Computer Game Programming Course for Art Design Students by Using Flash Software

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Abstract

It seems a difficult and unnecessary job for design students to learn computer programming. However, as the development and the needs of producing interactive media and computer games, the integration of different disciplines is a compulsive trend for training creative designers in design education. This study is to use Flash software as a game design and developing tool for designing extensive and complex story of role playing games. This integrated programming and design course adopts the theory: "learning by doing," in which the design students learn the role playing game design by acquiring the practical programming skills and knowledge of integrating computer software science and artistic designing. Such a integrating course, hopefully, can be established as a first model of integrated programming and art design courses.

1. Introduction

As the prosperity and speedy growth of PC game and entertaining industry in global markets, electronic entertaining products continue expanding due to lower producing costs and higher availability. Riding the big wave of demanding better information system and popularity of personal computing, electronic games industry never stopped blooming. In recent years, electronic games have found their place in E-learning industry [1, 2]. The expanded multimedia applications and higher screen resolution help the cellular phone opening a prosperous market for the electronic game producers. The demands of trained game designer are getting greater.

The producing progress of an electronic game requires a group of people who can accomplish game story, visual art design, sound design, and programming. They are trained designers from different backgrounds. However, these programmers and designers with different training backgrounds do their jobs in different thinking process [3]. The advantages of teaching the computer programming to art and design students are two: first is to help the communication between programmers and art designers; second is to train and nurture the design students with multiple talents working in programming. This is a core course for art and design students and also is preparing man power for the future trend in digital job market [4].

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design, animation and interactive design courses, the Flash software is the main design tool for designing. Since the first version of Flash has published in December 1996, the build-in functions continued to expand. In addition to the drawing and animating functions in Flash 4.0, the ActionScript empowered the interactivity, which moved its reputation to a higher value of interaction standards of the web design. In a later version of 5.0, added commands and grammars have advanced the designing of Flash games [5].

In recent books published for Flash game design [6, 7, 8, 9] and web design, they have focused on small computer games. As to plan the programming and design courses for the art and design students, using Flash software as a tool is realistic choice to enhance students' motivation and to inspire their imagination and creativity in digital content design. In this study, four design students created a multiple-plotted role playing game. Based on Dewey's theory of "learning by doing" [10, 11], the authors intend to discuss a course design related in programming and art design.

This game design development includes three stages: concept, structure and design [12, 13, 14]. The designing tool is Flash software. Based on the game designing practice and experience of designing a role playing game, we lay out the considerations of planning a programming course content and teaching/learning plan for design students.

2. Case Study

The authors adopt project-oriented method to guide four undergraduate students to design a role playing computer game. It took one year to complete the draft of the game design. The authors, majored in programming, visual design, and sound design, are with eight years of teaching experience in art or design. Each of chosen four students is in charge of programming, visual design, and sound design. The

development progressed as three stages of concept, structure, and design. This section discusses these three stages in details, the results of the game design and the characteristics of this accomplished role playing game.

2.1 Concept Stage

In this created game, the player is playing a young guy who enters the under world to rescue his master. As exchanging the life his master, the young guy promises the King of Hell to arrest the disturbing black-faced Buddhists. After this ordeal, the young guy starts his adventure in underworld. The beginning animation depicts the background story. In one night, the main character- Liou was awakening by a noise of the metal chain pulling on the ground. He saw his master was held by two horse-faced arresters heading to the hell. Liou hasted to rescue the master and entered the underworld. The King of Hell will give the redemption of his master in one condition—if Liou can arrest the disturbing black-faced Buddhists for the King of Hell. Liou has to wander around the underworld to find the black-faced Buddhists and arrest them, by exploring, risking, and fighting to accomplish the mission and advance the level. In other words, the winning of the game is to arrest all the black-faced Buddhists.

2.2 Structure Stage

Computer RPG is set to plot a complicate development of a big story and role playing. The third-person role is wandering around within the scenes, and also operating the dialog of other non-player characters and object collecting. The main controlling keys are the arrow keys. The transition and change of scenes are expanded by changing frames not by unfolding reel. The power of the main roles can be advanced by completing levels and equipped with fighting strength by fighting system.

Through, risking, exploring, and fighting to accomplish the missions required in the RPG.

2.3 Design Stage

On the operating interface, the visual plan is to hide away the role choosing scene and select the whole screen for the player to walk around. This way is to expand the size of the playing space. The character is designed as cute version. The character and monster possess a series of actions (Figures 1 and 2). The scene design is divided as two kinds: one is two-direction or four-direction continuous patterns to connect each scene and to change scenes by "cutting (Figure 3)." The discrete connection between scenes is using fade in/out effects. The temporary disconnection during transition is limiting the visual confusion (Figure 4). The sound design includes the background music, auditory cues of picking up objects and level advancing points. The change of scenes is also signified by the environmental sounds, emotional human voices and exciting noise of fighting.

In this game design study, all the scenes are programmed to tell a story. Besides these, AI (artificial intelligence) is reflected by the object moving, crash of objects testing and enemy responses. The movement of objects is mainly controlled by the role-playing, which is the role moving freely around scenes. The crash of objects and responses testing apply in picking objects, dialog, fighting with enemies, and limiting the moving areas. The enemy roles display the AI (artificial intelligence) design in automatically tracking the main role and the fighting played by the player.

Figure 1. The main character—Liou—is an orphan adopted by the master and has been exercising Kung-Fu since young.

Figure 2. The vampire-like monster' claws are poisonous and kill enemies by scratching or tearing.

Figure 3. Two-directional continuous patterns of the scenes changed by cutting.
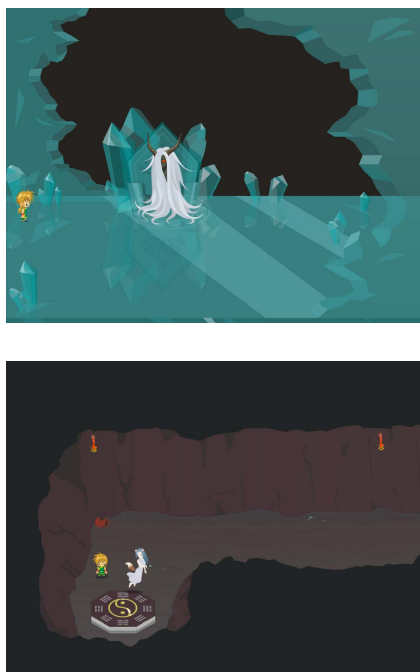
Figure 4. The discrete scenes are changing by fade in/out.

3. Conclusion

This game design use Flash software to develop a role playing game. It actually requires a grand story event and multi-plots to accomplish this role playing game. Based on the theory of "learning by doing," we created a course for game designing from the practice and experience of designing a role playing game. To complete a successful role playing game can plan out and carry out by effective strategy of following module of three stages of concept, structure, and design. Accompanying by the knowledge and skills of the visual design, character creation (drawing), scene design, sound design and programming, we find that Flash software is a usable tool to design and develop a role playing game. For design students, the programming could be a boring and difficult process. If the concept of programming the built-in objects, object crash testing system and connecting functions implant in student's thought, these design students can program a highly

imagined space to design their game play with interests. This course also leads students advance algorithms of mathematic orders, functions, and calculating. The appropriate teaching materials help students learn effective, efficiently, and happily.

4. References

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