Research on Extracurricular Science and Technology Activity Model of Junior College Student Based on "Peer Counseling"

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Keywords: Extracurricular Scientific and Technological Activities, Peer Counseling, College Students' Ability Training.

Abstract. With the social development of the demand for innovative talents, colleges and universities and college students are also increasing the degree of attention on the extracurricular scientific and technological innovation activities, but junior students don't understand the policy well and their professional foundation is weak. Consequently, how to strengthen the junior college students extracurricular scientific and technological innovation ability is a new research direction. This paper analyzes different modes of science and technology activities by comparison to explore the mode of extracurricular scientific and technological activities which are conducive to guiding the junior students in the bottleneck of innovation ability cultivation. Through the investigation and contrast of the basic situation of extracurricular scientific and technological activities of college students, this paper explores the development of college students 'extracurricular scientific and technological innovation based on the peer counseling.

Introduction

Under the background of knowledge economy society and higher education popularization, the development of applied innovation talents is the trend of our country, which is the realistic choice of building an innovative country in our country. Higher education should focus on cultivating beliefs and perseverance, good moral character, knowledgeable, highly skilled professionals and top-notch talents; promote scientific and technological innovation, adhere to the ability to focus on improving the ability of college students’ innovation [1]. This shows the profound demands of all kinds of colleges and universities at all levels to cultivate innovative talents. Extracurricular science and technology activities are not limited by the number of teaching hours and their operation mode is flexible, which is important channel for cultivating students’ practical ability and innovative ability.

During the university period, students are often in response to academic, emotional, interpersonal, employment, preparation of graduate entrance examination and other issues at the same time, but also accept a variety of social phenomena, diverse social temptation challenges. As the counselors now serve a large number of students with busy transactional work, one to one counseling is difficult and students keep wrong attitude to teacher-students relationship, the counsel job seems more difficult. However, because peer classmates have similarity and convergence in life background, thinking ways and values, are easier to communicate with each other and accept the impact, especially the role model effect of excellent students, among the peers it is easy to play a win-win effect. Peer counseling not only has advantages of terms of timeliness, but also has a very good performance in terms of depth and acceptability, win-win and continuity. Therefore, peer counseling should be the effective help method of counselors, better complement the ideological and political education work, improve the ideological and political education effect, build a more scientific and structured college student education system.

This paper classifies the college students 'extracurricular scientific and technological innovation activities according to the dominant subject, and makes a comparative analysis of the different science and technology activities of college students. Through investigating the status quo of extracurricular scientific and technological activities of college students, this paper explores the development of technological innovation based on the peer counselling.
Extracurricular Scientific and Technological Innovation Activities for College Students

Contents

College students’ extracurricular science and technology activities refer to activities that students participate in to culture innovation and practice ability and the professional ability learned in the normal class time outside. Broadly speaking, it refers to the scientific and technological activities such as academic lectures, various scientific and technological competitions, patent inventions, scientific research (writing papers, participation or application topics, etc.) and entrepreneurial competitions and a series of simulation scenarios or real situation of scientific and technological activities, which are based on students’ own interests and career development perspective, consider social needs as the guide, make science and technology knowledge as the carrier, use practice as the main form to develop students' scientific and technological awareness, practical ability, teamwork competencies and creative creativity. So students' knowledge, skills will better adapt the evolving societies, and truly integrate the development of applied undergraduate education with social needs. It has practical, applied, innovative, sexual and comprehensive features.

(1) Due to the scarcity of science and technology innovation organizations in junior students, not enough publicity and guidance, the low utilization of resources in the activities, the atmosphere of college students’ extracurricular scientific and technological activities is lack.

(2) Low-grade students in the basic course of learning lack of professional knowledge, even cannot understand the professional terms. In addition, the proportion of theoretical education is higher than the practice of education, resulting in the weakness of low-grade undergraduate professional foundation.

(3) Junior students are easy to weaken their academic research and inquiry ability because of various student activities and rich campus life. Parental supervision deeply effects students, which leads many students cannot use library or network and other resources to solve the problems faced by their own, resulting in their own poor initiatives in scientific and technological innovation.

(4) Due to urban development planning reasons, there are two campuses or multi-campus school status in many universities. As more sophisticated equipment or mentors, professors and other resources are often concentrated in the old campus, traffic and time costs will increase; Limited activities funding cannot afford to pay equipment or raw materials large in large number; the activities of professional and technical content cannot achieve a greater breakthrough, but in the participation and entertainment on the fuss. As a result, it is easy to make innovation and technology to lose color.

The Main Mode of Extracurricular Scientific and Technological Innovation Activities of College Students

There are different models according to different classification standards, such as academic and innovative entrepreneurial type according to purpose; student-led, teacher-led, school-led according to dominant subject; This paper aims to analyze the establishment of peer-based counseling based on the lower grade college students’ extracurricular science and technology activities, which belongs to the dominant subject classification criteria, including Student-led model, Teacher-led model and University-led model.

Through the above three kinds of model, we will find that each model has its own advantages and disadvantages. But also because the dominant subject has the insurmountable disadvantage, so, in order to complement the passive, better play the role of outstanding students to make up the unreasonable allocation of teachers, schools and other resources to develop self-awareness and ability. The model based on "peer counseling" is worthy of our discussion.
The original meaning of "peer counseling" is the education method that a group of people with the same background or for some reason share information, ideas or behavioral skills [6]. Specifically, "peer counseling" is the student-led model involved in teachers, schools and many other resources, but from the subject selection, technical research to technological innovation processes and achievements students have to solve mentioned issues by themselves. In these processes, higher grade senior sister students lead junior students to carry out scientific and technological innovation activities alone, which in fact, is more conducive to stimulate students' interest in scientific research, innovative ideas and ability, and practical ability.

In the field of ideological and political education, "peer counseling" is to give full play to the role of outstanding student groups to promote mutual progress and active effective interaction. The main models of peer counseling include high-grade and low-grade passport form, professional students and non-professional students, the mutual help between the same grade students in their respective field and so on. Those methods help through using advantages to counsel other more students to achieve progress, promote each other and improve, and achieve the purpose of ideological and political education of "self-education, self-management, self-service" for college students.

**Examples Analyzation of Extracurricular Science and Technology Activities Based on "Peer Counseling"**

After the above analysis, it can be seen that one of the advantages of peer counseling is to solve the problems and drawbacks of the traditional extracurricular scientific and technological innovation activities, and to complement and improve other forms of extracurricular science and technology activities. In addition, this model, in fact, has a great effect on college students extracurricular scientific and technological activities innovation building. This paper explores the organizational form and operation of "Peer Counseling" by investigating several key student associations of Beijing Institute of Technology.

**Introduction to Research Objects.** This paper selects several key student associations or organizations of Beijing Polytechnic University, including Formula One racing team, Baha team, scientific and technological innovation coordination center, robot innovation base and three-dimensional mapping space. By studying their composition, development and operation, it is found that they have the following characteristics:

![Figure 1. Beijing Institute of Technology Formula Car Team Distribution.](image)

**Survey Results.** These scientific and technological innovation organizations are typical cases of peer counseling model. Through research, it can be found that it is common situation of high-level low-level activities. Further analysis revealed the following characteristics:

1. Although with school support, professional guidance teachers, counselors and other resources from schools and teachers, students play a great role in the organization of activities and carrying out and research. Senior or professional students lead low or non-professional students to carry out scientific and technological innovation activities with limited school support;
(2) These organizations are led by higher grade students, and recruiting procedures is strict with certain professional basis;
(3) The basic operation of the organization relies on competition. in order to overcome the lack of professional foundation, senior students often train new members to develop professional knowledge training and organize hands-on practice, and enhance low grade students’ initiative, practical ability, and professional help;
(4) Team members often use after-class time to operate with the model of higher-low students, which can promote enthusiasm and practical innovation ability of two groups;
(5) The acquisition of resources, scientific and process and achievement of technological innovation and is often shared by the whole team. These teams make full use of various internal and external resources. Students from different majors provide their own professional resources to help solve problems.

Figure 2. Beijing Institute of Technology Baha Team Personnel Distribution.

The advantages of "peer counseling" model are:
(1) To overcome the problems of inertia and professional insufficiency caused by student-led model, the dependence caused by teacher-oriented model, and the macro-guiding of school-oriented model;
(2) Low grade students and seniors school students are in similar age, so comparing with teachers, it is easier for peers to acquire knowledge, experience, professional knowledge, and technical support;
(3) For the senior students, their management and innovation ability have been effectively promoted, which is necessary for further scientific and technological innovation;
(4) Effectively solve the problems caused by multi-campus situation, including uneven distribution of resources, lack of teacher guidance, low technological innovation atmosphere. Peer counseling model can fully stimulate students to participate extracurricular scientific and technological innovation activities.

Summary
In general, whether the measure is effective depends on three aspects: First, clear main body of extracurricular scientific and technological activities of the main model; Second, understanding the real content of college students’ extracurricular science and technology activities; three, grasping the real purpose of extracurricular scientific and technological activities for college students. We measure the "peer counseling" model from these three aspects: first, from the main body, the peer counseling emphasizes the junior and senior students are all in the dominant position, so that both sides get exercise, progress, and harvest of important capacity; Second, from the connotation,
the significance of this activity is to develop students hands ability, innovation ability, concentration in scientific research, so this model can fully mobilize the interest and initiative of students in scientific and technological innovation to allow them to better participate in with proper guidance; Third, from the core of the model, the core of the "peer counseling" model is to make the junior students in the state of learning and participation and fully mobilize their enthusiasm, make senior students in the state of teaching philosophy, deeper research, mentoring play a good role; Therefore, "peer counseling" model can and should be developed.

**Conclusion**

"Peer counseling" model doesn’t build on a variety of the scientific and technological innovation model. In fact, it is a comprehensive model which is based on the integration of various types of resources to support, highlight the innovative atmosphere, the environment Construction and cohort cultivation. In addition, it makes a good improvement of the shortcomings of the technological innovation model, and stimulates higher grade students in-depth study of the corresponding issues. On the basis of the low academic theory and skills in the low grade, the author introduces the experience and support of the senior students in life and study, accompanied by education, teaching and policy support from school, teacher and counselor, to better mobilize all students to culture autonomy, initiative, innovation in the field of extracurricular scientific and technological innovation activities.

Of course, we should also see that although this model has been developed and accepted recent years, there are still the need for gradual improvement, such as: funds, venues, support from school, formulation and implement of relative policy and regulation, wider publicity and so on.

The scientific and technological innovation ability of college students represents the soft power of our country's scientific and technological innovation to a certain extent, and the strategic significance of the cultivation and promotion of scientific and technological innovation ability is far and wide. Universities cultivate the ability of science and technology innovation and literacy from low-grade period, which will inevitably improve the overall level of school research. The development of university students' scientific and technological innovation is a process of continuous improvement. It is these existing problems that have led us to think so as to find a feasible way to improve the mode of scientific and technological innovation and enhance the level of scientific and technological innovation from the real sense.

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Reference to a book:


