

# Thoughts on the Training Process of Biopharmaceutical Talents in Higher Vocational Colleges under the Guidance of Evidence-based Thinking

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**ABSTRACT:** When combined with the curriculum setting and training objectives of biopharmaceutical specialty in Higher Vocational colleges, we should change teaching methods under the new educational concepts, integrating the cultivation of evidence-based thinking ability into the different stages of professional course learning. Graduation thesis writing in Higher Vocational talents Training under the guidance of evidence-based pedagogy theory, so as to cultivate students' self-learning consciousness, critical thinking consciousness and improve their studies. Students' active learning ability was improved by using scientific thinking to solve practical problems.

## 1. Introduction

With the rapid development of science and technology, people were increasingly looking forward to the pursuit of high-quality life. The comprehensive renewal of modern biopharmaceutical technology made the level of demand for personnel training rise tremendously. Combining with the actual needs of employment, the task of cultivating biology professionals in Higher Vocational Colleges at present was to cultivate and master the basic theories, basic knowledge and basic professional skills of biochemistry, microbiology, biological separation and purification technology, biochemical industry and modern industrial pharmaceuticals, modern bioengineering principles and biotechnological pharmaceuticals, and to be able to perform biomedicine and other biotechnological engineering. Research and development units, production and circulation enterprises, colleges and universities, pharmaceutical inspection and pharmacy administration, and other fields were engaged in biopharmaceutical research, production and process design, technological innovation, quality control and production management, as well as the production and application of health products and pharmaceutical related products involved in biomedicine. Evidence-based teaching and its mode of thinking were different from traditional education. It took solving teaching problems as its starting point, put forward a set of theories and methods to find problems in teaching practice, found the best available evidence, and correctly applied the results to guide teaching. People aimed at the common requirement of biology professionals in Higher Vocational Colleges in different regions, in order to achieve this teaching goal, evidence-based education idea was introduced into the process of cultivating talents in Higher Vocational colleges, which enriched teachers' teaching ideas and diversifies their training methods. It was proved to be helpful to cultivate teachers' correct and scientific educational outlook and lay a foundation for standardizing teaching practice.

## 2. The Connotation of Evidence-based Teaching

"Evidence-based teaching was evidence-based teaching, i.e. the best teaching and research basis that can be obtained prudently, accurately and wisely. At the same time, combined teachers' personal professional skills and many years of teaching experience, considering students' value and desire for their own work, the three are combined to formulate teaching syllabus and form teaching programs." Evidence-based teaching method referred to the method of following evidence, which was based on the basic scientific principles of behavior. Evidence-based approach guided educators to "make necessary intervention on how to promote students' learning, and after intervention, how

students' learning behavior changes".

### **3. Evidence-based education implementation process**

The implementation of evidence-based teaching required teachers to fully care for and care for students, respect their human rights and legitimate rights and interests, and cooperated with students in a friendly way, so as to achieve a high degree of trust of students and thus produce the best results.

#### **3.1 Teaching Design Based on Professional Teaching Inquiry**

Teaching design based on teaching inquiry of modern biopharmacy was a methodological system with structure and hierarchy. It should solve the problem of how to make the actual research activities more in line with the teaching law. In the teaching design of cultivation and research of biopharmaceutical vocational students, teachers inevitably ask themselves: what should students be guided to explore? How to guide students to explore? What would lead students to explore? How to judge the level and effect of students' inquiry? These problems inherently included several basic links of instructional design: statement of inquiry objectives, analysis of inquiry tasks, selection of inquiry guidance methods and evaluation of inquiry learning results.

#### **3.2 Student-centered Participation in the Process**

In the evidence-based activities characterized by operational experience in the practice stage, students were the main participants, and on the basis of experience and perception of relevant facts and phenomena, guess, summarize or verify reasonable conclusions, and made logical explanations. This part belonged to shallow and low-requirement activities. Sometimes, in order to make evidence-based planning feasible, relevant situations were designed according to the background, characteristics of learning tasks and the thinking process of knowledge generation. Evidence-based teaching process based on situational design, also known as "anchored" inquiry planning, uses the context containing knowledge as the support to maintain the research activities, which was an important research institute of situational cognitive learning theory. As far as practical education learning was concerned, if we could focus on excavating the meaning background of knowledge in the teaching design and design a reasonable inquiry activity situation based on it, it will not only make an important contribution to evidence-based teaching, but also enriched and developed theoretical learning. For this process, teachers should not only have a deeper professional foundation, but also have a certain spirit of research and innovation consciousness. This was a higher level of "semi-open research" in teaching design.

No matter how active the students were in the process of problem-based writing, they should think about what kind of knowledge they have ever learnt in the process of "situational creation-model recognition-explanation and application-practice experience". Even as skilled talents in Higher Vocational colleges, the training process should not be lack a process of sublimating students' abilities, i.g. to form the fruits of ideas in writing. The process of material. Graduation thesis writing was a learning task that must be completed before graduation, and the training of this ability should not wait until the eve of graduation, but should run through the whole process of personnel training. As a thesis instructor, in the guidance of students' graduation thesis, the cultivation of evidence-based thinking ability should be infiltrated into every link to improve students' scientific literacy and lifelong learning ability.

(1) First of all, the thesis instructor should fully understand the students' mastery of basic professional knowledge, basic theory and basic skills, as well as their computer skills and literature retrieval abilities. Then, the relevant learning tasks were arranged to enable students to learn about the process and methods of scientific research and paper writing, and to make a good knowledge reserve for paper writing.

(2) According to the basic procedure of evidence-based practice, the instructor of scientific topic selection may first let students systematically retrieve relevant literature through Internet resource database, evaluate the literature and confirm the feasibility according to the existing conditions.

Then the instructor and the students discussed together to determine a realistic and feasible direction of the paper.

(3) At this stage, the instructor should help students understand the starting procedure of a scientific work, clarify the research ideas, grasp the basic elements and principles of scientific research design, and guide them from research criteria, research objects, statistical design to the arrangement of writing process, so as to cultivate students' correct and rigorous scientific thinking. Law.

(4) To grasp the experiment and analyze, the instructor should first instruct the students to carry out the pre-experiment, find out the problems in time, and correct them. During the experiment, students' experimental records should be checked regularly to help them form good working habits. After all the experiments were finished, the students were instructed to analyze the data correctly and to find out the reasons for the errors in the process of evidence-based learning. For the existing problems, we should instruct students to carry out supplementary experiments to get real data, so that students can develop a serious and rigorous scientific attitude.

(5) When revising the first draft, we should pay attention to communicating with students and try to retain their ideas. Encouraging students to express their opinions, respecting original ideas and letting students understand that experience was important, but more attention should be paid to the use of valid arguments to prove conclusions, not to follow blindly. After finalizing the paper, students should also be instructed to sort out the whole process of the paper writing comprehensively, so that students can clearly understand the whole scientific research process and feel the process of participating in scientific demonstration.

#### 4. Conclusion

With people's increasing emphasis on practical experiences, evidence-based teaching methods have gradually shifted from focusing on theory to focusing on the proof of practical experience. Evidence-based medicine concept combined with case teaching method was a new medical thinking. In the process of teaching, teachers introduce typical examples, students took examples as examples to guide discussion, questions as the basis, and find answers through various ways, summarize and analyze after obtaining scientific evidence, and finally obtain the answers to questions. Case teaching method, starting from typical examples, guides students to enter learning through enlightenment, and combines theory with practice in the learning process. Students were in the leading position, effectively improving students' autonomous learning ability. Classroom teaching was no longer boring and tedious. Students gained interest and motivation in the process of exploration, which helped to stimulate students' learning enthusiasm and improve the quality of teaching.

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