Research on the Application of Blended Learning

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Abstract—**With the development of the information age, the combination of traditional face-to-face teaching and online learning is more widely used in college teaching. The organic integration of these two learning methods can not only help teachers guide, inspire and monitor students in the teaching process but also fully reflect the initiative, enthusiasm and creativity of students as the cognitive subject of the learning process. Blended learning can better help teachers to establish a student-centered, teacher-led teaching form and build a perfect teaching support system. It gives full play to the advantages of "online" and "offline" teaching, and expand teaching time and learning space to ensure the comprehensive improvement learning effect of students. Starting from the concept of blended learning and its teaching methods, this paper particularly explains the application of blended learning in the major by elaborating the establishment of curriculum standards and the construction of learning resources, as well as the design and implementation of curriculum and the evaluation system and summary of curriculum.**

Keywords—blended learning; face-to-face teaching; application

I. INTRODUCTION

Blended learning has been widely used by universities and educational institutions in recent years. The blended learning combines the advantages of traditional face-to-face teaching and online teaching to better serve students. This paper has explorations and practices on the educational concept, resource construction, curriculum implementation and curriculum evaluation of blended learning, and makes full use of the fragmentation time of students to carry out mixed teaching design, which has achieved good results.

II. THE EDUCATIONAL CONCEPT AND TEACHING METHODS OF BLENDED LEARNING

A. The Educational Concept of Blended Learning

The core concept of blended learning is focusing on student development, student learning, and learning outcomes. It uses the TOPCARES basic concept method to create students' value by promoting the comprehensive and coordinated development of students' knowledge, ability and competency; it also create social value through the students' contribution to society in the future. The TOPCARES integration talent training is concept with the educational characteristics of "application-oriented, production-teaching integration, innovation and entrepreneurship and

internationalization". The basic procedures in blended learning include the decomposition of graduation requirements, graduation requirements, professional TOPCARES indicators, courses, and projects target. It's also include the concordance of teaching objectives and expected learning effects of students, the design of assessment, teaching contents organization, teaching strategies selection, development and effective use of teaching resources, evaluation and continuous improvement. The basic idea of blended learning is: combining the advantages of traditional learning methods and networked learning, organically integrating face-to-face teaching and online learning modes, which can plays a leading role in guiding, inspiring and monitoring the teaching process. It is also necessary to fully reflect the initiative, enthusiasm and creativity of students as the cognitive subject of the learning process, so as to obtain the best learning effect.

B. Teaching Methods

Teaching methods should reflect the project-oriented principle and highlight students' practical ability as well as training students' personality, and guide students to conceive, design, implement, and operate and have real practice, training, and battle. The implementation of teaching organization should have a strong practical atmosphere, which is conducive to the achievement of the project's teaching objectives and stimulation of students' interest and initiative in learning and practice, promoting and supporting students' practice, combining teaching with project research and development, and working with studios to promote students. The professional ability and application ability are improved, so as to effectively achieve the project teaching objectives. Guiding by the learning output principles, the combination of online learning and face-to-face teaching has formed the perspective of learners, the students' learning experience, the interaction of the teaching process, and the design of "teaching" and "learning".

III. THE FORMULATION OF CURRICULUM STANDARDS AND THE CONSTRUCTION OF LEARNING RESOURCES

The formulation of curriculum standards is the most important part of the blended learning. Setting the competence index of the major and design the professional course standard according to the requirement of competence index based on the professional training objectives and the integrated education concept. At the same time, the teaching objectives of the curriculum are designed in combination

with professional requirements based on the learning output-oriented OBE education model. The purpose is to enable students to understand the framework and key points of the curriculum itself through the study of the curriculum. Students can combine "online" and "Offline" teaching resources and teaching content, complete the various learning parts of the course. In the process of building learning resources before class, teachers should make full use of the fragmentation time. The teaching video of micro-courses about solving the knowledge focus and difficulties is generally designed within five to ten minutes. Teachers should designed different micro-course contents for different levels students in the same grade, which contain the supplemented learning content and expanded learning resources. There are many open online learning platforms, such as WeChat and CCTalk. Teachers can use mobile phones to fill teaching resources on the platform according to their needs. Teachers should grasp several key links in the process of building resources before class: first part is the course introduction, the introduction of course content, learning methods and methods of study should be convenient and students can understand the course content and clearly define the learning objectives. The second part is the micro-course. It should pay attention to the knowledge focus and difficulties and was generally designed within five to ten minutes during students' fragmentation time in principle. It mainly helps students to prepare for pre-class and post-class consolidation, which is convenient for repeatedly watching. Teachers should also pay attention to the knowledge expansion and knowledge linkage, designing different learning content for students of different levels in the same grade. The video content should include the counseling part for students with weak foundations to repeatedly watch and improvement part for students with better foundations. At the same time, the content of the follow-up courses should be considered, and it is not allowed to completely separate or mix each professional course into one. The last part is the final course feedback; the students will have various problems during the learning process. After the students have feedback on the WeChat group, the course team interacts with the students in real time, timely helping students solve the problems beyond classroom.

IV. THE CURRICULUM DESIGN AND IMPLEMENTATION

The teaching content design should be scientific and advanced; and it should make full use of the competition-driven cooperation to realize systematic design, specialized transformation and instructional development. The curriculum design should consider the interlude and application of new theories, new technologies, new tools, new products, and new applications. It should timely update the curriculum resources, so that the curriculum resources can reflect the latest developments in the relevant subject areas and meet the requirements of students; In the design process of self-study, it is necessary to clearly define the requirements, highlight the key points and difficulties, and effectively support the project objectives and expected learning effects. The results-oriented project design method is adopted by the organically integration of face-to-face "offline" teaching and "online" teaching mode, and to

establish a student-centered, teacher-led teaching form; It should set up ability indicators to cultivate students and cultivate students' personal technical ability and comprehensive design ability according to the professional training program. It should make sure students to learn and understand professional learning processes and knowledge through the course. In addition, the business project model is adopted in the teaching content, and the business requirements and standards are used in the classroom. After the further combination of industry and education, students are required to evaluate each other after class. Cultivating innovation and thinking skills.

The organization of the teaching content and the teaching of the corresponding knowledge points are designed according to the links among "before-class", "in-class" and "after-class". The four aspects of the closed-loop system construction teaching strategy was evaluated from the following aspects: the learning objectives — the design process — the investigation results — the ability achieving. Establishing detailed "online" and "offline" capability evaluation criteria and forming the results-oriented model which is corresponding to the practice process through the design of teaching evaluation methods. It can realize the two-way improvement of teaching and learning, and finally realize the continuous improvement of teaching effect and constantly improve the quality of talent cultivation. It should grasp the construction of online micro-course design and course evaluation system. It should use the face-to-face "offline" teaching and networked "online" teaching mode for organic integration to control student learning. After the completion of teaching platform and learning resources, the teachers can design the teaching process according to the curriculum standards.

A. Before-class Preparation

The teacher will push the content of the course to students through WeChat group before each class, including the introduction of single course content, micro-class learning content and teaching materials. Students can online communicate with their teaching teams or classmates at any time by self-study courses before class. The teacher continuously updates and adjusts the teaching focus according to the learning results and questions rose by the students and provide a good foundation for subsequent face-to-face teaching.

B. Learning in the Class

The traditional face-to-face teaching has its own advantages; and the construction of learning platform and teaching resources is the enrichment and supplement of traditional classrooms. One of the important organizational links is emphasizing the project-oriented character and the cultivation of students' practical ability in class. Any learning methods, learning concepts, and learning ways are all aimed at better improving the learning effect and serving students, as well as solving the problem of better matching between the current major and social needs. How to enable students to meet industry standards and requirements after completing professional courses is the responsibility and mission of

colleges and universities and the purpose of blended learning. At present, the classroom is no longer based on book face-to-face teaching, but requires and guides students with industry requirements and standards, so that students can solve practical project problems and improve their abilities. Teachers can put forward clear tasks in the classroom. Students can complete tasks according to the content of pre-class study. Students can strengthen their interaction from teamwork in the process. Students can find problems, solve problems and find their own advantages and disadvantages during the task implementation. Through the interaction between group members, students can achieve a good teaching interaction effect and learn from each other. Students can also lead the classroom in the flipped classroom form. The flipped classroom form can enable students to better understand and master the professional knowledge ability while exercise students' expressive and communication skills. In short, any method and form that can improve learning enthusiasm and learning efficiency can be adopted during the class. Teachers should control the rhythm and progress of the class.

C. After-class Feedback

After course study, the questions that students have not solved before or during the class can continue communicate in WeChat. Teachers can give specific guide to solve problems based on specific issues. Teachers can record common problems to adjust the pre-class teaching resources and the teaching form. At the same time, teachers can assign assignments on WeChat group, presenting advantages and disadvantages, and sharing the excellent work. In the after-class feedback process, teachers can add assistant teaching links to the WeChat group. The teaching assistants are generally composed of senior students whose professional knowledge is well mastered; and it is convenient for students to communicate and interact well.

V. THE COURSE EVALUATION SYSTEM AND COURSE SUMMARY

The total score of the course consists of two major parts: 50% for formative assessment and 50% for final assessment. The formative assessment and the final assessment are different aspects in the course assessment. The purpose of the formative assessment is to promote the achievement of the learning effect. The purpose of the final assessment is to verify the achievement of the learning effect. Course assessment and evaluation include at least three aspects: assessment content, assessment purpose and evaluation criteria. It's necessary to reasonably set the composition and proportion of each assessment and highlight the practical results. The knowledge group and ability should be tested and the achievement of teaching effect and the mastery of key and difficult points of each assessment should be clarified. The course assessment method should conform to the type and characteristic of the assessment content. The assessment methods and standards should draw on the requirements of the industry enterprises for real projects, so that the curriculum assessment can objectively and fairly evaluate the students' academic performance; it can also fully

and effectively evaluate the students' achievement in the curriculum objectives.

A. The Curriculum Evaluation System

The formative assessment mainly examines the students' learning process, the scores on the online assessment, the theoretical study summary and the practice process assessment.

- Online assessment and assessment of students' self-study the total viewing time of the micro class meets the requirements.

- Through the theoretical study and summary to examine students' mastery of theoretical learning of what they have learned. 3. The practice process can assess the actual operational ability of students especially for many operational ability requirements of the professional, each link has set a specific evaluation standard.

B. Final Evaluation Results

The final assessment results are composed of three parts: the course project report, the computer test and the practice results. Firstly, the course project report, the course project report can assesses students' understanding of the course content. It requires students to create a report with clear description, a specific analysis, and an integrated summary. Secondly, the machine test focuses on assessing the actual operational ability of students within the specified time. Thirdly, the practical results can examine the students' ability to transform the results of the works and the ability to innovate. It requires their works transformed into results with a series of seriation and complexity. The design and production of the products are beautiful and excellent. The products are in line with the characteristics of carrying forward Chinese national culture and have certain innovation.

C. The Course Summary

With the introduction of blended learning in the classroom, the teaching content has been gradually adjusted and improved in the teaching during the past four years; the teaching methods and forms are enriched, the teaching evaluation system is refined, and the integrated model of the competition course is set. First, the design of the teaching team is clear, and the purpose of learning is also clear through the elaboration of the curriculum standards and the clarification of the purpose of the course. Students' understanding of the teaching model is also increasing year by year. With the micro-classification of self-study content before class, students' active learning is gradually increasing. From the results of the integration model of the competition course, the participation in the national A-class competition reached more than 90%. The award rate has increased year by year; the students and teachers have won the following awards: the first prize of the student group, the second prize and the third prize of the student group and the first prize of the teacher group. Second, the increase in basic knowledge testing and ability point testing has led a significant

improvement in students' practical ability and learning effects.

VI. CONCLUSION

The ultimate goal of the blended teaching model is to improve students' interest in learning and learning efficiency. No matter which form of teaching and learning is used, as long as it can improve students' learning effect, it is worth learning and introducing. At the same time, it also puts forward new requirements for teachers. Every aspect of the before, during and after class period must be carefully designed. The times have changed, and the way of teaching and learning is also updated. It is necessary to constantly explore and improve the teaching and learning methods to better enhance the teaching effect.

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