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Exploring the Path of Cultivating College Students' Scientific and Technological Innovation Ability in Colleges and Universities under the Background of Innovation and Entrepreneurship Education

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Abstract: Cultivation of college students' scientific and technological innovation ability is a new requirement for colleges and universities put forward by social development, and it is also an inherent need to promote students' self-development. In the process of implementing innovation and entrepreneurship education, college students should learn how to learn and explore themselves, how to communicate and collaborate with others, and comprehensively improve their comprehensive quality and ability, so as to enhance their competitiveness in the talent market. This paper takes the significance of cultivating scientific and technological innovation ability as the starting point, and makes a sorting out of the problems faced in the current innovation and entrepreneurship education in colleges and universities, and puts forward a few points of views on how to cultivate the scientific and technological innovation ability of college students.

Keywords: Colleges and Universities; College Students; Innovation and Entrepreneurship Education; Scientific and Technological Innovation Ability.

1. Introduction

Along with the vigorous development of social economy, education and higher education are facing brand-new requirements. Higher education needs to complete the transformation from traditional education to quality education and innovation education through diversified channels, and the cultivation of scientific and technological innovation ability is one of the important goals. For college students, the cultivation of their scientific and technological innovation ability is an intrinsic demand to promote self-development. Looking at the current fierce competition in the market, employers are more and more in favor of innovative talents with solid theoretical foundation, innovative ideas and innovative thinking, which can be realized through innovation and entrepreneurship education. Innovation and entrepreneurship education focuses on cultivating students' spirit of self-learning, exploration and practice, and in the process of implementation, it emphasizes laying a solid theoretical foundation, innovative concepts and thinking, and at the same time, cultivating the enterprising spirit, enterprising spirit and exploring spirit, and forming the ability to work independently. Through innovation and entrepreneurship education activities, it can lay the foundation for some students to start their own business and maximize their own value.

2. The Significance of the Cultivation of College Students' Scientific and Technological Innovation Ability

College students are the future builders and successors of the motherland, whether they have the ability of science and technology innovation, which is directly related to the future social and economic development of the country, related to the country's level of scientific and technological development, it is obvious that innovation and entrepreneurship has become the main theme of the development of China's contemporary era. In the process of talent cultivation, countries all over the world attach great importance to the cultivation of innovation ability, science and technology innovation is not only an important requirement of quality education, but also promotes the better employment of college students and the enhancement of their competitiveness.

Since the implementation of reform and opening up in China, our society has undergone great changes, and has fully stepped into a new era of socialist construction with Chinese characteristics. Since then, our country's humiliating history has been changed, and we have been on the road to becoming rich and strong and taking off. By 2010, our country began to surpass Japan and other developed countries, and ranked second in the world in terms of total economic output, and by 2018, the gross domestic product had reached 90 trillion yuan, with very rapid economic development. At the same time, all aspects of China's society are in profound transformation, and the cause of socialism with Chinese characteristics has since embarked on a journey of deepening reform. Against this background, how to cultivate innovative talents has become the focus of widespread concern in all walks of life, and at the same time provides a source of strength for social development. Therefore, colleges and universities should not only teach students basic theoretical knowledge, but also create an atmosphere of scientific and technological innovation, so as to stimulate the initiative and enthusiasm of students, better form the sense of innovation, and enhance the practical hands-on ability.

3. Problems Faced by College Students' Scientific and Technological Innovation Education in Current Colleges and Universities

3.1. Cross-Cutting Organizational Leadership

From the point of view of educational psychology, the enhancement of an ability requires long-term persistent learning, which cannot be achieved in a short period of time, of course, the cultivation of college students' scientific and technological innovation ability is the same. Cultivation of ability is a long-term and systematic process, and the cultivation of college students' scientific and technological innovation ability not only involves classroom teaching, but also is directly related to extracurricular scientific and technological activities, which needs to involve many functional departments and faculties of the university, such as Scientific Research Office, Teaching and Learning Office, Academic and Labor Office and so on, and in the current situation of the participation of these departments, there is an obvious problem between the functional departments of the university, such as the coordination of not in place, communication is not timely and so on, and the cross leadership of multiple departments is not in place. in place, untimely communication, etc. The situation of multi-departmental cross-leadership is common, and the caliber of management is intricate. In the process of cultivating the scientific and technological innovation ability of college students, due to the poor connection of the organization and leadership mechanism, it seems that everyone is in charge of the extracurricular activities, but in fact no one is in charge of them. When the school leaders and relevant departments need to give their support, there are a lot of mutual excuses, so the overall view of the cultivation of the effectiveness is not high.

3.2. Weak Instructors

In recent years, universities have been actively introducing young doctors as teachers, under the premise of a large number of young teachers, the construction of instructor team in the work of scientific and technological innovation of college students has just begun, and some schools still have a large number of students without professional teachers to provide guidance for them. From the viewpoint of the effect of teachers' guidance for students' scientific and technological competitions, on the one hand, under the pressure of heavy scientific research, teachers also have to undertake the task of teaching, and have no time to take care of this part of the guidance work; on the other hand, under the pressure of title promotion and other pressures, compared with scientific research results for teachers, guiding students to win prizes in scientific and technological innovation activities has a very small impact on the teachers. Coupled with the prevailing problem of insufficient number of teachers, some colleges and universities have therefore put the pressure of assessing students' achievements in science and technology innovation on counselors. Although tutors have certain advantages in tutoring and mobilizing students, for some highly specialized disciplinary competitions, tutors not only lack understanding, but also lack professional knowledge as a support, so most of the tutors will be overwhelmed when guiding students. In this case, in order to complete the tutoring task, most tutors will be improvised, not enough acting in organizing the competition activities, and at the same time, it is not conducive to the output of high-level results.

3.3. Inadequate Management Incentive System

At present, there are three main ways for college students to participate in scientific and technological innovation activities, one is that some scientific and technological innovation clubs will organize competitions in front of college students, and all college students can participate in them; the second is that teachers organize students to participate in some competitions in the classroom, and these activities are based on the interests of teachers, and not all students can participate in them; and the third is that students are free to participate in competitions. All the above three ways of participation have greater uncertainty, the audience cannot be guaranteed, and there is also a lack of perfect management system. In addition, there are very few management methods for teachers to guide students to participate in scientific and technological innovation activities, coupled with the lack of a management system, the teaching force used to cultivate the scientific and technological innovation ability of college students is very unstable, and it is impossible to ensure that the scientific and technological innovation ability of students can be cultivated at a high level. Setting incentive goals is a necessary factor in the cultivation of scientific and technological innovation ability that constitutes active practice and learning. From the current situation, the lack of incentive mechanism is an important reason for the low participation of students, and at the same time, in the process of guiding the students, the teachers are not motivated enough, and there may even be the problem that students have the will to participate, but there is a lack of guiding teachers.

3.4. Narrow Student Participation and Low Motivation

Compared with the poetry contest, debates and other recreational activities, science and technology innovation activities seem very boring, dull, and therefore cannot get the students sought after, and need to invest a lot of time and energy, and the results are still unknown. From the current situation, many students in the scientific research projects, disciplinary competitions in the investment of energy is not enough, simply rely on whim, or in the way to participate in the face of the late but rarely involved in the activities, and even give up halfway, lack of sufficient perseverance to complete. Many students are concerned about their own professional learning, they are more willing to put the extra time and energy on the exams, through good grades to obtain scholarships, most students believe that this kind of scientific and technological competitions are very distant from them. In addition, colleges and universities need to rely on college students' disciplinary competitions, innovation and entrepreneurship training programs and scientific research projects to create an atmosphere of science and technology innovation. Such activities are more official, formal and demanding, and there are really not many students who have the time and energy to participate in them. Meanwhile, from the viewpoint of most of the students, such activities are too pushy and far away from their actual situation, so they deny themselves before participating in them.

3.5. Lack of Adequate Hardware and Software Support

Although colleges and universities are spending more and

more money on schooling and gradually increasing their investment in practice bases, some of them are too strict in their management of laboratory equipment. Except for the prescribed teaching hours, students have little access to the laboratory equipment, so they are simply unable to carry out STI-related explorations in the open STI area. When clubs or academic associations organize students to carry out science and technology innovation activities, due to the influence of venue factors, the activities cannot be carried out normally and long-term, in order to maintain the normal functioning of the society, they have to settle for the second best, to carry out the expansion of activities that do not have the requirement of venue, which undoubtedly adversely affects the normal development of science and technology innovation activities. In addition, the development of science and technology innovation and practice activities require certain expenditure, although the university will face the participation of science and technology competition in the award-winning students issued a certain amount of money, but the vast majority of students do not have a fixed source of income, their living expenses are not sufficient, and even some students with poor family conditions simply do not have the money to advance, which seriously affects the enthusiasm of students to participate in science and technology innovation activities.

4. The Path of Cultivating College Students' Scientific and Technological Innovation Ability under Innovation and Entrepreneurship Education

4.1. Strengthening Organizational Leadership

As mentioned above, there is the problem of unclear organization and leadership in the process of talent cultivation. In the face of this situation, colleges and universities should set up cultivation committees based on the concept of top-level design specifically for the cultivation of college students' scientific and technological innovation ability, with the members including the vice-president in charge of teaching, the school league committee, the student work office, and the academic affairs department, etc., and the vice-presidents will lead the committee with a clear division of responsibilities, and be responsible for the relevant cultivation work together. The work of the program will be jointly responsible for the training of the students. At the same time, a working group is set up by the second-level colleges, with the vice president in charge of teaching as the leader and the vice secretary in charge of student work as the deputy leader, who are responsible for mobilizing teachers to participate in the guidance work and organizing and mobilizing students to participate in the activities respectively. In organizing the students, the college should organize the relevant students to form an innovation class, in which the students are not separated from the original class, and usually have to participate in the study of professional courses in the original class. Colleges or schools will organize students in the innovation class to participate in the process of scientific and technological innovation activities. Students in the innovation class come from different majors, and the formation of teams can promote the exchange of students from different majors. From the point of view of resource allocation, the innovation class should be given priority in terms of training, teachers and funding, etc., so as to encourage all students in the college to actively participate in the innovation class, so that students can be organized to carry out science, technology and innovation activities in the whole college.

4.2. Optimize the Instructor Team

At present, the number of instructors in the second classroom activities is seriously insufficient, the reasons for this situation are manifold, such as research, promotion, teaching pressure is too large, such problems can be solved by improving the incentive mechanism. There are also some subjective factors, for such problems should not only increase the rewards and punishments, but also from the teacher teaching, professional ethics and other aspects of the teacher to stimulate the teacher's motivation in the guidance work. At present, many teachers are reluctant to guide students' extracurricular activities, the fundamental reason is the lack of innovation ability, worrying that it will affect their authority as teachers. Colleges and universities should pay attention to the cultivation of teachers' ability in science and technology innovation, and enhance it from both inviting in and going out. The former refers to hiring excellent instructors from outside the school to work in the school or as visiting professors to teach students, so as to use their work experience and management methods to help teachers in our school to improve their instructing ability in science and technology innovation; the latter refers to assigning teachers to study and exchange with other schools or to the science and technology innovation class on a regular basis in every semester. The latter means that every semester, teachers are regularly assigned to other schools to study, exchange, or work in enterprises in science and technology innovation. As the leader of students in school, the role of counselors in organizing STI activities should not be underestimated. Although they are not from the science class and cannot provide professional guidance for students in a certain STI activity, it is significant for the improvement of non-professional abilities of students, such as psychological quality, emotion and perseverance, and so on. When it comes to the higher level of scientific and technological innovation activities, the difference between the intelligence and professional ability of the students involved in the activities is not very big, and it is the non-professional ability that plays a decisive role at this time, so for the growth and development of the students, the non-professional ability is as important as the professional ability. Therefore, a dual tutor system should be implemented, with professional tutors guiding students on professional issues and counselors guiding them mainly on non-professional abilities.

4.3. Establishment of a Sound Mechanism of Rewards, Punishments and Management

In order to carry out STI activities in an orderly manner, it is very important to implement the system building work/the training committee needs to implement the top-level design in the process of cultivating students' STI ability, and introduce a series of systems and norms to ensure that the activities are carried out in an orderly manner, which can provide institutional support for the development of STI activities, so that there is a basis for all the work. For example, it can be specifically for teachers to guide students to participate in the activities of the management approach, based on the use of costs and so on. In this way, under the guidance of the university, faculties and departments can carry out STI activities smoothly. For example, under the unit

of disciplines and specialties, different majors can be required to carry out science and technology competitions, innovation and entrepreneurship and other competitions based on the characteristics of their specialties, and to carry out inter-disciplinary innovation and creativity, science and technology innovation and other competitions with the sister faculties and departments, which not only promotes the integration of the disciplines, but also allows for competition among the different faculties and departments. Schools should develop a feasible incentive mechanism, on the one hand, do a good job of recording activities, the number of students to participate in the activities as a merit assessment of the work of extra points, as a condition of graduate school, but also to participate in the competition of students to give matching rewards and so on. On the other hand, teachers can guide students to the competition time is converted into workload, in accordance with a certain percentage of the workload used to offset the workload of teaching, or under the guidance of the students if the award can be used as a condition for promotion.

4.4. Integrate Innovation and Entrepreneurship Education with Talent Training

Colleges and universities in talent training work, mainly to talent training difficulties for the specific implementation of the plan, in order to realize the cultivation goal of scientific and technological innovation talents, colleges and universities should be integrated into the concept of innovation and entrepreneurship education in the talent training program. First of all, credits can be set up specifically for innovation and entrepreneurship. This part of the credits can be obtained by participating in extracurricular scientific and technological activities, completing scientific and technological innovation and entrepreneurship courses and participating in disciplinary competitions, and can also link this part of the work with the academic qualifications of the students, in order to cause the teachers and students to pay attention to the cultivation of scientific and technological innovation ability; Secondly, pay attention to the penetration of arts and sciences. In the science courses can be appropriate to increase some knowledge of literature and history of the course, the liberal arts courses can be liberal arts courses to add some knowledge of natural science content, through the arts and science penetration to achieve the role of complementing the strengths of the shortcomings of the last, but also increase the number of innovation and entrepreneurship courses, and appropriately broaden the scope of such elective courses, so that students can be in accordance with their own interests, the course of their free choice. Changing the evaluation method is of great significance to improve the teaching effect. Under the influence of the concept of exam-oriented education, most college students attach great importance to the test scores, but do not pay attention to the learning process. Therefore, the teaching of innovation and entrepreneurship courses should abandon the idea of "score" theory and focus on the learning process. In addition, we should also focus on the connection between theory and practice, through the construction of practice bases, strengthen the cooperation between schools and enterprises, etc., to extend the time for students to practice teaching, so that they can have more time to verify the theory through practice, and verify their own innovative ideas.

4.5. Increase Financial Investment and Support

As we all know, innovation and entrepreneurship activities need to practice to test, in the case of ensuring complete hardware conditions, due to the lack of supporting management leads to the inability to effectively use school resources, even if the hardware is hard, it is difficult to implement the work. At present, many colleges and universities in the practice of place management have some problems, in this case can be appropriate to extend the practice of open laboratory, laboratory equipment and site lending approach, or on the use of experimental equipment to strengthen the training, so that you can effectively reduce the damage rate of laboratory equipment, as far as possible, through the practice of verification of their own innovative ideas, and better cultivate their scientific and technological innovation capabilities. Specifically, the practice platform can be opened for all students, and the scientific and technological innovation projects can be included in the scope of the management of the training committee, and all scientific and technological innovation projects can be released through the platform, which can purposefully lead college students to research in the direction of the country's needs.

5. Conclusion

In the new period, in the reform of innovation education, colleges and universities should take the cultivation of scientific and technological innovation talents as the ultimate goal, endeavor to excavate the potential and ability of college students in scientific and technological innovation, deeply implement the work related to scientific and technological innovation, and constantly improve and perfect the talent cultivation program in the process of practice, so as to promote the enhancement of the scientific and technological innovation ability of college students, and ultimately explore a road of college students' innovation and entrepreneurship that is suitable for the needs of the new era. The road of entrepreneurship.

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