

Research and Practice of Mixed Teaching Model Based on “Internet +”

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Abstract—The construction of high - level "double - class" universities must be based on the cultivation of applied talents. In response to the demand of cultivating talents in colleges and universities, the research status and the dynamic of mixed teaching at home are summarized based on the application of applied talents. Taking the course of "Engineering Drawing" as an example and based on the online education comprehensive platform developed by Tsinghua Education online, this paper explores the teaching reform of engineering-driven course under information teaching mode. From the aspects of the construction of curriculum teaching environment, this paper also proposes to design curriculum teaching activities and reform curriculum teaching evaluation methods. Practice has proved that the mixed teaching model in the "engineering drawing" has achieved good results in the future trend of educational informatization, and has a certain promotion value.

Keywords—Colleges and universities; Applied talents; Informatization; Mixed teaching; Engineering drawing

I. INTRODUCTION

To promote the cultivation of applied talents in colleges and universities, shandong provincial party committee general office of the general office of the provincial government issued <The provincial party committee general office of the general office of the provincial government of advancing the reform of higher education comprehensive opinions> in 2016 (done by lu [2016] no. 19). At the same time, in shandong province education department decided to start high-level application which oriented for university construction. And it also introduces the <About promoting the construction of high level applied university issued by the implementation of notice> (lu teach high word [2016] no. 8). The group of "industrial engineering major of our college, including industrial engineering, safety engineering, management of science and engineering, project management, engineering cost, property management and information management of these seven professionals, are approved by the shandong province high level applied key project construction (group). Provincial high level applied key project construction (group)'s approving, is our school's good development opportunity in the construction of "Much starker choices-and graver consequences-in" professional construction. Next, the school will be in accordance with the requirements of the provincial education department and school, making applied professional construction plan, strictly implement the responsibility system.

We will also earnestly further strengthen the construction of the relevant professional group of innovative talents training mode, finish professional (group) construction's goal and mission, improve industrial engineering applied talents training quality professional ability and professional (group) service society. Hybrid teaching reform is an important task for the construction of applied professional, at present, the building of our university developed by tsinghua university education online optimal for class "online education integrated platform""shandong college hybrid teaching platform for industry and commerce". Combining the teaching project team project of shandong college of industry and commerce hybrid course "engineering cartography", and now it makes a literature review on the teaching of the hybrid at home and abroad, and it explores mixed teaching reform model which is based on hybrid teaching reform mode to cultivate applied talents.

II. THE CURRENT SITUATION AND RESEARCH OF HYBRID TEACHING MODE

A. The present situation and dynamic of hybrid teaching abroad

In foreign countries, the study of mixed learning began in the early 20th century and is now in the stage of combining learning theory exploration with teaching practice. The research focuses mainly on the basis of hybrid teaching theory, hybrid teaching application mode, mixed teaching environment and mixed teaching course design.

Hybrid teaching theory's basis: For the first time, "the white paper" education technology proposed Hybrid Learning in 2000. The most common expression in English is "Blended Learning", "Blending Learning", "Hybrid Learning", "Blended E - Learning", "Mixed - mode Instruction" [1]. Harvi Singh and Chris Reed (2001) evaluated the mixed learning model that mixed learning focused on the matching of teaching techniques and individual learning styles at the appropriate time [2]. Margaret Driscoll (2002) argued that blended learning is not only the mixture of various teaching techniques, teaching task type and teaching work, and it also is the mixture of all sorts of behaviorism, constructivism, cognitive science teaching theory and method of mixed [3].

Hybrid teaching mode: the Carol a. Twigg Dr based on PCR Program (the Program in Course Redesign, Course Redesign project) of the experimental results, summarizes the

five different blended learning mode [4] : add, replace, central market model, complete the online mode, the buffet. Purnima Valiathan of NIIT (national information research institute of India) puts forward three hybrid learning modes: skill driven model, attitude driven model, and capability driven model [5].

Hybrid teaching environment aspects: Teresa uses Moodle platform to practice in the physics class, he thinks that physical teaching platform is based on Moodle course tools, facilitate teachers publish course materials, organization learning activities, dynamic monitoring of students' learning, facilitate teachers and students to exchange information [6]. Romero uses data mining tools to analyze the learning process data of middle school students in Moodle platform and evaluated students' learning effects which is based on data analysis results [7].

Hybrid teaching curriculum design: Jared M.Carman believes hybrid curriculum is designed by real-time teaching case, since the pacing learning, collaborative learning, evaluation, performance of support materials and other five parts [8]. Josh Bersin believes that the design process of hybrid teaching course mainly includes four basic links, such as identifying and defining learning needs [9].

Domestic research on hybrid teaching effect evaluation, less PeiXiaoQin etc. Through the analysis of the basic concept, discusses hybrid teaching MOOC effect assessment, the problems of existing hybrid teaching effect evaluation system under the perspective of MOOC build think, for the future laid the foundation for the further application and popularization of hybrid teaching MOOC perspective hybrid teaching effect evaluation system research. The course system of human anatomy was reconstructed in the course of basic medical morphology teaching, and the formative assessment was carried out under the mixed teaching method. Discussion on the application of formative assessment under the mixed teaching of human anatomy. Li lanwen takes the "preschool children English teaching method" as an example, and discusses the process and application of the multi-teaching evaluation system of blended teaching. The construction and practice of multi-element teaching evaluation system based on hybrid learning. As an example of "Flash animation production" course, qian yuhua has built a multi-dimensional and multi-level evaluation system to comprehensively evaluate students' learning effects. Construction of teaching design and learning evaluation system based on hybrid learning -- taking "flash animation production" as an example. Wang xh building such as QQ group, blog, and baidu library network learning platform resources, probes into the network platform of hybrid teaching mode in physiology teaching, the application of and using the questionnaire survey to the effect was evaluated based on the network platform of hybrid application in physiology teaching modes and effect evaluation. Weiqi et al. took the course of "logistics science" as an example, using questionnaire survey and platform statistics to analyze and evaluate the implementation effect of hybrid teaching mode based on Blackboard platform. Xie Maosen building such as a cross between MOOC, SPOC and other online learning and traditional classroom "+" class teaching space between teaching mode, teaching evaluation mode of students learning process and to determine the space gauge. Study on the

evaluation of students' learning effectiveness under the hybrid teaching mode based on network learning space.

B. The present situation and dynamics of mixed teaching in China

At home, at present, the online teaching mode based on network has become a major means of university teaching reform in our country, including the ministry of education "five-year plan" key construction project of the high-quality goods resource sharing and video courses, which is introduced from abroad and micro lessons, SPOC (small private online course), MOOC (massive open online course). In 2015, the ministry of education issued "about strengthening the construction of institutions of higher learning online open courses application and management opinion" (high [2015] no. 3), accelerated the online open courses construction and platform construction. Meanwhile, in the general office of the state council on deepening the reform of creative education in universities implementation opinion "(countries do hair [2015] 36) file, explicitly pointed out that, universities should speed up innovation entrepreneurship education quality course informatization construction, launch a number of resources sharing for lessons, such as open courses online video session. He ke, a professor in the teaching of "hybrid" concept, introduced in 2002, expounds that the blended teaching is "the advantage of traditional ways of Learning and E - Learning combined with the advantages of both play to teachers' guide, inspire, monitoring the teaching process of leading role, and fully embody the students as the main body of Learning initiative, enthusiasm and creativity"[10-11].

In recent years, domestic scholars have focused on the practical application of "hybrid teaching", namely, "hybrid teaching" applied mode research and mixed teaching curriculum design. Xiong sujuan builds a new type of "online learning + traditional face-to-face classroom teaching" based on "flipped classroom". Construction and implementation of a new hybrid teaching mode based on "flipped classroom". Wu Kunbu through the analysis of the connotation and importance of blended learning, puts forward to construct higher vocational teaching of "leading learn + student + after school to promote learning" in 3 d interactive hybrid learning model. Development and application of higher vocational courses based on three-dimensional interactive hybrid learning. Zhang lina et al. constructed the hvac class group, and established a hybrid teaching mode based on micro-course, which was built and implemented based on the hybrid teaching mode of hvac courses in micro-course environment. Xi-liang Chen, "university computer basic course", for example from the teaching content reform, practice teaching reform, evaluation system construction and the teaching resources construction to construct the hybrid teaching mode. Yang Baican "TCM course", for example, Cao Xugong by "labor and social security law" course as an example, Shi Shugui etc in the college students' English reading ability, for example, ray crystal to "market investigation and study, for example", from the aspects such as teaching content, teaching method, examination system to build a hybrid teaching mode. Guo xinyi started from the characteristics of education of adults, and designed the teaching mode of mixed adult education, and put

forward the application strategy. On the basis of the constructive postmodern thought based on the process philosophy of huai he sea, feng shi gang gives constructive postmodern connotation to the mixed teaching and explores the mode of blended teaching. Constructive postmodernism orientation of hybrid teaching.

The main problems that need to be further studied are: the connotation and model of hybrid teaching are still to be perfected and refined. For hybrid from scholars both at home and abroad made related research, teaching content and mode of abroad focuses on the basic theory, and pay more attention to application, and throughout the domestic and foreign existing models, the model link or tend to focus on some of these links on curriculum design, some tend to focus on the online network learning design, and ignore the design of classroom teaching link; Some only highlight the design of network learning platform or learning resources, and neglect the organization and management of learning activities, students' evaluation and feedback, etc. Can be seen from the domestic scholars research, application research of hybrid teaching mode focuses on subjects such as computer science and medicine course, and the application in other disciplines is less, application scope is narrow, that is to say, at present hybrid teaching is not a perfect model for the implementation of all disciplines to reference to use, can put forward to promote complete and unified model.

C. The practice of mixed teaching curriculum reform

1) Information Teaching Environment Was Created

The information teaching environment of this course is constructed by using the online education comprehensive platform developed by tsinghua education online. In the teaching program to upload the rich resources of network electronic resources, including according to the knowledge of teaching courseware, curriculum instruction, electronic teaching plan, training materials, technical standards, the development of extracurricular eight columns. Answer in teaching activities column design: discussion, questionnaire,

teaching mailbox, teaching notes, research teaching, course assignments, online test, test paper library, seeding class unit and in-class advice of 10 columns, in the course construction, in order to strengthen the online communication with students constructed with answering discussion module homework appreciate module In order to cultivate application-oriented talents and strengthen practical teaching, we have built a practical training design and a competition examination module. In order to understand the students' autonomous learning situation, collect the student to the curriculum and teachers evaluation, help to adjust teaching content and teaching methods, build the echo wall modules; In order to monitor the students' overall self-learning status, they regularly publish relevant [online learning statistics] and [test/homework scores] to stimulate students' passion and motivation to learn. The design of the course network teaching platform is shown in figure 1. In the module, the course is divided into 16 teaching modules.

2) Teaching Activity Design

Teacher: build a network teaching module → release learning task list before class → collect student pre-course reading report online → online answering questions → review and assessment before class → class inspired, guided, task distribution, summarize and comment on to homework → collect students' learning summary report after class → read online and offline operation → online and offline unriddling to tracking guidance → build a knowledge network teaching module.

Student: check the learning task before class single → released online autonomous learning and doubtful points → online test before class → class discussion and interaction of thinking, discussion, collaboration, to complete the task, reporting, inductive → knowledge summary report → online job to check the problem feedback → waiting for the next knowledge learning task list before class.

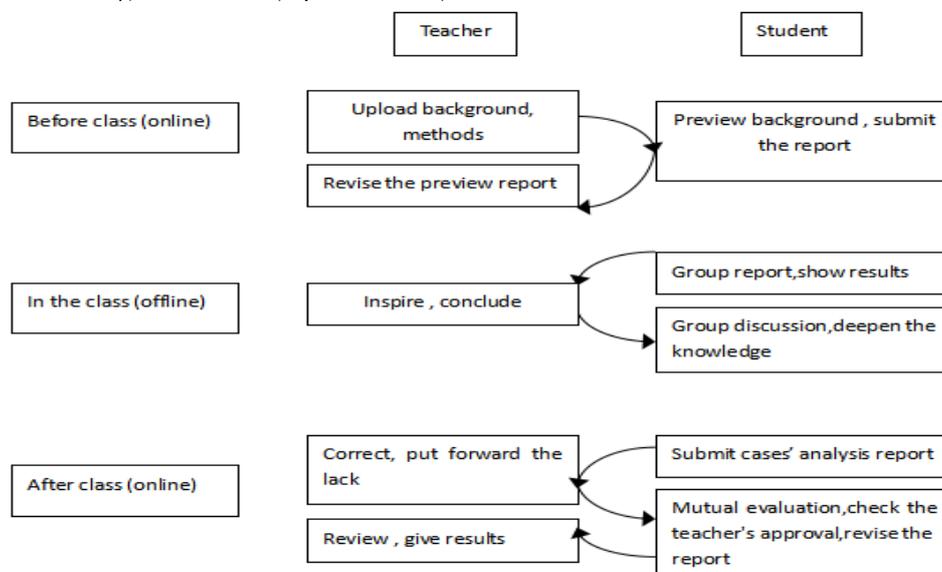


Fig. 1. Course teaching activity design

3) Reform Of Course Evaluation Method

The engineering draws teaching reform after two rounds of the hybrid mode, explores the "diversified and comprehensive appraisal method, pays attention to students' online and offline" autonomous learning and cooperative learning situation assessment, and its aim is to arise the enthusiasm of students' learning. The assessment consists of five modules: a. Students' attendance and classroom performance (5%); B. Self-learning situation (15%) : "online interaction" answering questions on the number of posts in the module, online learning duration, login frequency, etc.; C. Online and offline operations (20%) : "online test" 5% and "offline operation" (A3 manual drawing, 5% in CAD and 5% in problem sets); D. AD upper computer test (10%), (study CAD computer drawing module); E. final exam (50%), (study geometric drawing and drawing module). In addition, there is also a week of graphic training design (the results are calculated separately), mainly to examine the engineering design module.

III. IMPLEMENTATION EFFECT AND SUMMARY

In order to understand the influence's degree of the curriculum implementation hybridteaching for students and the teaching effect, and to adjust the teaching method in the process of curriculum implementation and after the course, we make several questionnaires. Questionnaire is mainly for satisfaction and hybrid teaching to improve the ability of autonomic learning with and without help, etc. Through the blended teaching mode, students can provide more opportunities for communication and cooperation, and it can also enhance their independent learning and cooperative learning. 90.91% of students believe that their autonomous learning ability are improved through blended teaching. Overall, from students' learning situation, the teaching improves the student's ability of autonomous learning, the hybrid teaching mode in the course of "engineering graphics" learning has achieved good results. In addition, during the teaching, through the students listen to the teacher, the supervision of the school, students' learning summary, WeChat public number and QQ group communication platform, timely feedback of teaching feedback, this course teaching has achieved very good results according to the results of the hybrid teaching reform.

IV. CONCLUSION

At present, scholars are still in the exploration stage for the mixed teaching mode in the informationization background from home and abroad, and the design and practice of all kinds of blended teaching models have accumulated valuable experience for the later generations. The main problems that need to be further studied are: hybrid teaching connotation and model and evaluation system are still to be perfected and refined. At present, there is not yet a perfect implementation model for hybrid teaching, which can be used in all disciplines, and it needs to be explored and practiced constantly. "Engineering drawing" course is an example, which is developed by tsinghua university education online optimal for

class "online education integrated platform""shandong business school network teaching platform" as the backing, from the course teaching plan, teaching content, course teaching system and teaching activity design has carried on the information-based teaching mode "engineering drawing" course teaching reform. The practice has proved that the hybrid teaching mode in the "engineering drawing" has achieved good effect. It will have a certain popularization value under the background of education informationization in the future.

ACKNOWLEDGMENT

This research was financially supported by Teaching Reform Project of Shandong Business School: A Study on Hybrid Teaching Model and Evaluation System Based on Application-oriented Talent Cultivation (Grant NO. 1168G201701) , 2016 "CAD Engineering Drawing" of the Project of Blended Teaching Course of Shandong Business School (Grant NO. 04021203) and Shandong Natural Science Foundation: Research on enterprise informatization introduction mode and enterprise value increment oriented to supply and demand network(Grant NO. ZR2012GM003).

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