Design and Evaluation of Micro-class Based on WeChat Public Platform

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Abstract. Vocational education, as an important part of Chinese education system, possesses great demands for informatization in teaching, learning and creative exploring, which meanwhile enjoys great prospects. How to develop informatization in vocational education has become one of the issues that must be solved in current Chinese education system. Taking the course of Mother and Baby Caregiver in vocational education and training as an example, this paper analyzes and summarizes characteristics of adult learners and learners who participate in vocational training based on the adult learning theory from the aspects of learners' background and their psychology. Modular teaching and participatory teaching methods are adopted to prepare for the content and resources for these micro-courses, of which recording, editing, releasing and testing are operated. Finally, this paper explores the learning effects of micro-learning courses from three aspects with the method of comparative analysis: micro-teaching design, micro-class learning effects and micro-teaching experience. Feedback on micro-courses from questionnaires and interviews of students and teachers are well collected to improve the study.

Keywords: Micro-course · Curriculum design · Vocational education · Course evaluation

1 Introduction

Accompanied by the rapid development of information technology in the field of education, education informatization has been widely used in the field of higher education and compulsory education in China and good results have been achieved [1]. Vocational education has always been an important part of China's education field. General Secretary Xi Jinping in the 19th National Party Report proposed the new orientation of vocational education with special characteristics in China [2] "Building a vocational education system with Chinese characteristics, improving vocational education and training systems, deepening the integration of production and education, as well the school-enterprise cooperation". China plans to modernize vocational education in 2035, making vocational education an important support for the country's

implementation of the innovation-driven strategy, making the strategy of rejuvenating the country through science and education, and the strategy of strengthening the country through talents, and further improving the basic quality and skills of workers. In 2018, a report entitled "2018 China Vocational Education Technology Outlook: Horizon Project Report" was published in the "Horizon Project Report" which was jointly researched by the New Media Alliance of the United States and the Institute of Wisdom Learning of Beijing Normal University. This article pointed out that educational technology has great needs and development prospects in the fields of teaching, learning and creative inquiry in the field of vocational education [3].

Micro-course is one of the more popular online courses. The earliest use case of micro-class is the organic chemistry 60s teaching method which was proposed by Professor LeRoy A. McGrew in the United States in 1933 [4]. The main purpose of the English Center in the United States is to help learners to learn English and to guide learners in English reading, writing, listening, speaking, and grammar [5]. The development and application of micro-curricular resources abroad relies on the government's education policy. With the wider field of micro-courses, academic institutions and related experts have gradually become the main institutions and groups for the development and application of micro-curricular resources, forming a large-scale, all-round micro-course curriculum system [6]. The micro-class firstly entered China in 2010, and the micro-courses only began to be constructed and used in Foshan, Shenzhen, Inner Mongolia and other regions of China. In 2012, micro-classes achieved spurt development in China [7]. Therefore, this article combines the "Newborn Touch" course in the "Mother and Baby Care" course in vocational training education to design and produce micro-courses, and develop a micro-course learning system for teachers and students to communicate and learn better. And finally the effectiveness of the micro-course teaching was analyzed and evaluated to assist the traditional teaching activities of the course.

1.1 A Micro-learning System Design

Teaching Content Design. The teaching content and teaching objects of vocational training are different from those of traditional teaching. Therefore, the design of micro-classes is also different from that of the traditional education [8]. This paper draws on the design of the vocational training courses in Peking University's civilian schools, combined with the teaching content of the "Newborn Touch" course, using modular and participatory methods for teaching design [9].

Modular Instructional Design. For the adult learners, especially the older learners with low academic qualifications, it is difficult to fully and systematically study the contents of the course [10]. Even through the detailed explanation of the teacher, it is difficult to fully grasp the contents of the course. In this paper, based on the characteristics of adult learners, the course is divided into eight modules in accordance with the characteristics of the "Newborn Touch" course.

Participatory Instructional Design. The "Newborn Touch" course is aimed at the middle-aged women who have children, who have more or less knowledge of maternal and child care. Therefore, the teaching design of the "Newborn Touch" course should allow learners to actively participate in the course learning in combination with their own experience. This kind of teaching method can enhance the interest of adult learners, and let adult learners be quickly integrated into the teaching. Students can improve their learning by the means of combining their own experiences. The subjective consciousness makes the students' sense of participation stronger and makes the students better understand the contents of the course [11].

Micro-learning System Design. He micro-course learning system based on WeChat public platform is mainly to meet the curriculum requirements of teachers and learners. The micro-class learning system mainly includes three modules, which is namely, personal center, curriculum resources and contact us. The overall functional design of the micro-learning system is shown in Fig. 1.
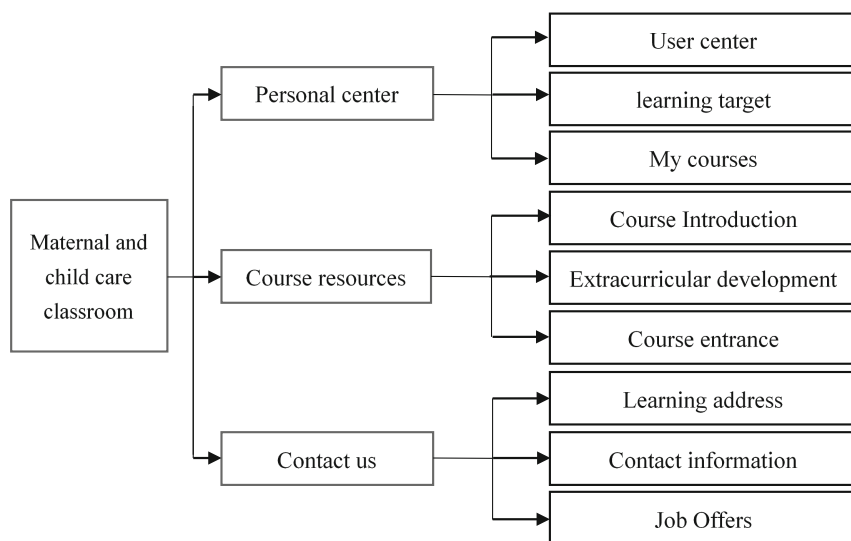

Fig. 1. System function architecture diagram

1.2 Implementation of Micro-learning System

Micro-course Recording. Mainly through the recording software of Screen Flash to complete the recording of theoretical knowledge, the realization of the micro-course of the theoretical course of this research is made. After the course recording is completed, the course will be produced through the Premiere software, theoretical course micro-class rendering effect is shown in Fig. 2.
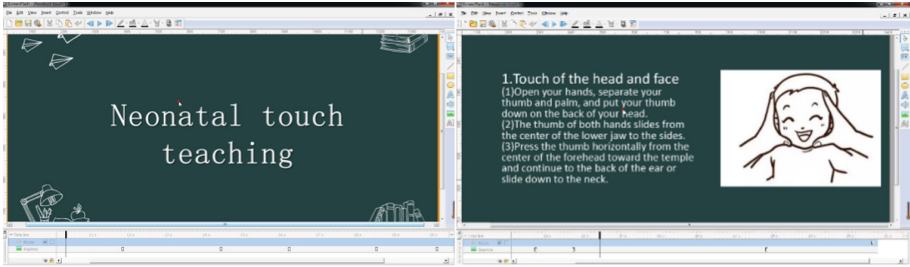
Fig. 2. Recording process of the micro-course theory knowledge

The implementation of this research practice course is mainly by the means of the completion of the recording of the practical operation part in the classroom, and the production of the course through the Premiere software after the completion of the course recording. The theoretical course micro-class presentation effect is shown in Fig. 3.

Fig. 3. Recording process of micro-curricular practical knowledge

Implementation of Micro-learning System. The micro-course learning system is a learning system for learners to learn independently through the WeChat public platform. The screenshot effect of the micro-course system is shown in Fig. 4.

Newborn touch   Breast touch   Head and face touch

Fig. 4. Micro-course learning system course screenshot

2   Evaluation and Feedback of Micro-teaching Teaching Effect

2.1   Analysis of the Effect of Micro-class Learning

The analysis and evaluation of the learning effect of micro-class mainly includes the analysis of the effect design of micro-teaching and the analysis and evaluation of the learning effect of micro-class. The analysis of the design of micro-teaching is mainly through the questionnaire to analyze the teaching design of micro-class, the analysis of the learning effect of micro-class and the evaluation mainly analyzes and evaluates the learning effect of the students through the test scores of the students.

In this study, the comparative study method was used to classify learners into "Traditional classes" and "Micro-classes". The "Traditional classes" included two classes, and 50 students per class, with a total of 100 students. The "Micro-class" included two classes, each class consisting of 50 students, with a total of 100 students. The questionnaire on the design of micro-teaching was only distributed to 100 students in two "Micro-classes". The score distribution of the "Questionnaire for the evaluation of the teaching design of the "Newborn Touch" micro-teaching" is shown in Table 1.

Table 1. Questionnaire for "Newborn Touching" micro-course teaching design evaluation

Variable	Index	Theoretical course	Practical operation	Score
Teaching needs	Teaching objectives (10 point)	9 point	9 point	9 point
	Teaching content (10 point)	9 point	8.3 point	8.65 point
	Knowledge needs (15 point)	12.5 point	13 point	12.75 point
	Course equirements (15 point)	12 point	13.5 point	12.75 point
Teaching strategy	Micro-teaching order (5 point)	3.5 point	4.5 point	4 point
	Micro lesson video (20 point)	18 point	19 point	18.5 point
	Teaching session (20 point)	19 point	18 point	18.5 point
	Teaching method (5 point)	4.6 point	4.5 point	4.55 point
Grade	Total score (100 point)	87.6 point	89.8 point	88.7 point

From the analysis results of the eight variables of the micro-teaching design in Table 1, we can find that the design of the micro-course teaching of the "Newborn Touch" course is reasonable and can help the learners to better complete the learning tasks. It is a good supplement to traditional teaching.

2.2 Analysis and Evaluation of the Learning Effect of Micro Lessons

The evaluation object of the "Newborn Touch" micro-class learning effect is the two training classes which are the "Traditional class" and "Micro-class class". These two classes are taught by the same teacher, and the quality of the students of the two classes basis the same. The "Traditional class" is used with the traditional classroom teaching method. The "Micro-class class" uses the micro-course teaching method in this study to assist the teaching. There are 100 students in the two classes. After one week of training, the students in the two classes were tested with the same test papers. The results of the theoretical course are shown in Table 2:

Table 2. The results of the "traditional class" and "micro-class" theory courses

"Traditional class" test scores	Score distribution	Fractional segment	90–100	80–89	70–79	60–69	Below 60	
		100 people	0 people	0 people	12 people	78 people	10 people	
		Proportion	0%	0%	12%	78%	10%	
	Highest score	77 point	Lowest score	54 point	average score	65.17 point	Passing rate	90%
"Micro-class" test scores	Score distribution	Fractional segment	90–100	80–89	70–79	60–69	Below 60	
		100 people	0 people	2 people	54 people	44 people	0 people	
		Proportion	0%	2%	54%	44%	0%	
	Highest score	81 point	Lowest score	61 point	average score	70.855 point	Passing rate	100%

The test results show that the average score of the theoretical course of "Traditional class" is 65.17 points, and the average score of the theoretical course of "Micro class" is 70.855 points. From the average scores of the two classes, we can see that the average score of the "Micro-class" theory course is 5.685 points higher than the average score of the "traditional class" theory course. After two classes are made one week of training similarly. The learning scores of the "Micro-class classes" have been improved compared with the "traditional classes", indicating that learning with micro-classes can improve the learning effect of learners to a certain extent.

The results of the courses that pass the test of the course are shown in Table 3:

Table 3. The results of the "traditional class" and "micro-class" operation courses

"Traditional class" test scores	Score distribution	Fractional segment	90–100	80–89	70–79	60–69	Below 60	
		100 people	0 people	0 people	5 people	85 people	10 people	
		Proportion	0%	0%	5%	85%	10%	
	Highest score	72 point	Lowest score	52 point	average score	63.29 point	Passing rate	90%

(*continued*)

Table 3. (*continued*)

"Micro-class" test scores	Score distribution	Fractional segment	90–100	80–89	70–79	60–69	Below 60	
		100 people	0 people	4 people	47 people	49 people	0 people	
		Proportion	0%	4%	47%	49%	0%	
	Highest score	81 point	Lowest score	64 point	average score	70.78 point	Passing rate	100%

The test results show that the average score of the "traditional class" operation course is 63.29 points, and the average course of the "micro-class class" is 70.78 points. From the test results, the average score of the "micro-class" is "traditional". And the average score of the class is 7.49 points. From the analysis results, it can be seen that in the course of operation, the use of micro-teaching has significantly improved the learner's performance.

It can be seen from the analysis results that in the course of the theoretical course and the operation course, the "micro-class class" has a more obvious improvement than the "traditional class", especially in the process of teaching the course, the efficiency of the "micro-class class" is improved. And the effect is more obvious. In the 7-day training process, the average score increased by 7.49 points. The theoretical course improvement effect is also obvious, and the average score is also increased by 5.685 points. Therefore, we can see that the micro-course teaching has achieved good results as a kind of auxiliary teaching form into the classroom teaching, which has improved the learner's performance, reduced the teacher's teaching pressure, and completed the traditional classroom well. The supplement and improvement of teaching have made the training and teaching achieve better results.

2.3   Micro-teaching Effect Feedback

In this study, the students conducted a questionnaire survey on the effect of micro-class learning in the later stage of the "Micro-class" course training. The research and analysis were carried out from the aspects of the micro-teaching mode and teaching effects. 100 questionnaires were distributed, of which 93 were valid, including 12 electronic documents and 81 paper documents. The study obtained relevant results by statistical analysis of the questionnaire, and presented the analysis results in the form of a graph.

Students' Evaluation of Micro-teaching Teaching Mode. The evaluation of the micro-teaching mode is mainly to investigate whether the learners adapt to the new teaching mode of micro-teaching. The statistical results of the questionnaire are shown in Fig. 5.
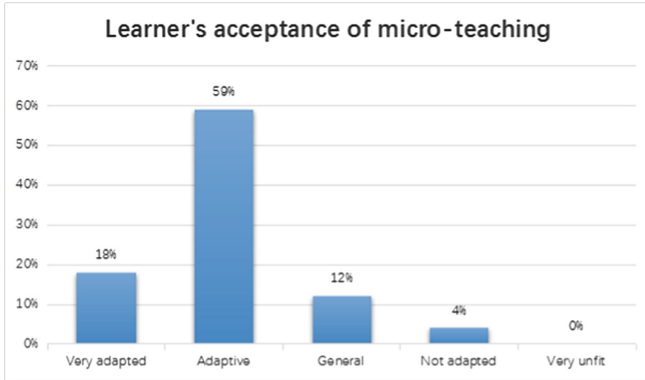
Fig. 5. Whether the learner adapts to the micro-teaching

From Fig. 5, we can see that after the micro-class study, 18% of the "micro-class" learners think that they are very suitable for this learning style, and 59% of the learners think that they are more suitable for this learning style. 12% of learners think that in general, and only 4% of learners do not adapt to this micro-teaching method. From the overall data, we can know that most learners are more suitable for the learning method of micro-teaching, which indicates that the teaching method is recognized by most people.

Students' Evaluation of the Effect of Micro-teaching. The evaluation of the teaching effect of micro-teaching mainly refers to whether the micro-courses have helped the students to learn after the micro-courses are studied, which reflects the teaching effect of the micro-courses. The results of the specific questionnaire survey are shown in Fig. 6.
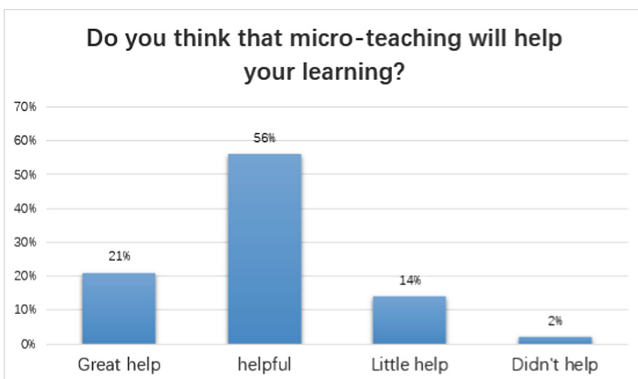

Fig. 6. Evaluation of the teaching effect of micro-teaching

From Fig. 6, we can see that after a week of micro-learning, 21% of the "micro-class" students believe that micro-teaching provides a lot of help for their own learning, and 56% of the learners think that micro-teaching is given to my own learning, which is helpful, and only 2% of learners believe that micro-teaching is not helpful for their own learning. It can be seen from the survey results that the learning method of the micro-teaching provides some support and help for most learners, so that the learners can achieve better learning results. The feedback of the micro-course teaching experience mainly includes two parts, the feedback of the students and the feedback of the teachers. The feedback of the students refers to the feedback of the micro-courses after the learners learn through the micro-courses. The feedback of the teachers refers to the teachers' feedback on micro-teaching after teaching assistance through the use of micro-courses.

Feedback on Student Micro-teaching Experience. From the results of the micro-class evaluation, it can be seen that after a week of micro-course learning, the micro-teaching course provides some help for the learners in the training process. After the micro-course assisted teaching, the learner's academic performance has been improved. As well that the earning efficiency has also been improved. In the process of learning, learners also put forward some feedbacks and suggestions for the micro-teaching of this study, including the following two aspects:

Micro-teaching Content is not Enough. After a week of micro-learning, some learners believe that the teaching content of micro-teaching is not sufficient compared with that of the traditional classroom teaching. The teaching of micro-teaching only introduces and teaches the knowledge points of the course. Some of the contents expanded by teachers in the traditional classroom are not reflected in the micro-courses. For the study of practical knowledge, micro-teaching is undoubtedly more suitable. The micro-teaching teaching reveals the operation steps to the learner more clearly and accurately, so that the learner can better complete the mastery of the knowledge point, thereby improving the learning efficiency of the learner.

Micro-teaching Knowledge is Too Fragmented. For the teaching of micro-courses, some learners also reported that the knowledge of micro-classes is too scattered. For the students who graduated from high school, it is difficult for them to link the knowledge point system. The fragmentation of micro-teaching is the characteristic of micro-teaching. However, for the junior high school graduates, too much fragmentation makes it difficult for learners to master all the knowledge. Therefore, in the process of micro-teaching, teachers need to communicate more with the learners to help learners to connect the knowledge points in tandem to achieve better learning outcomes.

Feedback From Teachers' Micro-teaching Experience. In this study, we also interviewed the teachers of this course who are in the course of using micro-teaching. We interviewed three teachers who have been engaged in training for many years and learned about the teaching experience after using micro-teaching. Through interviews, we found that the three teachers are still very willing to accept this teaching method. First, they believe that using micro-course assisted teaching in the training process can alleviate much of their teaching pressure, especially in the actual teaching process,

because there are too many people. Even if the teacher repeatedly performs the demonstration exercises, the effect is not very good. After using the micro-course assisted teaching, the learner can learn independently by watching the video of the micro-course, which reduces the teaching burden of the teacher. Secondly, the teacher believes that after using the micro-course assisted teaching, the students can more easily understand the teaching contents in the traditional classroom training process, and the students have a stronger grasp of the knowledge points, thus improving the quality of the school's training and teaching.

Finally, all three teachers believe that micro-teaching can improve learners' self-learning ability. Micro-teaching provided a good learning platform, which is the micro-learning, the communication between learners and teachers is increasing. When students encountering problems in their studies, they can directly communicate with the teachers through WeChat, which promotes the interaction between teachers and students. Communication improves the relationship between teachers and students, and also improves the learning efficiency of learners.

3   Conclusion

Although this paper completed the micro-course design and implementation of the "Newborn Touch" course, through comparative analysis, it also verified that the micro-courses can really help the learners who participate in vocational training, but the amount of the experimental data, the richness of the course content and some short-comings in analyzing learner characteristics, also need to be further improved. It is believed that with the further development of the education informatization in the field of the vocational education, there will be more micro-courses on vocational training and education in the future, so as to better promote the informatization of vocational training and education, and to provide more rich and diverse professional and technical talents, as well as the learning resources to promote the development of vocational education information.

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