

On Teaching Reforms Toward Coupling of Teaching and Research Based on Blended Teaching

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Abstract: This paper discusses the construction path of the teaching content system that organically couples teaching and research in the teaching of Development Economics, via four aspects: teaching content, research thinking, research methods and research results. It analyzes the mutual promotion effect of mixed teaching and teaching characterized by the coupling of teaching and research under the goal of innovation ability training, and explains the interactive mechanism in the online and offline teaching process and the evaluation mechanism of learning effects. Finally, a concrete teaching reform implementation plan is provided.

Keywords: blended teaching; teaching reform; coupling of teaching and research

1. Introduction

In recent years, MOOCs based on Internet platforms have been widely applied as a tool for online teaching and learning. How to effectively enhance the quality of traditional classroom teaching by the MOOCs platform, and how to effectively promote the reform of traditional classroom teaching become a significant topic. In this process, there come two questions: (1) how the construction of professional curriculum resources can be carried out? (2) how the online and offline teaching interact organically?

At present, universities bear a double functions of creating new knowledge and cultivating students. Consequently, teaching and research should be integrated to achieve more effectiveness. And research is a natural complement to teaching [1]. On the other hand, teaching is also a fundamental driving forces of research. However, teaching is to some extent separated from research due to several factors. As a consequence, the coupling of teaching and research has been integrated for teaching reform in higher education. As Balkin and Mello (2012) proposes, teaching and research activities of faculty within business schools can hold a synergistic relationship [2]. With the development of open online courses, the online teaching has caught much more attention and been introduced to offline class. The principles and roads for the implementation of hybrid of online courses and offline courses have been widely discussed [3-7].

Development Economics is a professional course for economics majors. As a new discipline derived from the cross-disciplinary of microeconomics, macroeconomics, industrial economics, etc., the course is highly complicated, which subjects to the frontier characteristics. It hence requires students to analyze the frontiers and real problems of the subject, just like the way economists do. However, in teaching practice, the teaching effect normally cannot reach the expected one, and the students' awareness of active participation in the classroom is not very strong. These lead to the low quality of teaching content itself. For this reason, the full coupling of teaching and research is regarded as an important way to improve the level of curriculum construction and to cultivate students' innovative abilities. Taking the course of Development Economics as an example, this paper conducts a comprehensive exploration and research on the mechanism design of the economic course teaching reform.

2. Two Problems in Teaching

Low quality of teaching content is a basic problem. The teaching content of the course does not reflect the latest research results of the subject and latest phenomena in practice. Excessive reliance on traditional textbook in teaching leads to the frustration of students' interest in learning. Some teachers believe that undergraduate teaching should safely teach uncontroversial professional knowledge. Due to the probable controversies, the frontier contents are not appropriate to be introduced into the classroom teaching. There are also many teachers attempting to transform researches into teaching content. However, they do not fully understand the way how to transform. The teaching contents seldom require students to use economic analysis methods to analyze. What's more, theoretical contents to be understood along the logic of scientific development are also relatively scarce. Students are accustomed to accepting economic theories passively, because of constraints behind theories, causing the problem of the inability to develop critical thinking. Without studying the original classics or mastering relatively modern economic analyzing tools, students cannot fully stimulate potential, which leads to the low willingness to learn.

The second problem is that the curriculum teaching mode is relatively traditional. The course time is generally 2 hours each week. Constrained by the limited hours, teachers prefer traditional teaching mode, since they do not have enough time to adopt interactive teaching such as discussion and communication. The functions of classroom teaching are not decomposed according to their characteristic differences. Teachers perform all the functions, and the implementation places of them are in the classroom, and the completion time of these functions is limited to 45 minutes in the classroom, which to some extent restricts choices of teaching mode. For professional courses, the research-based teaching model in line with the coupling of teaching and research requires a large number of face-to-face communication and interaction between teachers and students, which also needs sufficient time and space for thinking. Internet-based hybrid teaching can effectively solve this problem. However, it is difficult to interact effectively through the online and offline teaching process, which means that it may not be able to achieve good results. As a consequence, the exploration of making use of the advantages of the two teaching patterns to promote the research-based teaching of professional courses, has important demonstration values for the teaching reforms.

3. The Path and Mechanism of Solving Problems

The multi-dimensional coupling from both sides of "teaching" and "research" can effectively solve problems mentioned above to strengthen the training of students' innovation ability. From the perspective of the pedagogical research, it emphasizes the literature review-style research of every key knowledge point of the curriculum, and stresses the systematic disciplinary combing of the ins and outs of the knowledge system to improve the quality of teaching content, and to create curriculum content system embodied with research depth and interdisciplinary breadth. From the perspective of the research-based teaching, the teaching contents and methods are comprehensively improved along with the methodology, critical thinking, scientific logic and cutting-edge methods, and students can obtain comprehensive growth of knowledge, ability, thinking and other literacy in the course of study. .

3.1 Creating a multi-level resource system for the cultivation of innovative ability

Innovation ability can be decomposed into several sub-dimensions: literature analysis, scientific logic, innovative thinking, method tools, and problem awareness. Synergization of multi-level course resource system, analysis of key knowledge points, exploration of cutting-edge methods, and task training will provide a systematic solution for the cultivation of students' innovative ability. Resource systems of multi-level literature, homework and discussion topics should also be used to provide students of different levels with diversified chances for self-study. Literature reading cultivates students' capabilities of literature analysis and combination. Analysis of key knowledge points can help

students to get through the knowledge points, and improve students' scientific thinking. Frontier method exploration, homework and teamwork task training are integrated to enhance students' ability to use development economic analysis tools to study practical problems.

The curriculum resource system is the key to teaching reform. The quality of resources determines the success or the failure of the entire classroom teaching reform. Through the coupling of teaching and research from four dimensions, we can construct a complete multi-level resource system. One is the teaching-oriented research. Each chapter should conduct an extensive pedagogical research based on multiple interdisciplinary subjects. For instance, in the chapter of Institutional Economy, the teacher will be required to read a large number of classics by Douglass C. North, who is the most famous institutional economist, and other new institutional economics literature, and then provides corresponding cases, discussion topics, etc. In the chapter on economic growth, the total factor productivity is measured from the Solow model, the transcending natural logarithm method, the DEA method, and the method based on Directional distance DEA Method. The teacher should also provide a series of relevant topics, so that students can carry on systematic learning. The second is the research-based teaching. Starting from the four aspects of methodology, critical thinking, scientific logic, and cutting-edge methods, systematic design is carried out along with the links of teaching content, research-based thinking penetration, theme debate, classic reading, research-based assignments and case studies.

3.2 Exploring the co-promoting mechanism of two teaching methods, "blended teaching" and "coupling of teaching and research"

Teaching based on coupling of teaching & research and mixed teaching are two specific popular teaching methods in teaching practice. Teaching based on coupling of teaching has been discussed for a long time. However, under the traditional teaching mode and time constraints, academic recognition constraints, evaluation mechanism constraints, etc., it is difficult to implement in depth. Furthermore, the effect is often compromised. Blended teaching emerges in recent years with the development of MOOCs, which is accepted by teachers. It is suitable for various types of courses and it is of great value for enhancing students' learning participation. The mixed teaching mode can promote the organic coupling of teaching and research, and its per se also becomes more valuable by realizing the teaching paradigm characterized by coupling of teaching and research.

Using hybrid teaching as a technical tool, taking advantage of the cross-temporal communication advantages of the Internet, and the platform's supervision and learning record convenience, the implementation cost of teaching mode towards the coupling of teaching and research can be greatly saved, so that the traditional teaching method will be revived from the relatively tedious teaching. The mutual promotion mechanism of

the two teaching modes can be realized through three aspects. The first is a research back-feeding teaching mechanism on the basis of the hybrid teaching mode. The scientific research fruits such as scientific research thinking, scientific research issues, and scientific research methods should be transformed in a timely manner into teaching materials, and then they can provide high-quality teaching content and design for offline classrooms, and provide online cases, multi-level discussion topics, literature materials, etc. Students have access to choose the contents of corresponding difficulty to study. As a result, they can have a targeted pre-class preview and after-class review with a high degree of freedom. The second is a teaching-driven scientific research mechanism in accordance with the hybrid teaching mode. Online and offline interactions bring greater pressure, driving teachers to prepare lessons like completing research tasks. For the explanation of knowledge points, key and difficult points, they are also required to find the roots from the most classic economic literature and provide most accurate explanation and interpretation of theories. For the study of some specific topics, learning guides might also be compiled to lead students to read cutting-edge literature systematically by themselves, which not only saves students' exploration costs, but also enhances students' interest in learning. Conversely, the teaching process can also further stimulate teachers' research inspiration. The third is the collaborative mechanism of teaching and research based on the hybrid model. Through online and offline capacity building, problem awareness cultivation, and research thinking cultivation, students are guided to actively participate in competitions and research projects.

3.3 Creating a three-dimensional teaching methods

Online platform provides students with multi-level resources for relatively free independent learning including preview before class and review after class. No matter before or after class, students can interact with teachers via the online platform to solve the problem of insufficient guidance time and insufficient guidance for students in traditional teaching mode.

In offline teaching, teachers will have enough time to tell the story about the development and evolution of related theories thoroughly based on scientific logic. In terms of interactive teaching, three types of teaching design are mainly carried out: the first is a small group discussion, which guides students to conduct group discussions and exchanges, and to conduct class discussions around small discussion topics designed by teachers. The second is a thematic debate. Two thematic debates are set up in one semester, allowing students to be divided into two groups to collect information, to discuss and determine the debate strategy. Through participating in debates, students can fully experience the process of constructing the overall knowledge of development economics. The third is a task homework. This type of homework allows students to carry out research-based learning, to combine policies and data, to use development economics analysis methods to analyze

actual economic issues, and to complete small papers or survey reports.

3.4 Establishing the process-oriented learning evaluation mechanism

To form a complete online record and evaluation of daily results is the first step. According to the learning process: watching videos, completing quizzes, online examinations, participating in online discussions, etc., students' usual performance is evaluated. Online results will weight higher to stimulate students to carry out online learning actively. Online performance evaluation can be divided into two parts: an objective part and a subjective part. The objective score is directly derived from the system, and the subjective score is evaluated online by teachers.

Establish a complete offline performance evaluation method is the second step. First, process evaluation will be highlighted to ensure the learning effect through a high-quality learning process. Second, integrated individual evaluation and team evaluation will be used to strengthen students' awareness of team collaboration. In terms of team evaluation, teacher evaluation, team mutual evaluation and member mutual evaluation are unified organically. Third, knowledge evaluation and ability evaluation will also be organically integrated to promote comprehensive and diversified development of students.

4. Constructing a New Road Map for Teaching Reform

Based on the teaching concept of constructivism, online teaching and offline teaching are systematically designed from the four dimensions of knowledge, ability, quality, and emotion, with the cultivation of innovative ability as the core.

First, the online preparatory and post-class review of basic knowledge will be offered, and then tests for knowledge and discussions will also be prepared for students to learn freely. On the other hand, the teacher is required to issue the contents and give introductions regularly.

The offline research-oriented discussion and research-oriented tasks are emphasized to ensure the organic interaction between online and offline teaching and provide students with more learning opportunities. The teacher will comb the system of professional knowledge in more detail, and give introductions and guidance for the discussion and research tasks in class.

The online learning mode requires a strong "autonomy", but students tend to be lazy, resulting in a low completion rate of various online courses. By "task-driven" and "pressure transmission" for students, and "target-driven" and "effect transmission" for teachers, a two-way organic and benign interaction mechanism can be built. It mainly starts from two aspects. The first is to provide clear-pointed and abundant resources to provide students with a clear roadmap for online learning, including clarifying whether the use of learning resources is pre-class preparation or after-class consolidation, and

indicating the degree of difficulty of the resources to reduce the cost of choice in learning. The second is to strengthen the evaluation in the offline teaching process, which not only allows teachers to accurately understand the effects of students' online learning, but also drives students to carry out online learning independently. In offline classrooms, challenging questions and discussions should also be designed to further enhance students' initiative and awareness of online learning.

5. Conclusions

Taking Development Economics as an example, this paper discusses the construction of teaching content system towards the coupling of teaching and research based on blended teaching from the four dimensions of teaching content, research thinking, research methods and research results. This paper further analyzes the organic combination mode of online and offline teaching. Online teaching serves offline teaching through task and goal driving, and offline teaching in turn improves the efficiency of online teaching by pressure transmission and effect transmission. Through the organic combination of online and offline hybrid teaching mode, it can overcome the insufficient class time of pure offline teaching mode and the inability to allow students to participate effectively. And it can also overcome the weakness of the single online teaching. The new mode will help students complete the ability building in the course of economics, and in turn help them develop good professional qualities. The conclusions can also be reference for teaching reforms of other humanities and social sciences curriculum, which will promote relevant courses to expand the boundaries of curriculum teaching

through the Internet platform, and achieve the goal of improving students' professional quality and innovation ability.

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