

# Exploration on the Mode of "Online Teaching + Course Ideological and Political" in Biochemistry

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**Abstract:** For the integrated development of online and offline education, teachers tap the ideological and political elements in biochemistry based on the software such as rain classroom, questionnaire star, blue ink cloud class and Tencent classroom and the actual situation of undergraduates, so as to organically integrate online teaching, curriculum ideological and political education and biochemistry. This paper introduces the exploration and practice of biochemistry and curriculum ideological politics from four aspects: the necessity of curriculum ideological politics, the mining of Ideological and political teaching elements of Biochemistry, the practical ways of online teaching and curriculum ideological politics, and the online evaluation of curriculum ideological politics. Combined with the author's practical experience, it provides reference for the interspersed of biochemical education and curriculum ideological politics in Colleges and universities.

**Keywords:** Biochemistry, Curriculum thought and Politics, Online teaching.

## 1. Introduction

In the school ideological and political course symposium, General Secretary Xi Jinping proposed the "Eight unification" from the strategic height of the long-term development of the Party and the country, clarified the significance of the school ideological and political course, made arrangements on how to manage the curriculum ideological and political in the new era, and put forward requirements.

With the development of society and the renewal of social concepts, patients' requirements for doctors not only stay at the level of "caring about the disease", but also want to know more about the nature of changes occurring in their bodies at any time, which puts forward higher requirements for doctors' medical knowledge[1]. In addition, according to the three diagnostic principles of TCM(traditional Chinese medicine), "abnormalities are known by contrast with normal conditions" refers to the discovery of abnormal changes that are lacking or excess on the basis of understanding the normal [2]. Both of these demonstrate the importance of understanding normal physiology of human body, and biochemistry is a subject that discusses and reveals the essence of life from molecular level by studying chemical molecules and chemical reactions in organisms, so an explanation can be given to these two problems from molecular perspective.[3]

Due to the impact of COVID-19, the Ministry of Education and schools have established an online course and evaluation system for biochemistry based on the platforms of "Rain Class", "Tencent Class", "mosoteach" and "Wenjuanxing", according to the requirements of "classes suspended but learning continues" [4]. Face before "traditional classroom education", the lack of education and biochemical characteristics subject itself, teachers to set into the ideological education of the online education teaching plan, set up reasonable curriculum framework, optimizing the curriculum resources, to provide education courses in the biochemistry of the online course evaluation, explore education courses and the integration and application of the journal of biological chemistry [5].

In this paper, the authors have been engaged in biochemical education activities for many years. In the teaching process, they tried to break the framework of traditional education and actively integrated online education courses with ideological and political courses under the special background of epidemic. During this period, he carried out the practice and exploration of the integration of ideological and political courses and online biochemistry courses.

## 2. The Necessity of Curriculum Ideology and Politics

### 2.1. What Is Curriculum Ideology and Politics

What the Great Learning teaches, is to illustrate illustrious virtue; to renovate the people; and to rest in the highest excellence. As a university teacher, we must take "cultivating socialist builders and successors with all-round development of morality, intelligence and body, ideals, morality, culture and discipline" as our original intention and mission, and take moral cultivation and cultivating people as the starting point and foothold of our work, and to be a teacher with warmth and feelings.

As an educational method, curriculum ideological and political education aims to achieve moral education. Moral education plays an important role in both traditional and modern education in China. The object of ideological and political education is people, and the content of ideological and political education is "what kind of people to cultivate" and "how to cultivate people", which is the baseline and essence of the work of the Party and the country [6]. Curriculum ideology and politics should always adhere to the "moral education", pay attention to the education of undergraduates' three views, guide undergraduates to establish a correct sense of family and country and historical identity, cultivate undergraduates' cultural confidence, and gather, cultivate and transport talents for the realization of the dream of the great rejuvenation of the Chinese nation.

## 2.2. Ideological and Political Curriculum Is the Need of "Morality Education"

Since the 18th reported for the first time put forward the "taking moral cultivation as the fundamental task of education", various universities around the "course education" have done a lot of work, but in the course of education, teachers still focus on imparting knowledge and the cultivation of undergraduates' professional accomplishment, a large number of professional and technical courses is having serious lack of "moral education" [7 - 8]. Therefore, based on the education paradigm of OBE proposed by Spady[9], the rational integration of ideological and political elements into the education of medical and health undergraduates in Biochemistry is conducive to the systematization of ideological and political education, the formation of an innovative system, and more conducive to the realization of the responsibility of "establishing morality and cultivating talents" in universities. In order to cultivate the road confidence, cultural confidence, theoretical confidence, system confidence, can bear hardships, can take responsibility for the socialist successors to provide a suitable environment for growth.

At the same time, with the development of science and technology, a world characterized by globalization and informatization has been innovated. The emerging media represented by new media have brought a large number of ideological trends into college campuses, which also poses a huge challenge to the realization of the goal of "cultivating people with virtue". A single traditional ideological and political education method can no longer adapt to complex social development [10]. Therefore, in order to cope with this new trend, new challenges, and seek new opportunities, the innovation of ideological and political education in colleges and universities that are diversified and multidisciplinary is imminent.

## 2.3. Ideological and Political Courses Meet the Needs of Cultivating Medical Talents with Both Moral and Ability

Medicine is about life and people's health. It is the goal of medical college education to supply medical talents with benevolence and skill for medical profession. The special relationship of "Tie with health, entrust by life." requires medical practitioners to have higher ideological and political quality and moral accomplishment. Due to the particularity of the service object, medical education has high directivity and higher requirements for professional knowledge and skill accomplishment. At the same time, medical majors have a heavy academic burden and less after-school time, which further reduces the time of ideological and political education for undergraduates. Under this factor, a teaching atmosphere that emphasizes skill education and ignores medical ethics education is created.

The level of medical ethics is closely related to the medical practitioners' love for the audience. The lack of moral education leads to the undergraduates' lack of responsibility, the lack of humanistic care for patients, and the loss of respect for life, which affects the development of undergraduates' career. It is a good way to avoid the vicious circle of problems by incorporating ideological and political education into the curriculum of Biochemistry and increasing the affinity of medical education [11].

## 3. The Exploration of Ideological and Political Elements in Biochemistry

### 3.1. Stimulate Undergraduates' Innovative Consciousness

Biochemistry is a highly innovative course. In the formation and development of biochemistry, the discovery of many new substances and new methods of experiment are related to innovation. These contents can be used as materials for ideological and political education to improve students' innovative consciousness. Take Krebs's trihydroxyacid cycle discovery process. After four dehydrogenated citric acids, succinic acid can be synthesized from cis-aconitate, isocitrate and A-ketoglutaric acid. Krebs found that acetyl-CoA entered the cycle and condensed with oxaloacetic acid to produce citric acid. This discovery makes the cycle of the eight organic acids a closed loop. Krebs proposed that pyruvate dehydrogenase catalyzes the condensation of pyruvate with oxaloacetic acid in vivo to citric acid, which produces CO<sub>2</sub> and releases hydrogen in a series of chemical reactions to oxaloacetic acid. This explains the oxidative reaction mechanism of organic compounds in vivo. On this basis, Krebs demonstrated that in the body, substances such as carbohydrates, fats and proteins are decomposed by oxidation, releasing CO<sub>2</sub>, water and energy. Krebs found that the trihydroxy acid cycle is a process that builds on previous research, uses new methods, makes bold guesses and proves his own ideas. The history of biochemistry is full of examples, including the Coris' discovery of the lactic acid cycle and the discovery of prostaglandins, all linked to a sense of innovation. Interspersed with such cases in biochemistry teaching can cultivate students' creative consciousness.

### 3.2. Enhance Cultural Confidence and National Pride

In the development process of biochemistry, China has also made a great contribution to promote the progress of biochemistry. It is very important to tell the research deeds and significance of Chinese scientists to enhance students' cultural confidence and cultural identity, and stimulate students' national pride. 1965 Gong Yueting, Zou Chenglu, Du Yucang, Ji Aixue, Xing Qiyi, Wang You, Xu Jiecheng completed its synthetic bovine insulin, through technical appraisal, bovine insulin biological energy, crystal structure, shape, physical and chemical properties and natural of bovine insulin are exactly the same, this is the world's first synthetic protein, A landmark step has been taken in the understanding of human life [11]. In 1984, Chinese scientists represented by Tu Youyou realized the complete synthesis of artemisinin and published a study on the Structure and Synthesis of Artemisinin and its class of compounds. Artemisinin derivatives have been the most effective and uncomplicated malaria combination agents since their birth. It was called by the World Health Organization, the world's only effective treatment for malaria, and then hailed as a discovery that saved 200 million people. Through the above cases of outstanding scientists, students can not only feel the development of science and technology in China, but also motivate students to pursue scientific truth and strengthen their sense of responsibility of The Times based on these cases of scientists [12].

### 3.3. Education in Medical Ethics and Law

On November 26, 2018, He Jiankui, former associate professor of Southern University of Science and Technology, announced the birth of two gene-edited babies named Lulu and Nana in China, whose gene CCR5 was modified to be naturally resistant to HIV. As soon as this news came out, it caused a great uproar in the world, and many scientists at home and abroad condemned He Jiankui's behavior, and He Jiankui was also investigated for criminal responsibility by the People's Court of Nanshan District in Shenzhen for the crime of illegal medical practice. This case seriously touched the bottom line of human ethics, and seriously violated the law of China. He Jiankui's behavior made the two babies live in the eyes of the media and the public for life, and also challenged the public order and good customs. It is important to teach students the professional ability in study and life, but it is the bottom line to abide by scientific research ethics and laws in innovation, which is also the minimum to ensure their scientific research career.

### 3.4. Awareness Education of Hard Work and Continuous Struggle

In the development of biochemistry, a new discovery is destined to be tortuous and bumpy from the stage of putting forward to the output of the result. Countless people have paid their efforts, experienced countless failures, and even several generations of relay, just to succeed, or no output. By understanding such stories, students can correct their attitude towards scientific research, establish their correct world views, and cultivate their spirit of perseverance and hard work [13].

## 4. Online Teaching and the Practical Approach of Course Thinking and Politics

### 4.1. Online Survey of Ideological and Political Content of the Course to Build the Framework of Students' Favorite Professional Courses

Before the beginning of the course, teachers use Wengjuanxing to survey students' ideas on ideological and political content and biochemistry teaching. To understand students' cognition of course ideological and political content, whether they support the combination of online courses and ideological and political content, their preference for course ideological and political content, whether they have accepted online courses with ideological and political elements integrated, and suggestions on the way of course ideological and political integration into Biochemistry. At the beginning and in the course of teaching, a questionnaire survey was conducted, and the data were collected and analyzed to form a dynamic report. Through investigation and analysis to

master students understanding of the course ideological change, the change of the content preferences, students' learning situation, under the premise of discipline education norms, respect students' willingness to meet the demand of students, build a reasonable teaching framework, to improve the content of the course education, the construction of student satisfaction and student favorite the biochemistry course.

### 4.2. Online Discussion of Teaching Content

Under the special background of the epidemic, the integration of Biochemistry and online education has been promoted, and students need to receive courses different from the "traditional classroom". The author use tencent classroom for online teaching of biochemistry, in the process, make full use of the function of tencent classroom discussion, and student perceptions of course education case to discuss, answering questions, and exchanged opinions on course education into, has realized the student opinion real-time synchronization, the curriculum design of real-time correction, provides students with benign channel to communicate with the teacher. The addition of online discussion is close to offline class to the greatest extent, which reduces the difficulty of students' adaptation and increases the interest of class, and students respond well after class. It provides an effective innovative way for curriculum ideological and political classroom to be integrated into professional education reform.

### 4.3. Online Investigation of the Effect of Ideological and Political Teaching

In the past, offline courses were divided into final exam (50%) and usual score (50%). In order to deepen the integration of ideological and political education in courses, students' reading of ideological and political education videos and materials posted by teachers before and after class in Lanmoyun class is included in the score statistics on the basis of previous evaluations, so as to master students' learning situation and status. Blue Moyun class will automatically form a weekly learning report through data analysis, prompting students to arrange their learning plans reasonably and increasing their learning enthusiasm.

The comprehensive results of Class B of Acupuncture and Massage major of Class 2019 and Class A of Acupuncture and Massage major of Class 2018 were compared. The results are shown in Table 1. Through the comparison of the scores of the two groups of students, it is found that the scores of the group of 2019 students who use the course ideological and political science are better than those who do not join the course ideological and political science, and the number of students with good scores is significantly increased, indicating that after joining the course ideological and political science, students' enthusiasm is improved and the teaching effect is good.

**Table 1.** Comparison of online and traditional examination results

	n	Pass (60-69)	Medium level (70-79)	Good marks (80-89)	excellence Pass (>90)
The class of 2019	89	8(9.0%)	29(32.6%)	40(44.9%)	12(13.5%)
The class of 2018	92	30(32.6%)	25(27.2%)	27(29.3%)	10(10.9%)
P	>0.05	<0.05	<0.05	<0.05	<0.05

## 5. Course Ideological and Political Evaluation

### 5.1. Students' Evaluation of Course Ideology and Politics

Through the learning experience of one semester, the final evaluation of ideological and political classroom reform of Biochemistry was formed. Summarize the problems of students' feedback and put forward corresponding solutions. Improve the diagnosis evaluation system of ideological and political classes and the diagnosis of professional courses to achieve a virtuous cycle of the two. Gradually complete the supervision system of integrating online ideological and

political courses into the educational reform of specialized courses and the objective evaluation of ideological and political courses, inject ideological and political elements into the courses to ensure the practice and implementation of curriculum reform.

After a semester of study, the author intercepted the content and results of the last questionnaire survey to form a final evaluation (Table 2). The results show that most students study ideological and political courses 2 ~ 3 times per week, each time in 10 ~ 20 minutes, prefer the combination of online and offline education method, high satisfaction with the course, good evaluation of the course, good practice of ideological and political courses.

**Table 2.** The questionnaire

Q	The results of the survey
How often do you study online per week?	Once a week (27.3%), Two to three times a week (53.5%), More than three times a week (19.2%)
How many hours per week you study ideological and political content online?	10 minutes (35.4%), 10 to 20 minutes (40.2%), more than 30 minutes (24.4%)
Which teaching method do you prefer	Offline teaching (42.8%), Online teaching (10.3%), Combine online and offline (46.1%)
Your satisfaction with the integration of ideology and politics	Very satisfied (50.5%), satisfied (23.8%), General satisfied (10.0%), dissatisfied (15.7%)
What do you think of the effect of the study this semester	Good perfect (13.4%), Good (48.5%), General (30.3%), No perfect (7.8%)

### 5.2. Teachers' Feedback on Ideological and Political Curriculum Education Evaluation

After obtaining students' evaluation, the ideological and political course education is analyzed and the course evaluation report is formed. "If there is a problem, it will be corrected, and if there is no problem, it will be encouraged", so as to inherit and retain the advantages of the course. After the completion of the above work, online evaluation feedback will be held to reflect the dynamic analysis report of the whole learning process of students in a variety of forms, so as to answer the questions raised by students and propose solutions. The convening of evaluation feedback shortens the relationship between students and teachers, increases students' sense of participation, and provides students' opinions for the online reform of integrating ideological and political courses into professional courses.

makes the university not only become the cradle of the study, but also ideological education of the bottom line.

Due to the unique attributes of medical service objects, the medical practitioners have high requirements on all aspects of quality. In the medical college, different teachers have different teaching methods and styles, but the ultimate goal is the same -- to cultivate medical talents with medical skills, medical ethics, bottom line and ethics for the society and industry. The practice of introducing ideological and political elements into Biochemistry through online education mode is an exploration on this road, and the reform of curriculum ideological and political education is always on the way to cultivate high-quality talents who can undertake the dream of the great rejuvenation of the Chinese nation for the country.

## 6. Conclusion

Biochemistry is the science that uses molecules to reveal the nature of life. Course education is the current university student to carry on the ideological education of new ideas, new methods, and online education as a new product into the information age, the new platform, combination pattern, the demands of the development of is also a requirement for education, the perfect symbol for education and practice, it

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