

Strategies for Enhancing the Practical and Innovative Abilities of Environmental Major Students

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Abstract: In order to meet the quality requirements of applied talent cultivation in local universities and enhance students' innovation ability, this study which take the environmental major students of Zhaoqing University as an example, explores the role of the "industry-university-research-application" platform, college student innovation and entrepreneurship training programs and various subject competitions in talent cultivation. It is benefit to encourage students to complete self practice ability cultivation through school enterprise platforms, training programs, and competitions. This study provide reference for improving the abilities of environmental majors in similar universities.

Keywords: School enterprise cooperation; Subject competitions; Collaborative education.

1. Introduction

The improvement of students' practical abilities is the requirement for the cultivation of applied talents in universities. The self-improvement of students' cognition plays a crucial role in employment and entering society. The improvement of practical literacy of new engineering talents in the 21st century includes several aspects, such as practical awareness, practical knowledge and practical ability. Enhancing students' practical initiative can stimulate their sense of social responsibility. The basic courses of environmental majors have diverse categories and strong comprehensiveness in core courses. The comprehensive ability of students to master and apply knowledge can be improved through school-enterprise cooperation platforms, innovation and entrepreneurship training programs for college students, and subject competitions closely related to their majors.

2. Cultivation of Innovative Practical Abilities Based on School- enterprise Cooperation

Students should fully utilize the practical platform resources of the school to improve their comprehensive quality and innovation ability. The innovation and entrepreneurship practice bases, maker spaces, and other platforms established by schools and enterprises are the best places and resources for practice. Taking the environmental engineering major of our school as an example, we focus on guiding students in engineering practice through multiple channels, such as encouraging students to form teams, cross disciplinary learning to stimulate their initiative, encouraging students to choose interdisciplinary courses, and cultivating their interdisciplinary thinking and cooperation abilities[1]. Cultivate students' innovative practical abilities in these practical activities. The construction of industry university research platforms is the cradle of practical talent cultivation. The "industry-university-research-application" platform for collaborative cultivation and construction between schools and enterprises emphasizes the cultivation of professional core abilities of talents. Therefore, it is necessary to

strengthen the depth of school-enterprise cooperation by increasing communication between schools and enterprises, enhancing the close connection between teachers and students. The long-term development of enterprises depends on high skilled talents. Enterprises need to actively explore multi-party collaborative education models. The construction of school- enterprise cooperation platforms is an important way to cultivate practical talents. A good collaborative education platform for enterprises can provide students with practical opportunities such as internships, practical training, and internship projects, cultivating talents that meet social needs. At the same time, enterprises can also gain innovation motivation and talent support from it, promote industrial development and economic growth, and achieve a double-win situation for schools and enterprises.

3. Cultivate Initiative Based on The Innovation and Entrepreneurship Training Program for College Students

It is important to encourage and organize students to participate in innovation and entrepreneurship projects. Students should actively utilize the financial support provided by the school and apply for scientific research projects, academic lectures and seminars to learn about the latest research progress. Participating in innovation and entrepreneurship activities can stimulate students' innovative thinking and practical abilities, and also help to translate scientific research results into practical applications. Only by participating in innovation and entrepreneurship training programs can we make good use of the equipment and resources provided by the school, strive for corresponding rewards, honors, etc., and form a good atmosphere. Our school implements a "mentor system", where teachers are appointed as guiding teachers for students, providing guidance and support for innovative practices. Mentors can help students plan innovative practice projects, provide professional knowledge and experience guidance, and promote their self-cultivation and growth. The situation of environmental major students publishing papers in our school in 2023 is shown in Table 1. The projects they participated in

are diverse, and their research directions are mostly hot topics, such as the degradation mechanism of microplastics and heavy metal pollution issues. The school offers courses related to innovation and entrepreneurship, including innovative thinking, project management, market analysis,

etc., providing students with basic knowledge and skills in innovation and entrepreneurship to help them plan innovation and practical projects, and providing necessary resources and support.

Table 1. Statistics on student participation in paper publication in 2023

Paper title	ISSN	Number of participating students
Construction of off campus practical teaching bases for environmental engineering majors	2095-6401	2
The Interaction and Mechanism between Microplastics and Organic Pollutants: Current Status and Biodegradation Research Progress of Agricultural Plastic Films	1673-310X	5
Analysis and evaluation of Water Environmental Quality of Nalong River in Yangjiang	1674-9944	6
Soil HeavyMetal Content and Potential Ecological Risk Assessment in Dinghu District, Zhaoqing City	1674-9944	5
The interaction and mechanism between microplastics and organic pollutants	1001-9677	6
Status and Research Progress of Heavy Metal Pollution in Aquatic Vegetables	1003-6490	4
Study on carbon footprint inventory of disposable beverage containers	1674-263X	3

4. Improvement of Innovative Practical Abilities Based on Subject Competitions

Students should actively participate in professional competitions, seize opportunities for self-improvement and use subject competitions to improve practical abilities. Students in Zhaoqing University have had the opportunity to participate in various professional subject competitions and provide training and guidance from the beginning of their freshman year, helping them work together as a team and solve related problems[2]. Students have established their own competition associations to promote learning through competitions. These measures can greatly inspire and improve students' independent thinking and innovative practical abilities. From the perspective of students' learning, competitions are the best way for students to transition from passive learning to active acquisition of knowledge, which helps to cultivate their ability to learn actively. Enterprises value students' hands-on and operational abilities, and excellent design solutions can be applied and transformed through school enterprise cooperation, promoting the depth of students' exposure to enterprises and society. Through the comprehensive application of the above measures, it is possible to improve the self cultivation ability of innovative practice among college students, stimulate their innovative potential and practical initiative, and prepare them for their

future career development and social innovation.

5. Conclusion

The improvement of students' comprehensive abilities relies on multiple ways of cultivation. School enterprise resources, innovative and innovative projects, and subject competitions are important ways to cultivate innovative practical talents, as well as important directions for practical teaching reform. The teaching reform of building a multi-channel practical platform carried out by our school has achieved certain results, passed the IEET engineering certification, met the needs of society in talent cultivation, and promoted the smooth development of the environmental protection industry. As the main body of environmental students, they should actively adapt to the needs of social development, achieve good self-development, and strive to become practical and innovative environmental protection talents.

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