

Design and Research on Online Course of Instructional Design for Mobile Learning

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Abstract: With the growth of digital technologies such as networks and mobile phones, the “digital indigenous” learning style is different from that of their parents and teachers. This requires primary and secondary school teachers to master the teaching design in the mobile Internet environment and be able to take advantage of mobile learning for students. Create a better learning environment and learning activities strategy. This study adopts a design-based research paradigm. After three courses of iterative cycle, the curriculum implementation design and resource development of the "Mobile Learning Instructional Design", the typical learning object is selected for small-scale application and the experience is summarized. The main conclusions of the design principles, design process and design study of the online training courses for primary and secondary school teachers.

With the popularization of various technologies such as mobile devices, educational apps, educational cloud services and various digital learning resources in education and teaching, in this mobile learning environment, the "digital indigenous" generation of learners and teachers in classroom learning The requirement is no longer in the single learning mode of one-way playback. Teachers need to strengthen professional development, pay attention to the use of common equipment and resources in the mobile learning environment, integrate rich learning resources into subject teaching reasonably and effectively, and develop learners' independent learning ability and high-order thinking. Teachers should be able to combine the characteristics of the smart education environment, effectively design all aspects of teaching to effectively integrate face-to-face teaching with mobile learning, and improve teaching and student learning efficiency..

1. Preliminary research

The mobile learning environment supported by mobile devices allows teachers to extend the guidance of the student learning process to all levels before, during and after class. The author designed a questionnaire based on the relevant content of the “Primary and Secondary School Teachers' Information Technology Application Training Standards (Trial)” and analyzed the appropriate factors and reliability of the questionnaire to ensure the reliability and consistency of the questionnaire.

The teachers who participated in the questionnaire came from 300 elementary schools, 91 junior high schools, and 42 high schools. The survey results are as follows:

Teachers have higher acceptance of mobile devices. 77% of the teachers participating in the survey use mobile phones, Pads to teach or manage students; 2 teachers commonly use APP and use confusion: teachers use APP-assisted teaching in teaching Confusion, in addition to the limitations of the network environment, also includes cumbersome operations, poor compatibility of content and technology, poor parental cooperation, inability to download resources, and difficulty in data statistics. 3 The obstacles faced by designing learning activities using mobile devices: management of student mobile devices, design of mobile learning, and difficulty in testing students' predecessor learning outcomes. 4 Classroom teaching in the mobile learning environment: In the course of class preparation, about 72% of the teachers participating in the survey expressed their own clear

teaching resources needed for the subject knowledge points. More than 90% of the teachers believe that mobile phones, Pads and other mobile devices record Data can help it more fully evaluate student learning.

2. The design of the course content

This study draws on the process of learning science and design research in the Trends and Problems in Instructional Design and Technology (Second Edition) to design and develop courses. On this basis, the author proposes the design and research technical route of the course "Mobile Learning Instructional Design".

The overall research framework is shown in Figure 1. In order to ensure that learners have a relatively complete knowledge framework in the time segment, the content of the course content of "Mobile Learning Instructional Design" should follow the principle of fragmentation, and split it into a short and precise knowledge segment with logical structure, including Theoretical articles, model articles, design articles, case articles and sharing articles. The main objectives of the course are (1) knowledge and skills:

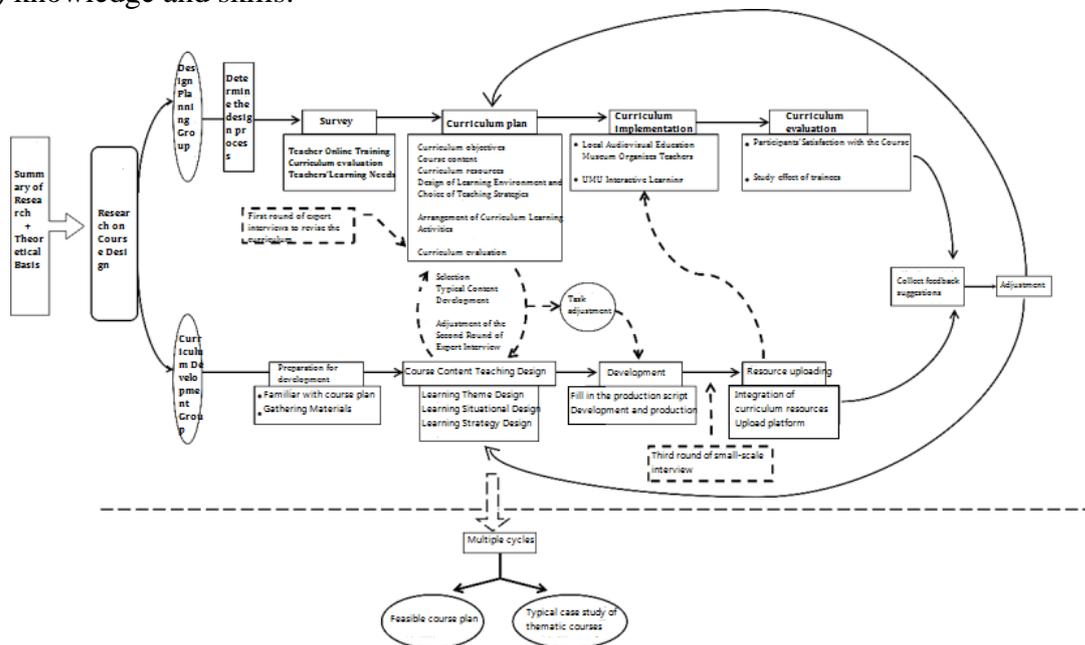


Fig 1 Overall research framework

2.1 Course objectives and content

(1) Understand the relevant theoretical support of the mobile learning environment and its specific application scenarios, grasp the connotation, essential features and components of mobile learning, and the elements of mobile learning instructional design. (2) By analyzing the course case, selecting the appropriate subject teaching content for mobile learning instruction design; being able to use mobile devices reasonably in the mobile Internet environment, effectively carrying out teaching activities such as explanation, interaction, evaluation, and learning activities such as autonomy, cooperation and inquiry. Learn to use teaching software and behavior evaluation software to manage classes in an orderly and efficient manner, and improve teaching efficiency. (3) Experiencing the advantages brought by mobile learning for teaching, establishing awareness of using online learning to promote their professional development, and effectively participating in relevant training activities.

When designing the course learning activities, it is necessary to combine the various aspects of the training course and focus on the design of the problem situation. The course tasks should be specific, targeted and the difficulties and problems encountered in the teaching work of frontline teachers.

2.2 Expert interview

In order to better grasp the content of the course, the following four principles are mainly used to select interview experts: the expert candidates should be in the field of educational technology; the research field should involve mobile learning or teacher training; have experience in hosting or participating in online courses; prioritize teaching design experts Or an expert in the National Training Program for Primary and Secondary School Teachers. The degree of authority of experts is usually determined by the three factors of expert academic attainment, index judgment, and familiarity with indicators: by calculating the scores of the four experts on the questionnaire, the expert degree of interviews is 0.9, 0.86, 0.81, 0.83 (both greater than 0.70), the credibility of experts and scholars is higher. Through three rounds of interviews and revisions, the course plan has been recognized by experts, the course orientation is basically accurate, and it has certain rationality and scientificity.

The final "Mobile Learning Instructional Design" course program includes eight parts: course nature and orientation, pre-study, course objectives, course content, curriculum resources, learning environment and teaching strategies, course learning activities, and course evaluation. (Specific content is omitted)

2.3 Trial evaluation

Based on the above design development and loop iteration work, the design planning group and development team of the course completed the research and development of the course plan and curriculum resources. Through the integration of curriculum resources, the course was uploaded and published on the umu interactive learning platform, and some first-line teachers were selected to participate in the training for preliminary application. Analyze and evaluate the application effect of the course "Mobile Learning Instructional Design" from three aspects: learning experience, learner learning situation and offline training report. The learners of the trial mastered a certain basic theory of mobile learning, basically understood the design pattern of mobile learning teaching, knew the various elements involved, and mastered the teaching design applications of different learning types such as classroom teaching and extracurricular promotion, and the learning effect was ideal. The participants indicated that they have a sense of using the mobile Internet environment to develop their own abilities through this course and expressed their willingness to continue to participate in relevant training activities.

Third, the research conclusion. After three iterations of the curriculum plan, curriculum resource development and the overall trial of the course, the author applied the online training course of "Mobile Learning Instructional Design" and summarized the experience, and got the design process of the online training course for primary and secondary school teachers. And the conclusions of the three aspects of the design study of the course are briefly summarized as follows:

(1) Pay attention to preliminary research and analyze the needs of learners in depth. In the research, we should fully consider the subject, information literacy, and information-based teaching design ability of the front-line teachers, avoiding the training content to be in the policy interpretation and theoretical explanation. It is necessary to implement the curriculum theme by subject and sub-module, and design the training content close to the teaching practice. Intensify the practice of teaching practice, and truly combine the use of disciplines to maximize the professional growth of the participants.

(2) Course content and resources need to be updated and upgraded. The course content should not only plan the course content in the course goal, but also seek the advice of experts and scholars, and follow the learner's feedback in the learning process. Learn the excellent enthusiasm of the outstanding learner works to generate new course content or course resources. Dynamic update.

(3) Using experiential case teaching, the cases in the course should be from the teaching work of the frontline teachers as much as possible, and the sub-disciplinary case as the carrier of learning analysis to transmit the learning content, meet the needs of teachers of different disciplines, realize the upward deduction of the case and master the new Knowledge and skills.

(4) Implement the evaluation incentive mechanism. The learning reward platform can be set in

the learning platform. At the same time, learners are encouraged to share the original teaching experience and compare and analyze with the subsequent learning results, so that learners can find their own improvement in related content.

(5) Different participants will be involved in the design research. Bringing different experiences to the development and analysis of the design scheme is conducive to the improvement of the research. Therefore, the design planning group and the curriculum development team should be divided into two groups to conduct design research. The design planning team is responsible for the design and control of the top layer, and checks all aspects of the curriculum design. Therefore, it is necessary to hire experts who are familiar with the educational background and policy documents and scholars with experience in design and development courses. The members of the curriculum development team should be familiar with the technical means of general resource development and have a certain teaching design basis. They are mainly responsible for accepting the task development curriculum resources from the design planning group. The design planning team will try out the development results and make design adjustments.

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