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Talking About the Cultivation of Innovation and Entrepreneurship of Biomedical College Students under the Era of Internet +

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Abstract: In recent years, with the development of Internet+, the bio-pharmaceutical industry has become a strategic emerging industry and a dominant pillar industry in Tianjin and even the country. With the growth of China's bio-pharmaceutical industry, China has continuously increased its investment in science and technology, more and more internationally renowned pharmaceutical companies have increased their investment in Tianjin, and the demand for biopharmaceutical talents in the biomedical industry is also increasing. Higher requirements are put forward for the level of talent training in the biopharmaceutical profession of colleges and universities. Through the cooperation between schools and enterprises, this paper highlights the cultivation of students' innovative spirit and practical ability, and builds an innovative talent training model with distinctive characteristics of "bio-pharmaceutical". Experimental studies have shown that, compared with the traditional biomedical teaching model, innovative biomedical teaching combined with the Internet is more excellent in multiple teaching modules, especially in the part of mobilizing students' learning interests, which exceeds 10%, which fully reflects the research in this article. The feasibility of the content.

1. Introduction

With the rapid development of biotechnology, the biomedical industry will become one of the factors that will dominate the economic strength of countries around the world in the future. Countries all over the world, including developed and developing countries, have invested heavily in the research and development of the biotechnology industry, aiming to seize the new highland of bio-economy. Biotechnology is also the focus of research and development in China, and has made great progress in recent years. Compared with other disciplines, basic research in biotechnology is close to the world's leading edge, but biotechnology industrialization is far behind developed

countries. The reason is that in addition to insufficient investment, poor financing channels, lack of protection of intellectual property rights and other factors, it is more important to lack entrepreneurial groups that understand research, develop, market operations and management. How to cultivate innovative and entrepreneurial biomedical applied talents for the industry from the source is a new problem facing higher biological science education and higher pharmacy education. This paper explores the establishment of a multi-disciplinary, interdisciplinary, research and development application combination, research and production combination, combined with a combination of internal and external talents, can undertake major scientific research projects, can implement scientific research results transformation, genetic engineering technology application and biomedical innovation research and development.

2. The Advantages of Internet +

2.1. Get Timely Access to Relevant Information

The 21st century belongs to the era of computers and the era of the Internet. With the development of the times and society, the Internet is playing an increasingly important role in people's lives. People also have a variety of tools for using interconnections, including Mobile phones, PCs, etc., people can get the relevant knowledge and information they need at any time and anywhere in the Internet. For example, students can use the Internet to obtain a wider range of extracurricular knowledge and expand their horizons; Office workers can get what they need with a mouse click, and the world can be seen.

2.2. It Can Enrich People's Spare Time

With the gradual enrichment of people's material life, people's pursuit of the spiritual world is becoming more and more important. At this time, the living thing of the Internet plays a very important role. For example, the development of the Internet has led to the development of paper media. With the gradual rise of electronic media, people can use mobile phones and PC to read online during leisure time, enriching people's spiritual world anytime and anywhere, people can also use the Internet to watch videos, listen to music, play games, etc. Through these entertainment methods, people's moods are relaxed, and all aspects of people's morality and beauty are developed.

2.3. It Can Promote People's Individual Development

With the development of the Internet, the major dating sites have become the eye-catching pearls. It can be said that people can't live without them all the time. People of all ages use different social and chat tools, including WeChat, QQ. , Weibo, blogs, etc., people can write their own ideas anytime, anywhere, including their daily life, travel, novels, etc., so that they can exercise their writing, photography, and promote development, establishing their own self-confidence.

2.4. It Can Promote Economic Development

"Internet +" is a common theme pursued by all major Internet companies today. The implementation of the "Internet +" action plan is to develop a sharing economy. The “+” in the "Internet +" refers to all walks of life in the traditional industry, and the Internet economy is to combine traditional industries with the Internet and take advantage of the Internet to form new formats such as Internet finance, Internet medical care, Internet education, and Internet agriculture.

3. The Concept of Biomedical Industry

There is no unified definition of the biomedical industry in the world. Scholars from different countries have different concepts for the biomedical industry according to different organizational divisions and basic theoretical perspectives. However, in general, most of the biomedical industries are classified into two levels. The first is the biomedical industry on a narrow level. At this time, the biomedical industry only includes industries that use modern biomedical technology. For example, well-known industries such as genetic engineering, cell engineering, fermentation engineering, enzyme engineering, biochip technology, and bioinformatics, all of which are supported by biotechnology and do not associate with other types of industries or technologies. The other level is the biomedical industry on a broad level, but different from the narrow sense. On a broad level, the biomedical industry cannot be confined to the biotechnology industry alone. In addition to the foundation of modern biotechnology, these technologies must be combined with the pharmaceutical industry, an industry that realizes the manufacture and production of new drugs and achieves the efficacy of new drugs, which can diagnose, treat, or prevent various diseases and improve the goals of traditional medicine industry. This involves not only biotechnology, but also industrial technology in the production process, marketing tools in the sales chain, and so on.

4. The Necessity of Biomedical Innovation under the Background of Internet +

4.1. The Only Way to Train Applied Undergraduate Talents

Biomedicine is a highly practical undergraduate major with the aim of cultivating applied engineering talents. Production internship is a key link to achieve this talent training goal. In the process of production internship, students need to apply the theoretical knowledge learned in the school to the actual production, deepen the understanding and application of the theoretical knowledge and experimental skills learned in the school, and obtain the opportunity of linking theory with practice. So familiar with the research and development of biological products, production processes and processes, understand the management model and operating mechanism of biological enterprises, and lay a solid foundation for the development of innovative entrepreneurial activities and biomedical work after graduation.

4.2. Effective Means of Building a Platform for Cooperation between Industry, Universities and Research Institutes

With the extension of university functions from talent cultivation, scientific research to social services, colleges and universities have become an important social force to help enterprises develop. The development of higher education needs more and more enterprises to participate in the training of undergraduate talents to meet the needs of professional development for professional talents. Under this circumstance, the construction of the cooperation platform between universities and enterprises is particularly important. Through the production, study and research cooperation platform built by the production internship, the company has obtained the support of professional talents, scientific research achievements and advanced technology, and improved the development ability of new products; the colleges have complemented the shortcomings of market operation and product production, and improved the students' Cultivate quality.

4.3. A Quick Way to Build a "Double-type" Teacher Team

In order to promote the development of higher education, it is a common voice of the social and

educational circles to vigorously strengthen the construction of the "double-type" teacher team. “Double-type” teachers refer not only to teachers who hold certain qualifications, but more importantly, to the ability to solve practical problems in the production line. Through production internship, the school will send the school teachers to the production line for production and training, assist the enterprise to solve the engineering problems encountered in the actual production, and cooperate with them to develop new products and improve new technology, so that they can truly get the “double-type” quality and ability that teachers need.

4.4. An Important Part of the Transformation of the "New Engineering" Education

The core goal of the "New Engineering" is to train engineers who meet the needs of the modern economy and society. Changsha College actively responded to the call and vigorously promoted the construction of the “New Engineering” major, among which the bioengineering and other majors became the pilot projects for the transformation and development of the school. The bioengineering major is a typical engineering major, closely linking to the national strategic emerging industry – the bio-industry, mainly for bio-manufacturing, bio-agriculture, and bio-pharmaceuticals. The goal of biomedical specialty to achieve the transformation of “new engineering” is to train a large number of outstanding engineers for bio-manufacturing, bio-agriculture, bio-medicine and other fields. Production internship is the best performance field for students to learn, and can quickly promote the conversion of theoretical knowledge and experimental skills to actual production, and promote the transformation of college students to engineers.

5. Innovative Entrepreneurship Program for Biomedical College Students under the Internet+ Era

5.1. Consolidating the Basic Theory Course of Pharmacy

Focusing on the concept of “thick foundation and wide caliber”, the pharmaceutical engineering profession combines with the actual production of the enterprise on the basis of the original curriculum group, focusing on strengthening the biology curriculum group (including cell biology, microbiology, biochemistry, the course of microbial genetics and breeding, physiology, molecular biology, etc.) and the basic theory course of pharmacy (including the principles of biopharmaceutical synthesis, pharmacology, medicinal chemistry, natural medicinal chemistry, etc.). On the one hand, it highlights the characteristics of “biopharmaceuticals”, expands the coverage of the basic course teaching content, and increases the cross-cutting of pharmacy courses and engineering courses while updating the knowledge points of basic theory courses in biology and pharmacy. On the other hand, it introduced excellent teachers, reformed and innovated the teaching content and teaching methods of the basic pharmacy theory course, and optimized the curriculum structure system. By encouraging the teachers of each course group to actively participate in the curriculum reform seminars inside and outside the school, the teaching and research room will hold a class teacher exchange meeting, review the teaching plans from time to time, and urge teachers to revise the syllabus to update and increase the cutting-edge content of the course. The quality of teaching in each theoretical course group has been improved, and the basic theoretical knowledge of pharmaceutical engineering pharmacy has been further consolidated.

5.2. Building and Cultivating the Collaborative Innovation System of Industry, University and Research

The biomedical industry is a knowledge- and technology-intensive industry. It involves a

complex knowledge system, complex theoretical knowledge, and cross-disciplinary theory, all of which determine the complexity of technological innovation in the biomedical industry. When the overall strength of the bio-pharmaceutical industry is not significant and the overall competitiveness is not strong, if you want to improve the technical capabilities of the entire industry, you must integrate the internal public resources of the industry, make full use of the functions of various functional systems, and strive to create a good external environment for technological innovation in the biomedical industry. At the same time, the efficiency of internal technology research and development is improved, and the integration and cooperation of all functional modules within the entire economic system form a good innovation environment, thereby enhancing the competitiveness of the entire industry. The functional modules of these economic systems related to the technical capabilities of the entire industry include enterprises themselves, institutions of higher learning, scientific research institutions, governments, etc., and collaborative innovation in industry, academia and research is the best innovation model that integrates these institutions and their resources, and leverages the strengths of each institution to achieve complementary strengths.

5.3. Building a New Pattern of Open Innovation

No matter in terms of technical strength, innovation awareness, basic resources, and park construction, it is far from developed countries. The biomedical industry belongs to high-tech, high-knowledge-intensive industries, and the demand for professional technical theory, knowledge, and talents is very large. Therefore, in the initial stage of biomedical industry construction, our province needs to implement an open innovation pattern, strengthen technical exchanges and cooperation in the field of biomedicine at home and abroad, implement the introduction of talents and technologies. Implement the introduction of talents and technologies, promote the export of featured products, and finally achieve innovation through the imitation, introduction, digestion and absorption of foreign advanced technologies, and enhance their own level of technological innovation.

6. Calculation of Index Weights for Innovation and Entrepreneurship of Biomedical College Students

In order to ensure that the “index system” that has been obtained can be used in the actual evaluation process, the weight value of each index in the “index system” needs to be determined. This study uses the geometric average method in AHP (Analytic Hierarchy Process) to determine the value of each index Weights. Determining the index weight is a step that must be performed in the system evaluation. The main reason is that the various factors are not balanced, and their impact on the whole is still different. In order to obtain the research results we want more reasonably and objectively. Therefore, in the research of this article, a combination of quantitative analysis and qualitative analysis is used to demonstrate the entire evaluation system. At the same time, it also makes the results of this research more maneuverable. The steps to determine the index weight are as follows:

Build a hierarchy

Constructed as a contrast judgment matrix

Use geometric average method to determine the weight of each indicator, use formula (1) to calculate the geometric average of all elements in each row:

$$\overline{w_i} = \sqrt[n]{\prod_{i=1}^{n} a_{ji}}, (i = 1,2...,n) \tag{1}$$

Can get

$$\overline{w} = (\overline{w_1}, \overline{w_2}, ..., \overline{w_n})^T \tag{2}$$

Use formula (3) to normalize $\overline{w}$

$$w_i = \overline{w_i} / \sum_{j=1}^{n} \overline{w_j} \tag{3}$$

Finally, the random consistency ratio C.R (Consistency Ratio) is calculated to check whether the judgment matrix is consistent.

7. Experimental Research on Innovation and Entrepreneurship of Biomedical College Students

7.1. Experimental Program

(1) In order to make this experiment more scientific and effective, this experiment conducted a questionnaire survey among college students majoring in biomedicine by going to a university in a certain place and using a questionnaire survey. The students in this survey were all above junior and junior. Students have completed most of the courses in this major, which can reasonably guarantee the validity of the experimental data. This experiment investigates the current situation of the biomedical major, in which the gender ratio of the survey is equal, and the data obtained is analyzed and counted using the analytic hierarchy process. .

(2) In order to further research and analyze this experiment, based on the investigation of the status quo of biomedicine, compare the traditional biomedical teaching method with the Internet + biomedical teaching method studied in this article analysis. To judge the feasibility of innovation in this paper.

7.2. Research Methods

(1) Questionnaire survey method

This experiment set up targeted questionnaires on the basis of asking relevant experts, and conducted a survey of students in a semi-closed manner, the purpose of which is to promote the correct filling of the surveyed persons.

(2) Field research method

This research conducted a field investigation and recorded data for the biomedical specialty of a certain university in a certain university. These data provide a reliable reference for the final research results of this article.

(3) AHP

Use the analytic hierarchy process to make statistics and analysis on the research results of this article.

8. Experimental Analysis of Innovation and Entrepreneurship of Biomedical College Students

8.1. Analysis of the Status Quo of Biomedical Teaching

In order to make the results of this experiment more scientific and effective, this experiment carried out investigation and research by going to a university in a certain place and using a questionnaire survey method. The data obtained are shown in Table 1.

Table 1. Analysis of the status quo of biomedical teaching

	Teaching methods	Education resources	Learning efficiency	Others
Man	42.3%	37.2%	50.1%	44.2%
Woman	44.6%	41.9%	48.3%	49.1%

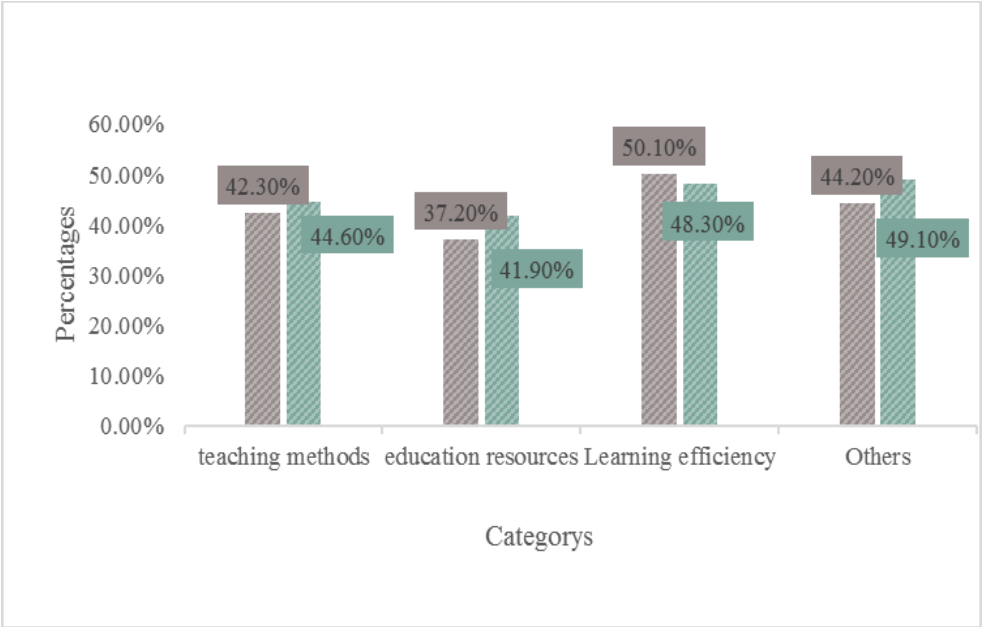

Table 1. Analysis of the status quo of biomedical teaching

It can be seen from Figure 1 that students majoring in biomedicine are not satisfied with the current teaching status of biomedicine, especially in terms of teaching resources, with an average satisfaction rate of less than 40%. This fully reflects the current status of the teaching of biomedicine. The problem needs to be solved urgently.

8.2. Comparative Analysis on Teaching Mode of Biomedicine

In order to further research and analyze this experiment, this study conducted face-to-face interviews with teachers of related majors and recorded data, and the recorded data was sorted and analyzed, as shown in Table 2.

Table2. Comparative analysis on teaching mode of biomedicine

	Teaching facilities	Learning interest	Teaching philosophy	Others
Internet+	7.63	7.89	7.21	6.75
Traditional	6.73	6.66	6.21	5.68

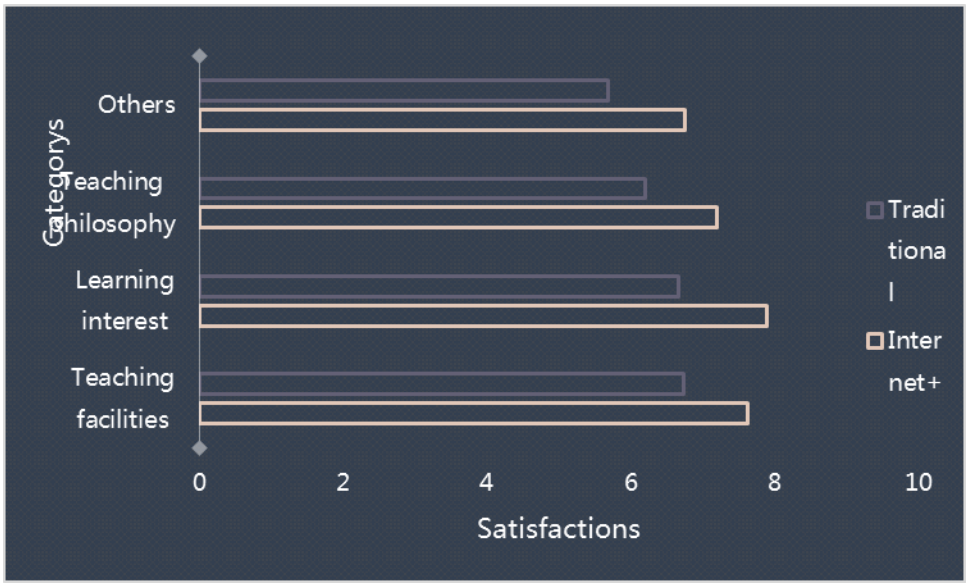

Figure 2. Comparative analysis on teaching mode of biomedicine

It can be seen from Figure 2 that compared with the traditional biomedical teaching model, the innovative biomedical teaching combined with the Internet is more excellent in multiple teaching modules, especially in the part that mobilizes students' interest in learning more than 10%, which fully reflects the content of this article. Study the feasibility of the content.

9. Summary

All in all, the scientific construction of the biomedical specialty in the talent training mode is a work with relatively strong professionalism and complexity, which is related to the school's teaching reform and personnel training, which affects the improvement of the school's teaching quality. Therefore, it is necessary to create characteristics in the discipline professional setting, reluctantly compete, and scientifically position according to the actual needs of the country, region, industry development and social development and its own characteristics, and build a scientific talent training model.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

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