

Participate in the "Challenge Cup" Science Competition, Deepen the Understanding of "Marine Medicine"

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Abstract—To explore new learning and teaching models in the course of Marine Medicine, to enhance students' interest in learning and to enhance their comprehensive practice, innovation and application ability. Establish a student-oriented teaching concept and conduct a tentative teaching guided by the "Challenge Cup" extracurricular academic and scientific works competition. By combining the "Challenge Cup" competition with the study of "Marine Medicine", the understanding of "Marine Medicine" was strengthened, and the combination of theory and experiment can consolidate theoretical knowledge and deepen understanding of the theory. Improve the learning efficiency of Marine Medicine. It greatly enhances students' enthusiasm for learning and subjective initiative; cultivates students' ability to discover problems, analyze problems and solve problems; improve students' practical ability and teamwork ability; and consciously strengthen research and exploration capabilities.

Keywords—marine medicine; challenge cup; practical ability; research and exploration ability

I. INTRODUCTION

A. "Marine Medicine"

The ocean is the cradle of life, and life originates from the ocean. With the deteriorating terrestrial environment in which humans live, the scarcity of terrestrial resources, and the aging of the world's population, people are turning their attention to the second territory on which the humans depend. At the same time, the ocean is also a treasure trove of medicines. It has and will continue to provide us with novel lead compounds and functionally specific genes to provide ideas for the development of new drugs. Marine medicines refer to medicines developed from marine organisms and marine microorganisms using modern scientific methods and techniques. Therefore, the study and research of marine drugs is particularly important. The Marine Medicine established on this basis is an emerging cross-application science that uses modern chemistry and biological techniques to research and develop new drugs from marine organisms. At the same time, Marine Medicine is based on marine chemistry, marine biology, pharmacology, etc., with marine active substances as the main research object, and is the expansion and extension of

terrestrial biological products research.

The "Marine Medicine" system introduces the research methods, biological sources, structural characteristics, biological activities and structure-activity relationships of secondary metabolites in marine animals, marine plants and marine microorganisms, and introduces the discovery process of marine drug lead compounds. The frontier direction and development prospects of marine drug research and development [1].

B. Challenge Cup

The full name of the "Challenge Cup" is the "Challenge Cup National College Students Series Science and Technology Academic Competition". It is a national university student extracurricular academic technology entrepreneurship jointly sponsored by the Central Committee of the Communist Youth League, the China Association for Science and Technology, the Ministry of Education, the National Federation of Students, and the local provincial government. Class competition, hosting colleges and universities is a famous university in China. The "Challenge Cup" was initiated by Tsinghua University in 1998. With the tenet of "advocating science, pursuing truth, diligently learning, innovating and meeting challenges", the "Challenge Cup" is a large-scale extracurricular science and technology competition with the mission of "spreading self-employment awareness". The "Challenge Cup" competition consists of two parallel projects, one is the "Challenge Cup" national college students' extracurricular academic science and technology competition (big choice); the other is the "Challenge Cup" Chinese college student business plan competition (small pick). The national competitions of the two projects are carried out in turn, and each project is held every two years. After ten sessions, the "Challenge Cup" National College Student Extracurricular Academic Science and Technology Competition has become a science and technology event that attracts the participation of college students, an innovative cradle that promotes outstanding young talents, an important channel to guide college students to promote modernization, and a beautiful stage to showcase the innovative style of all Chinese students. The "Challenge Cup" China University Student Entrepreneurship Competition has played an increasingly active role in cultivating compound and innovative

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talents, promoting the integration of production, education and research in universities, and promoting the establishment of a domestic venture capital system. The "Challenge Cup" has played an active role in promoting the growth of young innovative talents, deepening quality education in colleges and promoting economic and social development, and has produced extensive and good influence in society. The "Challenge Cup" series competition is hailed as the "Olympic" event for Chinese university students' science and technology innovation and entrepreneurship. It is currently the most popular national competition for domestic college students [2].

C. *Difficulties and shortcomings in the current study of the course of Marine Medicine*

"Marine Medicine" has certain drawbacks in the learning process. The following list is some of the problems found in the course of studying this course.

- "Marine Medicine" is a cross-application course involving biology, resources, chemistry, medicine, pharmacy and other disciplines. It mainly studies the types, distribution, and nature of natural drugs from marine or non-living organisms. Preparation, efficacy and application [3]. Due to the characteristics of Marine Medicine, there are many subjects and large spans in the learning process, which are difficult to understand. Many nouns are unfamiliar and have little knowledge of marine organisms.
- This course is an emerging subject, and there is a lack of books on marine medicine for undergraduate students. Therefore, it is more difficult for undergraduates to study.
- There are many kinds of marine medicines. The traditional teaching method is limited by time, and it will feel dull and boring.
- The study of marine drugs is based on experiments. Experiments can consolidate theoretical knowledge and deepen understanding of theory. However, the experiments at this stage are mostly the experimental routes designed by the teachers. The students are executed step by step, and the experimental report is used as the evaluation standard of the experimental results. The style is single and it is not conducive to the exercise of students' writing ability.

Although the course of "Marine Medicine" is an emerging course, there are many shortcomings, but the teacher explores and explores according to the actual situation. The students conduct extra-curricular deep learning based on the teacher's explanation to jointly promote the learning and development of this course.

II. GUIDED BY THE "CHALLENGE CUP", STRENGTHENED THE UNDERSTANDING OF MARINE MEDICINE

A. *In the process of studying Marine Medicine, we found solutions to the above problems.*

- Through the examination of more documents, you can deepen your understanding of this course, and you can ask the teacher for help if you have problems that cannot be solved.
- Using "Marine Medicine" edited by Wang Changyun, this book combines a large number of representative examples to introduce the research methods, biological sources and structural characteristics of secondary metabolites in marine animals, marine plants and marine microorganisms. , biological activity and structure-activity relationship; highlights the discovery process, biological origin, structural characteristics, pharmacological action, mechanism of action, chemical synthesis of representative anti-tumor drugs, anti-infective drugs, analgesic drugs and other drugs and drug lead compounds , clinical research and application, etc.; Analyzed the constraints of marine drug research and development, such as drug sources, and looked forward to the future direction and development prospects of marine drug research and development.
- Take the flipping classroom, students can do PPT and other methods to increase the fun of learning. At the same time, in the course of learning "Marine Medicine", the information technology is fully utilized. Based on the Internet, the information and website of various marine drugs provided by teachers are used to inquire about the classification and distribution of marine drugs, growth habits, active ingredients, Relevant knowledge of morphological pictures, medicinal value, and cultivation of marine medicinal plants [1] can deepen understanding and understanding of marine drugs.
- Because of the rich experimental content and data of Marine Medicine, it can already become a small paper, and if the methods used by different groups of students are different, the results will be different, leaving enough results for analysis and discussion. Space [4]. Therefore, the experimental report can be replaced by a small paper.

B. *The positive role and influence of participating in the "Challenge Cup"*

- The role of educating people [5,6]: the implementation of the "Challenge Cup" competition mode, for example: the entry in the "Challenge Cup" is determined by the students themselves, and the subject of the entry can be selected from any subject, which is extremely open. Students have a lot of room for thinking and innovation. In addition, in the competition to achieve student-centered autonomous learning and research discussion mode, the various problems encountered during the competition can also lead students to think and discuss.

It can be seen that in the whole "Challenge Cup" competition process, it is conducive to cultivating and promoting the growth of young innovative talents, deepening the quality education of colleges and universities, cultivating and enhancing students' ability of innovation and practice, forming a sense of respect for others and team awareness, etc.; The purpose of the "Challenge Cup" is "the embodiment of advocating science, pursuing truth, diligent learning, innovation, and meeting challenges".

- Social and economic role [5]: Due to the lack of students' own experience, the environmental factors of study and life, etc., so that students' understanding and understanding of society is not comprehensive; and the "Challenge Cup" provides a good contact and understanding of society. The platform allows students to deepen their understanding and understanding of the society through competition, and strengthen the study of social norms and responsibilities. At the same time, it is understood that there are many successful entrepreneurial cases in which investment is obtained in the competition, which has increased the attention of enterprises to competitions and students, encouraged students to innovate and start businesses, promote economic and social development, and actively respond to sustainable scientific development.

III. DEEPER AND MORE DETAILED UNDERSTANDING OF THE ROLE AND IMPACT OF THE COMPETITION

We didn't know about the "Challenge Cup" at the beginning. After participating in the "Challenge Cup", I found that it has a positive impact on the learning and understanding of the course of Marine Medicine, the cultivation of innovative consciousness, and the improvement of experimental operation ability. After studying the course of Marine Medicine, I learned that the research and development of marine drugs has great value, and I learned about kelp from the chapter of marine medicinal plant resources. I know that kelp belongs to brown algae. The marine plants can breed kelp from north to south in China, and its distribution and promotion degree are relatively large; in addition to delicious sea food, kelp has important medicinal value. The kelp has a cold and salty taste, and it has the effects of softening and firming, clearing away heat and dampness, relieving cough and relieving asthma, and relieving fat and reducing blood pressure. Inspired by this, we have determined to use the marine medicinal plant - kelp as a raw material for extension research. In order to gain a deeper understanding of kelp, we look up a lot of literature. Studies have shown that kelp contains a variety of biologically active ingredients, such as brown algae polysaccharide, alginic acid, brown algae starch and other substances, with blood sugar lowering, blood lipids, anti-coagulation, anti-thrombotic, anti-tumor, anti-viral, immune regulation, anti-fatigue, resistance Hypoxia, anti-oxidation, antibacterial and anti-viral functions [7], while kelp contains manganese, zinc, copper, phosphorus, potassium, boron, selenium, cobalt, chromium and other trace elements [8]. In addition, the introduction of the properties, extraction, separation and utilization of brown algae polysaccharides in the course are relatively rough. By querying

more literature, a better experimental scheme for the extraction, separation and utilization of fucoidan in kelp was determined. In the course of the experiment, I was deeply touched. Compared with the current experiment, the experiment is designed by the teacher. The students are step by step, and the experimental report is used as the criterion for the experimental results. The experimental supplies required in the "Challenge Cup" experiment, such as raw materials, reagents, etc., are all prepared by themselves. In addition to consulting the teacher, they are more active in their brains and thinking about problems. Find the literature to find a solution. It can be seen that this can improve our learning ability, think enthusiasm and hands-on ability, and learn to think and solve problems independently. After hard work, the first experimental product was successfully produced, which not only recognized our efforts and efforts, but also increased self-confidence. In addition, during the competition, the group will inevitably encounter problems such as disagreement, and learn to respect each other's different ideas, unite and cooperate and share. The most important thing is to deepen the study and understanding of Marine Medicine through the competition, and also deepen the understanding of marine polysaccharides, and more fully recognize the valuable value of marine resources. At the same time, the development and utilization of medicinal resources should not be limited to terrestrial resources, but should be more researched and developed to utilize marine resources.

IV. SUMMARY AND OUTLOOK

Participating in the "Challenge Cup" can stimulate your mind, stimulate interest, and learn more flexible, memorable and practical, so that the project completion process is no longer boring, which not only learns knowledge, but also lays a good foundation for completing the project. At the same time, Marine Medicine, as a branch of pharmacy, has an increasingly important position in the development of the ocean today. Therefore, participating in this Challenge Cup can link our experiments to the course of Marine Medicine, so that the study of Marine Medicine is no longer limited to the theory of textbooks, more experimental verification, thus enhancing the ocean. The study and understanding of pharmacology, deepen the impression of Marine Medicine, and understand the flexibility to understand and apply the lessons learned in the course.

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