

Thoughts and practice on blended teaching in university courses——Taking interactive design course teaching as an example

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Abstract: This study aims to explore the application of blended teaching in interaction design courses and analyze its advantages and challenges in improving teaching effects and student learning experience. Through reasonable design and evaluation of online and offline teaching links, the study found that the hybrid teaching model can effectively combine rich online resources and highly interactive offline classes, significantly improving students' learning efficiency and knowledge application abilities. Research results show that using diversified evaluation methods and combining students' individual differences can comprehensively reflect learning outcomes and promote students' all-round development. The conclusion shows that the hybrid teaching model has significant promotion value in interaction design courses. Colleges and universities should strengthen teacher training and platform construction, and optimize teaching design and evaluation systems to achieve the best teaching results.

Keywords: blended teaching; interaction design; course teaching

1. Introduction

In recent years, with the rapid development of information technology and the continuous innovation of educational concepts, the hybrid teaching model has received widespread attention and application in college teaching. Blended Learning aims to optimize teaching resources and improve teaching effectiveness by combining traditional classroom teaching with online learning. Data shows that according to the 2020 China Education Informatization Development Report, more than 70% of colleges and universities have carried out hybrid teaching experiments to varying degrees, and 45% of them have adopted hybrid teaching as the mainstream teaching model^[1].

The "Education Informatization 2.0 Action Plan" released by the Ministry of Education in 2018 clearly states that it is necessary to comprehensively promote the in-depth integration of information technology and education and teaching, and promote educational reform and innovation. The policy emphasizes the important role of blended teaching in achieving individualized teaching, promoting educational equity, and improving educational quality. In addition, the "14th Five-Year Plan for Education Development" released in 2021 further proposes to accelerate the integration of information technology and education and teaching, actively explore the new model of "Internet + Education", and promote the modernization of education^[2].

In this context, interaction design courses, as a discipline that emphasizes the combination of theory and practice, urgently need to improve teaching effects through hybrid teaching models. Interaction design courses not only involve design theories and methods, but also require students to master design skills through a large number of practical activities. Traditional teaching models often fail to meet this demand, causing students to have difficulties in combining theory and practice. Therefore, exploring how to effectively carry out blended teaching in interaction design courses has important theoretical and practical significance. This article aims to analyze the current situation of the hybrid teaching model, explore its application practice in interaction design courses, and provide reference for curriculum reform in colleges and universities.

2. Analysis of the current situation of hybrid teaching model

With the popularity of blended teaching, the number of courses on the online MOOC platform has increased significantly, but the quality of students' online learning has also become increasingly prominent. The course completion rate on the Coursera platform is only 5%. This situation is mainly due to students' lack of learning pressure in MOOC learning, their relatively relaxed learning attitude, and it is difficult for teachers to grasp students' learning dynamics in a timely manner^[3]. In the context of the current widespread application of hybrid teaching models, colleges and universities should explore and implement appropriate teaching models based on their own school-running characteristics and development directions and from reality to improve teaching effects and student learning quality.

The popularity of blended teaching models has increased significantly in higher education around the world. According to a 2019 report from the U.S. Department of Education, more than 70% of colleges and universities have adopted a hybrid teaching model, with 40% of courses fully adopting this approach. Blended teaching combines the advantages of traditional classroom teaching and online learning to provide a flexible and resource-rich teaching method. Teachers can provide a variety of teaching resources such as videos, courseware, and online tests through online platforms, and students can learn according to their personal learning pace. This model not only improves students' learning autonomy, but also allows teachers to understand students' learning progress and difficulties through data analysis, and then provide targeted tutoring. The "China Education Informatization Development Report" shows that more than 60% of students believe that blended teaching has improved their learning interest and effectiveness. However, despite the significant growth in the number of applications of blended teaching, there are still some problems that need to be solved in terms of teaching effectiveness and student satisfaction^[4].

In practice, the main challenges faced by blended teaching include reduced teacher-student interaction and over-reliance on online learning platforms. Real-time interaction in traditional classroom teaching is reduced in blended teaching, which may lead to reduced student engagement and learning. In addition, different teachers have different mastery of information technology, and some teachers may lack the ability to effectively integrate online and offline teaching resources. These problems pose potential threats to the implementation effect of the hybrid teaching model. According to surveys, some college teachers feel uncomfortable with the technology application of blended teaching and believe that the use of online platforms has increased their workload and affected the stability and sustainability of teaching effects. Therefore, when colleges and universities promote hybrid teaching, they need to pay attention to technical training and support for teachers to ensure the effective implementation of the teaching model.

The self-discipline and continuity of students' online learning are also one of the challenges faced by the hybrid teaching model. Data from the MOOC platform shows that the average course completion rate is only 5%, reflecting students' lack of enthusiasm and persistence in online learning. Online learning lacks the supervision mechanism of traditional classrooms, and students are prone to slacking off due to lack of pressure and motivation. In addition, students may feel overwhelmed when faced with the large number of online resources and find it difficult to develop an effective study plan. Some students reported that the lack of face-to-face communication and immediate feedback in hybrid teaching made them feel isolated and confused during the learning process. Therefore, improving students' self-discipline and supporting mechanisms for online learning are crucial to improving the effectiveness of blended teaching. Colleges and universities need to strengthen monitoring and support of students' online learning processes and provide more interactive opportunities and instant feedback to improve students' learning experience and effectiveness.

3. Sorting out the relationship between various objects in blended teaching

3.1 Three-stage learning model relationship

The three-stage learning model in blended teaching includes preview, classroom learning and after-class review, aiming to optimize teaching effects through multi-level and multi-stage learning activities. In the preview stage, students learn the course content independently through online platforms, including watching videos, reading materials, and completing preview tasks. Independent learning at this stage not only helps students become familiar with the course content in advance, but also lays a good foundation for classroom learning. In the classroom learning stage, teachers conduct

face-to-face explanations and interactions in traditional classrooms, and deepen students' understanding and mastery of the course content through problem discussions, case analysis, and practical operations. This stage not only emphasizes teacher-student interaction, but also focuses on student-to-student interactions. Collaborative learning among students, through group discussions, classroom demonstrations and other activities, improves students' participation and learning enthusiasm. In the after-class review stage, students review and self-test through online platforms to consolidate the knowledge they have learned, while teachers monitor students' learning progress and effects through the online system and provide personalized coaching and feedback^[5].

The application of the three-stage learning model in blended teaching not only improves the flexibility and effectiveness of teaching, but also promotes students' all-round development in a variety of ways. During the preview stage, students can flexibly arrange study time and content according to their own learning rhythm and needs, and develop independent learning and time management abilities. During the classroom learning stage, through teacher-student and student-student interaction, it not only helps students deepen their understanding of the course content, but also cultivates students' critical thinking and cooperation abilities. In the after-class review stage, through repeated practice and self-test, students can promptly discover and make up for knowledge loopholes and improve learning results. Through data analysis on the online platform, teachers can comprehensively understand students' learning situations, provide targeted guidance and support, and further improve the quality of teaching. Overall, the application of the three-stage learning model in blended teaching provides an important guarantee for efficient, flexible and personalized teaching, and helps to comprehensively improve students' learning effects and comprehensive quality.

3.2 Break down the relationship between knowledge system and learning system

In the blended teaching model, it is crucial to subdivide the relationship between the knowledge system and the learning system. Knowledge system refers to classifying and stratifying course content according to certain logic and difficulty to form a structured knowledge network. This structured knowledge system helps students systematically master course content and improve learning efficiency. When designing blended teaching, teachers need to subdivide the course content into multiple modules. Each module contains several knowledge points and is ordered according to the logical relationship between the knowledge points.

The learning system refers to a series of methods and strategies used by students in the learning process, including preview, classroom study, and after-class review. The relationship between the subdivided knowledge system and the learning system is reflected in the fact that teachers need to design corresponding learning activities and tasks according to the characteristics of the knowledge system to help students gradually master knowledge. For example, in the preview stage, students can independently learn each knowledge point through the online platform, complete the corresponding exercises, and test their learning effects. During the classroom learning stage, teachers can explain and discuss knowledge points in a targeted manner based on students' preview status to help students deepen their understanding; during the after-class review stage, students can review and self-test through online platforms to consolidate the knowledge they have learned.

The combination of subdivided knowledge system and learning system not only helps to improve teaching effects, but also cultivates students' independent learning ability and critical thinking ability. Under the guidance of the subdivided knowledge system, students can clearly understand their learning progress and knowledge mastery, and conduct targeted review and consolidation. This method not only improves students' learning efficiency, but also helps students form good Study habits and methods. Through real-time monitoring and data analysis of students' learning situations, teachers can promptly discover and solve problems encountered by students during the learning process, provide targeted guidance and support, and further improve the quality of teaching. Overall, the organic combination between the subdivided knowledge system and the learning system provides an important guarantee for the effective implementation of blended teaching and helps to comprehensively improve students' learning effects and comprehensive quality.

3.3 Real-time conversion of object relationships

In blended teaching, real-time conversion of object relationships is one of its key features. The relationship between teachers, students and teaching resources is constantly changing in different teaching links, forming a dynamic learning ecosystem. Teachers are not only imparters of knowledge,

but also play the role of learning guides and feedback providers. In the preview stage, students learn independently through the online platform, and teachers monitor students' learning progress and effects in real time through platform data, and adjust teaching plans in a timely manner; in the classroom learning stage, teachers lead teaching activities, students actively participate, and deepen understanding through interaction and discussion. Understanding of knowledge; during the after-class review period, teachers provide personalized guidance and suggestions based on students' feedback and performance to further consolidate learning effects.

This dynamic conversion not only improves the flexibility of teaching, but also improves the teaching effect. At different stages, the role relationship between students and teachers continues to change, making the learning process more diverse and flexible. In the preview stage, students are the main subjects of independent learning, and teachers are remote monitors and supporters; in the classroom learning stage, teachers become the leaders, and students deepen their mastery of knowledge through participation and interaction; in the after-class review stage, students become the leaders again. The main body of learning carries out targeted review and consolidation through teacher feedback and guidance. This transformation of role relationships enables students to maintain an active learning state throughout the entire learning process, be able to independently plan and adjust their own learning rhythm, and improve learning efficiency and effectiveness.

In this model, teachers need to have strong teaching design and management capabilities to ensure seamless connection and effective implementation of all links. By converting the relationship between teaching objects in real time, teachers can flexibly adjust teaching strategies and methods according to students' different learning needs, and provide more targeted teaching support. In this model, students can also develop independent learning and critical thinking abilities, and comprehensively improve their overall quality through learning activities at different stages. Real-time conversion of object relationships not only optimizes the teaching process, but also provides more opportunities for effective interaction between teachers and students, promoting the overall improvement of teaching effects.

3.4 Rich levels of transmission orientation

In the hybrid teaching model, the richness of knowledge transfer orientation is one of its distinctive features. When teachers design teaching content, they need to consider the learning needs and receptive abilities of different students and use a variety of transmission methods and levels to meet these needs. Classroom teaching conveys core knowledge points and concepts through face-to-face teaching and interaction, helping students build basic cognition. On this basis, teachers can use online platforms to provide more in-depth and expanded learning resources, such as academic papers, case studies, and experimental videos, so that students can explore independently and learn in depth after class. In addition, through the online assessment and feedback mechanism, teachers can understand students' mastery of knowledge in real time, adjust teaching strategies in a timely manner, and ensure the effectiveness and continuity of knowledge transfer.

Multi-level knowledge transmission not only improves the flexibility of teaching, but also enhances students' learning experience and effects. After students acquire basic knowledge in class, they can conduct personalized in-depth learning through online resources and choose different learning materials and paths according to their interests and needs. This method not only meets the needs of students with different learning styles and abilities, but also stimulates students' independent learning and inquiry spirit. In extracurricular learning, students can communicate with teachers and classmates through online discussion forums, share learning experiences and questions, and form a benign learning interaction ecosystem. This multi-level, multi-channel knowledge transmission method enables students to receive corresponding support and guidance at different learning stages, improving the overall effect and satisfaction of learning.

When teachers implement multi-level knowledge transfer, they need to have good teaching design and management capabilities to ensure the organic combination and mutual promotion of all levels and links. By flexibly using various teaching methods and resources, teachers can provide students with a richer and more diverse learning experience. The data analysis function of the online platform helps teachers monitor students' learning progress and effects in real time, provide personalized feedback and guidance, and further optimize the teaching process. The multi-level knowledge transfer orientation not only improves the quality and efficiency of teaching, but also provides a strong guarantee for students' all-round development.

4. Blended teaching course construction ideas and implementation plans

This course will use a hybrid teaching method, combining online and offline teaching, inspiring interactive teaching, case practice project simulation training, practical teaching (smart micro-classes) and after-school subject competitions to achieve the effect of competition as training. The teaching environment is divided into theoretical teaching and experimental projects. The former is mainly conducted in smart classrooms, while the latter is conducted in experimental training rooms and is equipped with a smart micro-course recording system. Online learning relies on iFlytek's FIF online classroom and the BOSS platform. The teaching design concept emphasizes adjusting the course content and structure according to the nature of the course, teaching philosophy and syllabus, clarifying the teaching objectives, and uploading MOOC videos and courseware on the learning platform before class to explain the key points and difficulties of this teaching and achieve shallow understanding. Knowledge learning, and the entire course includes theoretical teaching and practical teaching, which is divided into three stages of training before class, during class, and after class.

In terms of teaching methods, the hybrid teaching model combines the advantages of online and offline learning and enhances classroom participation through inspiring interactive teaching. Case practice project simulation training provides students with practical opportunities, and smart micro-courses explain complex concepts through short videos to enhance learning effects. After-school subject competitions combine training and assessment to stimulate students' learning interest and competitive awareness. Theoretical teaching is conducted in smart classrooms, emphasizing interaction and discussion, and experimental projects are conducted in well-equipped experimental training rooms to ensure that students can apply theoretical knowledge to practical operations; online learning platforms such as iFlytek FIF Online Classroom and Bosi The platform provides students with flexible learning resources and time arrangements.

The teaching design concepts and ideas are based on the nature of the course and the requirements of the syllabus. Teachers need to flexibly adjust the course content and structure to ensure the clarity and accessibility of teaching objectives. Before class, teachers upload MOOC videos and courseware on the learning platform to help students preview the course content and understand the key points and difficulties of this teaching. The course as a whole is divided into theoretical teaching content and practical teaching content. The teaching process is divided into three stages: pre-class preparation, classroom teaching and post-class review. The teaching effect is ensured through systematic three-stage training (see Figure 1). The theoretical teaching content is taught through the interactive environment of the smart classroom, and the practical teaching content is implemented through practical training in the experimental training computer room, so that students can fully master the processes and methods of interactive design.

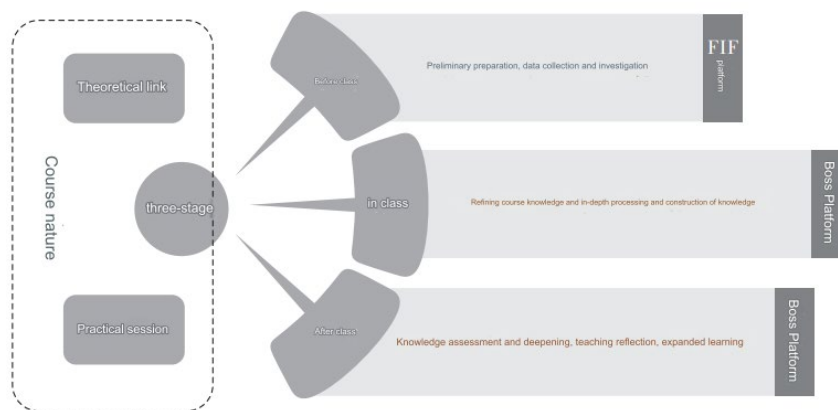


Figure 1: Interaction design process and method course teaching design concepts and ideas

In existing blended teaching courses, online teaching resources are usually divided into chapters or micro-lecture video time units. This approach does not fully reflect the student-centered teaching concept and fails to achieve educational teaching. Therefore, online learning is the most critical part of the initial stage of blended teaching. The construction of course resources needs to be carefully designed to build a complete course knowledge system, with chapter knowledge points as the entry point for in-depth development. Offline teaching uses face-to-face interaction to deepen and restore the knowledge learned online and solve the difficult problems students encounter in their learning. In-class teaching is not only a supplement and check for online learning, but also an important part of

knowledge deepening. Teachers need to balance online and offline teaching in the overall design to ensure an organic combination of the two.

When teachers design blended teaching, they should regard teaching materials as the primary medium for knowledge transfer. Traditional teaching imparts knowledge through classroom lectures, students' self-study and teachers' questions, while blended teaching requires teachers to use easy-to-understand and humorous language in the classroom to improve students' learning interest and understanding, thereby enhancing the teaching effect. Online learning resources need to be systematically planned to form a knowledge tree to help students systematically master course content. In the classroom, teachers use interactive teaching to solve the questions students encounter in independent learning and further consolidate knowledge mastery.

In order to improve students' understanding of knowledge points and learning efficiency, teachers must not only master in-depth knowledge during the teaching process, but also have humor and popular expression skills to stimulate students' interest in learning. In course design, online and offline teaching content should be organically combined to achieve the best teaching effect through systematic knowledge transfer and interactive links. Teachers need to carefully plan each teaching link so that students can efficiently absorb knowledge and achieve comprehensive knowledge understanding and application during independent learning and classroom interaction.

At the beginning of the course, the teacher will explain in detail the teaching objectives, content and tasks of the second chapter of the practical training, so that students can clarify the learning content and objectives of this course. The course will adopt a three-stage teaching model throughout the entire teaching process.

In the pre-class stage, online learning is conducted through the IFLYTEK FIF online classroom. The teacher will introduce the software and related professional knowledge of the second practical training course in detail through online teaching videos before class, and combine it with example pictures to intuitively help students understand and master content. The Bosi platform will release pre-class practical case tutorials so that students can study and understand the cases in advance and prepare for classroom practical teaching.

In the mid-class stage, classroom teaching is combined with the content of the second chapter of practical training through group discussions and other teaching methods. Flexible teaching methods such as questioning and discussion are used to guide students to conduct special discussions and give full play to their subjective initiative. Students use the Bosi platform to discuss specific topics. Teachers guide and summarize the discussion results, conduct practical exercises based on students' common difficulties, and use smart micro-classes to record courses to facilitate students' repeated learning and understanding.

In the after-class stage, after-class teaching will focus on consolidating the theoretical knowledge points explained in class and publish them on the Bosi platform through refined PPT course tasks. The practical teaching content will introduce the "Internet + Discovery Cup" competition project, which will be carried out in the form of staged tasks. Students will gradually complete the project tasks through reasonable grouping, and evaluate the results to ensure the practical application and mastery of knowledge.

After the second teaching phase of the practical training, the data will be analyzed through the online platform. Using the FIF online teaching platform and the Bosi platform, teachers can view academic statistics in a timely manner. These data feedback not only show students' mastery of online video learning tasks, but also include students' discussion participation, homework completion, question records and sign-in status. The data will be updated in real time as the course tasks progress. Teachers can count and analyze online in-class evaluation forms, experiment reports, classroom interaction reports and bad behavior record reports, as shown in Table 1.

Table 1: Survey and data analysis of online learning effects in the second chapter of practical training

| Data statistics form | Attendance status | Teaching resources online learning details | Student homework completion details | Online in-class evaluation report | Test report | Classroom interaction report | Bad behavior record report |
|--------------------------|-------------------|--|-------------------------------------|-----------------------------------|-------------|------------------------------|----------------------------|
| Completion calculation/% | 98 | 100 | 100 | 98 | 97 | 95 | 0 |

When evaluating the second chapter of the practical training course, we follow the principle of scientific rationality and conduct a comprehensive evaluation of the online and offline links. The online evaluation is mainly based on the investigation and analysis of online learning effects, while the offline scoring is based on classroom performance and course performance. The scores of the final assignments will be evaluated comprehensively. For staged and critical chapters, teachers can set up classroom assessments in the form of questions, responses or discussions to fully understand students' learning status, which to a certain extent can urge students to study on time. The assessment methods are diversified, and the online and offline assessment indicators and score ratios are shown in Table 2.

Table 2: Online and offline assessment indicators for the second chapter of practical training

| Assessment form | Exam topic | Weights/% | Comments |
|--------------------|-----------------------------------|-----------|--|
| Online assessment | Online Time | 4 | Online platform data statistics |
| | Study notes | 5 | Online platform data statistics and teacher evaluation |
| | Online reading teaching materials | 6 | Online platform data statistics |
| | Online discussion | 45 | Teacher evaluation and student peer evaluation |
| Offline assessment | Online test | 40 | Online platform data statistics |
| | Class Attendance | 10 | Teacher rating |
| | Assignments and class discussions | 45 | Teacher rating |
| | Final exam | 45 | Teacher rating |

5. Overview of the relationship between course assessment and evaluation

5.1 Process mobility

Process fluidity is crucial in course assessment and evaluation. It emphasizes the continuous tracking and dynamic evaluation of students' learning process. It not only focuses on students' performance in the final exam, but also pays more attention to their participation and progress throughout the learning process. Through regular homework, classroom interaction, online tests and other forms, teachers can promptly grasp students' learning status and discover and solve existing problems. The assessment method that combines online and offline provides teachers with comprehensive student learning information through data statistics and classroom observation, which helps to more accurately evaluate students' knowledge mastery and ability development. It can not only improve the quality of teaching, but also stimulate students' learning initiative and enthusiasm, and promote their continuous progress and improvement in the learning process.

5.2 Standard differences

Standard diversity is of great significance in course assessment, as it pays attention to the individual differences and diverse learning needs of different students. When evaluating student performance, we should not just rely on unified standardized tests, but should combine the actual situation of students and adopt diversified evaluation methods. In the assessment, students' learning background, interests and specialties can be considered, and through project assignments, classroom Discussions, practical operations and other forms provide students with opportunities to demonstrate and develop their own strengths. This flexible evaluation mechanism can not only reflect students' comprehensive abilities more comprehensively, but also stimulate their interest and motivation in learning. Through differentiated evaluation standards, teachers can more accurately identify the strengths and weaknesses of each student, provide targeted guidance and support, and promote the individual development and overall growth of each student.

5.3 Comprehensive content

Comprehensive content is crucial in course assessment. It emphasizes that assessment should cover all knowledge points and skills learned by students. Assessment should not only focus on students' mastery of basic theories, but also examine their performance in practical applications. Through various

forms of assessment methods, such as theoretical examinations, project assignments, experimental operations and classroom participation, teachers can fully understand students' learning situations. Students are not only tested on theoretical knowledge, but also demonstrate their application abilities and practical skills through practical links. Creative Thinking. Ensuring the comprehensiveness of assessment content will help cultivate students' comprehensive qualities so that they can flexibly apply the knowledge they have learned in future study and work, solve practical problems, and improve the overall teaching quality and student learning effectiveness.

5.4 Evaluation diversity

Assessment diversity plays a key role in course assessment, which requires teachers to use multiple assessment methods to comprehensively measure students' learning outcomes. In addition to traditional written examinations, teachers should also consider various evaluation forms such as oral defenses, project presentations, and practical operations. This diversified evaluation method can more comprehensively reflect students' knowledge mastery and practical abilities. In addition, teacher evaluations are closely related to students' own. The combination of evaluation and mutual evaluation makes the evaluation more objective and fair. Through evaluation from different angles and dimensions, students can more comprehensively understand their own strengths and weaknesses, and thus make targeted improvements and improvements. This not only stimulates students' interest and motivation in learning, but also helps teachers more accurately grasp students' learning.

6. Conclusion

The hybrid teaching model has shown significant advantages in modern higher education. Through the combination of online and offline methods, it has greatly improved the teaching effect and students' learning experience. The online learning platform provides a wealth of learning resources and flexible learning time to help students arrange their own learning progress and improve learning efficiency, while offline classes enhance the application of knowledge and student participation through interaction and practice. This teaching model not only solves the problem of insufficient teacher-student interaction in traditional teaching, but also reflects students' learning outcomes more comprehensively through a variety of assessment methods. However, in order to achieve the best teaching effect, teachers need to fully consider the individual differences and actual needs of students in the course design and implementation process, and flexibly use various teaching methods to ensure that each student can receive effective learning support.

Acknowledgement

The key project of the Ningbo Education Science Planning in Zhejiang Province, "Research on Constructing a Student-Centered Blended Teaching Model in the Context of Educational Informatization—Taking the 'Interaction Design' Course as an Example." (Grant no. 2023YZD002) .

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