Research on the Innovation of Teaching and Education Modes in Colleges and Universities in the Context of Informationization: a Case Study on the Imbalance and Reconstruction of the Classroom Ecology of Law Major

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Keywords: Education informationization, Classroom ecology, Law majors, Imbalance and reconstruction

Abstract: In the past decade, information-based teaching methods were closely linked with law courses in colleges and universities. The education and teaching modes based on computer network technology and MOOC (Massive Open Online Course) construction were promoted nationwide; the teaching level of higher education and teaching quality significantly improved. However, when information-based teaching methods change from auxiliary teaching means to the leading teaching mode, some new problems occur. From the perspective of ecology, this paper takes the classroom of law majors in colleges and universities as the research object. The participation of modern information technology changes the relationship between the internal and external environment of the classroom teaching and factors in the system, which leads to the imbalance of teaching ecology. Then the paper analyzes the causes of this imbalance, and explores ways which can reconstruct classroom ecology for law majors under the perspective of informationization, and ultimately provides practical theories and methods for the research on information teaching modes and innovation in higher education.

1. Introduction

Since the 1990s, China began to pay attention to the impact of information technology on social development; the concept of “education informationization” appeared in relevant government documents. There are many definitions of education informationization. Kekang He thinks that education informationization refers to the comprehensive and in-depth application of modern information technology based on multimedia computer and network communication technology in the field of education to promote education reform and modernization, so as to adapt to new requirements of information on education development.[1] Kedong Li advocates that education informationization means, under the guidance of advanced educational thoughts, all parties in the field of education should actively apply information technologies, deeply develop and widely use information resources, and cultivate innovative talents who can meet the requirements of the information society, so as to accelerate the education modernization process.[2] Kun Fan believes that the so-called education informationization refers to the process that people comprehensively and deeply apply modern information technology to promote the reform and development of education. Its features include digitization, Internet, intelligentization and multimedia. It is also characterized by openness, sharing, interaction and cooperation.[3] Scholars have different focuses on the concept of modern information technology and the purpose of education informationization, but the connotations are basically the same. To sum up, this study believes that education informationization is a dynamic and historical process; it aims at improving the quality of education, teaching and personnel training. In that process, we optimize teaching resources and methods through the wide usage of modern information technology.

Based on ecology, the subject of educational ecology emphasizes ecosystem, ecological balance and coevolution, so as to explore the rules and mechanisms of the interaction between educational phenomena and the surrounding ecological environment. [4] From the perspective of educational

  DOI: 10.25236/ieesasm.2020.138

ecology, we can regard classroom learning as a micro ecosystem, which is composed of three factors: teachers, students and classroom ecology, as shown in Figure 1.

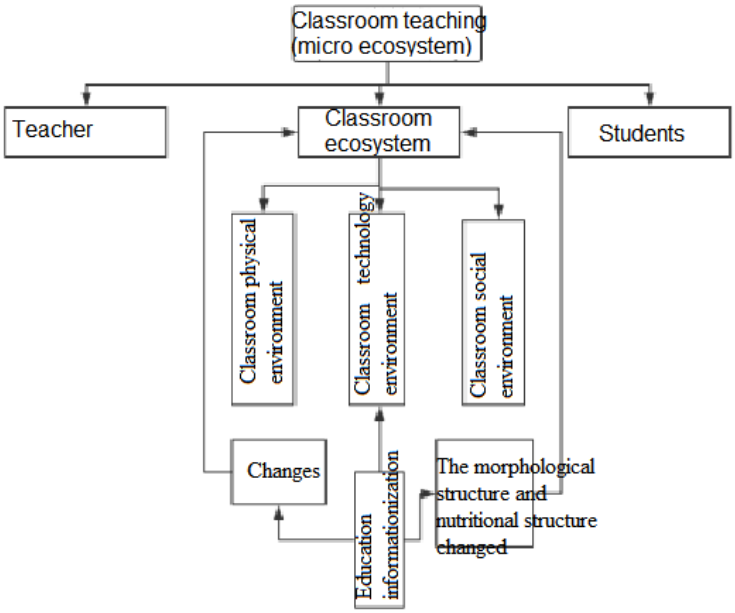

Fig.1 Micro Ecosystem of Classroom Teaching

Classroom ecological environment can be further divided into classroom physical environment, classroom technology environment and classroom social environment. Driven by new information technologies, the classroom technology environment changes, which leads to the changes of classroom morphology and nutrition structures, and ultimately affects the imbalance of classroom ecological environment. This paper intends to observe and analyze the phenomenon of classroom ecological imbalance, and puts forward new ideas to reconstruct the classroom ecosystem.

2. The Influence of Education Informationization on the Classroom Ecology of Law Courses

2.1 Transformation of Classroom Technology Environment

In the process of education development in China, the classroom technology environment has experienced three stages: manual skills, audition technology and digital technology. In the first stage, teachers mainly use chalks, the blackboard and traditional paper textbooks; in the second stage, teaching resources are further enriched. Slides and televisions appeared; but these methods are only used as auxiliary teaching resources to supplement the traditional manual skills, until the emergence of modern information technology. Modern information technology comprehensively subverts and integrates manual skills and the audition technology in the past. The innovation of education as well as teaching modes and methods leads to the emergence of digital curriculum resources, which has become the main form in law courses. Intelligent mobile terminals, VR (virtual reality) technology, AR (augmented reality) technology and electronic classrooms have become the core of classroom technology in colleges and universities.

2.2 Transformation of Classroom Physical Environment

Classroom physical environment mainly refers to the space-time environment such as the seat arrangement, the space layout, hygiene, temperature, color, lighting, and material elements such as the article display and the wall decoration.[5] For example, the arrangement and layout of the platform, desks and chairs can affect the atmosphere of the whole classroom to a certain extent, and even affect the academic performance and personalized development of students.[6] In traditional law classroom, the basic structure is as follows. The platform is in front of the classroom; tables and chairs are evenly distributed in each position of the classroom. Students can choose their own seats;

the teacher can also arrange seats for students, which is similar to the “seedling bed“. In this environment, the main teaching activity is limited to the surrounding of the platform and the gap between the platform and desks of the front row. It seems that both teachers and students are in a whole space, but if the teacher does not use appropriate teaching skills, the teacher will become an opposite of students. When the change of the technological environment has an impact on the physical environment, it will inevitably lead to new demands. The “seedling” classroom distribution is out of date, and the network technology makes the learning space more and more open. The “smart classroom” of law major injects “technology” into the classroom, and develops a new type of classroom integrating personality, numbers and intelligence. The change of classroom technology environment will gradually affect the atmosphere of traditional classrooms from simply cramming to personalized and smart education.

2.3 Changes in Classroom Social Environment

In traditional law courses, teachers are usually the center. Teachers spread knowledge and students acquire knowledge; for students, the main sources of knowledge are teachers and textbooks. When education is integrated with information technology, the channels of knowledge spreading become rich and colorful. Students can not only acquire knowledge from teachers and textbooks, but also use information-based learning tools such as network teaching resources and teaching software. The classroom teaching is no longer closed. Teachers' teaching tools and students' learning tools are optimized, upgraded and expanded. Under the influence of information technology, the education mode has changed from a single teaching type to a combination of participation, discussion and interaction. The classroom of law courses has also changed from teacher centered to student-centered. From the perspective of information technology, relying on the Internet, the 7 * 24 hours of uninterrupted service can even make students always online.

3. Problems of Informationization in Law Education and Teaching in Colleges and Universities

As mentioned above, modern information technology has epoch-making significance for the development of higher education. Its wide application has produced revolutionary influence on the reform of the teaching mode of law majors in colleges and universities. At the same time, new problems arise. Contradictions among various factors and elements of classroom ecological environment and their relationship can affect the expected effect of education; we need to further examine and study these problems.

3.1 New Problems Arising from Changes in the Morphological Structure

Teachers and students are two species of classroom ecology. They form biological components with the teachers’ group as a unit and the students’ group as a unit. As a subsystem of social ecosystem, teachers and students in classroom ecology interact through this social role, which is presented in the form of classroom teaching interaction.

In the traditional ecological environment of law classroom, teachers communicate with students through talking, asking and answering questions. The communication among students is not encouraged under the control of classroom authority. The classroom ecology from the perspective of information technology is more active. The intervention of digital information and other new factors enrich the channels of interaction between teachers and students. In addition to learning in the classroom, information technology also enables students to realize adaptive learning online and offline through information resources such as the digital platform. The classroom boundary is greatly expanded, and the source of knowledge is not limited to teachers and textbooks. The central position of teachers has shifted, as shown in Figure 2. Students have more voice and initiative. Teachers are no longer simple knowledge transmitters; they become the combination of a guide, a serviceman and a supporter. This subversive change of ecological system structure puts forward higher requirements for teachers, that is, to change the old classroom concept in time. Otherwise, numbers of problems may occur.

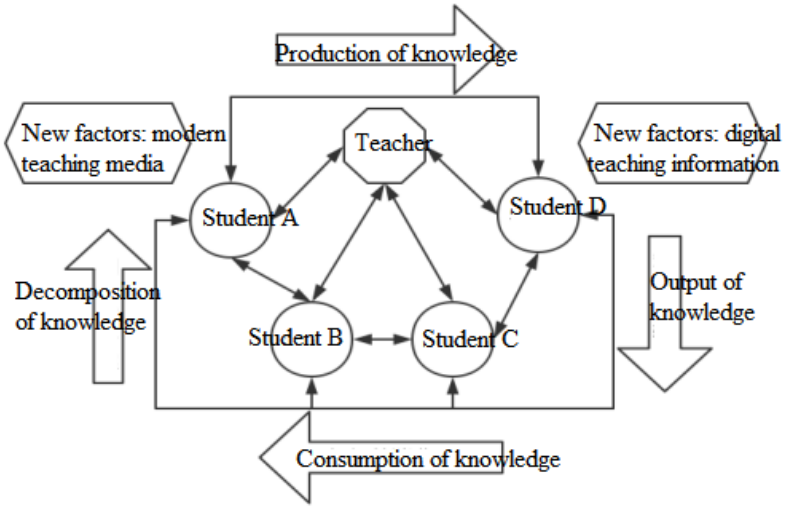

Fig.2 The Morphological Structure of the Ecosystem of Informationized Classroom

3.2 New Problems Arising from Changes in the Nutritional Structure

From the perspective of educational ecology, the relationship between the information supply and demand established by classroom ecology is a nutritional structure formed by a certain medium between teachers and students. In the traditional classroom ecology, teachers, as producers, are responsible for knowledge presupposition in the ecosystem and the establishment of dynamic classroom; students, as consumers, obtain knowledge nutrition they need through knowledge information provided by teachers. Textbook compilers are decomposers in the classroom; they reconstruct the knowledge needed in the classroom to produce new nutrition and energy and fed back them to teachers, so as to realize a virtuous ecological system of a closed-loop. That is a single cycle ecological chain, which can also be called as a nutrition structure. [7]

However, with the intervention of information technology, the role of each biological component in the classroom ecological chain also experienced a historical transfer.[8] At the same time, in addition to the two factors of teachers and students, modern teaching media and digital teaching information are also added. The main body of classroom activities is transferred from teachers to students. They participate in every link from production to decomposition in the process of ecosystem operation, and they are no longer pure knowledge consumers. Teachers are no longer regarded as pure knowledge porters. On the basis of guiding the classroom, they are no longer simply producing knowledge. They are more involved in decomposing and reconstructing knowledge; the communication channels of various ecological factors have changed from the single teacher to student communication to teacher to student and student to student communication; digital equipment is also used as the medium. [9]

4. The Path of Reconstructing the Classroom Ecology of Law Majors from the Perspective of Informationization

4.1 Guarantee the Leading Position of Information Technology in Classroom Ecology

To ensure the normalization and deep level of information teaching means is the premise of establishing the leading position of information technology in classroom ecology. Taking the law classroom as an example, a series of teaching tools and means such as the so-called information-based teaching platform and teaching resources tend to become simple performance, ignoring the effectiveness of teaching and the ecological education. Therefore, the author will construct the information-based teaching mode from teaching objectives, contents design and implementation, as well as teaching researches and management to highlight the special leading role of information technology.

First of all, in terms of the goal orientation as well as the design and implementation of teaching contents, the analysis of learning situation needs the support of information technology environment. Through real-time data, we can monitor, predict and adjust teaching objectives, and making personalized and customized learning programs. We can construct online MOOC courses for law majors, and use a kind of hybrid teaching mode which combines offline flipped classroom. Through analyzing data on students' online learning situation and classroom reports, we can find out the learning track and effect of individual students, and provide customized teaching objectives and plans. In addition, in teaching content arrangement, a special teaching team is set up with 1-2 teaching assistants. Teachers need to determine the final evaluation standard through background data. From the classroom activity, teachers' control of information technology, the rate of repeated use of teaching resources and resilience, we can evaluate whether the classroom ecology is healthy or not. At the same time, the teaching, research and management personnel of colleges and universities should accurately understand and apply various data under the background of education informationization, collect and summarize data of teaching staffs and students, analyze curriculum standards, assessment methods, experimental resources, as well as audio and video teaching materials of the discipline, and learn to use background data of the online teaching platform. The administrative data reflecting various teaching behaviors and classroom activities are processed and stored to support the stable teaching process and structure.[10] The specific path reconstruction model is shown in figure 3.

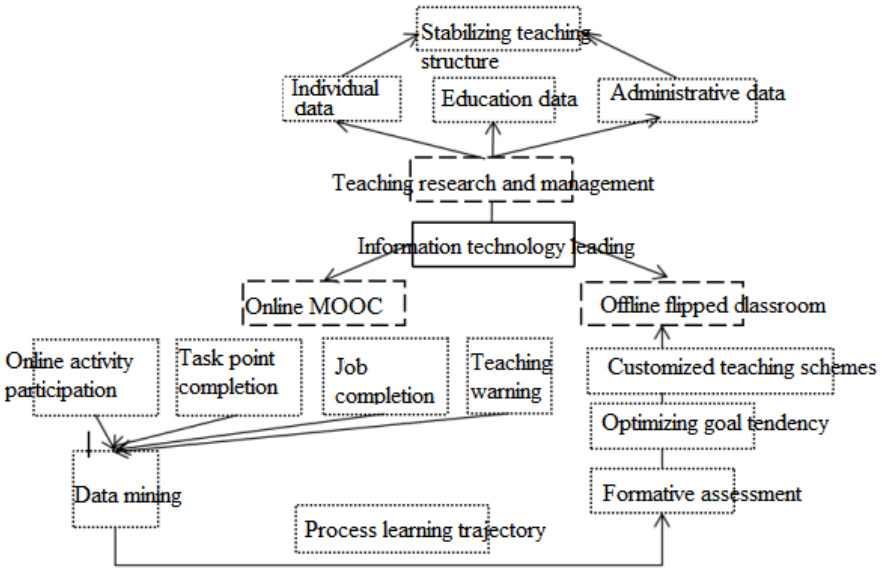

Fig.3 Basic Model of Teaching Mode under the Guidance of Information Technology

4.2 Optimizing the Ecological Environment of Classroom Teaching of Law Majors

Under the intervention of modern educational information technology, the imbalance of classroom ecological environment is due to the incomplete synchronous covariance of the proportion of each component. In the process of information-based teaching means innovation, the hardware investment of colleges and universities can basically adapt to the objective needs and match human and material resources. However, it is worth pondering that the hardware construction and software maintenance are not synchronized. After investigation, it is found that most colleges and universities have made enough efforts in building MOOC recording and broadcasting rooms, training rooms, and purchasing computer and other hardware supporting facilities. But these resources are rarely used. Some training rooms are even used as ordinary classrooms. In fact, the construction of classroom environment should also include the creation of information-based classroom atmosphere through various network resources. Colleges and universities should increase cooperation with online platforms or create their own online teaching platforms, associate, share and replace massive learning resources on line, make

full use of course resources of other universities, strengthen the learning and communication between schools, and launch certification as well as credit recognition projects between different schools. Schools should also maintain the platform carefully, improve its utilization rate and avoid the phenomenon of “high-tech and low use”. Rules and regulations related to classroom teaching should also be formulated.

Secondly, colleges and universities should regularly provide teachers with relevant training on information-based teaching ability and deep data analysis, so that teachers can gradually adapt to the classroom ecological reconstruction in the context of informationization, and find more valuable teaching resources from massive teaching data.

In addition, both teachers and students should have correct attitude towards the information-based teaching mode, and form good study habits on that basis. With the update of professional law knowledge and the increase of the number and utilization rate of online courses, professional teachers must update curriculum resources; administrative teachers should further reform and upgrade the teaching system; students should use the network to establish learning community, and realize the secondary dissemination and application of professional knowledge from that process. All these means can optimize the ecological environment of the classroom teaching of law majors.

4.3 Reshaping the Ecological Classroom Communication and Creating a Interactive Dialogue Mechanism

In order to stimulate classroom communication and further enhance the vitality of classroom interaction, we must reshape the interactive dialogue mechanism of classroom ecology. First of all, we need to ensure the rationality of the internal nutrition structure of the classroom ecology to promote the flow of information. Teachers have triple identities of the producer, the consumer and the decomposer of nutrition in the ecosystem; they reconstruct and sort external knowledge, digest and transform external knowledge into their own knowledge, and transmits it to students through the classroom environment. Under current environment, the training goal of law professionals in colleges and universities is to cultivate a number of lawyers and legal workers in the legal field; these students should become high-quality talents integrating theory, practice and work. Taking this as the key point, teachers are the leader of the goal and the most important factor in the classroom ecological environment. Excellent information teaching ability is the premise. Except for daily education activities, the most important thing for teachers is to effectively integrate massive teaching resources as well as cloud platforms of different types and levels, innovate and reform teaching methods, cooperate in groups, and help students better screen high-quality information, resources and data. They can reproduce the logical thinking mode and learning methods of students from famous schools. Methods like flipped classroom and hybrid teaching can be used. Through the detailed and targeted task list, teachers can help students clarify learning ideas; through the way of learning with tasks, theory, practice and positions can be highly integrated.

Secondly, students need to absorb and digest knowledge and feed back to teachers. To make such energy information flow smoothly in the nutrition structure, good classroom interaction is needed. Building a learning friendly digital teaching platform can greatly improve the utilization efficiency of learning resources among teachers and students; the frequent daily communication is also conducive to stimulating students' enthusiasm in mutual learning and can construct an equal and vigorous learning atmosphere.

5. Summary

Under the perspective of information technology, the reconstruction of law classroom ecology should make full use of the leading role of modern teaching technology in the classroom ecology, correctly understand the reasonable niche of each subject in the classroom ecological environment, fully mobilize classroom interaction to optimize the classroom structure, and find a good way of classroom ecological reconstruction, so as to ultimately serve the education and teaching mode reform in colleges and universities.

Acknowledgement

This paper is the stage achievement of the study, *Construction of the Double Helix Mode of Innovation and Entrepreneurship Education from the Perspective of Co-Creation of Teachers and Students*, which is supported by the Foundation of the Ministry of Education for Education Projects on University-industry Collaboration in 2019 (the Second Batch). It is the outcome of the study, *Research on the Innovation of Education and Teaching Modes in Colleges and Universities of Nanchong under the Context of Informationization,* which is supported by the Foundation for Social Science Research Projects of the "13th Five Year" Plan of Nanchong in 2018 (Grant NO. NC2018B123). It is also the outcome of the study, *Teaching Reform of Basic Courses for Economics and Management Majors in Colleges and Universities from the Perspective of Cultivating "Application-Oriented Talents": Taking the Construction of MOOC for the Economic Law Course as the Example,* which is supported by the Foundation for School Level Quality Engineering Projects of Southwest Jiaotong University Hope College in 2018 (Grant NO.2018026).

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