
Research on JiTT Based on Mobile Internet

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Abstract

JiTT is a kind of new teaching mode which is supported by information technology, promoting students' learning participation and effective teaching. The development of mobile Internet and the popularity of BYOD provide a new impetus for JiTT. On the basis of discussing the connotation and implementation process of JiTT, this paper analyzes the advantages and characteristics of using mobile network to support JiTT. Combined with the characteristics of mobile network technology and JiTT which involves two stage teaching and three key issues, the JiTT model based on mobile network was constructed. Finally, taking "animation programming foundation" as an example, JiTT was designed and carried out by supporting of Moso teach. Research shows that the proposed JiTT model based on mobile network is feasible, and the mobile network provides a strong support for effective preview, feedback and active learning.

Keywords: mobile internet, JiTT, teaching model, Moso teach

1. Introduction

Mobile Internet has inherited the advantages of mobile communications and Internet sharing, open, interactive, and promote a new world of mobile internet which is unlimited in innovation and vitality. Mobile Internet is not only to people's lifestyles changed dramatically, but also affect people's social, entertainment, education and learning. That students bring their own device (BYOD) into the classroom is the big trend of emerging technology used in education, which was put forward in NMC Horizon Report: 2014 and 2015 k-12 Edition, 2015 Higher Education Edition. JiTT is a kind of new teaching mode which is supported by information technology, promoting students' learning participation and effective teaching. Over the years, researchers and educational practitioners have been constantly exploring and practicing this model, seeking to change the teaching. With the development of mobile Internet and the popularity of BYOD, JiTT will usher in a new development.

2. About JiTT

2.1 The Connotation of JiTT

Just-in-Time Teaching, called JiTT, is a new teaching and learning strategies emerged in the late 20th century American undergraduate college teaching. Professor Gregor Novak and others, who are first to propose JiTT, thought that JiTT is a new type of teaching and learning strategy based on the interaction between Web-based study assignment and active learner classroom (G. M. Novak, A. D. Gavrin, W. Christian, & E. T. Patterson., 1999).

Web-based study assignment requires students to complete the specified preview task before class according to the requirements of the teacher's careful design, write their own understanding of the preview content and feedback to the teacher by internet. Before class, teachers check the feedback, and make corresponding adjustments to teaching in classroom. Active learner classroom is to carry out a variety of discussions and debates on the basis of teachers' targeted and practical teaching. During these discussions and debates, role playing, project learning, demonstration and experiment are usually inserted (Liu, Chunxuan, & He, Kekang., 2008).

Thus, the completion of Web-based study assignment and feedback determine the classroom-teaching organization and active learning, classroom-learning influences Web-based study assignment of the next learning topics. The core of JiTT is a feedback loop, which is a spiral rise of the structure (Cheng Lin., 2010), as shown in Figure 3.

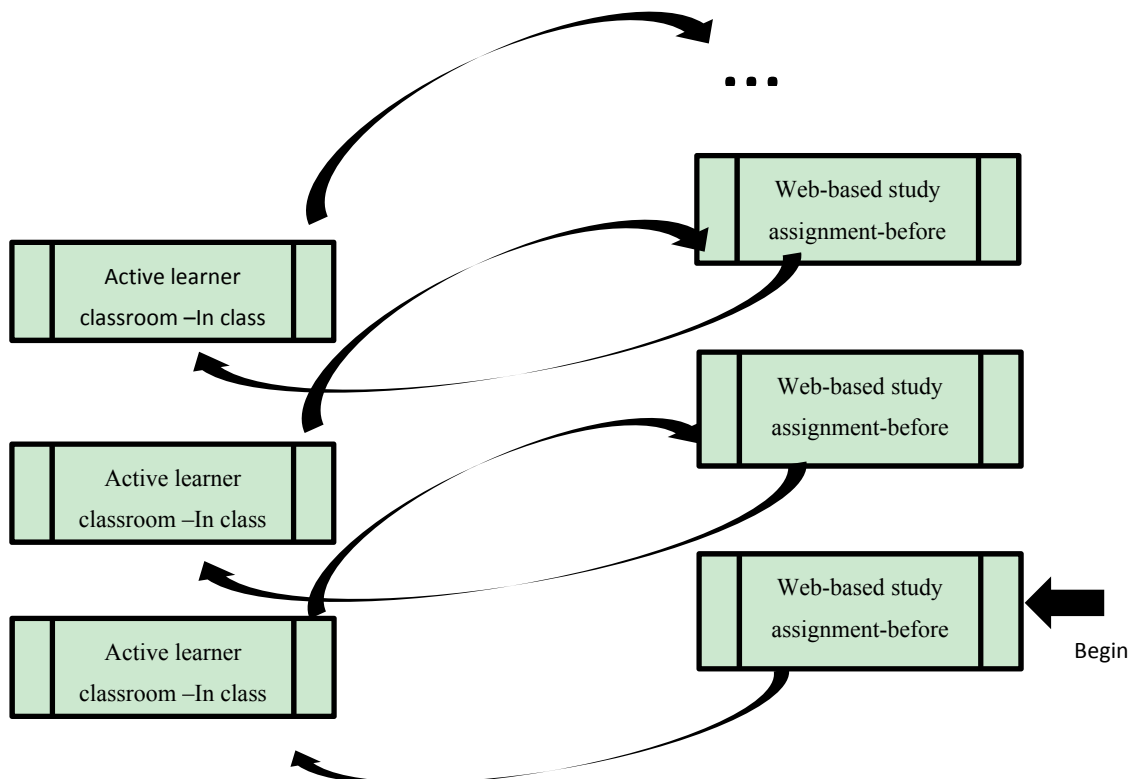


Figure 1. Feedback loop (Tang Jun, & Pang Shuai., 2015)

2.2 Implementation of JiTT

Implementation steps of JiTT are generally: (1) the teacher publishes preview content by internet in advance. (2) Before class, the students preview carefully and give feedback to teacher. (3) According to the feedback, the teacher adjusts and implements the teaching. (4) Creating “active learner classroom”. (5) Promoting the development of students' advanced and complex cognitive ability (Liu, Yuexiang, 2006). It is easy to see that the contents of the classroom-teaching, methods and progress are affected by the students' feedback. As an information transmission, recording, storage carrier, information technology plays an important role in active learning and feedback. Compared to the computer network, the sharing of the mobile Internet, timeliness, convenience allows learners to carry on material browsing, exchange and feedback at any time and time. In addition, the use of intelligent terminal audio and video sensors, GPS, distance sensors and other physical devices enhance learning experience, strengthen effective interaction and feedback (Dong Wenqi, 2014).

With the rapid development of mobile Internet technology, the continuous improvement of the network infrastructure and the popularization of the intelligent terminal equipment, the JiTT based on the mobile network already have the basic conditions. Ubiquitous mobile network and intelligent terminals (such as smart phones), which are owned by everyone, makes the class and extra-curricular teaching seamless. Using Information technology to support teaching and learning, which has a profound impact on the life and work, make learning life blend. That gives play to the subjectivity of students' learning, increases learning participation and feedback.

3. JiTT Supported by Mobile Platform

According to the characteristics of JiTT and the implementation process, combined with the characteristics of mobile network technology, the JiTT practice model based on mobile platform is constructed, as shown in fig.2. The model reflects the two stage teaching and three key problems of JiTT. The two stage teaching include: Web-based study assignment before class and active learner classroom in class. Three key issues are: (1) how to ensure that students can seriously preview before class. (2) How to obtain feedback timely and comprehensively. (3) How to promote students' active learning in the classroom.

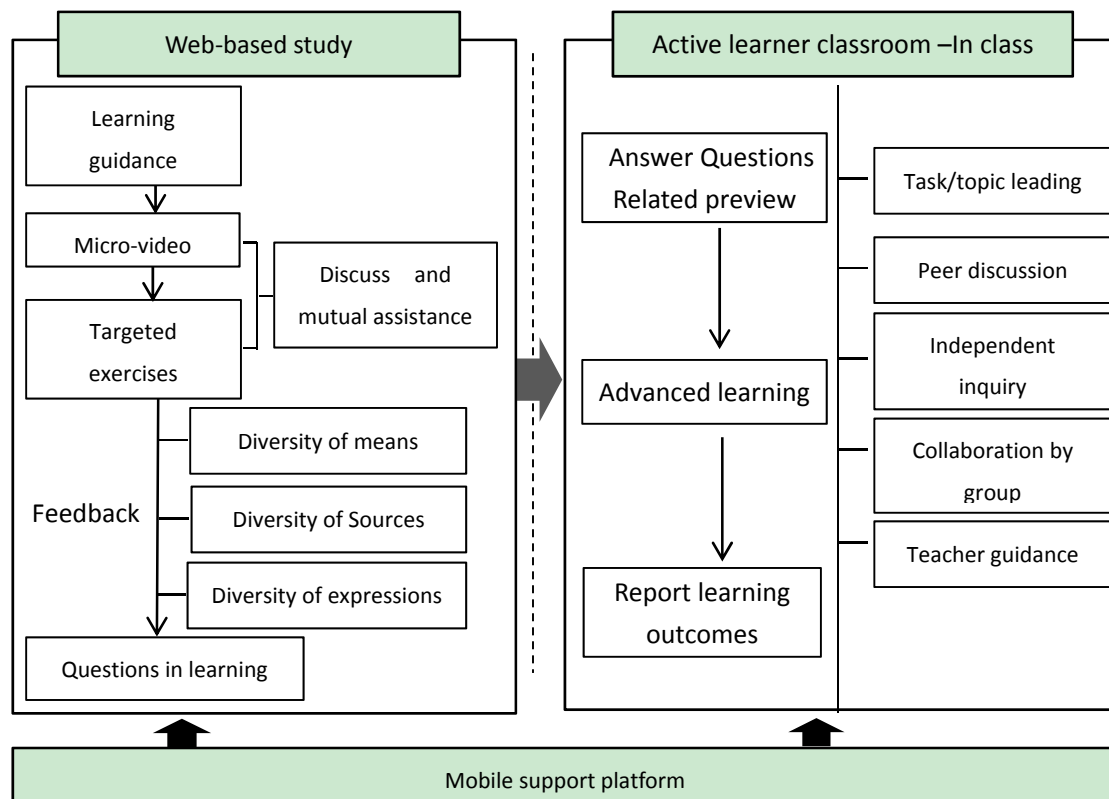


Figure 2. JiTT practice model based on mobile platform

3.1 Effective Preview Is the Basis of Teaching

In order to realize the effective preview, the following strategies are adopted.

- (1) Provide guidance of network learning for learners. Autonomous learning based on the network platform, easily causes the learning trek, loneliness, which is not conducive to construct knowledge system. "Learning guidance" provides learning support from the study subject, object, method, preparation, process arrangement etc. That lets the preview have a definite object.
- (2) The use of micro-video to organize learning materials. Contents are cut into a 10min within the video clips, and a fragment states a learning concept or a knowledge points.
- (3) Supplemented with micro-video corresponding to the targeted exercises. Let learners test their preview in a timely manner after watching the micro-video. At the same time, to complete the targeted exercises, learners must first carefully watch the micro-video.
- (4) Provide communication and interaction support, convenient for learners to get online help in time.

3.2 Getting Feedback from Students Is the Key to Teaching

Give full play to the technical advantages of mobile network and terminal equipment, timely and comprehensive get learning feedback.

(1) Diversification of means to obtain feedback. It allows student to write directly on the understanding of knowledge, also be organized to focus on the topic of discussion, but also through the operation, testing, surveys and other means to obtain feedback.

(2) Sources diversity of feedback information. It is that learners submit relevant information in accordance with the requirements, or use platform to record the learning footprint, through analysis learning big data to obtain feedback.

(3) Various expressions of feedback information. It is Picture and text information, It can also send voice and video feedback directly.

3.3 Promoting Students' Active Learning and Higher Order Ability Development Is the Goal of Teaching

(1) From the point of teaching process, to meet the needs of students as the starting point, the classroom learning is set to three stages. The first stage is to solve difficulty of preview. It is to help to solve the problem of learning to meet the basic needs of students. The second stage is the advanced learning, help students to set high goals to meet the needs of the development. The third stage is learning report. It is let the student demonstrate learning outcomes to the teacher and the whole class, share learning experience, to meet the needs of self-realization.

(2) From the point of teaching activities, to design rich teaching activities and help students to participate in. Such as: task/topic leading, peer discussion, independent inquiry, collaboration by group, teacher guidance, etc.

4. JiTT Practice Research Based on Mobile Network

4.1 Teaching Support Platform-Moso Teach

Moso teach is an APP based on the mobile network environment to meet instant feedback both inside and outside the classroom. The platform is free for teachers and students, while providing web version. Moso teach support services for JiTT from two aspects of resources and activities. Its main functional structure as shown Figure 3.

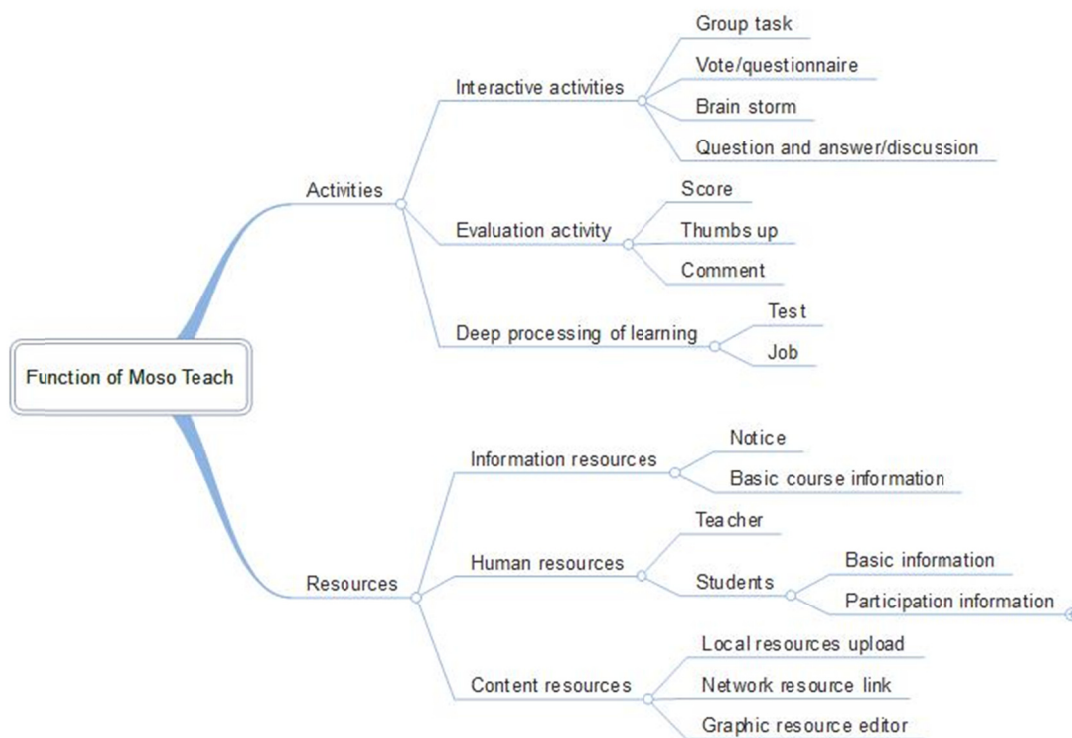


Figure 3. Function of Moso teach

According to function design of Moso Teach, it can provide comprehensive support services, in the effective class preview, learning feedback and active learner classroom, and so on.

4.2 JiTT in Course of "Animation Programming Foundation" Based on Moso Teach

4.2.1 Introduction of Course

"Animation programming foundation" is an elective course of educational technology, a total of 39 students. All students are equipped with laptops and smart phones, and can access Moso teach. The support platform based on Moso teach are shown in Figure 4, which supports smart phones and computer networking access.



Figure 4. The support platform based on Moso teach

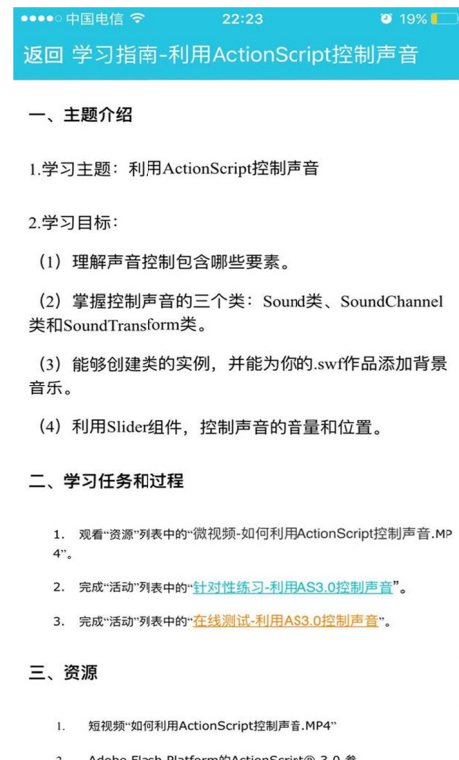


Figure 5. Learning guidance

4.2.2 JiTT in Theme of "Use ActionScript3.0 to Control the Voices"

Taking the theme of "using ActionScript3.0 control voices" as an example, this study shows the implementation of JiTT in animation programming foundation based on Moso teach.

(1) Learning guidance design

Using Moso teach of "teletext page resource organization", released learning guidance in a week before class, as shown below in Figure 5.

(2) Micro-video production

Micro-video are recorded by Studio Camtasia 8. Moso teach support playing MP4 online, as shown below. Of course, learners can also download to watch.

(3) Targeted practice

Targeted practice is to let students through the actual operation to verify and enhance the understanding contents which are explained in micro-video. Arrange the targeted exercises by the "homework" function of Moso teach. As shown in Figure 6.



Figure 6. Targeted practice



Figure 7. Advanced learning project

(4) Preview feedback

Preview feedback is obtained through the "online test" and "targeted exercises". The online test contains 7 single choices, in order to achieve feedback about basic knowledge and principle. Obtain feedback on knowledge application and basic operation through targeted practice.

(5) Design of advanced learning Project

"Job" function not only can publish relevant information of job requirements, but also can release the local resource files required to complete the project, while the learner can also submit the project results. Learning project task, which is to create a music player using ActionScript3.0, were release by "Job" (Adobe company, 2013). As shown in Figure 7.

(6) Classroom-learning report

By function of "Classroom performance", randomly select a student to report his own learning outcomes and share the learning experience. The reason for the time limited, it cannot be guaranteed that all students share learning in classroom. The other student show their works on Moso teach, and carry out the mutual evaluation.

(7) The feedback on classroom-learning

Carrying out "topic discussion" using "brainstorming" function, obtain the feedback on classroom learning.

4.2.3 The Summary of Teaching Implementation

(1) About preview feedback

It obtained the preview feedback through two ways. Among them, the targeted exercise, a total of 39 students completed on time, and to meet the requirements of practice. The online test, a total of 37 students in a specified time to complete the test (7min), of which 35 students was 100% in the accuracy rate. Through the analysis of the learning feedback, questions and difficulties existed in the following knowledge and skill operation:

- Class, which control of the sound play and the stop of a single sound, were confused.

- The role of “SoundChannel” is not fully understood.
- On the relationship between the class of SoundTransform and SoundChannel.
- The difference between snapInterval and tickInterval attributes on the Slider components.

At the same time, learning expectation was put forward in the study area.

- How to load the MP3 file about the song name, artist, album, lyrics and other information, and display them on music player?
- How to load more MP3, and play the chose music?

(2) The adjustment of classroom-teaching activities

The adjustment about teaching stage of “Questions and answers”. First of all, to invite excellent learners to share their understanding of the three classes that they control sound to play. Then, organize student discussions by group. In the end, a consensus is reached on the role of the three classes.

The adjustment about setting of advanced learning project. On one hand it should strengthen the students' understanding of the basic knowledge and skills. On the other hand, it meets the expectations of good learners to learn, to help students to achieve knowledge application and innovation.

(3) Feedback on classroom-learning

After the advanced learning, a total of 39 students participated in topic discussion about "how to use ActionScript to control the sound". AS shown in Figure 8. Through the analysis of the discussion on the three classes and Slider components function, students can accurately understand.



Figure 8. Topic discussion

In addition, 34 students participated in the interactive evaluation. The evaluation results statistics are as follows in Table 1.

Table 1. Interactive evaluation results

The completion of learning project	Completion rate
Load and play of single music	100%
Play control of a single music	100%
Load and control of multiple music	92.6%
Only get “songName” in ID3 tag of MP3	82.4%
Get all the information in ID3 tag of MP3	71.3%
Format display ID3 tag	70.4%

Statistics result shows that 92.6% students can realize basic functions of the music box, and achieve learning goals. 29.7% students are difficult to grasp ID3 tag of MP3 file. Through the investigation, learners are mainly confused about three concepts of ID3 attributes, ID3 events, ID3Info. Combining with the procedure and the case, the three concepts are discussed and distinguished in the discussion area. ID3 tag data can be formatted display by 70.4% of students. It indicates that the learners has mastered text forma previously learned and can be applied in the actual project.

5. Summary

Mobile internet not only meets learners to carry on material browsing, exchange and feedback at any time and time. In addition, the use of intelligent terminal audio and video sensors, GPS, distance sensors and other physical devices enhance learning experience, strengthen effective interaction and feedback. JiTT based on mobile network, constructed around the two stage teaching and three key issues, is feasible. The mobile network provides a strong support for effective preview, feedback and active learning.

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