# Research on the application of micro class based flipped classroom in basic biochemistry teaching

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**Abstract:** The curriculum is the carrier of talent cultivation. In order to give full play to the teaching and educating function of the curriculum, the curriculum team uses the advantages of micro courses to apply them to the teaching of basic biochemistry, and improves the teaching quality by means of the methods and means of "making high-quality micro courses around the core content; implementing flipped classes with the help of quality micro courses; integrating ideological and political content to improve the quality of curriculum education", To achieve the goal of improving the quality of talents through curriculum teaching.

**Keywords:** basic biochemistry; Micro class; New Agronomy; Flipped classroom; Curriculum Ideological and Political

Classroom teaching is the main battlefield of talent cultivation, and curriculum is the carrier of talent cultivation. How to give play to the teaching and educating function of curriculum depends on the continuous updating of teachers' teaching level and teaching methods and means. At present, with the development of the Internet era, information technology is changing the time and space of "teaching" and "learning" with its "new face". The traditional classroom teaching mode is difficult to adapt to the needs of the development of the times. How to use information means to transform the traditional classroom, improve the quality of classroom teaching, enrich teaching resources, and cultivate innovative talents is the problem faced by every college teacher in the new era. Microlecture is to use information technology to turn complex teaching contents into small videos composed of knowledge points, so that static knowledge becomes flexible, so that "teaching and learning" can go out of the fixed classroom with the network and enter into a flexible and mobile "big classroom", so that teaching can match the learning characteristics of college students in the new era, and play the role of teaching and educating students in the information age.

## 1. The Necessity of the Integration of Micro courses and Basic Biochemistry Teaching

### 1.1 The need for the development of “new agricultural science”

The development of new agricultural science needs "first-class talents trained by first-class majors", and the function of the curriculum is to "serve the specialty construction and talent training". Only by building a good curriculum can the service function of the curriculum be achieved. Therefore, in order to meet the needs of new agricultural science development for talent training, college basic biochemistry teachers should follow the concept of "educators receive education first", learn new technologies and methods with the times, improve teaching quality, give play to the ability of teaching and educating people in the curriculum, and lay the foundation for professional training of innovative talents. However, the arrival of the Internet era has spawned a variety of information based teaching methods. Micro courses based on information technology have been gradually introduced into the teaching process. Its comprehensive and targeted features can directly present the teaching content. While deepening students' understanding, it can strengthen students' comprehensive and rational thinking and innovation awareness, and promote students' diversified development. This teaching method can be effectively combined with the teaching of basic biochemistry in colleges and universities. By using students' electronic equipment, spare time and different spaces, we can use 5-10 minutes of video to combine the complex teaching content with the stories and characters of "strengthening agriculture and revitalizing agriculture" to form knowledge points that are easy to understand, remember and learn, and combine with the cultivation of "learning agriculture and loving agriculture", Targeted guidance of students' active learning and cultivation of "feelings about agriculture, rural areas and farmers" through imperceptible influence will not only improve students' autonomous learning ability, but also improve the ability to teach and educate people in the curriculum, so as to achieve the effect of "classroom flipping".

### 1.2 The need to improve the quality of talent training

In order to meet the needs of social development of our country for basic biochemistry talents, it is necessary to integrate micro courses. By creating teaching classes focusing on students' independent learning, students' overall quality and employment awareness can be cultivated, so as to enhance their employment competitiveness and help them get a better job. First, the integration of this teaching method in the explanation of theoretical knowledge can cultivate students' professional cognition and establish students' employment concept. Based on the new teaching method of basic biochemistry teaching, teachers will not only explain the knowledge related to the specialty, but also infiltrate employment knowledge in it, so that students can understand the knowledge related to professional employment, establish students' professional awareness, and cultivate their employment concept. In this way, through the introduction of micro courses, professional teachers are more likely to develop students' sense of autonomy and creativity, and students' sense of employment will also be improved, and the goal of students' overall ability development will be basically achieved.

### 1.3 The need to reshape teaching content

The connotation of micro class refers to a new method for teachers to integrate knowledge into a ten minute video and design a

certain section of teaching content or knowledge points by using media, situational creation and other methods. With the support of this teaching method, students can learn the knowledge in the video independently before class, or play it in the classroom to let students learn actively, and then make targeted explanations for the knowledge that students do not understand or know less, and then deepen students' understanding of knowledge, and strengthen their multi literacy. Biochemistry is a basic course for major in agriculture. Some of the knowledge is abstract, which makes it difficult for students to understand, and the relatively boring content will reduce students' awareness of participating in learning to a certain extent. However, the introduction of micro lessons into actual teaching can help teachers to simplify knowledge properly, which not only makes it easier for students to understand, but also stimulates their potential learning motivation in the form of "classroom flipping". The overall teaching effect is excellent, which can improve the previous teaching situation and promote the development of curriculum teaching.

## 2. Problems in the integration of micro courses and basic biochemistry teaching

First of all, due to the limitations of traditional teaching ideas, some teachers stick to the rules in teaching, are not easy to accept new technologies and concepts, and do not pay enough attention to the integration of new teaching methods and teaching. In teaching, they only teach the teaching content, and do not pay attention to students' understanding of knowledge points and their actual situation, students' learning characteristics, and the impact of the development of the times on students' learning methods. It is difficult for students to raise interest in teachers' teaching, As a result, the teaching effect is not good, and students' autonomous learning ability, inquiry ability and thinking and summing up ability are limited and affected. Secondly, Basic Biochemistry is the core professional basic course of the major of agriculture in our school. It is a combination of general education courses and professional courses. There are many basic courses involved. There has always been a phenomenon that "teachers are difficult to teach and students are difficult to learn". Micro teaching is difficult for both teachers and students. Third, some teachers do not have enough understanding of the advantages of micro lessons, and do not think enough about how to integrate micro lessons into teaching content, which makes it difficult to play the value and role of micro lessons.

## 3. Application Measures of Micro Course in Basic Biochemistry Teaching

### 3.1 Focus on core content and make high-quality micro courses

The course focuses on laying a solid foundation, taking material and energy metabolism as the backbone, introducing the biological evolution view of chemical origin, integrating the development history, frontier, life examples and hot interests of biochemistry, emphasizing the application of biochemical knowledge and skills in agricultural research and production practice, and making micro courses. The content of micro courses is targeted to related professional courses to help students build a professional knowledge system, cultivate good learning habits, improve course challenges, stimulate students' innovative thinking, and improve the integration of biochemical knowledge and "new agricultural" talent training goals. At the same time, micro courses focus on the development of students. Through the combination of knowledge teaching and ability training, we can create new agricultural talents who integrate biochemical knowledge and technology into agronomy required for the development of "new agricultural sciences", improve the high-level and innovative nature of the curriculum, build a teaching model that connects "before class, during class and after class", and focus on cultivating students' autonomous learning ability and lifelong learning habits, Achieve the ability to apply biochemical knowledge and skills to solve practical agricultural problems in the training of "new agricultural science" talents.

For example, in the teaching of Sugar Metabolism, combined with the teaching content, we made excellent videos, including typical examples, teaching difficulties and key points, learning requirements and the content to be mastered. Through examples, we can turn difficult and obscure content into stories, ignite students' interest and exploration awareness, and guide students to master relevant concepts and understand relevant mechanisms step by step. At the same time, in combination with students' learning conditions and cognitive characteristics, some interesting elements, such as weight loss, sports, and other topics that college students are interested in, should be added to the teaching content at the right time to mobilize students' initiative and guide students to learn actively. The comprehensive and interesting teaching content that conforms to the overall cognition of students is conducive to the students' mastering of relevant knowledge and helps teachers create a good teaching environment. In addition, teachers can also use the teaching platform in the school to upload these contents, so that students can complete the preview task before class. The platform includes learning materials query library, course materials, online testing and other parts, so that students can complete comprehensive learning tasks after uploading.

### 3.2 Implement flipped classroom with the help of quality micro class

Focusing on the "four lines - protein, sugar, lipid and nucleic acid metabolism, enzyme and gene regulation", the course uses micro classes to summarize the basic knowledge points, difficulties, and connection points of teaching by introducing "research reports, life examples, sports health, love and memory" and other examples, excavate the "ideological and political points, interest points, and enlightenment points" of the course, and integrate "knowledge points, key and difficult points, ideological and political points" with "frontier, science and technology, and life", Improve the depth, breadth and difficulty of the curriculum, expand students' knowledge, ignite their interest in learning, stimulate curiosity and increase their thirst for knowledge; At the same time, we should improve the ability to integrate theory with practice and cultivate the quality of sports health, organically combine "knowledge, ability and quality training", create an efficient classroom, solve the chronic problem of "boring content, outdated knowledge and simple methods", and make teachers stronger, the

classroom more active, students learn more, and the effect more practical. For example, after arranging students to preview the relationship between enzymes and vitamins, the author combined the main knowledge points with life according to students' learning feedback and teaching priorities, and made micro lessons about "how vitamins in life assist enzymes", how vitamins A, B and C, which are often eaten and often talked about in life, affect enzyme catalysis, and what diseases will be caused by lack of these vitamins, And let students consult relevant literature, research progress and give examples to illustrate the relevant problems they encounter through micro class learning, which not only makes the hard knowledge "interesting", but also extends the knowledge to the foreword literature, so as to achieve the goal of learning micro class to improve students' thinking and summing up ability and inquiry spirit.

## 3.3 Integrate ideological and political content to improve the quality of curriculum education

"The root of educating people is to establish morality". The core of the course is to cultivate new agricultural talents who are both red and professional. On the basis of "metabolism and regulation of protein, sugar, lipid and nucleic acid", with the help of micro courses, the course first integrates biochemical knowledge into the training of "new agricultural talents" and innovates the teaching content. By introducing the latest research reports of the discipline and scientific research talents (such as Mr. Tu Youyou), we integrate the frontier of the discipline into teaching, extend the curriculum content, expand students' knowledge, increase students' interests, guide and inspire students to "think, summarize, refine and extend" the curriculum content, and cultivate students' thinking; Integrate biochemical knowledge and technology in the form of micro courses, integrate them into agricultural research and production, tell stories about Chinese scientists' patriotism and rural development through case study, heuristic, inquiry and knowledge extension, cultivate students' "feelings about agriculture, rural areas and farmers" silently, combine the teaching of biochemical knowledge with the education of caring about agriculture, rural areas and farmers, and improve the affinity, penetration and germination of the curriculum, Realize the organic integration of ideological and political education and knowledge teaching, improve the quality of curriculum education, implement flipped classroom, and cultivate students' feelings of "learning agriculture and loving agriculture, and being rational in agriculture", so as to achieve the goal of integration of "teaching and educating people".

To sum up, micro class is a new teaching method generated with the development of the information age. It has the advantages of less content, short time and learning anytime and anywhere, and is more suitable for young people to learn now. Teachers also need to combine specific teaching contents, learn advanced technologies and means with the times, play the role of micro courses in teaching, improve the quality of micro courses, play the role of courses in talent training, and achieve the goal of training more "new farmers" for the development of new agricultural sciences and social needs.

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