
Exploration and Practice of Blended Learning Reform of Project Management Course Based on “Rain Classroom”

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Abstract: As the primary professional course of undergraduate business administration, Project Management has the characteristics of solid comprehensiveness of theories and broad application of knowledge. Suppose only a traditional offline onsite teaching method is adopted. In that case, students often find the content abstract and challenging to understand, making the classroom atmosphere dull. It is also hard to mobilize students' learning initiative and sense of participation. Based on the teaching practice of the Project Management Course in recent 20 years, this paper explores the online and offline Blended learning mode via deepening teaching method reform. It is to make full use of internet teaching platforms and high-quality online resources to realize the synergies of online and offline teaching. It enhances the primary battlefield role of onsite teaching in imparting knowledge while enabling students to exploit online teaching resources to complete autonomous learning before class, case analysis in class, and expansion and improvement after class. In addition, the Blended learning mode enlivens the classroom atmosphere. It improves students' ability to apply knowledge and critical thinking to solve practical problems of Project Management through the interactions between teachers and students and interactions among students.

Keywords: Project Management, Online and Offline, Blended Learning, Curriculum Reform, Rain Classroom

1. Introduction

In the New Era Undergraduate Education Teaching Conference held in June 2018, "replacing Tedious Courses with Gold Courses" was proposed for higher education curriculum reform. It transforms the meaningless "Tedious Courses" to "Gold Courses" that have depth and academic challenge in teaching practice. This initiative was then officially written in "The Notice on The Implementation of The Spirit of The National Work Conference for Undergraduate Education in Colleges and Universities in the New Era." The essence of "Gold Courses" is to build a first-class curriculum, which can be summarized as improving students' ability to solve complex problems and high-level critical thinking. The course keeps teaching content cutting-edge and advancing with time, enhancing the investigative and innovative teaching method, increasing the interaction between teachers and students in the teaching process, and elevating the difficulty and challenge level for the curriculum. In October 2019, "The Implementation Opinions

on The Construction of First-class Undergraduate Courses" issued by the Ministry of Education defined the "double 10,000 plan", that is, to complete about 10,000 national and 10,000 provincial first-class undergraduate courses, which are categorized in 5 subjects during three years. In December 2020, the Ministry of Education launched the first batch of the national first-class undergraduate curriculum in 5,118 courses, including 1,875 online, 1,463 offline, 868 online and offline Blended, 728 virtual simulation experiment teaching, and 184 first-class social practice. In order to complete the 6,000 courses goal, the construction of online and offline Blended first-class courses has more development space and is the mainstream trend of the first-class undergraduate course construction in the next two years [1].

In the current classroom teaching, college teachers face monotonous teaching modes, outdated teaching methods, poor interaction between teachers and students, students' weariness of learning, and others. Hence, it is of great significance to build a new liberal art education in the internet era via utilizing internet technology and high-quality online resources to promote curriculum reform and improve

college education's quality and effect. Based on the teaching practice of the Project Management Course for nearly 20 years, this paper explores the online and offline Blended teaching mode. It is trying to fully use the internet teaching platform and high-quality online resources to realize the synergies of online and offline teaching. Enhances the primary battlefield role of onsite teaching in imparting knowledge while enabling students to exploit online teaching resources to complete autonomous learning before class, case analysis in class, and expansion and improvement after class. In addition, the Blended teaching mode enlivens the classroom atmosphere. It improves students' ability to apply knowledge and critical thinking to solve practical problems of Project Management through the interactions between teachers and students and interactions among students.

2. Development and Application of Blended Learning

Blended learning refers to appropriate digital teaching tools based on MOOC, Small Private Online Courses (SPOC), and other online courses. The purpose is to transform the curriculum combined with the actual situation of specific universities, to implement students self-studying with 20% - 50% of the teaching time - the synergy among face-to-face teaching, "Flipped Classroom" (students take teacher's turn to self-teach) and Blended teaching in order to forge "Gold Courses" [2].

Blended learning is a new teaching mode integrating the advantages of traditional learning methods and network learning. It can play the leading role of teachers in guiding, enlightening, and monitoring the teaching process and give full play to students' initiative, enthusiasm, and creativity as the main body of the learning process. Blended learning creates a highly participatory and personalized learning experience for students with the help of Internet technology [3]. Regarding the purpose of Blended learning, there have two options. One opinion is starting from practical difficulties, views that replacing online learning with traditional classroom teaching can effectively solve these difficulties, such as a large number of students in offline classrooms and excessive teaching contents with limited class hours [4].

On the other hand, with the deepening of the integration of internet technologies and teaching, the view is that Blended learning can improve students' interests in self-learning and provide a personalized learning experience. Hence elevate teaching quality via teachers' ingenious design of the combination of online and offline teaching and the utilization of internet platforms and high-quality teaching resources to creatively reconstruct the teaching mode.

After clarifying the concept and purpose of Blended learning, how to improve the teaching effect and achieve the expected goal has become the focus of college education. From the existing teaching practice, researchers' analysis of Blended learning practice is mainly built upon three levels:

readiness, intensity, and Impact. Readiness level refers to the preparation condition of Blended learning, including the preparation of teaching institutions, teachers, and students in attitude and ability. Intensity level refers to the practical application level of Blended learning, that is, the specific implementation of it. The Impact level is the effect and result of Blended learning [5]. Nowadays, the research focuses on the Intensity level, such as online teaching via WeChat, Nailing, Tencent Conference, Rain Classroom, Flipped Classroom on MOOC, SPOC, and other online teaching platforms. The results of practical research show that Blended learning is better than traditional face-to-face teaching classrooms, which draws the wide attention of college teachers [6].

3. The Practice of Blended Learning Reform of Project Management Course Based on "Rain Classroom"

3.1. Characteristics of Project Management Course and Thinking on Teaching Reform

Project management is an emerging subject developed in recent decades. It is an essential part of management subject and a professional backbone course for management majors in domestic colleges and universities. Project management is also a comprehensive and practical professional course, which integrates management knowledge and project knowledge, such as engineering management of engineering projects, computer and software science knowledge of information projects, and project management expertise. Therefore, students must have foundations in management, statistics, and financial management before learning the project management course. In addition, the course is also a challenge to the subject knowledge and life experience of the lecturer. Without solid subject knowledge and rich life experience, it is not easy to take project management.

With the rapid development of the Internet and the increasing progress of society, the ideas and concepts of project management have been widely accepted in various fields, and the methods and technologies of project management have been widely used in all industries. As a result, a higher teaching standard of project management courses is required. At present, the main problems in the teaching of project management courses are as follows: first, the teaching method is still monotonous. Project management is a comprehensive and highly practical course. Students often feel abstract, monotonous, and fatiguing if only the traditional classroom face-to-face teaching method is used; secondly, project management cases, especially domestic cases suitable for local undergraduate teaching, are inadequate. During the recent 20 years of teaching project management courses, our team members have tried case study methods intending to enhance students' understanding of the key and difficult points of the course. However, most of the existing cases are uncommon and hard to be connected

with students' learning and life experience, so the interaction and effect of case analysis are not ideal.

Starting from the above pain points in the teaching of project management course, our team has been exploring and practicing the teaching reform. The overall idea is to build an online and offline Blended first-class undergraduate course based on the "Golden Course." The course aims to meet morality and political requirements to fully use the online teaching platform and online high-quality teaching resources to build SPOC resources of the project management course for undergraduate education with significant characteristics. The purpose is to achieve an active classroom learning atmosphere, promote students' participation level, and improve teaching effect via illustrating widespread common sense in daily life and familiar classic works. According to the domestic situation and local characteristics, more updates, supplementary, and compiled project management cases were used to enrich case teaching and form a case-based, heuristic, and inquiry teaching system for the project management course.

3.2. Introduction to "Rain Classroom" Online Teaching Platform

Rain classroom is a free intelligent teaching platform developed by the Online Research Center of the Ministry of Education and jointly launched by the Online Education Office of Tsinghua University and YuKetang.com in June 2016. It embeds software in the daily teaching PPT slides through the Internet to connect teachers and students. By having the Rain Classroom, teachers can seamlessly connect with students through WeChat. Blended teaching through Rain Classroom can stimulate students' potential and learning interest, guide students to carry out autonomous learning, cooperative learning, inquiry learning, and increase classroom communication and interaction to improve classroom teaching.

Functions of Rain Classroom involve teaching activities before, in, and after class, integrating the three to form a step-by-step loop to endow the teaching process with a new interactive experience and realize the synergy of network class, teacher-student interaction, and face-to-face teaching. Teachers can also use Rain Classroom to deliver courseware integrated with MOOC video, voice, graphics, exercises, and other teaching resources to students' mobile phones and have their feedback promptly. In addition, Rain Classroom enables real-time question answering, voting, and bullet screen interaction to add more effective interaction to the traditional offline classroom teaching. Lastly, Rain Classroom can record students' learning status in the whole teaching process and provide comprehensive learning data support for both teachers and students [7].

3.3. Teaching Design for Project Management Course Based on "Rain Classroom"

3.3.1. Pre-class Design

Pre-class materials, including the content for preview,

crucial and difficult points for a specific lecture, background studies, and guiding questions for case studies, are designed based on the lectures' characteristics and the curriculum's requirement. Moreover, activities designed in each lecture are based on how students followed the overall teaching content and their progress. These materials can be in the format of PPT slides, pre-recorded online class, or MOOC video, sending to the portal at WeChat through "Rain Classroom." [4] In this way, students can access the materials on their mobile phones anytime before the class and better grasp the lecture content, especially on the key and difficult points. They are also encouraged to take down the points that are not easy to understand after reading and thinking through the pre-class materials and bring the questions to the classroom. In the meantime, teachers can also have visibility on students' preview progress through "Rain Classroom" and adjust the lecture design accordingly based on the statistics. In this approach, the interest in the curriculum is certainly improved, and students get to learn and study proactively.

3.3.2. In-class Design

According to the characteristics of students, classroom teaching always focuses on the concept of "student-centered, output-oriented and continuous improvement." [8] It carries out different classroom teaching designs for the teaching contents of different chapters. The key is to utilize the content of popular life common sense, classic works, and political education embedded in curriculum ideologies throughout the classroom. The purpose of teaching is to activate the learning atmosphere and enhance students' participation in the class so that the learning enthusiasm of students and the quality of classroom teaching can be improved. Firstly, the key and difficult points of the learning content and the PPT slides where students marked as "do not understand" during previewing in Rain Classroom will be synchronized and discussed in the face-to-face class. These points will be lectured in a more heuristic and question-based way. The illustration will closely combine with the reality of ordinary life, aiming to make the abstract project management knowledge, technology, and methods concrete and vivid. For example, when teaching the chapter "Project Organization and Team," the story of "A Journey to the West" is used to compare the project organization to a stage and the team members to actors. In order to achieve the project objectives, the project manager must "set up a stage" to select the organizational structure of the project, and "sing a good play" is to allocate jobs and confirm responsibilities. Secondly, to apply Flipped Classroom in a case analysis of each class. The case materials that need to be analyzed and discussed will be updated to Rain Classroom 2 days before the class. The students can familiarize the case backgrounds and the questions to be further discussed in advance. During the class, teachers teach the key and difficult points first. Students take one class hour to analyze and discuss the case by using the bullet screen and contribution functions of the Rain Classroom to fully display their views and interact with teachers and other students. In the end, teachers summarize

and give the key points of the analysis for each case problem. For instance, when the chapter "Project Life Cycle and Progress" were taught during the spring semester of 2020, it coincided with the outbreak of the COVID-19 nationwide, and the face-to-face onsite teaching was entirely shifted to online teaching. Our teaching team used the case "the construction of Huoshenshan hospital, the race between epidemic and China's speed" to consolidate the knowledge points of the project life cycle. It also makes students experience the superiority of socialism when faced public health crisis and the Chinese traditional virtues that "one in trouble, assistance comes from all quarters" to integrate the knowledge imparting and the political education embedded in curriculum ideology.

3.3.3. After-class Design

After class, teachers use Rain Classroom to distribute review materials expanding documents to students to consolidate knowledge, assign exercises and tests to check students' learning effects, and discuss hotly debated topics. Take the learning of chapter "Project Organization and Team" as an example. A discussion on "what kind of team organization is efficient based on your life and learning experience" was held in the discussion area of Rain Classroom. After teaching the chapter "Time Management for Project," a topic discussion of "please talk about your understanding of time management in combination with your university life and learning experience" is assigned. Students' understanding of project management is consolidated and deepened through these interactive discussions between teachers and students. At the same time, the practical application ability and critical thinking of project management are also promoted.

4. Characteristics and Innovation of Blended Learning Reform of Project Management Course

The online and offline Blended learning reform of project management course closely focuses on cultivating students with morality, following the concept of student-centered, result-oriented and continuous improvement to gradually form the distinctive characteristics of the course in teaching reform for more than ten years.

4.1. "Trinity" of Teaching Method System

According to the syllabus and teaching plan requirements, the project management course adopts the "Trinity" teaching method, which combines face-to-face classroom teaching, case analysis discussion, and students' comprehensive case design and report. Firstly, to make full use of the face-to-face classroom teaching as the main battlefield to imparting key and difficult knowledge points in a heuristic and problem-based way [9]. Secondly, the detailed case study analysis and discussion implementation include taking a dedicated case-study class (three class hours per week, one class hour each).

That is to discuss and analyze real cases closely related to the knowledge points of a specific curriculum. The interaction and communication in the class have intensified both between students and students and between students and teachers. As students are familiarized with the cases, prepared with some pre-thinking and questions in the pre-class stage; students can either "raise hands" to speak out, send "bullet comments," or leave "long comments" online to fully express their ideas and views. There are no boundaries to the discussion on the case study; students can speak freely. Teachers will give positive feedback and reward any ideas and views that are reasonable and constructive throughout the discussion, and provides summary comments and reference points to answer the pre-designed questions on cases.

4.2. Complementation of Classroom Teaching Practice and Teaching Reform Research

During the teaching course of "project management" for nearly 20 years, through continuous exploring of effective teaching methods and carrying out teaching reform and textbook construction, the team has achieved some results on the teaching reform. In 2013, a study was carried out on the teaching reform on curriculum and teaching paradigm. The textbook "Project Management" was written and contributed and compiled by the study group published by Higher Education Press in 2014. Refer to the seven years of sales performance, the textbook has been well received and delivered to the classroom by many local universities where the "Project Management" course is offered at their enterprise training programs. The second edition of the textbook was revised and re-issued by Higher Education Press in July 2021.

The textbook uses the knowledge framework promulgated by the Project Management Association (6th edition) as a directive, systematically illustrating the project management's basic knowledge, techniques, methods, procedures, and operations standards. The book consists of eleven chapters and several syntheses of cases, and the content covers ten project management knowledge frameworks and five project management groups. The distinctive feature of the textbook lies in the integration of its knowledge and readability. While fully embodying the systematic and logical nature of knowledge, the textbook uses many short stories, quick tips, summaries, and the cases embedded in each chapter. The purpose is to make it easy to understand for students to read and summarize the difficulties and key points. The textbook also uses a straightforward approach to explain the systematic principle of all relevant knowledge in the Project Management domain. The course's teaching form, online case studies, and assignments are inspired and complemented by all editions of the textbook.

4.3. Reform and Innovation of Curriculum Blended

The innovations of teaching reform for the Project Management course are: First, constructing a trinity teaching

system combined with case teaching, heuristic, and inquiry teaching. It is taking the existing case teaching as the backbone, exploring the heuristic teaching style via online and offline Blended learning, to increase the interaction between teachers and students during the case analysis discussion in the classroom and to enable students to learn project management knowledge through exciting stories and real-life experience in a vibrant learning atmosphere in the classroom. Second, composing rich case materials in the new version of Project Management textbooks replaces many obscure and difficult to use project cases and supports this course's case teaching that suits the local university's education. Third, creating a performance evaluation mode emphasizing the learning process. The Project Management course uses a 4+3+3 model as the performance evaluation system. The overall result consists of 40% peacetime examination + 30% final examination + 30% case design and report. Peacetime examination includes 15% attendance, 15% online and offline participation, and 10% in-class tests. Under such a proportion setting, students' learning attitude, participation in classroom discussion and mastery of knowledge system can be better reflected. As for the case design and report, it is regarded as practical assessment and process evaluation. By completing group tasks, students can cultivate their sense of teamwork, communication, coordination, and comprehensive application of Project Management [10].

5. Conclusion

Online and offline Blended learning is a new education concept. It is also new teaching reform and practice mode to cope with the changes of current students in the internet era when personalization is respected. The practice of Blended learning reform in project management courses proves that applying "online teaching resources + face-to-face classroom teaching + online case analysis and discussion" can improve the content, method, and effect. Meanwhile, Blended teaching can also promote students' learning enthusiasm, understanding and applying knowledge, and proactivity in critical thinking. Therefore, we believe the online and offline Blended teaching mode reform is worthy of being extensively applied.

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