WeChat Mobile Learning Platform Based on the Knowledge Map Navigation

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Abstract. This paper focuses on building WeChat mobile learning platform to solve the problem that "autonomous learning" is inefficient. We first introduce iterative development in software engineering knowledge, and then put forward the "work project oriented iterative" knowledge map navigation system. The system is used to help build WeChat mobile learning platform and guide students to adopt the strategy of "iterative learning "to realize project development. At the same time, students are required to learn the course in the way of "daily classroom teaching & platform independent learning". Finally, we apply the research to practical teaching using comparative method supplemented by questionnaire survey, individual interviews, and unit test. As the experiment results show, our research can maximize the use of fragmented time, make learning more effective, and improve students' test scores and satisfaction with the course.

Introduction

According to the 2015 China Internet Network Information Center (CNNIC) survey, with the rapid rise of the mobile Internet, college students’ smart-phone users has reached 83.7% above. The highest application rate is followed by social network services (SNS), read the pages, photos and games. The application of SNS in the top three is WeChat, QQ and micro-blog[1,2].

Based on the above investigation, in order to make full use of the students' spare time, a lot of college teachers begin attempts to construct WeChat learning platform as a branch of network learning platform. The teachers hope students to have more autonomous learning after class, but investigators found that the results were unsatisfactory. Yang Jie [3] invested the teachers and students’ usage of the mobile learning platform in the five universities in Nanjing, and then analyzed the present situation of mobile phone learning through a questionnaire survey of more than 3000 copies. Results show that although the students have wide applications with intelligent mobile phone, learning is real little effective. Wang Ting [4] in Shanghai Normal University invested the Micro-curriculum learning using the WeChat platform in the college students of Jiangsu, Zhejiang and Shanghai. With sufficient data collection and analysis, the results show that only 9.17% of the students often use micro-courses for learning and the rest students only experienced but rarely used often. The two survey data show that WeChat mobile learning platform use efficiency is not high. The reason is that despite the platform is supported by widely used mobile application—WeChat, but the mobile learning is to use fragmentation time, the students without correct knowledge guide is hard to have "complete and systematic" learning. So it is necessary to study how to construct the whole structure of curriculum content when teachers are going to construct WeChat learning platform. It will facilitate students’ autonomous learning and retrieval and do the knowledge navigation more efficiently using the "knowledge map". Knowledge map can also help students to complete the systematic learning of course knowledge.
Platform Constructions

We found that many teachers have developed WeChat mobile learning platform, and uploaded the curriculum resources to the platform, such as the course-ware, case materials, micro lesson video, operation and testing content etc. But teachers didn’t arrange the course knowledge in accordance with the curriculum occupation ability of application and do the right index corresponding knowledge of those data. So the students can’t improve their professional ability to develop a complete project even after reading these massive learning materials. To resolve this problem, we decide to use the knowledge map navigation to guide students to learn. The research [5] shows that the use of "knowledge map" can provide resource navigation function for students to improve media mobile learning resources’ application effects. In addition, based on years of teaching experience, it is proved that the project teaching method can greatly improve the students learning enthusiasm and professional application ability. So in the process of development of knowledge map navigation system, we decide to use” knowledge map "combined with" iterative project development "method to structure knowledge into real task. The development process is divided into 5 steps as follows:

Step 1, Task Analysis: select representative enterprise project corresponding to the course, set up a working group composed of teachers, enterprises technical personnel and project key user, and then confirm the project specific needs of the project key users.

Step 2, Define Knowledge and Skills: confirm the target of knowledge map, the use of the scope, the basic structure, elements, the definition of the relationship between the nodes, the link data storage methods, etc.

Step 3, Design and Development: according to the requirements of knowledge and skills, choose specific development tools, find out the knowledge in the enterprise storage situation based on knowledge classification, confirm association knowledge and draw a map of the preliminary knowledge.

Step 4, Test and Improvement: the students will use and evaluate the knowledge map navigation system, and then expand, update and improve the content of knowledge map after the repeated evaluation according to the students’ opinion.

Step 5, Results Show: embed the knowledge map navigation system in the WeChat public platform. The framework design for WeChat mobile learning platform based on knowledge map navigation is as shown in figure 1.
Experimental Methods

In order to verify the research results of this project effectiveness and application, we conduct the experiment in case of the course—"senior interactive animation production" as an example. The curriculum belongs to computer programming course which requires students to develop interactive animation projects. So it is very suitable for our research.

We mainly use the comparison method in the research of experiment results. That is, the synchronous teaching of two animation classes use different teaching methods: one class use regular project-teaching method, the other class teaches in the form of "regular classroom teaching & platform independent study" way which we suggested. At the end of each teaching unit we will have a unit test, and record the test scores to compare the results.

Considering simple comparison method exist problems in terms of attribution, we also cross syndrome of the results through questionnaires, interviews with students and student evaluation method, in the conclusion to improve the results reliability.

The questionnaire survey will issue to two classes of students using an anonymous method. The survey is designed to answer about the curriculum goals, understanding of career goals, teaching attitude, teaching method and teaching effect. We will analyze the survey results through students’ appraisal. Interviews contain face-to-face talk or online QQ group or WeChat group counseling to collect students’ opinions on course teaching.

Experimental Results

Students’ professional ability

The course "senior interactive animation production" is divided into five chapters. In the end of each chapter we will spend 90 minutes to do unit testing in the classroom. The test issued in the
form of electronic paper with the main types of questions as Single Choice, True or False, Fill-in and Program-Design. The four questions are 20 points, 10 points, 20 points, 50 points. The first three questions are about basic knowledge and the fourth Program-Design study the migration ability of students programming ability and knowledge, and also examine whether the students have the professional ability to implement project applications. Experiment was conducted in the same session of two animation class A and class B, which class A (41 students) adopted by the "daily project teaching & WeChat learning platform" method, and class B (39 students) adopted by daily project teaching method. We analyzed two classes’ score data after the unit tests, then found that the average score of class A is 79.6 points, and class B is 65.9 points. It proved that our research method can improve students’ basic knowledge and ability. We also do further comparisons the scores in different types of questions in unit paper, as shown in Figure 2 below. We found that there are little differences between the two classes in the scores of the first three questions, with class A average score of first three questions only 4.6 points higher than class B, but the fourth question which can reflect the students’ ability of project development to the maximum extent scored higher than class B 8.1 points. As mentioned above, we prove the project research has played a certain role for students of curriculum knowledge consolidation and upgrading vocational skills.

![Figure 2. Average score comparison chart in types of question.](image)

**Students’ Recognition of Teaching**

At the end of the course, we distributed a questionnaire survey to the two class students. According to the questionnaire content we extracted the main four contexts such as teaching design, classroom activities, curriculum content, and teaching method to obtain evaluation points and then analyzed the data. The analysis results is showed in Figure 3 below, class A are significantly higher than class B both in the recognition of the curriculum and the evaluation of Teachers.
Improvement Suggestions

We analyzed the two classes of 80 students’ opinions in the questionnaire survey, including the recommendations and the students’ individual interviews. The students’ opinions of the teaching design of the project are showed in Figure 4 below:

20% students proposed the flipped classroom video is not very clear, that is because WeChat public platform require a video upload size limit requirements for 20M, and does not support FLV format at that moment. To overcome this difficulty, we plan to re-record video and upload it through QQ video. 26% students hope that learning resources will be constantly updated, so that after the end of semester they can continue self-study and the platform can help them understand the application ability of the corresponding occupation as one of the employment direction. 32% students propose to increase more project case presentations on the platform for reinforce learning. In this respect, teachers are studying to design more teaching case for students to self-study after class. 15% students suggest that they can develop project by means of division of labor. Such as art, sound effects, and creative part can be borne by students be good at this part, and program development can be completed according to the division of project function, which can make them better fit with the development mode and team cooperation of company project.
Conclusions
In this paper, we proposed a new teaching method “daily project teaching & WeChat learning platform”. It proved the practical application of WeChat learning platform based on knowledge map navigation in university courses, and we also put forward the method of constructing the learning platform. The platform can help students to complete autonomous learning more effective.

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References


