

# Strategies for Developing Innovation Ability of Pharmaceutical Engineering Students

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**Abstract:** Nowadays, with the improvement of people's living standard, there are higher demands on their health. In this context, to some extent, pharmaceutical companies are required to improve their research efforts and improve more effective medical supplies for the public. Students as the main scientific research personnel of pharmaceutical engineering, during the school, teachers need to strengthen the cultivation of pharmaceutical engineering students innovative ability. In line with the purpose of comprehensively improving students'comprehensive knowledge level, teaching research is carried out. This paper puts forward how to cultivate the innovative ability of pharmaceutical engineering students, and carries out relevant exploration and analysis in order to achieve the teaching effect.

## 1. Introduction

The specialty of pharmaceutical engineering belongs to the branch of chemical products, and the innovation ability of researchers plays a key role in drug innovation. Innovation includes not only ideological innovation, but also research and technological innovation. Innovation includes both the reuse of the original experimental results and the research and creation of new directions. It is criticism and inheritance, development and transcendence. The research shows that it is an effective method for students to master basic knowledge, promote innovation, teach students according to their aptitude and pay attention to students'individualized development. It is the only way to strengthen students'innovative ability to construct a new innovative talent system, which is the precondition to improve students'innovative ability.

## 2. Strengthening Basic Knowledge Education and Improving Students'theoretical Level

In line with the goal of improving students'innovative ability, the talent training system should include the following aspects: knowledge level, practical ability, innovation spirit. Among them, knowledge, as the fundamental of innovation, should strengthen students'learning of basic knowledge. In addition, pharmaceutical engineering knowledge system is divided into three major modules: general education, professional education, comprehensive education [1]. General education includes English, physical education, computer and so on; professional education includes theory, practice and so on, comprehensive education includes ideological and moral training, improving students'physical health, and so on.

Theory and practice are the basis and guarantee of innovation, students can better carry out innovative practice only if they have excellent theoretical knowledge and fully understand theoretical knowledge. Therefore, teachers should pay attention to the training of students'learning ability in all directions and pay attention to the students'learning of basic theoretical knowledge, so as to meet the requirements of improving students'innovative ability. Compared with other subjects, pharmaceutical engineering majors not only design a wide range of content, but also more scattered content, students only continue to improve their own basic knowledge, in order to reduce the possibility of errors in future innovation, improve the ability of independent innovation. In teaching, the teacher can show the form of the content as shown in figure 1, help the students to comb the

knowledge, let the students know more clearly the branch and connection of the content, strengthen the education of the students' basic knowledge constantly from the teaching, and lay a solid foundation for the students, so as to improve the students' theoretical knowledge level.



Figure 1 Related meetings

### **3. Promote the Connection with Teaching Materials and Focus on Developing Students' personality**

In teaching, the teacher should rely on the teaching material and teach the knowledge for the students according to the teaching content. At present, with the continuous improvement of science and technology, multimedia and other media into the campus, many teachers in the record before class will also use the advantages of multimedia mass information, in order to provide students with more excellent knowledge to explain. However, because of the complexity and dispersion of the information, it is difficult for the teacher to choose the content that fits well with the content of the textbook, so the teacher should consider it repeatedly before the class, teach students according to their aptitude, provide the efficient classroom, let the students express themselves in the class and develop their personality.

The results show that teaching students according to their aptitude is not only beneficial to the improvement of students' innovative ideas, but also to the improvement of teachers' teaching quality. For the teaching of pharmaceutical engineering, the teacher should understand the students' thinking, learning ability and self-opening spirit before class, so as to meet the students' practical requirements in teaching [2]. At the same time, pay attention to the development of students' personality in the classroom, to a certain extent require teachers to put students in the main position of the classroom, in line with the principle of all for students, all rely on students, cultivate students' divergent thinking, not only better cultivate innovative spirit, but also create a good classroom atmosphere. In teaching, teachers should learn to encourage students to find and deal with problems themselves, boldly express their ideas, and let students have the ability to think independently and solve problems.

### **4. Invite Professors to Give Lectures to Enhance Students' understanding of Scientific Research**

To invite professors into the lecture hall, to close the distance between students and scientific research, and to help students establish scientific ideas is the only way to cultivate the innovation ability of pharmaceutical engineering students. The professor tells the students about his scientific research achievements in class, preach the work experience to the students, guide the students to learn, inspire the students to innovate spirit, also make the students know more about this major, increase the identity of the pharmaceutical engineering, and understand the real meaning of the pharmaceutical engineering industry.

In addition, schools can invite well-known people from home and abroad to give regular lectures (Fig.2) to help students stand at the forefront of their majors, broaden their horizons and increase their understanding of majors and innovations. During the course of the topic lecture, the teacher should encourage the students to actively interact with the professor, on the one hand, to enhance

the students' interest in the study of pharmaceutical engineering, on the other hand, to let the students know more about the research content, to deepen the impression of the lecture content and to improve their own professional quality. However, in the course of the lecture, it is difficult for the junior students to understand the surface problems, so the students are less able to understand the meaning of the content, and at the same time, the influence of the learning differences among the students leads to the poor effect of the professional topic lecture[3]. Based on this, the teacher should guide the students on the eve of the lecture, help the students to establish the correct psychological cognition, let the students take notes carefully and understand the contents of the lecture carefully during the lecture, so as to benefit from the lecture better.



Figure 2 Lecture by Professor

## **5. Attention should be Paid to Cultivating Students' innovative Ability and Strengthening Students' practical Operation Ability**

Cultivating students' innovative ability and strengthening students' practical operation ability need to have a good talent training program, such as research should include comprehensive experiment, innovative experiment, design experiment and so on.

### **5.1. Enhancing the Frequency of Comprehensive Experiments and Adding an Independent Design Competition**

Pharmaceutical engineering research, innovation, basic machinery, equipment is essential. Therefore, it is necessary to increase the investment in laboratory construction, create a good experimental place for students, increase students' interest in experiments, and then increase the proportion of comprehensive experiments and improve students' practical operation ability. In addition, the competition can also be designed for students, such as product logo or medicine box, one is to relax the tension of students, the other is to provide fun for students, so as to protect students' high enthusiasm for pharmaceutical engineering research (Figure 3), to stimulate students' love of pharmaceutical engineering from the side, and then to continuously improve their innovation ability, promote the development of pharmaceutical engineering, meet the requirements of pharmaceutical manufacturers in the present era, but also to improve the employment opportunities of students[4].

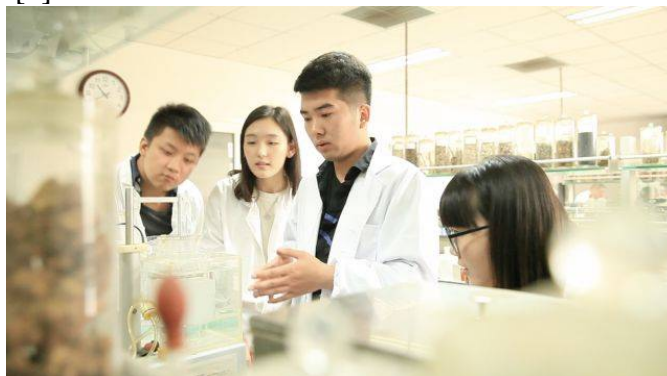


Figure 3 Training practical ability

## **5.2. Carrying out Students'Independent Innovation Scheme to Promote the Development of Students'Innovation Ability**

Students in school should focus on the implementation of independent innovation programs, encourage students to participate in innovation activities, in order to continuously convey innovative awareness for students. During the period of independent innovation program, school teachers can use the power of the society and teachers in school to provide students with a variety of innovative ways, such as organizing the relevant people to carry out pharmaceutical engineering innovation activities, and providing rich rewards to the winners, so as to stimulate students'desire to participate and increase students'perception of innovation. Pharmaceutical engineering teachers can start innovation groups according to the content of teaching and set the threshold of group entry, one is to increase students'emphasis on innovation in daily life and study, the other is to make students understand the difficulty of entering innovation groups, so as to cherish this opportunity more [5]. The most important thing is to create a competitive atmosphere among students, promote the development of students'innovative ability, and improve the quality of teachers'teaching.

## **5.3. Guide Students to Innovative Practice and Develop their Problem-Solving Skills**

Although college students have the ability to deal with and analyze problems, the university stage is the last step for students to enter the society. In the face of the increasingly severe employment situation, most students have a great psychological burden, so they sometimes cannot rationally analyze and solve the problems that arise [6]. As a guide on the way of students'study, teachers should not only play the role of students'role model, but also act as spiritual mentors to help students set up correct learning methods and improve students'ability of independent innovation. In addition, the subject of pharmaceutical engineering not only has complex theoretical knowledge, but also has difficult experimental operation, so teachers should be good at discovering the problems that exist in students'study and operation, pointing out the maze for students, reducing students'learning detours, and improving students'ability to distinguish and deal with problems. For example, when students practice experiments, teachers can listen to students from the perspective of students, and let students solve problems by themselves in a guided way, which not only helps to improve the emotional connection between teachers and students and students'experimental ability, but also makes students understand the significance of experiments and improve their self-innovation ability.

## **6. Conclusion**

In a word, improving the innovation ability of pharmaceutical engineering students is the requirement of the school in the present era. The school should not only conform to the situation and provide the students with a brighter future, but also pay attention to the cultivation of the students'innovative ability in the teaching. In strengthening students'innovation ability, we should start from the basic theory knowledge and lay a solid foundation for students; secondly, encourage students'personality development and maintain students'enthusiasm for specialty; finally, we should continuously improve students'innovation ability from increasing the frequency of comprehensive experiments, carrying out students'independent innovation plan and guiding students to carry out innovative practice, so as to meet the requirements of pharmaceutical engineering talents in the present era.

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