

Research on the Reform of Experimental Teaching of Food Processes based on the OBE Concept



Wei Xu^{1,*}, Danjun Guo¹, Wei Sun¹, Kun Zhuang¹, Yang Yi¹ & Qiulin Hu¹

¹Wuhan Polytechnic University, China

Abstract:Based on the OBE concept, this study takes the experimental teaching of Food Technology as the research object and explores the ways and methods of experimental teaching reform by formulating clear teaching objectives, selecting practical and relevant teaching contents, adopting diversified teaching methods and implementing scientific teaching evaluation, aiming to improve students' practical operation ability, innovative thinking ability, teamwork ability, and comprehensive quality. This study has theoretical and practical significance for improving the quality of teaching and the reform of education and teaching. The shortcomings of traditional experimental teaching are analyzed, the problems are pointed out, and the ideas and methods of reform are proposed with the OBE concept as the guide. In the practice process, this study successfully implemented the experimental teaching reform program by setting clear teaching objectives, selecting practical and targeted teaching contents and experimental equipment, adopting diversified teaching methods, focusing on the cultivation of students' practical operation and innovative thinking ability, and implementing scientific teaching evaluation, and achieving good experimental results.

Keywords: OBE concept; food technology; experimental teaching; teaching reform

Introduction:

In recent years, with the development of the economy and the progress of society, vocational education has received more and more attention and importance. In vocational education, experimental teaching is a very important part, which plays a vital role in improving students' practical operation ability and innovative thinking abilities and cultivating students' practical operation ability and problem-solving abilities. However, in experimental teaching, there are often some problems, such as single experimental content, outdated equipment, and old teaching methods, which restrict the improvement of students' practical operation and innovative thinking ability, and also restrict the development of vocational education. Therefore, the research on the reform of experimental teaching to improve the quality of teaching and educational teaching has become one of the current hot topics in

the field of vocational education.

1. Design of experimental teaching reform of food process based on OBE concept

1.1 Development of teaching objectives

In the experimental teaching of food technology based on the OBE concept, the formulation of teaching objectives should focus on students' learning outcomes and abilities, and pay attention to students' practical ability and innovative thinking (Xie et al., 2023). Specifically, the formulation of teaching objectives can include the following aspects:

Knowledge level: to enable students to master the basic theoretical knowledge required for food process experiments, including the knowledge of food composition, processing technology, quality control, etc.

Skill level: to cultivate students' ability to independently conduct experimental design,

Corresponding Author: Wei Xu
Wuhan Polytechnic University, China
Email: xuwei1216@163.com

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operation, recording, data analysis, and result interpretation, and to improve their experimental skills and practical operation ability.

Innovative thinking: to develop students' ability to think creatively and solve practical problems so that they can use multiple ways of thinking in experimental design and data analysis (Wang et al., 2022).

Comprehensive quality: to improve students' comprehensive quality, including communication, cooperation, analysis, and problem-solving skills, as well as experimental safety awareness and teamwork spirit.

The above objectives should be achieved through specific experimental content and experimental design and can be adjusted and supplemented accordingly according to the different levels and actual needs of students. In the process of experimental teaching, students can also be guided to conduct independent learning and inquiry, so that students can gradually achieve the above goals in practice.

1.2 Selection and integration of teaching contents

Based on the OBE concept of experimental teaching of food technology, relevant teaching content should be selected and integrated according to the requirements of teaching objectives to ensure the relevance and effectiveness of teaching (Dai et al., 2021). The following are some examples of possible ways of selecting and integrating teaching content:

(1) selection and integration of experimental contents: according to student's learning needs and teaching objectives, different types of experimental contents can be selected, for example, experimental design from food composition analysis, food processing process control, food quality testing, etc. Meanwhile, in the integration of experiments, different experimental contents can be related and integrated, for example, by combining a food composition analysis experiment and a food processing process control experiment, so that students can understand the relationship between the analysis of food composition and processing process control and realize the integration of knowledge.

(2) Integration of resources: In order to ensure the teaching effect and resource utilization rate, various educational resources can be integrated, such as books, networks, experimental instruments, and other resources. In the process of curriculum design, various educational resources should be fully investigated and integrated to ensure the full utilization of resources and the richness of teaching content.

(3) Integration of knowledge: To improve students' learning efficiency, the knowledge in the curriculum can be integrated so that students can better understand and master it. For example, in experimental teaching, the relevant theoretical knowledge in the textbook can be combined with the experimental content, so that students can deeply understand the theoretical knowledge through experimental investigation and achieve the integration and enhancement of knowledge.

Through the above teaching content selection and integration methods, students can gradually achieve the teaching objectives in practical operation, improve their practical ability and innovative thinking, and achieve the expected effect of experimental teaching of food technology based on the OBE concept.

1.3 Reform of experimental teaching methods

Experimental teaching should be student-centered and focus on students' participation and experience. Teachers should provide students with enough space for independent learning and investigation, so that students can find problems, solve them, and summarize their experiences in experiments, thus improving their practical ability and innovative thinking. Organizing cooperative learning is one of the experimental teaching methods based on the OBE concept, which stimulates interaction, cooperation, and joint learning among students by organizing group learning, group discussion, and cooperative experiments. This method can improve students' learning efficiency and teamwork ability, and cultivate their practical operation ability and innovative thinking. The contextual teaching method is an experimental

teaching method based on real-life scenarios, which places students in real-life scenarios and allows them to experience real problems and solutions through experimental design and practical operations to improve their practical skills and problem-solving abilities. In experimental teaching, teachers should guide students in thinking and independent inquiry, encourage students to ask questions, solve problems and summarize experiences, and cultivate students' innovative thinking and independent learning ability. In experimental teaching, teachers should use diversified teaching methods, such as video presentations, web-based courseware, and experimental explanations, so that students can fully understand the experimental content and help them understand and master it (Sun, 2021). Through the above suggestions of reforming experimental teaching methods, students can gradually achieve their teaching objectives in practical operations, improve their practical ability and innovative thinking, and achieve the expected effect of experimental teaching of food technology based on the OBE concept.

2. Reform Implementation

2.1 Implementation Steps and specific measures

(1) Develop a teaching plan and teaching program: Before the implementation of experimental teaching reform, a detailed teaching plan and teaching program should be developed. The teaching plan should include teaching objectives, teaching contents, teaching methods, teaching evaluation, etc. The teaching program should be more specific, including the preparation of experimental equipment, the design of experimental contents, the demonstration of experimental steps, the recording and analysis of the experimental process, etc.

(2) Provide teachers with necessary training: Before the reform of experimental teaching, teachers should be provided with necessary training so that they can fully understand the OBE concept and its application in experimental teaching. Teachers also need to be familiar with new experimental teaching methods and evaluation methods and be able to use

educational technology reasonably to assist experimental teaching.

(3) Design and improve experimental content and experimental equipment: In the reform of experimental teaching, experimental content, and experimental equipment should be redesigned and improved to ensure their matching with teaching objectives. The experimental content should be relevant, practical, and innovative, and the experimental equipment should be sufficient, complete, safe, and reliable.

(4) Teachers should guide students to conduct independent learning and inquiry: In experimental teaching, teachers should guide students to conduct independent learning and inquiry, so that students can gradually master experimental skills and practical skills in practice. Teachers should provide the necessary guidance and help, and give students enough space for autonomy.

(5) Student evaluation and feedback: In the process of experimental teaching, students should be evaluated and given feedback to help them better master their knowledge and skills. Student evaluation and feedback should be objective and scientific, and at the same time should be tailored to student's individual needs, giving full play to their strengths and constantly improving and enhancing the quality of experimental teaching.

In general, the design and implementation of the above implementation steps and specific measures can enable students to gradually achieve their teaching objectives in practical operations, improve their practical ability and innovative thinking, and achieve the expected effect of experimental teaching of food technology based on the OBE concept.

2.2 Feedback and Evaluation

In the experimental teaching of the food process based on the OBE concept, feedback and evaluation should be a continuous process aiming to provide students with effective feedback on learning and teaching improvement opinions, as well as to help teachers understand the teaching effect and students' learning (Zhang et al., 2019). The following are some examples of possible feedback and evaluation

measures:

Student questionnaires: student questionnaires can collect feedback from students on laboratory teaching content, laboratory equipment, teaching methods, and teaching evaluation. The survey results can provide an important basis for teachers to improve laboratory teaching.

Student experiment report: Student experiment reports can evaluate students' experimental operation ability, data processing ability, analysis and interpretation ability of experimental results, etc. Teachers can understand students' experimental levels and learning outcomes by grading students' experimental reports (Kong & Ma, 2018).

Experimental site evaluation: teachers can evaluate students' experimental operation ability, communication ability, teamwork ability, and experimental safety awareness by observing students' performance at the experimental site. Teachers can also provide on-site guidance and assistance based on students' performance.

Teacher evaluation: Teachers can evaluate students' experimental operation ability, data processing ability, ability to analyze and interpret experimental results, communication ability, teamwork ability, and awareness of experimental safety. The results of teacher evaluation can provide effective feedback and improvement opinions for students and also provide a reference for teachers to improve experimental teaching.

In short, the implementation of feedback and evaluation measures can obtain timely feedback on students' learning and teaching improvement opinions, help teachers understand the teaching effect and students' learning situation, and then continuously improve and enhance the quality of experimental teaching of food technology based on the OBE concept.

3. The application value and role of the OBE concept in experimental teaching of food technology

3.1 Application value

Experimental teaching is an important carrier for students' practical operation and innovative thinking. The reform of experimental teaching of food processes based on the OBE concept can improve students' practical ability and innovative thinking, and cultivate their abilities in experimental design, operation, recording, data analysis, and result interpretation. The reform of experimental teaching of food technology based on the OBE concept can develop teaching programs and teaching plans that are more in line with the learning needs and practical needs of students, thus improving teaching quality and students' learning effects (Yu et al., 2016). It can provide students with more practical and innovative experimental contents and experimental equipment, thus improving their practical operation ability and innovative thinking and enhancing their employment competitiveness. And it is an aspect of education and teaching reform, which can promote the in-depth promotion of education and teaching reform and provide practical experience and reference for building a modern education system.

3.2 Promoting Effect of experimental teaching reform

Experimental teaching is a very important part of higher education, which plays a vital role in the improvement of students' professional ability and professionalism. The reform of experimental teaching of food process based on the OBE concept can promote the reform of experimental teaching and produce the following promoting effects:

(1)Deepening education teaching reform: The reform of experimental teaching based on the OBE concept can promote the in-depth development of education teaching reform. Implementing experimental teaching content with relevance and practicality, can improve students' practical ability and innovative thinking, cultivate students' practical operation ability and problem-solving ability, and continuously adapt to the needs of the vocational education market (Liang et al., 2023).

(2)Promote the sharing of educational resources: the experimental teaching reform based on the OBE concept can promote the sharing of educational

resources. By integrating various educational resources, including books, networks, experimental instruments, and other resources, it can realize the full utilization of resources and richness of teaching contents, as well as the sharing of educational teaching resources among universities.

(3)Improve students' learning effect: The reform of experimental teaching based on the OBE concept can improve students' learning effect. Through practical operation and innovative thinking, it can help students better understand and master theoretical knowledge, thus improving students' practical operation ability and problem-solving abilities and maximizing students' learning effect.

(4)Promote employment market demand: The reform of experimental teaching based on the OBE concept can promote employment market demand. Through the experimental teaching content and experimental equipment for practical needs, it can improve students' practical operation ability and innovative thinking, cultivate their ability to adapt to the vocational education market and create more opportunities and advantages for students' employment.

Overall, the reform of experimental teaching of food process based on the OBE concept can promote the reform of experimental teaching, and then promote the in-depth development of education and teaching reform, and provide a strong guarantee for students' professional ability and professional improvement.

Conclusion:

This study is guided by the OBE concept to conduct a reform study for the experimental teaching of Food Processes. By formulating clear teaching objectives, selecting practical and targeted teaching contents, adopting diversified teaching methods, and implementing scientific teaching evaluation, it improves students' practical operation ability, innovative thinking ability, teamwork ability, and comprehensive quality, promotes the reform of experimental teaching and education teaching, and provides practical experience and reference for the

construction of modern education system. The reform of experimental teaching of food process based on the OBE concept has important application value and promotion effect, which can improve students' employment competitiveness, promote employment market demand and education resources sharing, deepen education teaching reform, and provide a strong guarantee for students' professional ability and professional improvement. Therefore, this study has important practical significance and application value for improving the quality of experimental teaching of food technology and the development of education and teaching reform.

Conflict of Interest

The authors declare that they have no conflicts of interest to this work.

Acknowledgement

This research was funded by teaching Research Project of Universities in Hubei Province (202135)Ministry of Education University-Industry Collaborative Education Project (202002115008)

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How to Cite: Xu, W., Guo, D., Sun, W., Kun, Z., Yi, Y., & Hu, Q. (2023). Research on the Reform of Experimental Teaching of Food Processes based on the OBE Concept. *Contemporary Education and Teaching Research*, 04(05), 194-199.
<https://doi.org/10.47852/bonviewCETR23209860501>