

Research on the "Blended Teaching Mode" and "Ideological and political education in curriculum" in Universities under the Background of Educational Big Data

Junwei Shi¹

¹*School of Management Science and Engineering, Shandong Technology and Business University, Yantai, Shandong, China*

**Corresponding author. Email: shijunwei302@sdtbu.edu.cn*

ABSTRACT

In April 2018, the Ministry of Education officially issued the "Education Informatization 2.0 Action Plan". By 2022, it will have been achieved basically the development goal of "three comprehensives, two highs and one large", that is, teaching applications covering all teachers, learning applications covering all school-age students, and digital campus construction covering all schools. The level of informatization application and the information literacy of teachers and students have generally improved, and a large platform of "Internet + education" has been built. On this basis, this paper records the education quality monitoring data and collects the information generated by the students in the learning process, accumulates and forms teaching evaluation big data, and builds a blended teaching model and teaching quality evaluation system in universities under the background of education big data. It is shown that the integration of big data in the teaching process can more accurately and personally customize teaching plans for students, feedback teaching problems, optimize the teaching process, and truly transform "teaching-centered" to "learning-centered" and improve under the background of educational big data, which improves the blended learning quality of universities and perfects the evaluation system of university undergraduate teaching quality.

Keywords: *information teaching, big data, online and offline gold lessons, blended learning, teaching quality assessment*

1. INTRODUCTION

With the rapid development of information technology, especially the widespread application of mobile Internet, cloud computing, and the Internet of Things, big data has become an inevitable product of information technology in the current era. The current education informatization is showing an unprecedented momentum of development, and the deep integration of technology and education is driving the reform and innovation of education. In the "Internet +" era, the school's traditional face-to-face one-way transmission on-site learning model can no longer meet the needs of students growing on the digital earth. At present, the imaginative song of the future school has sounded. Blended learning, which combines the advantages of traditional classroom on-site learning and online learning, will become the main method of teaching organization in the future. Blended learning the network-based learning platform can greatly enrich the content of the course, making online courses a systematic and selectable knowledge map that integrates text, animation, video, exploration tasks, virtual experiments and other resources. Students can independently determine the

content of learning through online learning, define the learning process independently, and even seek customized services of course content through the Internet. Therefore, online courses become an open context, and then through online and offline collaboration and conversation, meaningful construction of learning tasks can be realized.

2. DEVELOPMENT STATUS OF BIG DATA IN EDUCATION AT HOME AND ABROAD

Since 2013, there has been an upsurge in the domestic education field to promote education reform and innovation development based on big data technology. The rapid development of education application research of big data is directly manifested in the doubling of the number and quality of research papers. In March 2014, the "Key Points of Education Informatization Work in 2014" issued by the General Office of the Ministry of Education pointed out: In recent years, the Ministry of Education has actively taken measures to strengthen the training of big data talents and support the development of the big data technology industry. Since 2014, in order to implement the education plan outline and innovate the industry-university

Project support: Shandong Province Educational Science "13th Five-Year Plan" (Project No. 2020QZC015), Humanities and Social Sciences Project of Shandong Higher Education Institutions (J15WB32).

cooperation and education mechanism, the Ministry of Education has organized relevant enterprises and universities to implement industry-university cooperation and education projects. In terms of related majors, in 2015, undergraduate majors will set up new majors-Data Science and Big Data Technology, with 3 locations; In October of the same year, the Ministry of Education announced the newly revised "Ordinary Colleges and Universities Vocational Education (Specialty) Professional Catalog (2015)", Actively adapting to the development needs of the big data era, new majors in cloud computing technology and applications, e-commerce technology, and network data analysis applications are added. With the continuous advancement of my country's education informatization process, the in-depth integration of big data and education will be accelerated. This is an inevitable trend in the development of education in the current era. The digitization, informationization, and networking of teaching resources make it possible to share educational resources in the era of big data. Including online teaching and research system, network lesson preparation system, teacher learning center system, teacher evaluation system, resource management and application system, video-on-demand system, remote network teaching system, etc., big data education resources can realize a one-stop teaching information platform. On the learning public service platform, students realize distance learning and mobile learning through online classrooms, autonomous learning systems, and interactive communication systems. Big data can support the study of learner's personality development, and the analysis of big data can provide us with information about each learner's learning needs, learning style, learning attitude and even learning mode, etc., and thus can create one for every student Tailor-made learning environment and personalized courses can also create an early warning system to detect potential risks such as landslides or even learning fatigue. Therefore, we can provide learning content and learning guidance suitable for the development of different learners to promote them. Personality development to realize personalized education in the true sense.

3. CONSTRUCTION OF BLENDED TEACHING MODE IN UNIVERSITIES UNDER THE BACKGROUND OF EDUCATIONAL BIG DATA

3.1. Design of Teaching Objectives

In order to adapt the teaching of engineering drawing course to the requirements of mixed teaching, the traditional way of arranging the teaching content in the form of networked and modularized chapters is changed, but rather to establish hierarchical, sub-categorized, relatively independent knowledge points according to the teaching objectives According to Bloom's teaching theory, all the knowledge points of the engineering

drawing course are integrated and classified, and 64 relatively independent knowledge points are initially formed, some of which can be learned by students. The design of the teaching process no longer uses chapters as units, and completely breaks through the limitations of chapters.

According to Bloom's teaching goal classification theory [16], teaching goals are divided into two dimensions, one is the cognitive process dimension and the other is the knowledge dimension. The dimension of the cognitive process is the six stages that students experience in learning knowledge: memory, comprehension, application, analysis, evaluation and creation. The knowledge dimension includes four categories: factual knowledge, conceptual knowledge, procedural knowledge and metacognitive knowledge. According to Bloom's teaching goal classification theory, the 64 knowledge points in the curriculum are redesigned one by one from the two aspects of knowledge dimension and cognitive dimension, as shown in Table 1. At the same time, carry out the design of scientific teaching activities for each knowledge point, and finally design different evaluation methods according to the knowledge and cognitive dimensions of different knowledge points: classroom questioning, classroom observation of student feedback, online quiz, classroom test, online discussion, Class discussion, questionnaire survey, online homework, exercise book homework, manual drawing, training design, etc. Different assessment methods are adopted for different knowledge points, which increases the enthusiasm and initiative of students in learning, and realizes the diversified assessment methods of courses.

3.2. Creation of Informationized Teaching Environment

The information teaching environment of this course is built with the help of the "Online Education Comprehensive Platform" developed by Tsinghua Education Online. In the column of teaching resources, a wealth of online electronic resources are uploaded, including 8 columns of teaching courseware, course guide, electronic teaching plan, training materials, technical standards, and extracurricular development divided by knowledge points. In the column of teaching activities, 10 columns were designed: question and answer discussion, course questionnaire, teaching mailbox, teaching notes, research teaching, coursework, online test, test paper library, broadcast unit and in-class suggestions. In the course construction column, In order to strengthen online communication with students, we have constructed [Question and Answer Discussion Module] and [Homework Appreciation Module]; in order to cultivate application-oriented talents and strengthen practical teaching, we have constructed [training design] and [competition exam] modules in practical teaching; In order to understand students' autonomous learning, collect students' evaluations of courses and teachers, help adjust

the content and teaching methods of course teaching, and construct the [Course Echo Wall Module]; in order to monitor the entire autonomous learning status of students, the relevant information will be announced regularly [Online learning statistics] and [test/homework results] stimulate students' passion and motivation for learning. The design of the course network teaching platform is shown in Figure 1. In the [Course Learning] module, this course is divided into 16 teaching units.

3.3. Teaching Activity Design

Traditional classroom teaching activities are generally teacher-centered. In the class, new lessons are introduced first, then classroom lectures, after-class homework is arranged, and exercises are performed after class to consolidate, while mixed teaching emphasizes student-centered, first before class Preview (learning of online teaching resources and completing pre-class tests), in the form of group discussion, conduct problem exploration and guidance on difficult and difficult knowledge points (through pre-class preview student feedback), and then assign homework after class, students are doing homework During the process, if you encounter doubts, you can review relevant teaching videos or other electronic resources in time, or communicate with classmates and teachers through the information platform to solve the problem in time. Finally, a diversified evaluation method is used for evaluation (teacher evaluation, student mutual

evaluation, student self-evaluation). In the whole process, the role of the teacher has changed from the former "knowledge imparter and classroom manager" to the "learning guide and instructor". The student's role has also changed from "passive receiver" to "active explorer". Compared with traditional teaching, the mixed teaching model has changed in teaching goals, teaching activity design, teaching methods and methods, the roles of teachers and students, and teaching evaluation.

- (1) Teachers: construct online teaching module → release pre-class learning task list → collect students' pre-class preparation report online → online Q&A → pre-class review and evaluation → in-class inspiration, guidance, task release, summary, comment → arrangement Homework→Collect student study summary reports after class → review online and offline homework → answer questions online and offline→track and guide→build the next knowledge point network teaching module...;
- (2) Students: check the pre-class study task list → online self-study → issue of doubtful questions → discussion and exchange → pre-class online test → in-class thinking, discussion, collaboration, task completion, reporting, induction → knowledge point summary report → online Online and offline homework→check question feedback→waiting for the next knowledge point before class study task list....

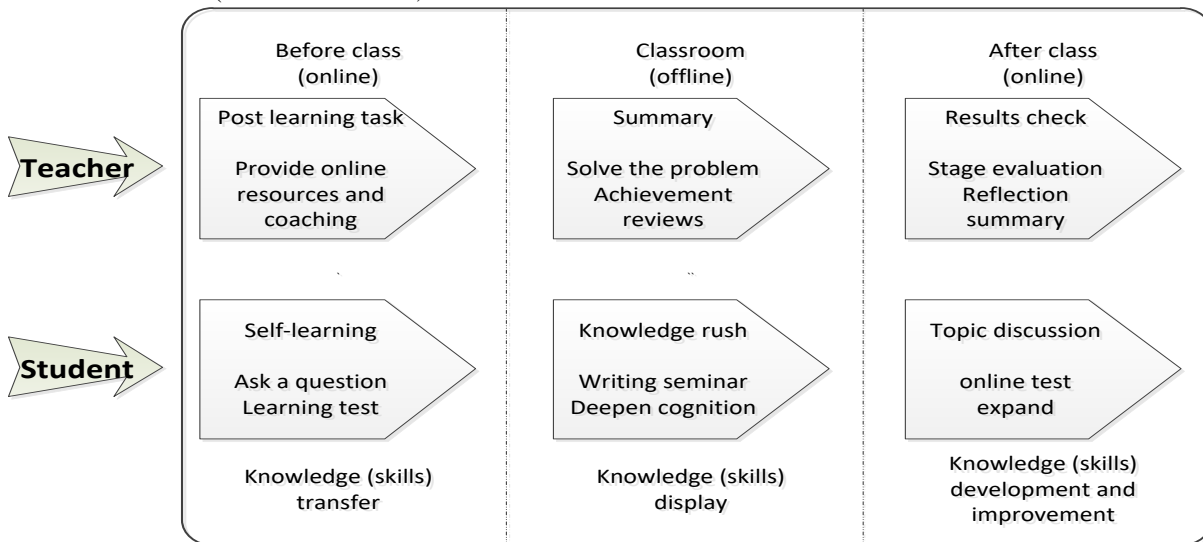


Figure 1 Flow chart of blended learning process based on flipped classroom

(3) Reasonably design the teaching process. Follow the characteristics of science, innovation and maneuverability, and carry out the teaching process of three links including self-study before class, deepening in class, and expansion after class, so that the inside and outside of the class are closely connected to achieve the activities before, during and after the course. Integration. Carry out bilateral activities of teaching and learning between teachers and

students to meet the needs of students and promote their personalized learning. The learning process is shown in the figure above.

Carry out the teaching model of "pre-class (online) preview, in-class (offline) interaction, and after-class (online) review and expansion" to cultivate the habit of autonomous learning. In view of the problems that students will not learn independently after class, set up interactive sessions

in the classroom, let students use materials or network resources to conduct self-study before class, and set up some simple knowledge points in the classroom as interactive teaching methods, such as questioning, teacher-student discussion, Role changes, etc., and give bonuses to students who actively speak, so as to arouse students' enthusiasm for pre-class preparation. After class, students are guided to review through homework and study notes.

(4) Strengthen "case teaching", and use online resources to expand classroom knowledge after class time to stimulate students' interest. Before explaining the content of the lecture, upload relevant background knowledge, security situation and development frontiers online to help students familiarize themselves with the system that needs to be analyzed, and explain the application of analysis methods in the system in class. Choose similar cases as homework, and after students complete, choose part of the homework to explain in class and discuss with everyone to form full participation, discuss and solve practical problems together. Through this teaching method, it has played a role in deepening the integration of theory with practice, stimulating students' interest in learning, and improving teaching effects. The teaching link design is shown in Figure 4.

4. CONSTRUCTION OF A HYBRID TEACHING QUALITY EVALUATION SYSTEM IN UNIVERSITIES UNDER THE BACKGROUND OF EDUCATION BIG DATA

4.1. Statistics of Student Learning on Online Platforms

After two rounds of teaching practice, the number of elective students for this course is 169, the total number of course visits is 14067, the number of teaching materials is 157, the number of topics and posts in the course discussion area is 1123, and the number of posts per person is 5.6 per person. Course question bank There are 211 questions, 15159 times of reading course teaching

Table 1 Online learning data statistics

Student number	Number of courses entered	Times of reading course resources	Online duration (minutes)	Number of times I entered the class	Enter the number of lectures	Learn the number of videos played	Duration of learning video (minutes)
1	97	51	545	9	5	3	2
2	84	56	389	7	5	4	0
3	81	135	764	20	9	11	8
4	70	37	593	8	4	0	0

materials, 1109 times of coursework submissions, total online time of 217,079 minutes, 6066 times of learning broadcasts, and length of learning broadcast video: 44368 minutes. The number of online tests submitted is 648 times. Statistics show that the utilization rate of the online teaching platform is high, the student's participation is high, and the self-learning can be completed well.

The country is implementing major strategies such as innovation-driven development, "Made in China 2025", "Internet +", "Network Power", and "One Belt One Road". In response to national strategic needs, supporting services are characterized by new technologies, new formats, new industries, and new models. The new economy is developing vigorously, breaking through core key technologies, building first-mover advantages, and occupying the strategic commanding heights in the future global innovation ecosystem. There is an urgent need to cultivate a large number of emerging application-oriented talents. The report of the 19th National Congress of the Communist Party of China made an important judgment that "socialism with Chinese characteristics has entered a new era" and put forward the "thought of socialism with Chinese characteristics in a new era". In 2015, Premier Li Keqiang promoted the "Internet +" action plan as a national strategy for the first time at the Third Session of the 12th National People's Congress. In July of the same year, the State Council issued the "Guiding Opinions on Promoting the "Internet +" Action", which listed "Internet + Education" as one of the important contents of the action plan. In the report of the 19th National Congress of the Communist Party of China in 2017, it was proposed to accelerate the construction of first-class universities and first-class disciplines, and realize the connotative development of higher education. With the rapid development of computer technology, network technology and multimedia technology, the traditional teaching model has been challenged. It is urgent to re-understand the teaching process according to the characteristics of educational technology in the information environment, and build a new type of learning that can adapt to students' independence, cooperation, and inquiry. Under the background of informatization, the hybrid teaching model explores the in-depth integration of informatization and higher education teaching.

Table 1, cont

5	62	50	558	3	3	0	0
6	52	57	663	3	3	0	0
7	52	50	709	13	4	9	24
8	49	48	638	12	5	7	29
9	41	55	632	2	2	3	7
10	39	48	625	6	3	4	2
11	39	47	635	2	2	1	0
12	37	20	187	3	3	0	0
13	36	46	651	9	4	8	35
14	35	63	423	2	2	0	0
15	34	51	562	6	6	0	0
16	33	17	611	9	6	16	66
17	32	40	625	11	7	6	17
18	31	66	590	11	5	4	1
19	30	11	2037	1	1	0	0
20	29	27	2762	0	0	0	0
21	28	14	500	8	5	13	76
22	28	42	774	6	5	1	0
23	27	30	518	7	3	2	2
24	25	9	5201	1	1	1	24
25	24	70	561	9	4	6	5
26	23	38	605	4	2	6	3
27	22	35	579	3	3	8	37
28	22	31	528	7	3	5	4
29	22	8	5961	6	3	6	68
30	21	31	436	3	1	2	5

4.2. Student's Academic Performance Statistics

By adopting a blended teaching mode, combining online and offline, making full use of the fragmented time of students, the time for independent learning is significantly

increased, the difficulties and doubts in the learning process can be solved in time, and the understanding of the course content is also improved. More in-depth, there are also abundant network resources as a supplement to the review at the end of the term, to sort out the knowledge points and content of the course in a timely and clear

manner, and there is no need to "grind the gun" before the exam. Through Table 1, Table 2, and Figure 1, the final results of students in the mixed teaching class (experimental class) and those in the non-combined teaching class (control class) are compared, and it is found that the performance of the mixed teaching class is significantly better than that of the non-combined teaching class. The implementation of mixed teaching classes, the excellent rate of non-combined teaching classes is 6.2%, the excellent rate of non-combined teaching classes is 16.3%; the failure rate of non-combined teaching classes is as high as 29.1%, and the failure rate of mixed teaching classes only 4.2%. It can be seen that the enthusiasm and initiative of students in learning has improved after the implementation of mixed teaching, and obvious results have been achieved.

4.3. Student Satisfaction Questionnaire Survey

In order to understand the degree of the impact of mixed teaching on students and the teaching effect, so as to adjust the teaching method in time, during the course implementation and after the course learning, many questionnaires were conducted. The questionnaires mainly focused on the satisfaction and mixed type of the course. A survey was conducted on whether teaching helped the improvement of autonomous learning ability. Through the statistics of the questionnaire, the statistical results are shown in Figure 4 and Figure 5. The results showed that the satisfaction rate of the students at the beginning (fifth week) was 74%, and the dissatisfaction and very dissatisfied accounted for 6%; the satisfaction of the students at the end (week 16) was 80.81%, and the dissatisfaction and very dissatisfied accounted for 1.03%. It can be seen that student satisfaction has been significantly improved, and dissatisfaction has also been significantly reduced. More than 80% of students have a higher recognition of blended teaching. Through the mixed teaching model, it provides students with more opportunities for communication and cooperation, and strengthens independent and collaborative learning. 90.91% of students believe that their autonomous learning ability has been improved through blended teaching. In general, from the aspects of student learning, teaching effects and the improvement of students' independent learning ability, the blended teaching model has achieved good results in the learning of "engineering drawing" courses.

In addition, during the teaching period, timely teaching feedback was also provided through exchange platforms such as student seminars, school supervision and lectures, student learning summary, WeChat public account and QQ group. The feedback results showed that the mixed teaching reform has achieved great results in the teaching of this course. Good results.

Looking at the research on blended teaching at home and abroad, it can be seen that in the research direction, foreign countries mainly focus on the theoretical basis of blended teaching and blended teaching environment, while

domestic research mainly focuses on the practicality of blended teaching. There are more researches on blended teaching application mode and blended teaching curriculum design. In the field of application, foreign blended teaching is mainly used in corporate training and the learning of on-the-job master's and doctoral courses in universities; domestic blended teaching used to be mainly used in non-academic training institutions, but in recent years, it has been increasingly used in colleges and universities.

The main issues that need further research are:

The connotation and mode of blended teaching need to be perfected and detailed. Scholars at home and abroad have done relevant research on the connotation and mode of blended teaching. Foreign countries focus on basic theories, while domestic ones pay more attention to application. Looking at the various existing models at home and abroad, they often only focus on them in the mode link or curriculum design. In some aspects, some often only focus on the design of online learning, but ignore the design of classroom teaching; some only highlight the design of online learning platforms or learning resources, but ignore the organization and management of learning activities, and student evaluation and feedback. From the research of domestic scholars, it can be seen that the applied research on the blended teaching mode focuses on the subject courses of computer science and medicine, while the application in other subjects is less and the scope of application is narrow. In other words, the current blended teaching is still, There is no perfect implementation model for all disciplines to refer to and use, and propose a complete unified model that can be promoted.

The construction of a blended teaching effect evaluation system needs to be scientific and diversified. Scholars at home and abroad have little research on blended teaching evaluation. In the existing research, there are mainly the following problems: ①The construction of the blended teaching effect evaluation index system is relatively simple, and often only focuses on one aspect, such as online teaching evaluation or Traditional classroom teaching evaluation only starts from the perspective of evaluation objects or learning results, and does not conduct in-depth research on the process evaluation of learning; ②The evaluation index system of mixed teaching effects lacks scientificity and lacks certain indicators for the selection of indicators. The scientific basis ignores the quantitative analysis of the effect of blended teaching, and has not formed a blended teaching evaluation standard that can adapt to different subject areas; ③The effect of blended teaching is not static, but changes dynamically over time. In addition to the principles of scientific, systematic, and comparable feasibility, the evaluation process must also follow the principle of combining dynamics and statics. In previous studies, qualitative evaluation methods such as questionnaire survey and Delphi method were mainly used to evaluate the mixed teaching effect, and the mixed teaching effect could not be gauged to reflect its dynamic changes.

5. CONCLUSION

At present, scholars at home and abroad are still in the exploring stage of the blended teaching mode under the background of information technology. The design and practice of various blended teaching modes have also accumulated valuable experience for future generations. The design of the hybrid teaching model of this course is based on Bloom's teaching objective classification theory, and re-categorizes the teaching content: knowledge points mainly taught by teachers and knowledge points for students to learn independently. According to the different types of knowledge points and different recognition dimensions, it is researched and designed different teaching objectives, evaluation methods and teaching activities, so that traditional curriculum teaching and online learning can be organically integrated to form a hybrid teaching model suitable for curriculum characteristics and student development. After two rounds of teaching practice, the "engineering drawing" course has achieved in the mixed teaching reform, but the mixed teaching is a long-term project that cannot be completed overnight. It also requires continuous exploration and improvement. In the process of mixed instructional design, it is the key to achieve the teaching goal of knowledge, ability and quality in a three-in-one, down-to-earthly transform "teaching" into "guided learning", and guide students from passive "listening" to active "researching", and construct each teaching resource module of the network teaching platform. The design of teaching activities and the reform of teaching evaluation methods still need to be constantly explored. How to deeply integrate information technology with curriculum teaching is a problem that needs to be further explored in future blended teaching.

ACKNOWLEDGMENT

This work was financially supported by the Project support: Shandong Province Educational Science "13th Five-Year Plan" (Project No. 2020QZC015), Humanities and Social Sciences Project of Shandong Higher Education Institutions (J15WB32).

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