Advance Journal of Food Science and Technology 10(2): 141-145, 2016
DOI: 10.19026/ajfst.10.1814
ISSN: 2042-4868; e-ISSN: 2042-4876

Submitted: April 19, 2015 Accepted: May 10, 2015 Published: January 15, 2016

Research Article

Experimental Research on Teaching Reform of Biotechnology Food Course Based on Interactive Learning

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Abstract: Interactive learning mode refers to the teaching activities through the implementation of a complete interactive carried out with the aim of organically combining the theory teaching and practice teaching and fully exploiting the creative potential of students and improving their overall quality of solving practical problems and ability. It's the students that should bear the liability of interactive implementation and final evaluation. By conducting the interactive, students can understand and grasp the entire process and the basic requirements of every step. This study introduces Interactive learning in biotechnology food experiment Teaching, adjusting and optimizing the biotechnology food experiment subjects teaching to make it more operational, practical and updating the traditional teaching methods, which is of great significance with remarkable results.

Keywords: Biotechnology food experiment, interactive learning mode, practice teaching

INTRODUCTION

Interactive teaching approach refers to Interactive-based Learning in biotechnology food experiment, PBL in shorter form, which can be translated as "interactive-based learning", "thematic learning" or "topic-based learning" which, in this context, is generally called as interactive-based learning. The term "interactive-based learning" was first seen in "Interactive-based Learning" coauthored by educator Katz from the United States and educator Richard from Canada. "Interactive-based learning" theory: knowledge can be obtained by self-construction; learning is the improvement of information and knowledge, skills and behaviors, attitudes and values and other aspects; education is a conscious, systematic, continuous communication activities to meet the needs of improvement. "Biotechnology food experiment" courses are basic and compulsory courses for students majored in Biotechnology food and management. As a comprehensive and practical subject, its purpose is to train the students to master teaching basic concepts, basic theory and basic skills of the biotechnology food experiment and to use biotechnology food experiments and regulations to solve practical problems of social, which is in line with demand of the socialist market economy to college level personnel with applied talents, complex foreign economic management (Wu, 2009). However, due to the huge biotechnology food experiment curriculum and the wide range of content and the restrictions of the faculty power, training establishments and weak foundation of students not majored in food while teaching; there are some difficulties in the teaching of food (Xu, 2007). And the conflict of practical and artistic characteristic of biotechnology food experiment disciplines and abstract and rigid characteristic of tradition school teaching, especially some problems of biotechnology food experiment teaching philosophy, teaching methods, teaching content in the process of traditional teaching, to a large extent, affect the effectiveness of teaching and teaching quality. This study selects the international food biotechnology major "international biotechnology food" as a pilot of interactive-based learning and through introduction of the test cases, test results and analysis, discusses the feasibility of interactive-based learning used in "food" course of colleges and universities and gropes promotion routes based on test cases to reach training requirements of higher education (Zhang, 2008).

MATERIALS AND METHODS

Implementation steps of interactive-based learning: Detail description as shown in Fig. 1.

Determine the interactive: One or several interactive ideas are generally made by teachers and then are discussed with the students to finalize the objectives and tasks of the interactive.

Make interactive plan: Generally the students develop the interactive work plan and determine the steps and procedures, which should get teacher's approval.

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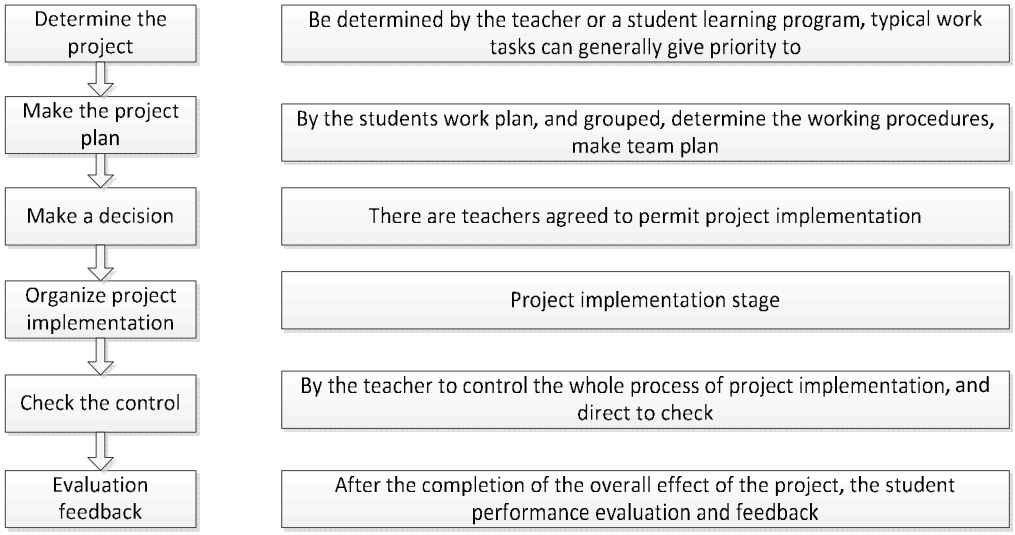

Fig. 1: Implementation steps

Make decisions: Teachers consider various aspects of the conditions permit based on student's interactive plan and make a decision to agree the interactive implementation.

Implement the interactive: In this phase, the students themselves have a clear division of labor and cooperation tasks and pattern of team members in the group and then follow the work steps and procedures that have been established. Students can avoid unnecessary detours, wasting time and energy.

Check control: Teachers make check control in the course of the interactive of the students in a phased manner.

Inspect and evaluate: After the interactive is completed, summarization should be done in a timely manner, in order to promote the consolidation of student knowledge. First divide several teams for students to work on their own self-assessment results and then check the ratings by teachers. Teachers and students all together discuss, judge the problems in interactive work and students learn problem-solving thinking and action features.

Consummate summarization: By comparing the results of the evaluation of teachers and students, summarize the entire interactive and find out the cause differences in the results. Teachers get this feedback, which is good for follow-up interaction.

The integration of information technology and biotechnology food experiment curriculum should take advantage of the information technology; use its multimedia information integration technology, asp technology, network technology and other advantages (Pritchard, 2013). As the auxiliary tool of teachers' biotechnology food experiment teaching and the cognitive means of students' biotechnology food experiment learning, the mode should establish digital biotechnology food experiment learning resources, which accomplishes the reform of learner's biotechnology food experiment learning means, which refers to that the learning way of passive accepting is really transformed to autonomous learning and meaningful learning. The integration of information technology and biotechnology food experiment curriculum will change biotechnology food experiment educational concept to form new teaching structure, which is the structure that students can learn autonomously, consult and discuss through themselves' exploration and discovery, from the teaching with teachers as the center. The new teaching structure is shown in the following Fig. 2.

In such integration mode, first of all, teachers analyze and process teaching material according to the teaching goals and display the teaching content to students in the form of courseware or web page. After accepting the task, under the guidance of teachers, students should use the information provided by the teacher (or yourself to find information) to learn autonomously with the combination of individuation and collaboration, use information technology to complete tasks. Finally, the teachers and students together conduct study evaluation and feedback. With the help of information technology, the teachers and students can teach and learn respectively.

Advantage of interactive-based learning: Interactive-based learning can cultivate the innovation and cooperation consciousness of students.

Students participate in practice through interactive-based learning interactive, learning from acceptance to active learning, transforming from a learning goal to

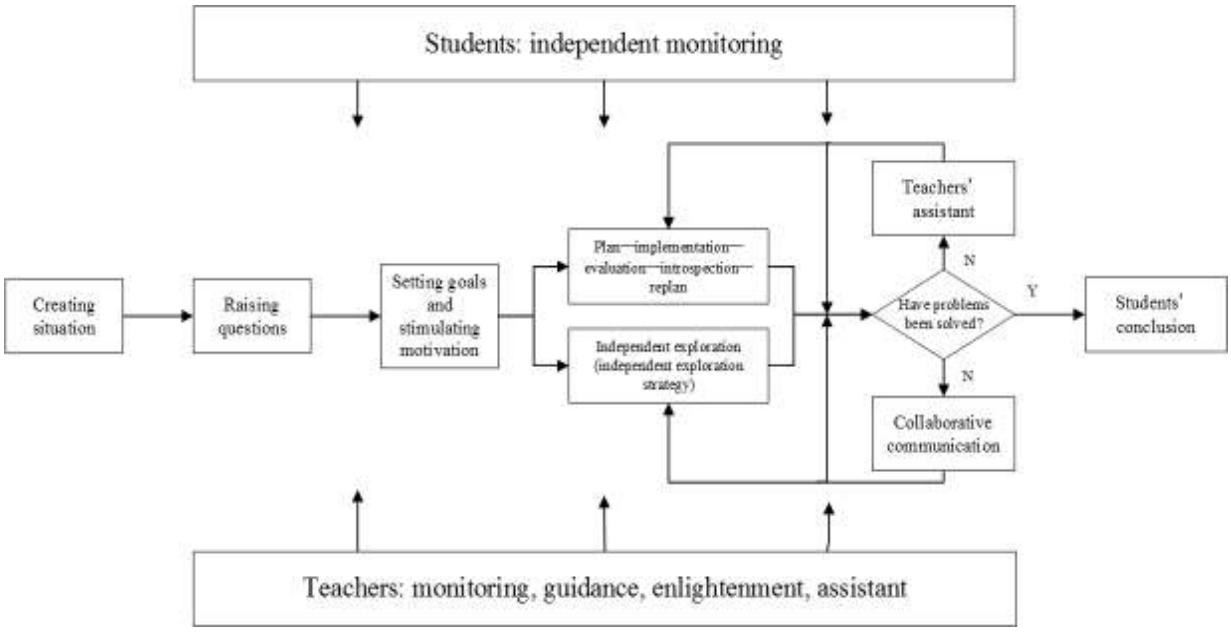

Fig. 2: The basic mode of biotechnology food experiment curriculum integration

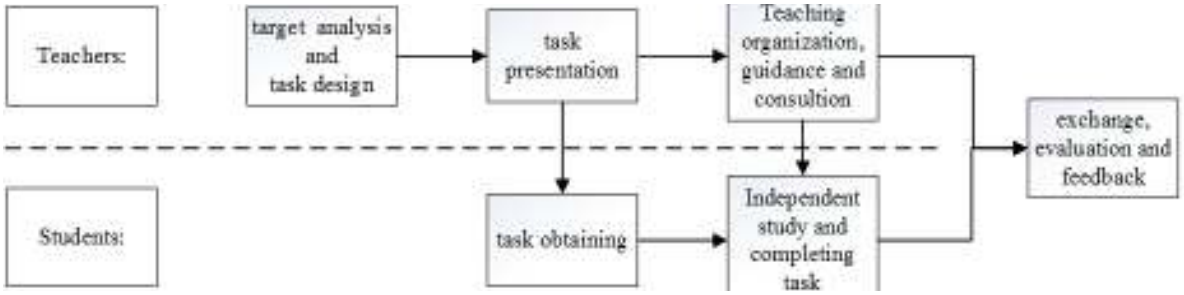

Fig. 3: Multiple interactions teaching mode

develop their professional ability by the application of knowledge (Yin, 2010). Through group learning, fully develop the students' thinking and innovative ability, not only mastering professional skills, but also enhancing their sense of innovation. In an atmosphere of teamwork, the students can develop the collaboration spirit of each other in the team. Personnel training objectives of universities is "serve as the aim, employ as orient", mainly for production and social practices of the first line and personnel with primary and intermediate technical applying skills. Therefore, the key for higher education personnel training is the cultivation of students' skills, so that students have comprehensive quality and professional competence employment required. Student-centered, interactive-based self-study interactive-based learning can face the need of the entire work process; integrate the knowledge of many courses through the work process systematic training to master the integration of knowledge, technology and skills in the practice action.

Interactive-based learning can improve students' personality and healthy outlook on life and value. Interactive-based learning creates a collective collaboration of a group of people; such a group breaks through our exchange of ideas, not only good for the cultivation of professional knowledge, but also conducive to foster students' personality. By learning together in small groups, students can develop a collective sense of honor and positive values and outlook of life.

The teaching mode called "multiple interactions", is a new teaching structure that under the information technology environment, the teaching activities should be as diverse and dynamic interaction process; through optimizing the interactive teaching, various teaching elements related to learning should be made full use of to adjust the contact and effect between them and to arouse and promote students' active learning activities to conduct learning activities, which can form omni-directional, multifaceted harmonious interaction teaching mode to produce teaching resonance and improve the teaching effect. As shown in the following Fig. 3.

Based on the above definition, the Conceptual Model of multiple interactive teaching mode of college

Table 1: Interactive requirement

Group	Head	Job content	Job requirements and processes	Inspection
	A1	Responsible for the biotechnology food company's domicile	• To draft the house lease international biotechnology • Find the right address as required	
	A2	Responsible for the verification of capital	Hire accounting firm capital verification as required and issue a capital verification report	
	A3	Responsible for the biotechnology food company's articles of association	According to the requirements of "international biotechnology food" to write articles of association	
	A4	Be responsible for the biotechnology food company bank account	Finding the right bank, according to the requirement applies to the bank for opening bank accounts and deposited the money in the account and establish account, etc.	

biotechnology food experiment we build under the environment of information technology is defined with a quaternary equation:

CM = (KM, KMS, TM, TMS)
Among them, KM = {K, CK, SK, PK
$k \in$ Basic Knowledge
$CK \in$ Composite Knowledge
$SK \in$ Strategic Knowledge
$PK \in$ Proceduralized Knowledge}
KMS = {KR|KR. Constructing Relation in KM}
TM = {STD|STD E Sub-teaching Design and Related Template}
TMS = {STDR|STDR. Constructing Relation in TM}

The conceptual model defines the applied basic frame structure of college biotechnology food experiment teaching mode under the environment of information technology. KM (Knowledge Model), KMS (Knowledge Model System) are corresponding to the Knowledge representation and are the maps of constructivism learning theory, cognitive teaching theory and learning theory of behaviorism in the aspect of Knowledge, which refers to the students' learning content layer, namely the basic biotechnology food experiment elementary knowledge, Knowledge of learning strategies and encyclopedic knowledge related to study, life and major that students must master; In a certain environment, students need to restructure the gained knowledge to realize the interaction (Meng, 2013). TM (would Model), TMS (would Model System) are corresponding to design the teaching process and are the maps of constructivism teaching theory, cognitive teaching theory and behavioral teaching theory in the teaching design, which refers to the teachers' teaching design level. Under teaching environment of information technology, teachers need to restructure the different teaching design according to students' actual situation to realize the interaction among various teaching elements fully.

Interactive test conditions: This study attempts to take "international biotechnology food" as an example to explain the college biotechnology food experiment course: the first one is teaching conditions: first, altogether 100 people, divided into 5 groups with 20 people per group; Second, prepare the appropriate pen, paper, multimedia equipment, computer networks, "international biotechnology food" and other legal provisions; the second one is overall interactive; the third one is interactive requirement, shown in Table 1:

- Qualified food shareholders
- Qualified food sponsor
- The formation of the food corporate governance mechanism
- Opening a bank account, tax registration, business registration, etc., for the food biotechnology food company
- Understanding the biotechnology food company's alteration and termination
- Draw up a proposed international biotechnology; the forth one is to report international biotechnology situation for each group; the fifth one is counseling of teachers theory; the sixth one is the case reviews; the seventh one is interpretation of cutting-edge issues of international biotechnology

In teaching activities, teachers will give the tasks o be resolved or need to complete to the students in the form of the interactive. The students will make plans altogether and cooperate to complete the entire interactive in small groups in accordance with the actual work under the guidance of teachers. Through the above steps, the teachers can mobilize students' learning motivation in the classroom and fully exploit the students' creative potential, so that students can learn knowledge in practice, combining the theory and practice of teaching organically improving students' comprehensive capacity to solve practical problems. "Interactive-based learning" is teaching methods in line with the actual situation of the students, forming and preliminarily mastering "biotechnology food experiment" course teaching modes and regulations teaching-guided and student-centered.

RESULTS AND DISCUSSION

The object of study selected in this subject is students of international biotechnology. Through

Table 2: Evaluation of students

	Score									
	90-100 points		80-89 points		70-79 points		60-69 points		less than 60 points	
Number	Experiment class	Contrast class	Experiment class	Contrast class	Experiment class	Contrast class	Experiment class	Contrast class	Experiment class	Contrast class
Pre-test	6	5	8	9	7	6	12	11	9	10
Middle-test	8	6	10	9	9	7	13	12	2	9
After-test	9	7	12	8	10	8	11	10	0	10

recycling issuing student questionnaires, seminars, etc., examine the effect of interactive-based learning in the "international biotechnology food" to the students for different stages of the interactive. As shown in Table 2, there are 1 person in the overall Evaluation of students on the "international biotechnology food" (50 persons) scoring less than 60 points, three persons scoring 60-69 points, 7 people scoring 70-79 points, 31 people scoring 80-89 points, 8 people scoring 90 -100 points. There are one people in the process assessment of teaching test of students (50 persons) on the "international biotechnology food" scoring less than 60 points, one people scoring 60-69 points, two persons scoring 70-79 points, 40 people scoring 80-89 points, 5 people scoring 90-100 points. There are two people in the assessment of teaching system assessment of students (50 persons) on the "biotechnology food experiment" scoring less than 60 points, three people scoring 60-69 points, 5 persons scoring 70-79 points, 28 people scoring 80-89 points, 12 people scoring 90-100 points.

CONCLUSION

The knowledge and skills of biotechnology food experiment courses are contemporary knowledge and qualities for modern college students, especially for foreign economic management specialty. Its purpose is not to conduct food teaching legal research, but to focus on applying their knowledge and to cultivate personnel with a certain legal thinking skills, legal spiritual and legal problem-solving skills, with strong social adaptability and practical application ability, complex foreign economic management capability. In fact, the problems in traditional teaching of biotechnology food experiment make an impact on the effect of food teaching. The goal of teaching is difficult to achieve, so the traditional teaching model of biotechnology food experiment reform ought to be carried out. While, this is a very long process, with the constraints of related concept and with the effect of lesson plans, curricula, teaching facilities, teacher quality and other factors. The reform cannot be achieved in a day and only with the hard work of schools, teachers and students, it can be realized.

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