The C programming micro lecture designing mode study in mobile learning circumstance

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ABSTRACT

With the exuberant developing of mobile communication tech and education resources, the mobile, non-formal, fragmented, personal learning concepts started to threaten the traditional college education. This article explored the function that the Micro lecture applying in the personal study of students in the C program course education based on mobile learning circumstance; discussed the role Micro lecture can play in c program course education. After that, according to the perceiving principle of students, divide the course content by program design, design the constitute elements of the Micro lecture and the general structure of the Micro lecture supporting platform, and eventually offer the applying model of c program teaching based on Micro lecture from the perspective of mobile learning.   © 2014 Trade Science Inc. - INDIA

KEYWORDS

Mobile learning;
Micro lecture;
C language program design;
Micro lecture supporting system;
Teaching applying model.

INTRODUCTION

Mobile learning belongs to the next generation. In the recent years, the fraction of college students own the smart phone generally over 90%. A big portion of them hope to utilize the time during daily life, learning and the fraction time effectively, meanwhile hope to use the mobile learning to connect the interval between two learnings, to achieve high-effective learning [1]. The mobile learning is the learners to use the mobile terminals, with the supporting of mobile communication tech, to study whenever and wherever, and also is the extension of e-learning[2]. At the same time, the Micro lecture is the novel course form suits the small capacity teaching designed specifically for certain teaching theme, normally no more than 10 m, like modern fast pace,

mobile learning, ubiquitous learning, fraction learning[3].

The micro lecture focused MOOCs, especially the ally constitutes with Coursera, edX, Udacity, etc., crushed higher education in different countries seriously. To implement the Education information construction development plan for the next ten years (2011-2020), the education department national college teaching network training center hold the first national college micro lecture contest in 2013, and also initialed the explore that applying micro lecture into education in China. The new generation teaching model as Micro lecture will subvert of support the college lecture education has been popularly concerned by the teachers in universities.

Most of the support system of program design courses build their course center based on network,

FULL PAPER

which provides PPT for lecture, experiment materials, assignments delivering, online task, testing, BBS, etc. The students can connect the the course website from computer, and get the relevant course support through. In the meanwhile, the advantage of mobile learning is to convenient the students to learning fractionally whenever and wherever; support the personality of learning; support the real time interaction. The author believe Micro Lecture can be used as the kernel learning resource of mobile learning. It is the beneficial extension and supplement of course education.

As a result, the article aimed to analyze the role micro lecture can play in the C program course education and its existence form; proposed the divide method and general structure design of micro lecture based on c program course; proffered the reasonable teach applying solution; facilitated the students to learn c program design course in mobile circumstance with the idea of micro lecture.

THE CONCEPT OF MICRO LECTURE

The concept of micro lecture

There were plenty of experts explained and settled the concept of micro lecture from different angles. XiaoJun Zhen regards micro lecture as the learning method supporting flipped, blended, mobile, fractional and other learning methods from the angle of learning resource. It conveys the ideas through the terse but forceful micro teaching videos; developed a scenario, interesting and visualized digitalized learning resource that specifically aiming at the knowledge from certain subject or the teaching process[4].

A micro lecture can be a video, flash, audio or text. It's convenient for the transmission. Normally, the learning duration will be between 5 to 10 minutes, so in another word, it's micro content to some extent.

The constitution and category of micro lecture

The constitute elements of micro lecture can be differed from the different comprehension of micro lecture. TieSheng Hu started from "The whole process of teaching activities, the applying circumstance of the resources and the growth and development of the resource constitution" of micro lecture, proposed seven micro lecture resource constitute elements includes "micro teaching video, micro teaching plan, micro courseware, micro exercise, micro rumination, micro review, micro feedback". (XiaoBin Su, etc.[5])

According to teaching category, that of micro lecture normally contains teaching, answering, inspiring, discussing, presenting, experiment, performing, learning, cooperate learning, explore learning, etc.

According to the major step of class teaching, micro lecture can be divided into reviewing before class, new subject lead-in, knowledge perceiving, exercise testing, summary expanding.

The position of micro lecture in teaching

The author believes that micro lecture can't absolutely replace the traditional class education currently, like the internet based college education can't replace the formal record based college education. At present, micro lecture will spark more with the real college education.

Micro lecture should root into the realistic courses. As kernel teaching resource, micro video can play different parts in daily lecture, like course introducing, kernel concept presenting, explore process presenting, post exercises, etc. (LeMing Liang, etc., 2013[6]).

The design of C program designing Micro Lecture structure

C language program design is a practical, skill-oriented course. As a programming design introduction course, the content of the course includes c language grammar and being familiar with IDE (integrated development environment), algorisms and the designing of program structure. Study by cases or questions is the generally used teaching method. The difficult of applying this method in the class is control the schedule of the course while the reaction speed of students are differed. Micro Lecture can extend the class teaching into pre-class and post-class perfectly, implement a personal learning chance for students with separated pace, and enable the teachers to take care students in all levels.

The modular design of lecture

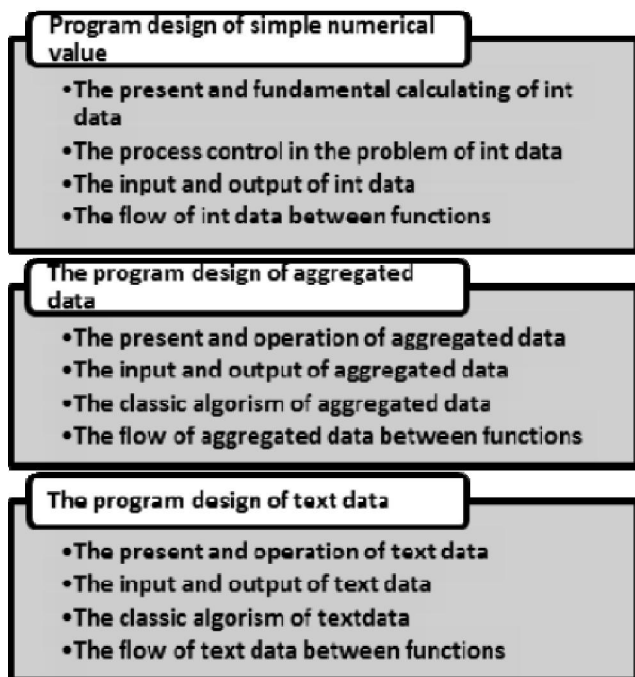In the C language teaching, the logical though abil-

Figure 1 : The modular design of the main content of micro lecture

ity, problem analyzing and solving ability should be considered as priority. The language knowledge should be introduced gradually during the process of training student's ability, so does the language applying ability (LianJun Chen, 2011)[7]. According to the conceive principle of students, we take the program design of different data as principal line, take the present, calculate, input, output, classic algorism and the transmission of data in functions as clue, take language knowledge to assist, start from applying, distribute difficulties and key points, reconstitute the detailed teaching content into three parts by advanced teaching as Figure 1 presented.

The functions, pointers and files are all difficulties in C language teaching. According to traditional division of knowledge structure, all sorts of data processing will be present disordered, so the difficulties will accumulate. We design the content and divide the method from the solution of problems, focus on solving certain data type, how to present this kind of data, what are the conventional calculating and operations, what are the classic algorisms, how the data flow in the functions while organize multi-function grogram structure.

The knowledge of function, pointer and file scattered in the circumstance that they are applied typically. For the teaching of function and pointer, the definition and using of function are learned in the simple program designing phase, so does the flowing of Int data in main function and subfunctions. In the text program designing phase, the flowing of text data in main function and subfunctions will be taught. On one hand the modular designing thought will be taught through the whole process of teaching, on the other hand the difficulties of function and pointer are scattered, so the student can command function and pointer after times of training.

The designing of micro lecture constitute element of C program design

The demand of teaching mode should be considered while designing the constitute elements of micro lecture. We reconstituted the teaching process of C program design course. As Figure 2 presented, the right of the Figure is the learning process of students, and the left side is the teaching process of teachers. The middle one is the resource supporting system of micro lecture group.

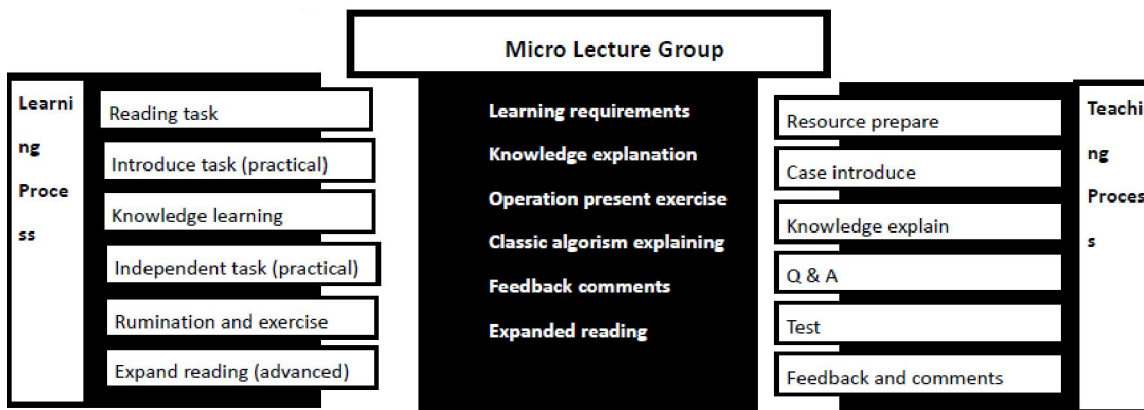During the teaching, program design is the principal

Figure 2 : The teaching mode reconstitution with the support of micro lecture

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line go through modules. With the method of gradually introduction, key grammar knowledge was picked. Practical and interesting program examples are serving as the introducing tasks. The class being lectured by examples, from the proposal, analyze, algorism design till the terminal code testing of questions, so the students can learn the whole process of program developing. Teachers introduce the knowledge while analyzing and explaining the cases, and then explain grammar.

To solve the problem that students are lacking necessary sensible perception of the knowledge, we take "experienced learning", let students "acting from learning and learning from acting" by introducing tasks, and then teacher offer a separate task that familiar with the example, let the students lead the process, solve their own problems, so the learned principles can be tested and applied in the experiment. The students can understand the learning tasks and targets sensibly and reasonably and their ability of using knowledge comprehensively can be trained.

Micro lecture constitutes with micro content like learning requirements, knowledge explaining, operation presenting exercise, classic algorism explaining, feedback comment, expanded reading, so a supporting resource system formed. Different types of micro lecture took different media ingredient for the creating, like TABLE 1 presented. There are two ways for the student to acquire micro lecture: passive App, as the learning requirements and feedback comments can utilize short message or App message; the studying resources as knowledge explaining, classic algorism explaining can be downloaded by students, learned offline whenever they want.

In addition, micro lecture acted as the supplement of class education, to be exquisite instead of compre-

hensive. The kind of micro lecture as classic algorism and expanded knowledge can be gradually accumulated through teaching. The proper micro lecture picking is the difficulty, kernel, focus and fallible point of the program learning.

The general design of micro lecture supporting system based on mobile learning

The learning mode in the mobile circumstance can be divided into the studying mode based on offline resource, short message service and link browsing (ShengQuan Yu, 2005)[8]. In light of these three learning models, supporting system based on mobile learning can be constitute by three related models, supporting different types of micro lecture resource, as Figure 3 described.

Submit Mode support the study mode based on short message service, send the study assignments, introducing assignments and feedback comments to the devices of students through APP. The online practice of interaction modes support the study based on linking browse, and enable the device link the server as PC to study remotely, get into course website, finish online practice and discuss the assignments with teachers and classmates in BBS. The resource mode supports study based on offline resource, meanwhile offers search function, select the explanation of required knowledge, classic algorisms, etc. The micro lecture resources can be downloaded to the cell phone for the users to study offline.

The Micro Lecture supported C Program Design Teaching Application Model

The micro lecture teaching application owns two features. The first one is ordinarily the studying of micro lecture suits independent learning more, during the class

TABLE 1: List of constitute elements of C program designing micro lecture

| Micro Lecture Type	Media Material	Applying Form
Study requirements	Micro text	APP submit
Introducing tasks	Micro screen video	Download online, study offline
Knowledge explanation	Micro video or PPT	Download online, study offline
Post-class exercise	Micro test	APP submit
Debug operation presenting	Micro screen video	Download online, study offline
Classic Algorism	Flash or micro video	Download online, study offline
Expanded knowledge	Video or PDF files	Download online, study offline
Feedback and comment	Micro text	APP submit

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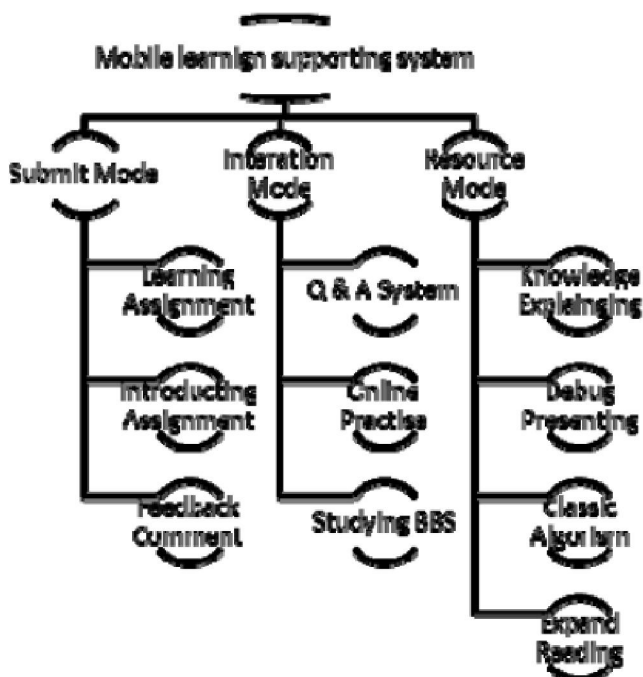
Figure 3 : The supporting system based on Micro Lecture in mobile learning

or not. The second one is that the studying of micro lecture will be more effective before and after the class. Considering the limitation of time during the class, micro lecture are fewer arranged (XiaoBin Su, 2014)[9]. As a result, the principal application model of supporting system of micro lecture should be the differentiated teaching during the class and post-class tutoring after the class. In addition, during the class, teachers can have more time to solve the question, organize study group. The teaching application model presented as Figure 4.

The learning process of students started from submitting the study tasks and introduce tasks, and then definite the study tasks; finish the tasks; forming perceptual realization to the content about to learn; summarize the introduce tasks with teacher in the class; listen to the explanation teacher offered for the relevant knowledge; think about the questions teacher asked positively; discuss the new questions with the cooperation of classmates; watching micro lecture material like
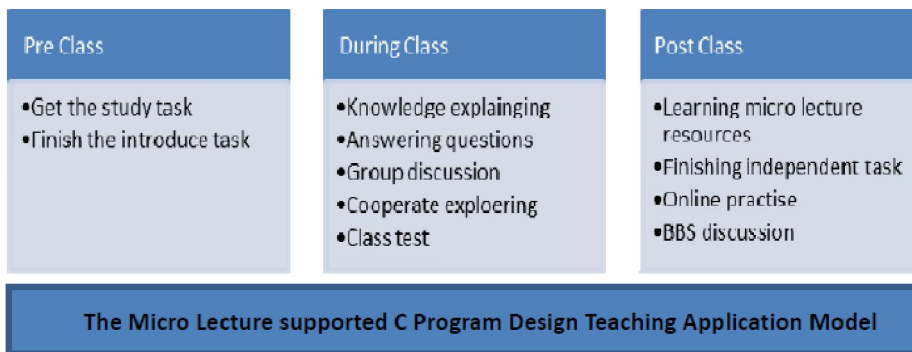

Figure 4 : The micro lecture supported c program design teaching application model

knowledge explanation, operation present exercise, classic algorisms based on the requirement of the post-class assignments and their own understanding of the lecture after the class; execute independent tasks and online exercises; discuss with teachers and classmates through BBS, so their understanding of the courses and the practical ability can be promoted continuously.

CONCLUSION

What is micro lecture and how to apply micro lecture to college education is the focus of college educators currently. The author holds that micro lecture can't replace formal class, but it can act as the extension of class teaching, support personal study and differenti-

ated teaching served around students. The article discussed the C programming Micro lecture designing mode study in mobile learning circumstance, and proposed a doable solution.

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