Framework of Supporting Structured Game Script Learning System

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Abstract. Game-based learning applications have been getting much attention and it has been widely applied on teaching activities of modern teaching. However, Game-based learning is used as well as the common computer games, so in the design of game-based learning it needs to keep users in the flow effect to intrigue learners to continue learning. Many studies have also pointed out the importance of faithful appropriation for learners in game learning, so that people tend to pay much attention on the entertainment effect. As to the design of the game, i.e., how to achieve the purpose of teaching and how to conduct different teaching effect by playing learning activities in some domain, and so on, it seems be ignored. Besides, many issues in the applications of game-based learning showed that the effect of Game-based learning is merely like the one of playing computer game but difficult to achieve effective learning outcomes if lacking of proper guidance and assistance.

In this study, we intended to design a RPG-based script editing system to build a game-learning platform. Using the game script editing system, it can help designers or teachers to easily plan their learning activities without consideration of game design. In addition, as the game playing, the guides or teachers can observe and guide students to learn in order to achieve the goal of adaptive learning.

**keywords:Game-based Learning, RPG-based, Structured script.**

1 Introduction

Game-based learning in educational applications has been getting much attention. One of the main reasons is the game-based learning can intrigue learners' interest and motivation to use learning, achieve to improve students' learning efficiency, stimulate students' higher-level cognitive thinking, and then become one of effective learning modes. However, the most important thing of above is that the game-based learning is better capable of combining with different areas of discipline and easier to be immersed into a variety of life situations.

Many reports revealed that the game-based learning if lacking of proper guidance and assistance is just like playing games and rather difficult to achieve effective learning. Therefore, the project aims to plan a role-playing game based learning platform, which not only to help designers or teachers to plan learning activities, but also each student can choose their favorite roles to proceed the game learning according to personal characteristics. In addition, teachers/guides can observe, assist and guide students to learn in game situation to achieve adaptive game-based learning goals.

2   Related works

Due to game-based learning as the use of general computer game, it needs to be designed to keep users be immersed in flow effects to cause learners to use and to continue using. Therefore, many studies on the game-based learning application [7,8] pointed out the importance of faithful appropriation of users. And therefore, most of learning games' designs tends to focus on their entertainment effect. Regarding to how to adopt game learning to achieve the teaching goal? how to apply the learning activities to various fields with game learning to improve learning efficiency? etc., it seems less attractive. In fact, many research issues about game-importing to learning need to be explored and discussed.

In the game-learning script design, about the methods of combination of traditional games activities and learning content, Umetsu, Hirashima & Takeuchi proposed the most common simple simulation method, the combination method and the fusion method which is to combine more closely than the combination method on game-based learning [4]. Both methods are shown in Fig. 1 and Fig. 2 respectively.
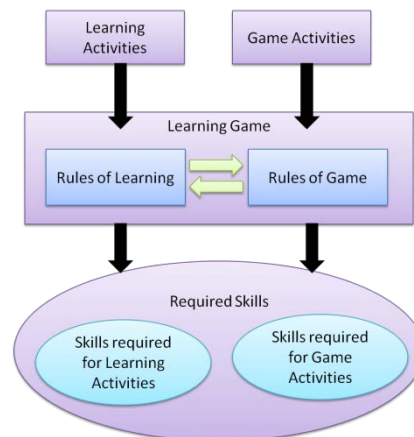

Fig. 1. Combination Method.
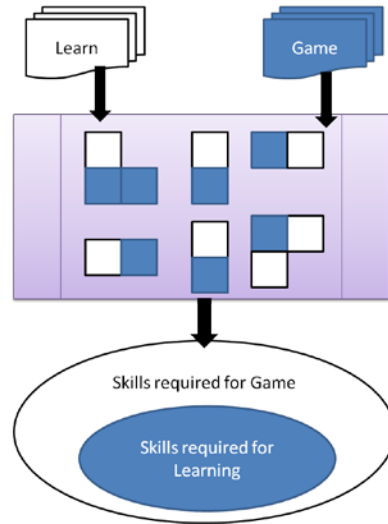
Fig. 2. Fusion method

In the design of system development, domestic and foreign literatures [1,2,3] are still not too many. Ok-Hue Cho and Won-Hyung Lee [1] proposed an interactive event design tools, Easy Design tool of Game Event for rapid game Development, named EDGE, to assist rapid game development. EDGE system is based on Unity 3D engine and its development progress contains five procedures, as shown in Fig. 3. By adopting the game design procedures, the game prototyping can be constructed rapidly.
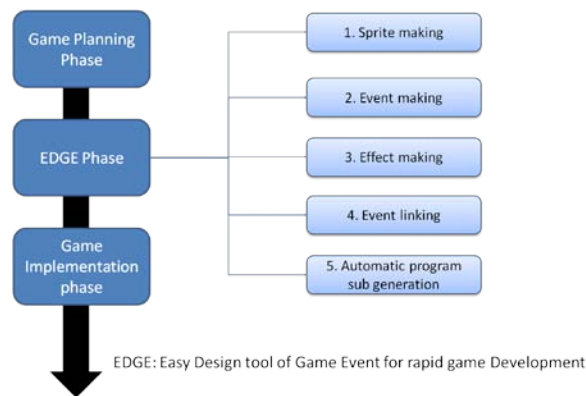
Fig. 3. EDGE's rapid game development process.

In this study, we adopt the concept of the rapid game prototyping to develop a supporting standardized or structured game script learning system platform to achieve the purposes of the quickly learning script import to game learning applications.

3 System design

3.1 Game Story Writing

Campbell's 'Hero's Journey' Monomyth [9], described by Campbell in 1949, is a basic pattern to explain a classic sequence of actions that are found in many stories. The stages of the hero's journey are shown as Fig. 4.

Fig. 4. Campbell's 'Hero's Journey'.

In the game script design process, it is divided into four steps and summarized as follows:

1. To setup the game script: According to traditional culture, the designer or teaching activity designers utilize and assign people, events, time, place and thing with real settings in order to act as a teaching guiding function.
2. To tell the story: Through experiences from teachers, to tell the space-time interleaving story. In this step, it doesn't focus on the reality of story, but the rationalization and harmony of the story development.
3. To write the script: Based on the Campbell hero's journey model, guide or instructional designer proceeded to write the script according the basic requirements of the rationalized concept of the story.
4. To design system: Based on the above planning and through structured system analysis, we progress to establish the template of standardized script design and activate the development of the structured game script editing system.

3.2 Game Script Editing System Design

As shown in Fig. 5, the design of game script editing learning system is based on the spirit of problem-based learning, PBL and constructed with the scaffolding and fading

strategies[5]. In addition, we attempt to combine with SCORM-compliant digital teaching material to achieve learning objectives. Currently, the exchange of standard learning paths is mainly based on the Sequencing and Navigation specification of SCORM 2004 [6]. We intend to use the game script editor to assist guide/teachers to combine the SCORM-compliant teaching materials to build an effective learning path.
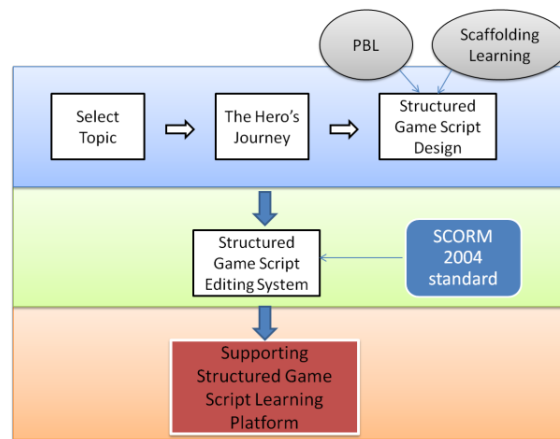

Fig. 5. System Design of Supporting Structured Game Script Learning System.

4 Conclusion and Future works

In this study, we mainly proposed a RPG-based script editing system framework to help designers or teachers to easily plan their learning activities on game-based learning. In addition, we also attempt to follow the specifications of SCORM-compliant digital teaching material to provide an effective learning path in conjunction with game script design. Game design works, including the stories of game, characters, scenes, and so on, are the major part of the supporting structured game script editing system. But, the most important objective of the Game-based learning platform is to improve learning effectiveness.

In future work, we will refine the system architecture more clearly. We hope a teaching activity designers can design a learning game without the deep knowledge of a game and high ability of game design. We will construct the prototype of game-based script editing system that makes all designer can design a learning game easily.

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