Teaching Experience for Non-computer Major App Inventor Program Design Course

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Abstract. APP Inventor is a visual programming software developed by MIT that can quickly develop android APP without code writing. In the traditional non-computer professional C programming language courses, students generally poor acceptance, teaching is not good. Now cultivate students' computational thinking by piloting in the non-computer major with APP Inventor as their first computer language course for students. At the same time, students in the learning process generally feel easy to learn, interesting, high degree of acceptance, and achieved good teaching results.

Keywords: APP Inventor · Computational · Thinking programming
Interest UI

1 Introduction

1.1 Introduction of College

In higher vocational colleges, students have a low starting point and face many difficulties in programming courses. In the previous syllabus, the non-computer major in our college was mainly C in the course of programming, which was generally accepted by the students with unsatisfactory results [1]. Especially in professional animation, because the enrollment of students from art and cultural studies, weak, learning C is particularly difficult, and, due to the operation result C is under the DOS interface, student interest is not strong, emotional weariness heavier.

We design the application interface design as the main training direction in our professional animation department, so for students to master the necessary programming ideas is very important. UI designers with programming ideas can communicate better with the background programmers in the development team, but the UI designers themselves do not have to be expert in the details of developing the programs themselves, so long as they know the process of running them, so we use App Inventor as a programming language for teaching in the 2011 animation professional.

1.2 Introduction of App Inventor

App Inventor is a simple, code-free, rapid-developing, visual mobile application programming tool that inspires sand trains young students in computational thinking. Particularly, it is suitable for low grade non-computer major students in programming entry practice teaching.

Animation students in the course of the learning process, you can quickly and easily develop Android applications, and it plays a role in promoting that interface design combined with the Android system to initially check the students make their own interface effects on professional courses [2].

2 Teaching Reformation of App Inventor Programming Design

Throughout the teaching process, we insist on "mission-oriented" various practical operations of the course content in a task-driven manner. In the process of teaching, we followed the order of tasks to realize to make it easier for students to more easily grasp the teaching content. In the teaching methods, we explain profound theories in simple language, do more experiments, stimulate students interest in learning, develop students programming ability [3].

In the course of teaching reform, we have done the following:

(1) Teaching and experiment synchronization
   We think all teaching methods and teaching methods should be used around the purpose of improving students' abilities and qualities.
   According to the characteristics of App Inventor, we developed a teaching syllabus, and wrote the experimental book "App Inventor Programming". Studying effort is better when students develop programs at class by teaching content and the experimental book real-time. Resource of this course is shown as Table 1.

Table 1. Resource of the course.

Course's title	Curriculum module	Cases	Key point
Quick development technology of App Inventor	Introduction	Structure of develop environment	Develop environment
		Cat-Man	Develop processing
			Basic component
	Basic components	Angle and radian	Textbox component
		A simple music player	Layout introduction
			Variables and strings expressions
			Selective structure
	Program flow	Finger-guessing game	Program flow
			Interface of game
			Naming rules; resource loading
			Design of the game

(*continued*)

Table 1. (*continued*)

Course's title	Curriculum module	Cases	Key point
	Computer digital image design	Drawing board	Interface design of drawing board
			Draw lines and circles
			Clock and random coordinates
			Finger painting
	Multi-screen control	Virtual Beijing	Multiple screens in the interface
			Table layout
			Horizontal list box
			How to start multiple screens
			Implementation of listpicker component

(2) Reform the examination method

Flexible and diverse assessment methods are used to present the evaluation results quantitatively. Such as daily attendance, homework, class notes, on-board experiments and other comprehensive assessment, no longer organize exams in the form of papers, students ultimately need to submit the work by way of grading, learning and application of innovative students to encourage and add grades [4].

According to the traditional programming courses, the students' scores mainly depend on the written test results. After carrying out the assessment reform, if the student work has been submitted to the Android software store, we will give scores based on downloads work. Creativity and innovation are important parts of the overall evaluation system. The level of student achievement depends on the applicability of his work.

(3) Combination of professional courses, reflecting the professional characteristics

According to the characteristics of animation professional, the interface layout, icons, animation, color matching, fonts and other aspects of strengthening requirements, emphasizing the beauty of the application software interface.

According to the works I received, I compared the procedures submitted by computer other related professional students. The advantages of animation majors are very obvious both in layout and in interface colors and texts.

(4) Develop student programming interest and accomplishment

App Inventor is easy to learn and easy to implement, allowing students to turn ideas into reality as they learn. In previous professional animation creation of C language programming courses, students generally react learning difficulty, they do not know what the role of learning C, poor experimental results. After opening

an App Inventor course, students have a high level of interest and accomplishment as 90% of students complete the experiment on the spot and run smoothly on their mobile phone. Throughout the teaching process, students enthusiastic questions and have a strong reaction. Some students have also developed a creative work.

3 Teaching Experience of Course "App Inventor Programming" for Student with Non-computer Major

In response to the teaching of App Inventor in animation major, we got the following experience:

(1) For non-computer professional programming courses, mainly to cultivate programming thinking.
(2) We should be combined with professional characteristics, choose to reflect the characteristics of professional language, so as to better serve the professional goals, and the willingness of students to accept more intense.
(3) The programming language should be chosen to avoid too much difficulty and too much depth to avoid causing students' fear and excitement and to make students feel tired of learning when they are exposed to programming.
(4) In the teaching process, we must be distinguished from the computer class lectures.
(5) The advantage of App Inventor programming is that it is simple, fast and convenient, and the students have a high degree of acceptance and the interest is strong. The disadvantage is that by way of building block programming, students do not have enough understanding of programming ideas, especially when writing circular structures or conditions, they often encounter difficulties, the overall concept is not strong.

In response to App Inventor's teaching experience, the School Affairs Department will have a planned App Inventor elective for all non-computer professionals this year. We will also make some improvements based on this lesson experience.

(1) Case of continuity and expansion. In these years of teaching, we has accumulated some curriculum resources and materials. The version of APP Inventor is also in a state of rapid update. The old case needs to be improved and expanded to accommodate the new version, and new cases need to be developed to reflect the new application.
(2) Due to APP Inventor server problems, sometimes there will be unable to log in, in response to this problem, we will be set up servers in schools to solve platform problems.
(3) In the teaching process, we will also emphasize the integrity of programming ideas. Through an explanation of each example, try hard to explain the goal, sample design idea, design steps and reasons for doing so in order to prevent students from going through the teacher's diagram to do the work one by one, but they does not know how to start the situation when they meet a new assignment.

(4) For different professional students, we write teaching syllabus and curriculum resources that accord with their own professional characteristics, make APP Inventor not only beneficial to student's program thinking, but also to students' professional courses.

4   Conclusion

The characteristics of higher vocational education determines our training mode, that is, learning to use, for non-computer programming courses, without too much difficulty, as long as simple enough to be able to achieve the teaching objectives. Allow students to learn in the interest, to play, feel the joy of programming, which reached the purpose of our App Inventor this course.

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