

Application of Blended Learning Model to Computer Fundamentals Courses in an Online Environment

Xin Lv*, Yingxin Sun, Gang Chen

College of Optical and Eletronical Information Changchun University of Science and Technology, ChangChun 130000, Jilin Province, China

Funding: Jilin Provincial Education Science Thirteen-Five-Year Plan 2019 Annual Key Topic: Research on the Construction of Stereoscopic Classroom in Higher Education Institutions in the 5G Era; Subject No.: ZD19151.

Abstract: In the online environment, schools should keep up with the pace of development and strengthen the application of hybrid teaching mode, so as to strengthen the cultivation of students' comprehensive computer application ability and computer subject literacy, and improve students' learning efficiency. The author explores the actual situation of teaching basic computer courses at this stage and the requirements of applying hybrid teaching mode to carry out computer basic course teaching under the network environment, and puts forward an effective strategy for the application of hybrid teaching mode in computer basic course under the network environment, hoping to contribute to the improvement of the teaching quality and quality of computer basic course.

Keywords: Online environment; Blended learning; Computer-based courses

Publication date: July, 2020

Publication online: 31 July, 2020

***Corresponding author:** Xin Lv, puppetlx@163.com

With the development of information technology, there is an increasing demand for human resources in human calculations, in order to cultivate talents that meet the needs of the society. All schools have offered basic computer courses, but from the actual situation of teaching basic computer courses at this stage, which still exists a number of problems that affect the achievement of the objectives of computer-based courses. The application of the blended learning model in computer-based courses in the online environment

not only broadens the learning pathway in schools, but also It has greatly improved the efficiency of student learning.

1 The actual situation of teaching basic computer courses at the present stage

1.1 Still following the traditional model of teaching basic computer courses

The constant expansion of enrollment and class sizes in some schools has made it difficult for teachers to take into account the needs of each student when they develop teaching activities that are based on content and the implementation of the teaching guide, and some teachers still follow the traditional teaching mode in the process of carrying out the teaching activities of basic computer course., with too much emphasis on theoretical basic knowledge transfer and the completion of teaching tasks, students in the in passive learning position. Over time many students will not be in the process of learning knowledge in the active thinking, just rote memorization of the to memorize this knowledge, it is difficult to apply this learning to practice, and the teaching outcomes are seriously divorced from the teaching objectives^[1].

1.2 Low utilization rate of e-learning resources

Most teachers do not link their teaching activities well to e-learning resources, neither the teaching methods nor the teaching contents have changed substantially^[2]. In the online environment, students'

access to knowledge has been broadened, and e-learning resources such as micro-classes and catechism provides great opportunities for students to study independently, and can also breathe new life into the teaching activities of teachers.

1.3 Lack of in-depth reform of the teaching and assessment methods of computer-based courses

At this stage, many schools are assessing the teaching of computer-based courses through a combination of final exams and regular grades, but usually the assessment is basically formal, and usually ends up being based on the students' final exam results. This also results in many students attaching too much importance to the learning of basic theoretical knowledge and neglecting practical operation, now it is difficult to produce computer professionals who meet the needs of society under such a teaching and assessment approach^[3].

2 Requirements for the application of blended learning mode for computer-based education in the network environment

2.1 Basic requirements for teachers

Teachers are both instructors and guides of student learning in educational activities. In the online environment, in the process of applying a blended learning model to computer-based teaching activities, the teacher remains in the teaching classroom plays a leading role^[4]. In conducting teaching activities, in addition to teaching students basic theoretical computer knowledge and operational skills, it is necessary to have a purpose and a plan to broaden students' horizons and enrich their knowledge structure system. Of course, in the online environment, teachers can't completely rely on the network when applying the blended teaching mode to carry out teaching activities teaching model, rather, the teacher should integrate the traditional and online teaching models in the traditional classroom which can teach students face to face, and can actually observe their learning so that the teacher can make the right learning decisions in time. This is an advantage that the e-learning model does not offer^[5]. In addition to this, teachers are required to know the overall student before applying the blended teaching model and the content and teaching methods are adapted to meet the different learning needs of students at different levels.

2.2 Basic requirements for students

The implementation of the new round of basic education curriculum reform emphasizes the main position of students in teaching. Students not only need to understand and master the theoretical knowledge of basic computer courses, but also need to be able to operate proficiently in the process of learning computer and apply the knowledge learned to solve some computer problems^[6]. In the online environment, in a blended learning model, students are required to use the Internet for independent learning, and they should be promptly feedback to the teacher on problems and confusion in independent learning, so that the teacher can communicate and be informed in a timely manner The actual learning situation of students and the reasonable adjustment of the teaching content, under the targeted guidance of the teacher, can not only deepen the students' understanding and mastery of basic theoretical knowledge, as well as further improving their practical skills^[7]. Computer basic course is a strong practical course, the purpose of carrying out the course teaching is to improve students' computer operation skills which will encourage students to become proficient in using some of the more common office software. Rather than mechanically memorizing what the teacher has told them, students should progressively take these knowledge content into their own knowledge structure system. So that when students encounter some computer problems in real life, they can better apply this knowledge to solve problems. This leads to better learning outcomes.

3 Effective strategies for the application of blended learning mode in computer based courses in an online environment

3.1 Cultivating students' independent learning skills through online instruction

In the online environment, teachers can make further improvements to students' self-directed learning when applying a blended learning model through online teaching and learning. Prior to the specific implementation of online instruction, course teachers must be adequately prepared to teach and students must have adequate independent learning resources, as well as the teacher should enhance the understanding of students, including their cognitive level, age characteristics and actual learning^[8]. And to prepare

online teaching resources based on the knowledge content and teaching tasks in the textbook. In addition, it is also possible to actively seek advice and suggestions from other teachers, so as to continuously

improve the quality of computer-based course teaching. The tasks of teachers and students in the online teaching mode are shown in Table 1 and the advantages of online teaching are shown in Table 2.

Table 1. Tasks of teachers and students in the online teaching model

Online learning	Main content
Teachers' tasks	<ol style="list-style-type: none"> 1. Divide the contents of the basic computer course material into different chapters in a reasonable manner. 2. Decompose the knowledge points reasonably, and make a teaching video. 3. Upload the teaching video to the online platform.
Students' tasks	<ol style="list-style-type: none"> 1. Use class time to watch teaching videos or PPTs anytime and anywhere. 2. Students feedback on problems and confusion encountered in independent study. 3. Complete the online exercise exercises and submit them.

Table 2. Major advantages of online teaching

Advantages of online teaching	Main content
Teachers	<p>The knowledge that is difficult to understand and master can be made into a teaching video to avoid repeated detailed explanations in the teaching classroom and save classroom teaching time.</p> <p>2. It can be based on the actual learning situation of online students and the problems encountered, the reasonable design of offline teaching content, improve the effectiveness and efficiency of offline teaching.</p>
Students	<p>Breaking the limitations of the teaching classroom, students can learn anytime and anywhere</p> <p>2. Students can watch the instructional video repeatedly many times and can say pause and continue playing at any time. This is more conducive to deepening students' understanding and mastery of theoretical fundamentals. The students' learning effect is obviously improved.</p> <p>3. Through a long period of online learning, students' independent learning ability can be significantly improved.</p>

For example: teachers speak about the knowledge of Word content, teachers can make short videos of some common paragraph formatting methods, like alignment, indentation and line spacing. After the students have studied on their own, they provide feedback to the teacher on the problems and exercises they have done, and the teacher will explain the problems and errors that students have encountered in offline teaching in detail, and the teaching efficiency will be significantly improved.

3.2 Online teaching mode enhances interaction between teachers and students.

In applying a blended learning model for teaching computer-based courses in an online environment, it is not just a matter of completing an online course. There is also a need to demonstrate the value of offline teaching^[9]. If online teaching can realize the training of computer talents, then there is no need for schools to offer basic computer courses. Although online teaching is very convenient, it has its drawbacks, while offline

teaching is limited by time and space, but it also has its own strengths^[10]. Therefore, teachers must make effective use of their limited offline teaching time to enhance communication and interaction with students, thus helping to students better grasp the key points and difficult points of this lesson and be guided to deeper learning. In addition, the teacher should also pay enough attention to the development of offline practical teaching, leading students into the computer room, organizing the whole student together carrying out practical operation. Special attention should be paid to the fact that in the whole practical teaching activity, the students occupy the main body position, and the teacher is only a guide and instructor, which plays a supporting role. In the practical teaching, the teacher must pay attention to the control of the teaching atmosphere of the course and guide every student to participate in the practical operation, to avoid students do something else that is not related to the content of the instruction. The main advantages of offline teaching are shown in Table 3.

Table 3. Major advantages of online teaching

Advantages of offline teaching	Main content
Teachers	1. The teacher can face to face knowledge and operational techniques to teach students, timely observation of student performance in the classroom, and avoid slipping and distracted. 2. Teachers can organic combination of practical teaching and theoretical teaching, deepening students' basic theoretical knowledge while improving students' practical operating ability.
Students	Problems encountered in the process of learning and operation can be effectively solved in a timely manner. They can freely interact and communicate with the teacher. Students can get a stronger sense of learning experience.

For example, the teacher can lead students to the machine room while explaining the page layout modification operation. Teachers can explain the basic theoretical knowledge, while guiding students to practical operation. In this way, students can be more familiar with Word operating system. In the process of hands-on operation, students have a more in-depth understanding of the basic theoretical knowledge. After completing the combination of theory and practice of offline teaching, teachers can strike while the iron is hot, upload the slightly more difficult learning tasks to the network platform, so as to further consolidate students' understanding and application of this part of the knowledge in a web-based platform, thereby effectively improving students' level of computer operation^[11].

3.3 Positive collection of pedagogical evaluations to optimize the use of blended learning models

After applying a blended learning model to a basic computer course in an online environment, the teacher should do an overall student questionnaire survey to collect students' opinions, suggestions and satisfaction on the teaching mode of this computer-based course. After learning the content of each unit of knowledge, the teacher can organize students to take a test on the knowledge of the unit, and the results of the test will be used to assess the students' perceptions of the course. The effectiveness of the application of the blended teaching model, from which problems and drawbacks are identified, teaching experience is summarized, and the teaching content and teaching methods are reasonably adjusted, so as to find the most suitable application method of the mixed teaching model for students. It is important to note that when assessing students' understanding and mastery of the content of the unit through examinations, the content of the

examinations also is necessary to fully reflect the differences between students, and set different test content for students of different levels. In this way, we can avoid that some students with poor computer basic level may lose their confidence in learning basic knowledge of computer because they did not get good results in the exam. And if a uniform content is used to assess the entire student body, the level of difficulty will inevitably be chosen as moderate, which will make those students who has a relatively high level of computer literacy will easily be able to answer these questions correctly, without any difficulty. It is bound to affect the motivation of these students to learn. These will seriously reduce the effectiveness of the application of the blended teaching model. Therefore, teachers should implement assessment of teaching and learning on an individual basis.

4 Conclusion

In summary, in the online environment, teachers of basic computer courses must keep up with the pace of development, innovation and reform teaching. The application of blended teaching mode in basic computer courses is of great significance, but at the same time, it also puts forward the new requirements for teachers and students. In applying the blended teaching model, teachers must take full advantage of the important advantages of online and offline teaching to enrich the the content and methods of teaching basic computer courses to change the previous perception of students that learning basic computer knowledge is boring and tedious and effectively improve the efficiency and effectiveness of student learning.

References

[1] Chen H, Guo XX. O2O-based hybrid teaching mode exploration of higher vocational computer composition

- principles course[J]. *Henan Agriculture*, 2020(15): 37-38.
- [2] Tang YT. The reform of senior vocational computer foundation course based on SPOC blended teaching mode[J]. *Science and Technology Wind*, 2020(11): 83.
- [3] Luo Y, Chen W, Zhang C. Research on the blended teaching mode of "Fundamentals of Computer Applications"--Suizhou Vocational and Technical College as an example under the background of "Internet+"[J]. *Science, Technology, and Economics Guide*, 2020, 28(6): 113-114.
- [4] Liu L. Reform of the blended teaching mode of "Computer Network" course[J]. *Southern Agricultural Machinery*, 2020, 51(3): 180.
- [5] Chen J, Wu FY. A preliminary exploration of the mixed teaching mode of "computer application foundation" course in local colleges and universities[J]. *Journal of Wuzhou College*, 2019, 29(6): 64-69.
- [6] Zhu KH, Ji ZZ. Research and application of blended teaching mode based on intelligent teaching tools rain classroom - taking "Computer Network Technology" course as an example[J]. *Education Modernization*, 2019, 6(A0): 199-200+206.
- [7] Kan BP, Liu YJ, Du WL. Practice and Reflection of Blended Teaching Based on Flipped Classroom in SPOC Environment - Teaching Computer Network Fundamentals for Senior Vocational Students . as an example[J]. *China Education Informatization*, 2017, 399(12): 48-51.
- [8] Dai XM. An analysis of 1+E online and offline hybrid teaching and learning model - taking a senior computer foundation course as an example[J]. *Southern Agricultural Machinery*, 2019, 50(7): 151, 155.
- [9] Zeng M, Liu Q. Practice and research of "Internet+"-based blended teaching mode for higher vocational courses in Computer Application Fundamentals[J]. *Digital Design: Down*, 2018(9): 6.
- [10] Wang YJ. The construction of digital e-learning center system in universities - a reflection and research on the teaching mode of computer foundation courses in the Internet environment in universities[J]. *Research on Contemporary Educational Practice and Teaching (Electronic Edition)*, 2016.
- [11] Wei L, Ni ZP, Lai WQ. Research on the blended teaching model of MOOC-based "University Computer Fundamentals" course[J]. *Technology Outlook*, 2017, 27(30): 152-153.