

Research and Effect Evaluation of “Environmental Hygiene” Blended Teaching Based on Five in One

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Abstract: In the past, the teaching method of “Environmental Hygiene” was mainly classroom injection, and the content and information taught were limited, which could not let students update their frontier knowledge in time. Ignoring the initiative of students' autonomous learning, lacking the cultivation of innovative thinking and innovative ability. In order to solve the problems in the teaching of “Environmental Hygiene”, the author tried to adopt the five-in-one mixed teaching mode of “classroom teaching, ideological and political theories teaching in all courses, online courses, theory and practice”, and adopted this teaching mode for students majoring in preventive medicine, and evaluated its effect in order to better mobilize their learning enthusiasm. The blended teaching of “Environmental Hygiene” based on five-in-one can significantly improve the teaching effect of “Environmental Hygiene”, which is of great significance for breaking through the limitations of traditional classroom teaching and improving students' autonomous learning ability.

1. Introduction

“Environmental Hygiene” is a subject that studies the relationship between natural environment and living environment and people's health, promotes human health, and maintains and improves people's health level [1]. It is the two disciplines and main course of preventive medicine, and it is a compulsory course for undergraduate teaching of preventive medicine [2]. In our previous teaching of “Environmental Hygiene” course, the classroom injection teaching method was mainly used, and the content and information taught were limited, which could not let students update the frontier knowledge of the subject in time; Ignoring the initiative of students' autonomous learning, lacking the cultivation of innovative thinking and innovative ability [3]. Under the background of new situation development, students in science and engineering colleges have an increasing demand for the depth and breadth of course learning.

The author tried to adopt the five-in-one mixed teaching mode of “classroom teaching, ideological and political theories teaching in all courses, online courses, theory and practice”, and adopted this teaching mode for students majoring in preventive medicine, and evaluated its effect in order to better mobilize students' learning enthusiasm.

2. Construction of Mixed Teaching Mode of “Environmental Hygiene” Based on Five in One

2.1 Five in One Teaching Mode

“Environmental Hygiene” mainly discusses the influence of environmental factors on people's health, and its teaching and scientific research system is interdisciplinary. Because of its complicated knowledge structure, there are many teaching contents, and the task is heavy and time is tight [4]. Blended teaching combines the advantages of traditional face-to-face teaching and network teaching, which not only plays the leading role of teachers in guiding, inspiring and monitoring teaching, but also reflects the initiative, enthusiasm and creativity of students as the main body of learning [5]. In teaching, the training requirements are always detailed around this training goal, that is, to let students know and update the frontier knowledge of the subject

frequently, to cultivate their autonomous learning ability, innovative thinking and innovative ability, to cultivate their ability to find, analyze and solve problems, and to mobilize, communicate and coordinate the public health field work ability.

In order to solve the problems in the teaching of “Environmental Hygiene” course and realize the educational and teaching objectives of moral education guidance, ability training and knowledge imparting, the author correctly handles the relationship between teaching and learning on the basis of “online and offline” mixed teaching [6-7], according to the constructivist learning theory and centering on students’ “learning needs, learning ability and learning effectiveness” [8-9]. Ideological and political theories teaching in all courses, online courses, theory and practice “are organically integrated to construct a five-in-one mixed teaching model, as shown in Figure 1.

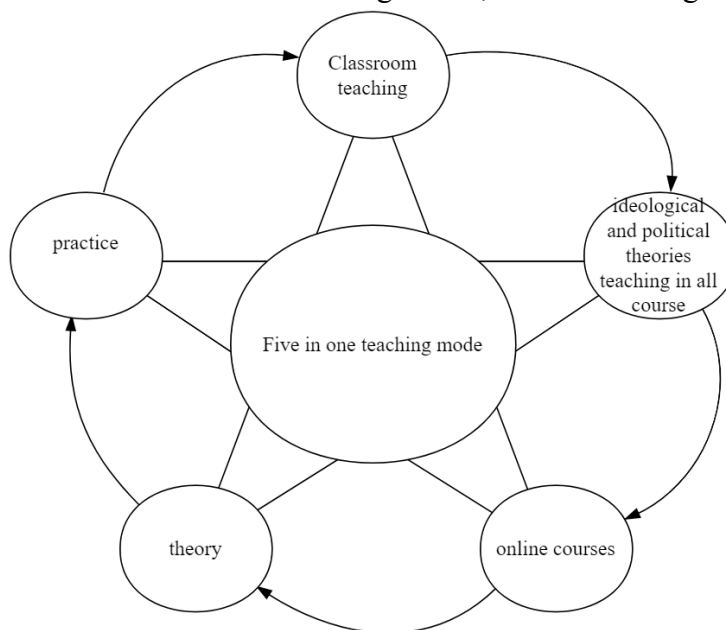


Fig.1 Five-in-One Mixed Teaching Mode

The new model expands the traditional curriculum space of “environmental hygiene”. The development and utilization of online teaching resources has strengthened the process of actively constructing individual knowledge in the classroom teaching of environmental hygiene in universities. The massive, convenient and instant network sharing of environmental hygiene intellectual resources is driving the accurate and personalized learning and practice of environmental hygiene for college students.

2.2 Connotation Analysis

Classroom teaching. Teachers and space-time resources are given priority, led by universities and implemented by “environmental hygiene” teachers, which has a good system and coherence of “environmental hygiene” knowledge. The disadvantage is that time is fixed and very limited. With the development of online course sharing resources, space is changed for time, which enriches the channels for college students to acquire knowledge. The core function of classroom teaching of “Environmental Hygiene” is intellectual support, imparting health knowledge and “Environmental Hygiene” skills, realizing “teaching them to fish” and laying the foundation for extracurricular exercise and experience.

ideological and political theories teaching in all course. Ideological and political theories teaching in all courses does not exist independently in the system of “Environmental Hygiene” in universities. It is different from ideological and political courses in the general sense. It penetrates into classroom teaching, extracurricular training, extracurricular exercise and other elements in the form of integration, refining cultural values, realizing collaborative education and completing the ultimate goal of moral education. In the new era, to deepen the integrated education of “environmental hygiene” ideologically and politically in all courses in universities with China

characteristics, we should grasp the unique educational characteristics of “environmental hygiene”, give full play to its educational function, and integrate health promotion with value experience.

Online courses. On the basis of online courses, flip classes and mixed teaching, aiming at the curriculum goal of “Environmental Hygiene” and the training goal of preventive medicine specialty, this model constructs a mixed teaching mode of “guidance, learning, flip, discussion and evaluation” based on the online course platform, and divides the course into course guidance+online course platform independent learning+”task-driven” flip class+classroom discussion and answering+process evaluation [10].

Theory. The teaching content is fragmented, and each unit is divided into several knowledge points. Whether each knowledge point is put online for students' autonomous learning or offline flip classroom teaching has been optimized in detail. For each knowledge point, a large number of online and offline test questions, thinking questions, discussion questions and homework questions were compiled, and preview courseware was made. At the same time, knowledge points with high click failure rate (difficulties), interest (points of interest), wide application (key points) and not presented in class were recorded into micro-lesson videos for 5-15 minutes, inorganic chemistry experiment and analytical chemistry experiment manuals were compiled, and micro-experiment operation videos were recorded.

Practice. This model fully integrates the new ideas of innovative and entrepreneurial teaching into the daily running of universities with “integration of production and education”. From the introduction of university policies, the revision of personnel training programs, to the quality control of various teaching practice links and teaching processes, it can fully reflect the cultivation of innovative thinking and entrepreneurial ability of university students, which is very in line with the running ideas of “new engineering” applied senior talents.

3. Effect Evaluation

Taking the experimental teaching of “Environmental Hygiene” course in preventive medicine as an example, this study evaluates the application effect of the five-in-one mixed teaching mode in the experimental teaching of “Environmental Hygiene”, and accumulates experience and provides basis for the teaching reform of other preventive medicine courses. 50 people in each group were randomly selected as the experimental group and the control group, and there was no statistical difference between the two groups ($P > 0.05$).

The control group is a traditional teaching group, and the experimental group is a five-in-one “environmental hygiene” mixed teaching group. The two groups use the same teaching materials and syllabus, and each micro-lesson video covers the contents and key difficulties required by the syllabus within 10 minutes, with exercises and literature.

The test scores before and after the lecture are as follows (see Table 1). Both groups of students can master the theoretical knowledge and key contents well, but the experimental composition is better than the control group, with no statistical difference ($P > 0.05$). It shows that students can master the main points of basic theoretical knowledge through self-study of micro-courseware.

Table 1 Comparative Analysis Of Test Scores Before and after Teaching

group	Before class	after class
Experimental group	8.488±4.31	25.56±5.16
control group	10.182±2.82	19.941±3.57
P value	>0.05	>0.05

The students' completion of the course “Environmental Hygiene” is good, and the analysis of the pass rate shows that the pass rate of students' exams per semester is generally above 85%, which is much higher than that of ordinary online courses. It shows that most students can really absorb what they have learned effectively through course learning (see Figure 2).

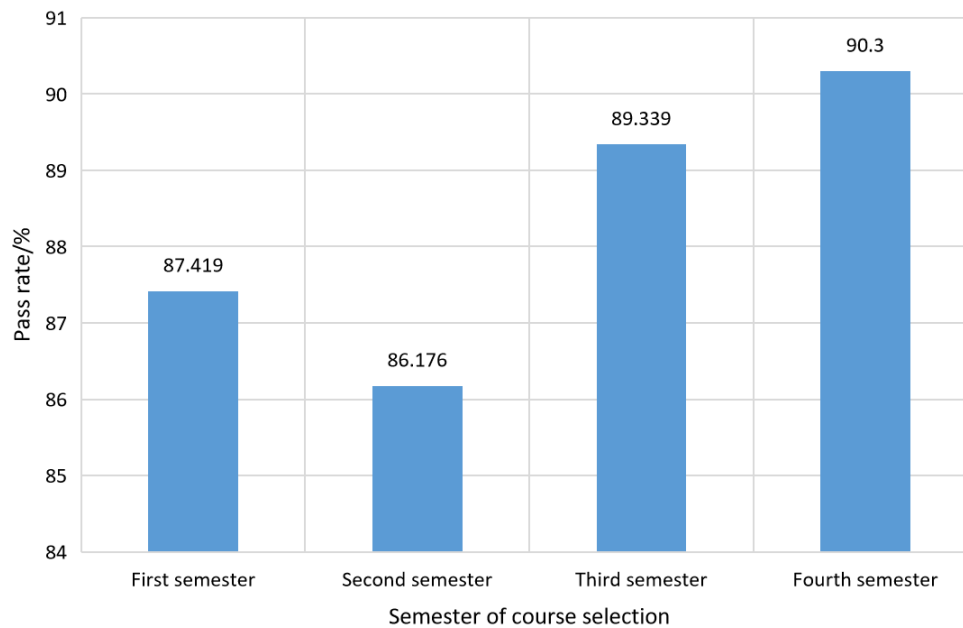


Fig.2 Examination Pass Rate Statistics

After watching the teaching videos after class, the students in the experimental group thought about the questions raised by the teachers in online course center and searched for information on the Internet. Through the experimental teaching videos carefully designed and recorded by teachers, and some high-quality online teaching resources and assignments arranged on the network platform, this course helps students internalize knowledge points to some extent, ensures the teaching effect and improves students' academic performance. Teachers can give special guidance and answer questions raised by students, which truly embodies personalized education. This way also changes the role of students, from passive lectures in traditional classes to active questions in flip classes to solve problems with teachers and classmates.

The teaching purpose of “Environmental Hygiene” course is not only to deepen students' understanding and mastery of book theoretical knowledge, but also to cultivate students' practical ability, comprehensive analysis ability and problem-solving ability. This is inconsistent with other scholars' research that blended teaching can improve students' theoretical achievements. It may be that online teaching requires students to spend more time on skills training and knowledge application, and they are not familiar with theoretical knowledge. Traditional teaching has certain advantages to students' mastery of theoretical knowledge, and whether mixed teaching is beneficial to students' mastery of theoretical knowledge of textbooks needs further exploration and improvement in this study.

In the teaching process, we also find that the level of a class depends largely on the professional level of teachers, especially on the ability to deal with sudden environmental pollution incidents. Teachers need to keep pace with the times, strengthen their study, update their professional knowledge, improve their professional ability, and enrich the teaching content in combination with the frontier progress of disciplines in order to provide students with a high-quality classroom. For teachers, we can master the teaching process more comprehensively and understand the students' learning dynamics through the online course platform, so as to adjust the teaching strategies; For students, you can preview before class through the online course platform, or you can make full use of the fragmented time to review. Through the online course platform, students can get learning resources that traditional classrooms can't get in the past, and find more problems, thus gradually changing from passive learning to active learning.

4. Conclusions

“Environmental Hygiene” mainly discusses the influence of environmental factors on people's

health, and its teaching and scientific research system is interdisciplinary. Because of its complicated knowledge structure, there are many teaching contents, heavy tasks and tight time. Blended teaching combines the advantages of traditional face-to-face teaching and network teaching, which not only plays the leading role of teachers in guiding, inspiring and monitoring teaching, but also reflects students' initiative, enthusiasm and creativity as the main body of learning. The blended teaching of "Environmental Hygiene" based on the five-in-one has changed the traditional teacher-centered teaching mode, improved students' learning initiative, promoted the communication and interaction between teachers and students, cultivated students' ability to analyze and solve problems, and provided teachers with new teaching methods and ideas, thus realizing the learning from each other. The course group of "Environmental Hygiene" will continue to explore, strive to create a high-quality mixed course that is challenging and can be accepted and recognized by the majority of students, and further promote the experience of mixed teaching reform of "Environmental Hygiene" course.

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