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The Application of Mobile Teaching Mode in The Practical Training of Large-class Interdisciplinary

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***Abstract*—The teaching reform of "Internet + teaching" has become an irreversible trend of the times. The implementation of mobile teaching mode in practical teaching enables teachers to manage the classroom more efficiently and monitor the learning track of students. For students, it can effectively stimulate their learning initiative and carry out personalized learning. This research is carried out in the practical training teaching of large-class interdisciplinary training. After 48 teaching hours were managed, planned and implemented on the mobile teaching platform, the author conducted a satisfaction survey on the learning effect, and used SPSS software to conduct descriptive statistical analysis and correlation analysis and test of the survey results. The results show that the platform is highly valued by students in terms of promoting the communication between teachers and students and obtaining resources. At the same time, resource acquisition and classroom interaction have significant positive effects on improving teaching satisfaction. Therefore, the application of mobile teaching in practical training has a positive effect on improving the teaching effect and should be vigorously promoted in practice.**

Keywords—mobile teaching; practical teaching; interdisciplinary teaching; super star learning

I. Introduction to Mobile Teaching Mode

Mobile teaching is the combination of modern teaching concept and information technology. It is a new teaching concept of learning anytime and anywhere. In the traditional teaching process, students mainly learn book knowledge from teachers in class, and the short communication between teachers and students realizes the temporary interaction. After class, teachers cannot follow up each student's learning progress and know the learning effect of students. In the mobile teaching based on information technology, teachers can publish tasks and upload materials through mobile terminal devices (mobile phones), and they can interact with students at any time to meet the independent learning of students with different learning progress [4]. Based on the cognitive theory of constructivism, this model holds that students are active constructors of learning and play a major role in learning construction. Teachers need to constantly stimulate students' interest in learning, enable students to form internal learning motivation, create teaching situations conducive to the construction of students' active learning, and finally achieve the internalization of knowledge through mutual cooperation and discussion.

II. Necessity of Using Mobile Teaching in Practical Teaching of Large-Class Interdisciplinary

A. The universal problems existing in the current practical teaching

In the traditional teaching mode, the practical training course still takes the teacher's teaching as the key part and the students' hands as the auxiliary part. In the process of students' practice, teachers give individual guidance. Due to limited classroom time, theoretical teaching is often allocated more time than practical training, which is contrary to the original intention of practical training. At the same time, the practical training course is time-intensive, has a large amount of tasks, and has certain procedural. If students use after-class time to work overtime to complete practical training tasks, they will be unable to carry out further training when they encounter unsolvable problems. They must wait until the next class to solve this problem before continuing the subsequent practical training, which greatly reduces the efficiency of the whole practical training task [1].

B. The particularity of interdisciplinary large-class teaching

The teaching and learning of practical training courses in the interdisciplinary large-class environment is also faced with special problems such as a wide range of students' professional fields, a large number of students and management difficulties.

Students have a wide range of majors: this course is open to all majors of the university, and students of arts, science and engineering gather together to study. Students have different professional backgrounds, different basic knowledge and different ways of thinking and solving problems. Students' understanding of course content, opinions and preferences for teachers' teaching methods are also different. Therefore, to some extent, there exists the phenomenon of "difficult to adjust to different tastes" in the course teaching, which affects the teaching effect.

Large class: large number of participants (average 110 per class). Compared with small classes, large classes have more students and fewer teachers, which makes it more difficult to organize teaching. Students' concentration in class is not enough, and the phenomenon of playing mobile phones occurs from time to time. There are many challenges such as classroom order and students' participation. The purpose of this paper is to explore how to stimulate students' interest in

learning, create a learning situation of mutual cooperation and active participation, and build a mobile teaching mode with better teaching effect by using students' mobile terminals.

III. MOBILE TEACHING APPLICATION BASED ON LEARNING

A. Study on super star learning

Super star learning is a mobile learning professional platform for smart phones, tablet computers and other mobile terminals. It organically integrates advanced teaching technology, advanced teaching concepts and actual classroom teaching needs, promotes the diversification of classroom teaching means and effectively improves the teaching effect. The home page, information, notification, check-in, homework, discussion, testing and other functions of the super star learning platform provide technical support for the cooperative and interactive learning between teachers and students. Strong technical support promotes the diversified development of teaching mode. At present, super star learning platform has been introduced into English, computer, marketing and other courses. The teaching experiment proves that teachers and students have good effect in cooperative and interactive learning, internalization of knowledge and expansion of teaching space.

B. Mobile teaching mode based on general learning

Mobile teaching mode constructs the interactive mode based on the network teaching platform, which realizes the linkage of the platform, teachers, students and learning resources and the management of the whole teaching process before, during and after class[2], as shown in Fig.1.

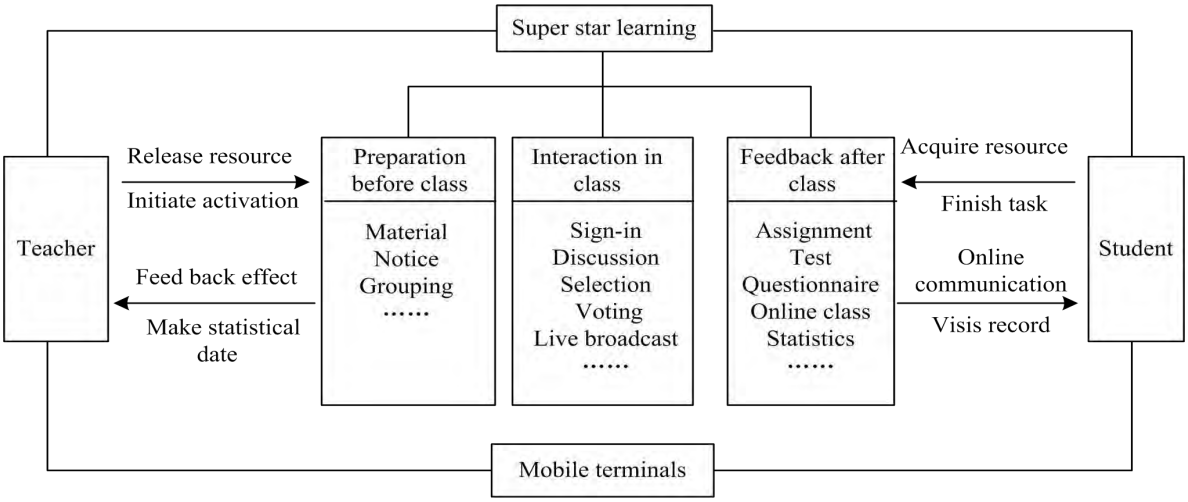

Fig. 1. Model diagram of teacher-student interaction teaching in general learning

First, the platform can access learning materials. In addition to its own rich electronic resources for teachers and students to download and share, teachers can also upload curriculum related learning materials for students to preview or review in advance. Secondly, learning pass provides functions such as check-in, voting, first-responder, live broadcast and topic discussion in classroom activities, which are more conducive to improving the interaction between teachers and students. After class, the general homework, tests, questionnaires and online classroom functions enable students to conduct personalized learning by browsing the expanded knowledge or materials uploaded by teachers. Teachers can provide online guidance, resources and comments after class. At the same time, teachers can track and understand students' learning situation through the statistical function.

Learning through the whole teaching process, pre-class - in-class - after-class activities related to the real-time record. Teachers can record all the data of teaching and learning, analyze the teaching process, and measure the teaching effect by quantitative index. According to the statistics of student interviews and completion, teachers can constantly improve the setting of corresponding links.

C. Mobile teaching application process based on general learning

1) Prepare before class: Before class, the teacher creates the class, and sends the class invitation code to the students to join the class. The teacher sends the relevant materials and information, video and PPT of the practical training course to the class and releases the pre-class tasks in advance. Through the "notification" function, it reminds students to timely preview the content of "practical training rules for each post". And in the class, the teacher set pre-class post ability test, supervise and master the students to complete the preview. According to the test results, the teacher gives the appropriate experience reward to motivate students.

2) Interaction in class: In the practical training teaching of large-scale cross-specialty classes, there are a large number of students, and teachers use the "check-in" function to replace the traditional time-consuming and inefficient roll call. All students can sign in within one minute to effectively use class time and improve learning efficiency. On study pass, the teacher releases rush to answer, arouse the enthusiasm of the student adequately. Random roll call, full of excitement. Only by listening carefully in class can students think and talk correctly. For group speech and group discussion, students can

speak freely, which is conducive to expanding students' thinking and giving full play to their imagination. The opinions posted by students to the general study can be seen by both teachers and students. In the process of practical training, students of the same position in different groups can exchange work experience and solve problems through the learning platform. Some previous activities, such as the selection of group posters, were mainly conducted in the form of one teacher or some student representatives. On the learning platform, all students can participate in the voting. Results are generated and published instantly, making the process more transparent and fair

3) Feedback after class: After class, the teacher will release specific exercises or online exams to help students review and consolidate what they have learned. Especially for the unsolved problems in the process of practical training, on the one hand, it can learn through online Q&A between teachers and students. On the other hand, teachers divide students of different majors into groups according to practical training positions by grouping them. Students can do their own discussions in groups and find solutions through discussion and comparison. This improves students' practical problem-solving ability and teamwork spirit. Teachers can also solve the problems existing in teaching and master the learning situation of students through questionnaire survey.

In addition: according to the number of times that students answer questions, participate in discussions and actively interact in class, students are given corresponding experience values and make objective evaluation, and their classroom performance and learning track are recorded. Through data analysis, students can understand their learning situation of practical training courses and learn key and difficult points in a targeted way. Based on this, the teacher gives a more accurate average score at the end of the semester to make the total score of students more objective and effective.

IV. Analysis on the Implementation Effect of Mobile Teaching

After the practical training course for large classes of cross-major, the author released an online questionnaire on the learning platform to understand the teaching effect of mobile teaching. Likert 5-point scale is used to score the questionnaire. The 5 scoring points respectively indicate: "1 is very dissatisfied", "2 is dissatisfied", "3 is general", "4 is satisfied" and "5 is very satisfied". 145 questionnaires were distributed and 136 were effectively recovered, with an effective rate of 94%.

A. Descriptive analysis

The questionnaire is conducted from five aspects: classroom management, resource acquisition, course interaction and overall teaching satisfaction. The survey results are as follows.

TABLE I. Statistical Table of Survey Results of Learning General Teaching

Survey item	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
1. General learning in class check-in	2	5	22	77	30
2. General learning in acquiring resources	0	5	15	51	65
3. General learning in classroom interaction	1	4	30	47	54
4. General learning in answering questions after class	0	12	20	78	26
5. Overall teaching satisfaction	0	4	11	50	71

As can be seen from the above data, students still hold a positive attitude towards the mobile teaching mode of learning. The number of people who think that they are satisfied and very satisfied in the four aspects of classroom check-in, resource acquisition, classroom interaction and after-class Q&A basically accounts for more than 75%. As for the overall teaching satisfaction, 89% of the students thought that they were satisfied and very satisfied, and achieved a high feedback effect. However, in the after-class Q&A and class check-in, there are still 9% and 5% dissatisfied people, which indicates that teachers still have some omissions and deficiencies in the setting of this link, which need to be constantly improved in the later stage.

B. Correlation Analysis

According to the results of SPSS correlation analysis, it can be seen that the correlation coefficient between overall teaching satisfaction and resource acquisition is 0.996 and that between classroom interaction and overall teaching satisfaction is 0.938, both of which are highly correlated. The test results were all less than 0.05, indicating that the overall teaching satisfaction was highly correlated with classroom interaction and resource acquisition. In addition, the correlation coefficient between classroom interaction and resource acquisition is 0.962, and the bilateral test value is less than 0.01, indicating that classroom interaction and resource acquisition are highly positively correlated.

From the above analysis, it can be seen that mobile teaching can provide students with more convenient learning resources and enhance the interaction between teachers and students inside and outside the classroom. Both of them have significant effects on improving teaching satisfaction. Therefore, teachers should pay more attention to resource integration, effect feedback and platform management.

TABLE II. SPSS CORRELATION ANALYSIS RESULTS

		Class Check-In	Acquire Resource	Class Interaction	Answer Question After Class	Overall Teaching
Class check-in	Pearson correlation	1	.722	.786	.990**	.668
	Significance (bilateral)		.168	.115	.001	.218
	N	5	5	5	5	5
	Pearson correlation	.722	1	.962**	.667	.996**
Acquire resource	Significance (bilateral)	.168		.009	.218	.000
	N	5	5	5	5	5
	Pearson correlation	.786	.962**	1	.723	.938*
Class interaction	Significance (bilateral)	.115	.009		.168	.019
	N	5	5	5	5	5
Answer question after class	Pearson correlation	.990**	.667	.723	1	.611
	Significance (bilateral) N	.001	.218	.168		.273
		5	5	5	5	5
	Pearson correlation	.668	.996**	.938*	.611	1
Overall teaching	Significance (bilateral)	.218	.000	.019	.273	
	N	5	5	5	5	5

[a] **. There is a significant correlation at the level of.01 (bilateral).

[b] *. There is a significant correlation at the 0.05 level (bilateral).

V. CONCLUSION

Mobile information teaching not only restricts the phenomenon of using mobile phones in class to a certain extent, but also improves the ability and enthusiasm of students to learn independently. Compared with traditional teaching, it has substantially made a great breakthrough. It can improve students' learning efficiency by making full use of such links as fragmentary time learning, interesting check-in, hierarchical teaching and simulated practical environment teaching. Especially in the interdisciplinary and large-class practical training teaching, such an efficient teaching form can free teachers from repetitive work such as correcting homework, naming and signing, and so on, so as to spare more time and energy for the application in teaching design and teaching improvement. The application of mobile teaching in various disciplines and survey results show that mobile teaching mode has a significant impact on improving the efficiency of classroom learning, optimizing classroom management and enhancing students' interest in independent learning. Therefore, the application of mobile teaching in practical training courses has far-reaching education significance and is a new teaching concept that conforms to the learning mode of contemporary college students and conforms to the trend of the times.

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