

# Research on the Teaching Reform and Practice of the Food Analysis Course Under the New Situation

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**Abstract:** With the development of society, the overall development of various industries in our country is unprecedentedly prosperous. However, various damaging industries with the sole goal of profit have emerged, significantly reducing people's experience in basic needs such as food, clothing, housing, and transportation. Food analysis course is an essential primary subject established by colleges and universities to cultivate food quality and safety talents. In order to further ensure the food safety of society, this article mainly analyzes the teaching reform path of food analysis courses under the new situation. We hope the views in this article can provide guidelines for relevant workers.

**Keywords:** Under the new situation; Food analysis course; Teaching reform; Practical research

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## 1. Introduction

"Food" is the basic need for human survival. However, with the continuous deepening of the country's economic development, more and more illegal elements are taking advantage of the overall development of society to seek personal gain. As a result, plenty of food in the current market has excessive and illegal additives, such situations seriously endanger people's health. Food analysis courses can cultivate more high-quality food quality and safety talents for society. However, the current traditional teaching model and concepts make the teaching results of food analysis courses appear in an awkward situation of high cultural scores and low application effect. In order to break the constraints of traditional teaching models and concepts on food analysis course teaching, major universities should actively analyze current students' learning habits and promote the reform process of food analysis course teaching with innovative teaching concepts and teaching methods. The society provides innovative talents with high quality and practicality.

## 2. Overview of food analysis course

Food analysis courses include four significant categories of content:

- (1) Food nutrition analysis, including but not limited to moisture, ash, inorganic salts, carbohydrates, and other components contained in food.
- (2) Basic knowledge of the food analysis process.
- (3) Food risk factors and safety analysis, including but not limited to harmful human elements, pesticides, and drug residues, harmful substances formed during food processing, and harmful substances in food packaging materials.
- (4) Commonly used analytical methods in food quality analysis.

Food is a general term for food, beverages, processed products, and semi-finished products. The teaching content of the food analysis course can enable students to comprehensively grasp the various characteristics of food to judge whether the food meets relevant national standards through analysis and provide a guarantee for the food safety of society as a whole.

### **3. Problems existing in the current teaching of food analysis courses**

#### **3.1. Backward teaching concepts**

The current food analysis course teaching in most colleges and universities is limited to knowledge teaching, and there needs to be more teaching that can effectively apply knowledge to students. As a result, many students need to “relearn” how to conduct food analysis in the workplace after graduation. Food analysis is a teaching subject with the primary purpose of ensuring social food safety. Different from other disciplines, food analysis course teaching should have “application” as the teaching purpose. However, current knowledge-based teaching model in most colleges and universities has made the teaching purpose backward. Putting the cart before the horse will ultimately affect the overall teaching effect of food analysis courses<sup>[1]</sup>.

Secondly, after the long-term development of the education industry, the educational experience summarized by relevant education departments has pointed out that teachers should play the role of guides rather than leaders in the classroom, so that students can gain more robust participation in the classroom. Only by feeling can we effectively ensure the quality of teaching. However, most teachers still remain in the category of traditional teaching concepts. In teaching, teachers’ narration is the primary teaching method. Students passively accept the teacher’s knowledge transfer in the classroom, and their sense of classroom participation is minimal. It is also the main factor affecting the teaching of food analysis courses. At the same time, this is also caused by the fact that most teachers have been teaching in a purely theoretical environment on campus for a long time and have yet to integrate teaching with corporate practice effectively.

#### **3.2. Outdated classroom teaching methods**

With society’s development, modern students’ psychological characteristics are different from those of past students. Today, with highly developed electronic devices and entertainment information, if teachers cannot fully attract students’ attention in the classroom, they will rely solely on the students’ abilities. Self-discipline can ensure efficient classroom teaching, which could be more realistic. However, most teachers still stick to the traditional teaching methods and use “writing on the blackboard” as the teaching medium. The only innovations they can make in teaching methods are to replace “writing on the blackboard” with “PowerPoint presentations and micro-lectures,” which means changing the teaching medium without changing the teaching method. Method innovation cannot achieve a good teaching reform effect, and its significance in promoting the reform of food analysis classroom teaching is also minimal.

In the classroom, teachers and students are knowledge imparters and knowledge receivers. Both are the protagonists of the food analysis classroom. No matter which party is separated from the classroom, the

teaching effect of the food analysis classroom will be reduced. Therefore, teachers should innovate education. This method helps students to concentrate in class and effectively complete the imparting and receiving knowledge. At the same time, innovative teaching methods can also deepen students' understanding of food analysis knowledge and guarantee their subsequent study and work <sup>[2]</sup>.

### **3.3. Confusing teaching content structure**

Food analysis is very complex, including but not limited to teaching more than ten types of courses, such as organic chemistry, food biochemistry, instrumental analysis, and physics. To ensure that students can master sufficient food analysis knowledge in the classroom, students need to learn various types of knowledge. In this process, teachers of each subject teach different subjects and will not be affected by the complicated teaching content structure of the course. However, it is difficult for students to sort out the learning direction in the complicated and large amount of knowledge learning, which will ultimately seriously affect the teaching quality of food analysis courses.

### **3.4. Insufficient experimental teaching effect**

Experiments are an important learning method to deepen students' understanding of food analysis knowledge. During the experiment, students can effectively verify the correct use of knowledge. However, in the current experimental teaching of food analysis courses, teachers will first conduct the experiments as demonstration, and then students perform the experiments according to the teachers' operating steps. In this process, the teacher is the only demonstration, and the space around the teacher is limited, which can only ensure that a small number of students can effectively observe and learn. Multiple demonstration operations will affect the efficiency of the classroom, if it is a single demonstration, it is difficult to guarantee the demonstration effect. In addition, during the experiment, many students undoubtedly imitated the teacher's operating steps. The students needed to combine knowledge with experimental operations effectively and did not think deeply, thereby affecting the quality of experimental teaching in food analysis courses <sup>[3]</sup>.

### **3.5. Insufficient use of modern teaching aids**

Modern teaching aids are effective auxiliary teaching methods for teachers in the current teaching environment. Through the use of modern teaching aids, teachers can carry out more modes of bad food habits teaching. However, most teachers do not use modern teaching aids in food analysis courses. The use of teaching methods remains at the level of "PowerPoint Presentations and micro-lectures" and fails to integrate modern teaching aids with classroom teaching. Therefore, to further promote the teaching reform of food analysis courses under the new situation, teachers should actively analyze the characteristics of modern teaching aids, effectively integrate modern teaching aids with classroom teaching, and maximize the teaching effect of modern teaching aids <sup>[4]</sup>.

## **4. Feasible methods to effectively promote the progress of teaching reform of food analysis courses**

### **4.1. Innovative teaching concepts**

Teaching philosophy is the core factor that helps teachers to sort out their teaching directions. If the teacher's teaching philosophy cannot adapt to the teaching needs of the current era, it will seriously affect the actual classroom teaching effect. Compared with other majors, the food analysis course teaching is based on "practical

application.” For the ultimate teaching purpose, under this premise, teachers must innovate teaching concepts to carry out higher-quality food analysis course teaching.

Teachers should establish a student-centered teaching concept. In the past, teachers were the leaders in course teaching. Even if teachers designed teaching sessions based on students’ sense of classroom participation, the teaching philosophy focused on teachers, this will still lead to a shift in the focus of classroom teaching. In the classroom teaching of food analysis under the new situation, teachers should always insist on putting students at the core of the classroom and ensure students’ high participation. For example, teachers should teach relevant knowledge of “Determination of Protein in Food” in the classroom. At the same time, the traditional teaching model will increase students’ classroom experience by designing a particular teaching segment. However, in student-centered classroom teaching, teachers will reserve much classroom practice for students to discuss freely after explaining the basic knowledge. Moreover, the teacher helps students to understand the textbook knowledge from a guide’s perspective, thereby deepening students’ mastery of the course content <sup>[5]</sup>.

## **4.2. Enriching the teaching methods**

The teaching method is a teaching segment designed by teachers in classroom teaching to improve students’ understanding of classroom knowledge. In the past classroom teaching of food analysis, teachers used basic language teaching methods such as questioning, explanation, and discussion to convey information as classroom knowledge teaching. In experimental teaching, teachers mostly use direct perception teaching methods such as the demonstration method and the visit method to carry out experimental teaching. The above teaching methods are essential, and most teachers have been using this method for a long time, and achieved specific teaching results, consequently they stick to the rules and are no longer willing to try other teaching methods.

At present, the psychological characteristics of students are significantly different from those in the past. Teachers should use more guiding teaching methods to teach food analysis courses to ensure the quality of food analysis courses. For example, the case teaching method and the contact teaching method are mainly based on practical training, the cultivation method mainly involves appreciation activities, the discovery method and the inquiry method are mainly guided inquiry. Enriching teaching methods can enable students to maintain a high degree of enthusiasm for food analysis courses, thereby ensuring the quality of learning. It is a practical help to improve teachers’ teaching capabilities and promote the teaching reform of food analysis courses under the new situation <sup>[6]</sup>.

## **4.3. Summarizing and sorting out the teaching content**

The disorganized teaching content is currently an essential obstacle to the further development of food analysis course teaching. In order to ensure students’ effective learning in food analysis course teaching, schools should plan more appropriate course arrangements, such as analyzing food nutritional components, moisture and ash content, inorganic salts, and lipids are grouped into one category, and the teaching content of proteins, amino acids, and vitamins are grouped into one category. More detailed curriculum planning can help students to further digest the knowledge in textbooks, thereby ensuring the teaching effect of food analysis courses <sup>[7]</sup>.

## **4.4. Carrying out project-based teaching**

Project-based teaching is a teaching method in which learning is given to students in the form of tasks, and students learn with an attitude similar to completing work. The main reason for the poor effectiveness of experimental teaching in current food analysis teaching is that students cannot effectively combine knowledge with experiments during the experiment. Through the development of project-based teaching, students can independently complete the various steps required for the experiment, thereby ensuring that students can

effectively absorb and internalize the knowledge during this period.

For example, in the teaching of the open experiment “Solvent Extraction Method,” the teacher handed over “Using Solvent Extraction Method for Food Analysis” to the students as the project topic and divided the students into several groups. In this process, the students need to complete the experiment by themselves. Teachers need to guide students in project learning, such as preparation of learning materials, preparation of facilities required for the project, practical implementation, and project summary. Teachers must provide appropriate reminders when students require more reference materials or correct experimental facilities. The whole process is led by students, who freely discuss the implementation plan and finally complete the learning project. Teachers only need to evaluate the learning results of each group after they complete the project study <sup>[8]</sup>.

In project-based teaching, students can complete the accumulation of knowledge and experimental experience from “zero” to “have.” At the same time, project-based learning is completed independently by students, and the knowledge content is more profound in students’ impressions, thus ensuring that students effectively understand food analysis knowledge and use the knowledge correctly.

#### **4.5. Effective use of modern equipment for teaching**

Firstly, teachers should use modern equipment in the classroom to deepen students’ understanding of the course content. For example, in “Classification of Analytical Reagents,” teachers should use modern equipment to show the appearance characteristics. Secondly, teachers should replace manual experiments with video demonstrations during the experiment process. Video demonstrations can allow all students to observe the details of the experimental demonstration, thereby ensuring the teaching significance of the demonstration. It should be noted that when making such teaching videos, teachers should try to reduce useless teaching elements in the video which may distract students, such as only showing hands and using a solid color background, so as to improve the teaching significance of demonstration videos effectively <sup>[9]</sup>.

#### **4.6. Integration of industry and teaching**

In the teaching process of food analysis courses, relevant industrialized products or platform topics should be integrated with enterprises to promote the application of cutting-edge products in food analysis courses, such as functional peptide products in “Determination of Protein in Food,” craft beer products in the “Determination of Amino Acids in Foods,” the application of fruit wine in the “Determination of Reducing Sugars in Foods” experimental course. Middle and senior managers of enterprises can be invited as off-campus tutors in the classroom to provide relevant verification based on the content of the enterprise’s products and food analysis courses. “Dual-qualified” teachers can also be trained in colleges and universities to integrate production and teaching, as reflected in the recent “double-qualified and dual-skilled” teacher qualification review and talent training carried out by our school.

### **5. Conclusion**

To sum up, the food analysis course is currently an essential introductory course in colleges and universities. It is an essential professional course that provides society with professional practical and management talents in food science and engineering, food quality and safety, food nutrition, and health. Colleges and universities should actively grasp the psychological characteristics of contemporary students, innovate teaching methods, strengthen the use of modern equipment, and cultivate “double-qualified” teachers in production and teaching to promote the progress of the food analysis course teaching reform.

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