Universe Scientific Publishing

ORIGINAL ARTICLE

# Exploration of blended Practice teaching mode under "Internet +" in application-oriented Universities

**Xin Cong, Hongyu Su, Xiping Li**

Harbin Cambridge University, Harbin 150069, Heilongjiang, China.

Project number: GBE1317042, "The construction and application of hybrid practical teaching model" , Education Science Planning Office, Heilongjiang.

***Abstract:*** Under the background of "Internet +", informationization of higher education gradually infiltrates into teaching, which brings new opportunities for practical course teaching of engineering in application-oriented universities. Facing opportunities, aimed at the teacher's "teaching" as the main body of the traditional experimental teaching mode has been unable to fully mobilize students' learning initiative, puts forward the applied engineering practice courses hybrid practice teaching mode, and Cambridge college of electrical engineering and its automation in Harbin electrical and PLC application in experiment course in practice. The practical results show that the application of mixed practice teaching model in experimental courses not only improves the motivation of students' independent learning, but also improves the ability of learning practice, innovation and entrepreneurship.

***Keywords:*** Internet +; Mixed Practice Teaching Mode; Innovation and Entrepreneurship

With the development of information technology, under the background of "Internet +", gradually penetrated into the teaching of higher education informatization, the hybrid practice teaching in chemistry experiment teaching in colleges and universities, has been trying to practice, the relationship between teachers and students, breaking the traditional experimental teaching to establish a new relationship between teachers and students, teachers a promoter of the students in their study, the mentor, fully embody the students' subjectivity. That is, a student-centered new way to allow students to deeply participate in the experimental teaching process, and ultimately achieve better teaching results. The hybrid practical teaching mode realizes the integration of digital teaching resources and traditional experimental teaching classroom, as well as the organic integration of online and offline, which is helpful to improve the teaching effect and quality of practical courses. Engineering experiment teaching in application-oriented universities is an important way to cultivate students' ability of independent thinking, problem solving and innovation, and an important practical supplement to theoretical teaching.

In engineering experiment course, exploring the effective blended practice teaching mode under the background of "Internet +" can not only strengthen the teaching effect of engineering experiment course, but also improve students' practical ability, innovation consciousness and innovation ability.



doi:10.18686/ahe.v5i6.3766

## 1. Teaching status of the blended practice teaching mode under "Internet +" in the experiment of engineering specialized course

Due to the limitations of teachers' teaching level, experimental equipment and experimental sites, the hybrid practical teaching mode is not widely used in the course experiments of engineering majors in application-oriented universities. The mixed teaching mode of theory courses has achieved better classroom results and improved students' ability to acquire knowledge independently. On the contrary, although mixed practice teaching mode is permeating in the experimental teaching of engineering courses in colleges and universities, it has not formed a scientific and systematic research, and its promoting effect on teaching effect has not been fully demonstrated.

## 2. Application practice of hybrid practice teaching mode in engineering experiment course

The mixed practice teaching mode of engineering courses in colleges and universities is a systematic project, which includes not only teaching and learning in class, but also teachers' pre-class preparation, students' pre-class preparation, in-class interaction and after-class feedback, etc. The mixed practice teaching mode is mainly divided into four processes: teachers' pre-class preparation, students' pre-class preview, in-class interaction and after-class feedback. The process of hybrid practice teaching mode is shown in the figure below.

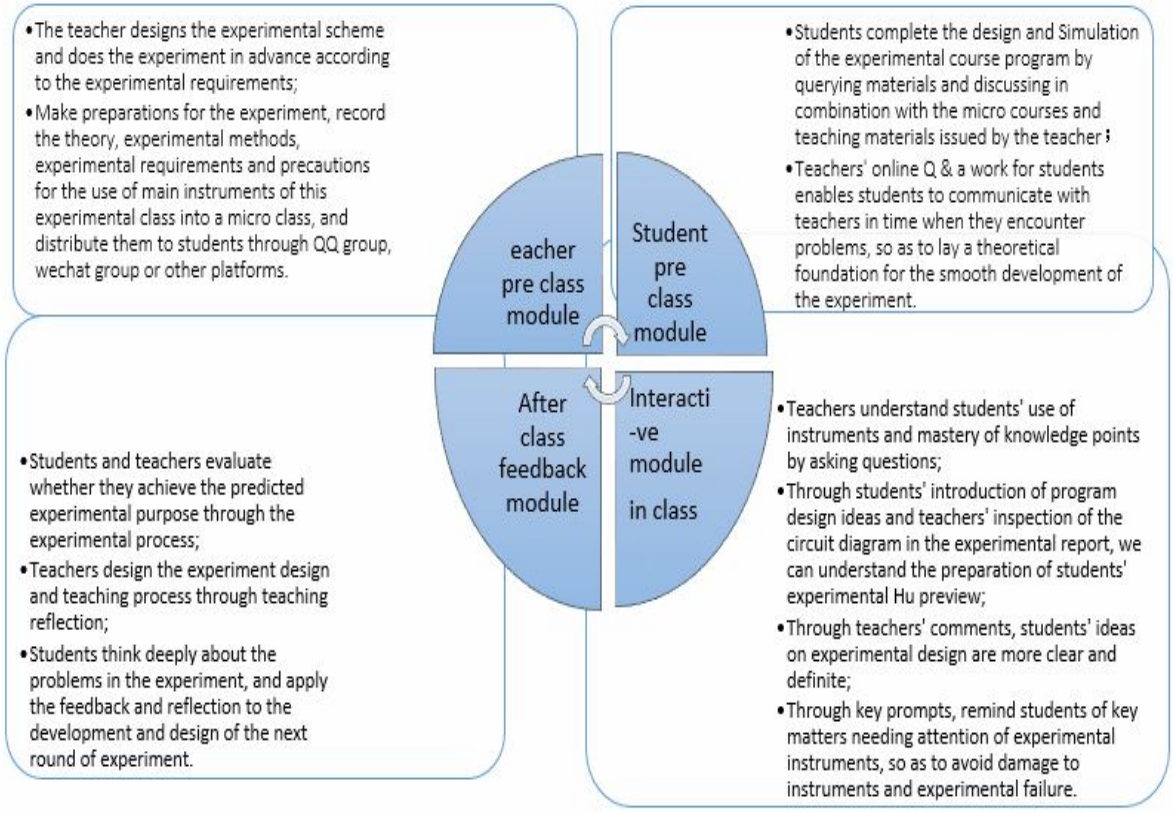


Figure1 Mixed practice teaching mode

In short, under the background of "Internet +", the combination of multimedia, micro-class, flipped classroom and virtual experiment with traditional classroom teaching can better guide students to find, put forward and solve problems independently and encourage innovation.

The author has carried out the practice of mixed practice teaching in electrical appliances and PLC application technology experimental course for 2018 undergraduate students majoring in Electrical Engineering and Automation of Harbin Cambridge University. After a year of practice, good results have been obtained.

## 3. The evaluation methods of hybrid practice teaching mode are diverse and flexible

In traditional experimental teaching, experimental results are mainly composed of three parts: attendance, classroom

performance and experiment report. Since the number of students in each class is about 40-50, it is impossible for teachers to supervise every student in the classroom, so the objectivity of experimental results is mediocre. After adopting the mixed practice teaching mode, the evaluation method can be more diversified and flexible. Besides the traditional method, the experimental results also add the process evaluation, which makes the evaluation more objective and stimulates the learning motivation of students.

## 4. Implementation effect

Hybrid practice teaching mode in Harbin Cambridge college of electrical engineering and its automation level 2018 undergraduates of electrical and PLC course experiment was carried out in practical application, through the classroom teachers to teach the same course before and after two different grade teaching effect in the form of contrast, it is concluded that the hybrid practice teaching mode has obtained the good effect. The comparison of the two teaching dimensions is as follows:

| **The dimension** | **Traditional classroom experiment teaching** | **Mixed experimental teaching** |
|---|---|---|
| Experimental online preview assessment | The students have no preview, and do not understand the purpose, requirements, principles, equipment and scheme of the experiment. | Through online learning, students have a certain visual understanding of the experimental equipment, in order to complete the task assigned by the teacher, the initiative to strengthen the preview of relevant knowledge, access to materials and literature and the design of the program with simulation software. For all kinds of problems encountered in the pre-class learning can also be through online and other ways to get independent guidance from the teacher. |
| Evaluation of experimental teaching implementation | Teachers will explain the installation and use of equipment and software in the first classroom experiment, which usually takes up a lot of class time, and the experiment for students is relatively unfamiliar. Even though the teaching is specific and detailed, operation errors or equipment damage often occur. | What teachers teach in class is more focused. In class, teachers can ask questions to know which specific instrument usage specifications have been mastered and which are not too profound. They can introduce relevant knowledge in a targeted and focused way, which can reduce the time of explanation and improve the effect of students' listening, and the success rate of experiment and the rate of equipment completeness are greatly improved. |
| Experimental teaching effect evaluation | Due to the limited time of the classroom experiment, 1/3 of the students can complete the experiment well, 1/3 of the students can basically complete the experiment, and 1/3 of the students cannot complete the experiment, so the efficiency of the experiment is low. | The efficiency of students' classroom experiment is greatly improved. Due to the full preparation of students before the experiment, the interactive links such as teachers' questions, students' introduction of the design ideas of the experiment, teachers' comments and so on, students have a clearer understanding of the experiment process and content, which reduces the probability and frequency of experiment misoperation, shorts the completion time and improves the efficiency of the experiment. |
| Experimental score evaluation | Lag, subjective one-sidedness, limitations of achievement evaluation. | It is helpful for students to adjust their learning behavior at any time in class. The performance evaluation is comprehensive and objective. |

## 5. Conclusion

Under the background of "Internet +", one of the core problems of experimental teaching reform is how teachers make use of the network information resources to reform the experimental teaching mode and improve the learning efficiency and effect of students. Through nearly two years of hybrid practice teaching model in the application of PLC application technology course, breaking the previous teachers teaching experiment contents and steps is given priority to,

verify the results of teaching students according to the steps machinery imitation model, exert the students' subject position in the learning process, has carried on the beneficial exploration for the reform of engineering experimental teaching mode. However, it is also found in practice that students have a higher demand for the quality and quantity of experiment content after the improvement of classroom efficiency. The scope of content and multimedia effects recorded in micro-lessons affect the degree of students' understanding of the experimental content, etc., all of which need to be further studied and explored by teachers and administrators. Hybrid practice teaching mode of multimedia, micro class, flip the classroom with the further integration of the traditional teaching mode, give full play to students' subjective initiative, make students from the platform under passive accept knowledge "audience" to "active" actively explore new knowledge, to exercise consolidating theory knowledge, practice ability in the experiment, the cultivation of innovative practice goal. It plays a great role in promoting the training of practical ability and innovation and entrepreneurship ability of engineering students in application-oriented universities.

## References


1. Liang L, et al. Research on electronic experiment teaching mode based on multiplication strategy. Physics Experiment 2019; (11).
2. Research on the Mixed Teaching Mode of Engineering experiment Course. Baidu Wenku. https://wenku.baiduhttps://wenku.baidu.com/view/97a93087182e453610661ed9ad51f01dc3815762.html
3. He K. The new development of educational technology theory from the perspective of blending learning. Research in Audio-visual Education; 2004; (3).
4. Zhang M, Guo X. Research and Enlightenment of new education and teaching mode in the era of "Internet +"——micro class, MOOCs, flipped classroom. Computer Knowledge and Technology, 2015; (12): 167-171.
5. Yan Z, Xu J. Research on online and offline integration of "Internet +" personalized teaching model. China Vocational and Technical Education 2016; (5): 74-78.
6. Wang L, Huang W. Research on the application of blended learning mode in the experimental teaching of economics and management. Experimental Technology and Management 2011; 28(1): 121-124.