn from passive learning to positive thinking and active exploration [3]. On the one hand, it stimulates students' thinking, improves their interest in learning and learns scientific research methods, and on the other hand, it enhances students' ability to practice research.

ISSN (ONLINE): 2454-9762
ISSN (PRINT): 2454-9762
Available online at www.ijarmate.com

International Journal of Advanced Research in Management, Architecture, Technology and Engineering (IJARMATE)
Vol. 7, Issue 12,December 2021

B. Introducing cutting-edge topics into classroom teaching

When teachers ask students questions, they are not limited to the limited scope of handouts and textbooks, but consciously introduce some cutting-edge academic research topics into classroom teaching and guide students to carry out thematic discussion. It is undeniable that students' education should still pay attention to mastering solid and solid basic knowledge. Learning, accumulating and mastering knowledge is the premise and foundation of forming innovative practical ability. At the same time, we should pay enough attention to the dynamics of the discipline. The above measures have built a bridge between the learning of basic knowledge and the grasp of the frontier of disciplines, and created conditions for students to think independently and conduct independent scientific research. Under the active guidance of teachers, while mastering basic knowledge, students have conducted special discussions on many cutting-edge topics of undergraduate purposes, so that their learning and research can realize the natural transition from basic knowledge to topics.

C. Guide students to actively carry out scientific research practice

In the past classroom teaching, students only need cognition and understanding to achieve the purpose of learning. However, in the future social practice and higher-level research activities, the problems they face are not limited to the scope of cognition and understanding. Their difficulty and complexity are far from comparable to ordinary class and extracurricular reading. They must be collected, sorted, extracted, analyzed, judged Comprehensive and a series of specific practical activities and complex rational thinking, the processing process can achieve the goal. In view of this, our teachers should actively guide students to actively participate in various scientific research activities, so that students can feel and understand the process of knowledge generation and development in direct scientific research practice, and improve scientific literacy, scientific spirit, innovative spirit, innovative consciousness and ability. In addition, teachers can introduce problems related to scientific research topics and teaching contents into teaching, so that students can have classroom discussion on the basis of consulting materials. On the one hand, it enriches the teaching content and broadens the students' vision. On the other hand, it makes full preparations for the students' scientific research practice. The full preparation after class and the active discussion in class have obviously strengthened the students' micro understanding and objective grasp ability of many problems. By participating in scientific research projects and carrying out scientific research, these students not only learn how to do scientific research, but also cultivate the scientific spirit of being rigorous and realistic and not afraid of difficulties.

V. MEASURES TO PROMOTE THE CULTIVATION OF INNOVATIVE TALENTS WITH SCIENTIFIC RESEARCH

A. Set up innovation credits

Actively encourage students to engage in scientific research activities. In order to encourage students to participate in scientific and technological activities, students can be allowed to replace some elective course credits with innovation credits during school. Actively encourage students to participate in the teacher's scientific research project team and complete the project under the guidance of teachers. This system can be implemented from the beginning of freshman enrollment. Students with excellent character and learning can be selected from them to enter the laboratory or the teacher's research group, and study while studying. In this way, after four years of university learning and research, they will have the conditions for innovative talents when they graduate.

B. Set up a special fund to encourage students to conduct scientific research independently

The school strongly supports students to guide students to conduct scientific research and carry out scientific research independently by applying for school funds. Encourage students to choose their own topics to carry out research, and improve students' ability of independent learning and scientific research.

C. Carry out various forms of scientific and technological innovation activities

The electronic design of college students, the National Mathematical Modeling Activity of college students and the "Challenge Cup" scientific and technological work competition carried out by our university every year belong to the category of scientific and technological innovation. This proves the innovative ability of our students from one side, and is the fruitful achievement that our school has always adhered to promoting teaching with scientific research. By participating in scientific research, students have activated their innovative thinking, exercised their innovative ability and cultivated their team spirit.

REFERENCES

[1] A.D. Zhu, X.M. Cui, “Research and practice of cultivating innovative physics talents based on scientific research,” *Survey of Education*, vol. 41, pp. 97-100, Oct 2021.

[2] X. M. Yang, “Relying on key laboratories to explore the cultivation path of graduate students' innovative ability,” *Basic Medical Education*, vol. 23, pp. 670-672, Sep. 2021.

[3] D. L. Di, W.F. Gao, “The Practice and Discussion of Medical Undergraduates Participating in Scientific Research Projects,” *Education and Teaching Forum*, vol. 36, pp. 134-135, Sep 2020.

ISSN (ONLINE): 2454-9762
ISSN (PRINT): 2454-9762
Available online at www.ijarmate.com

International Journal of Advanced Research in Management, Architecture, Technology and Engineering (IJARMATE)
Vol. 7, Issue 12,December 2021

AUTHOR'S PROFILE

Yun Li is a lecturer. He obtained his first degree of Bachelor of Management at the Central South University and Master of Science Degree at GuiZhou University. His major fields of study are image processing and big data processing.