Media Design of Learning and Teaching Process Based on Game Technology for Introducing Electronic Component Course

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Abstract

The development of technology as a medium/tool of teaching and learning process has already significantly emerged. Game provides a powerful media/tool so that learning is no longer monotonous, Learners can immediately see the object being studied or even learners could participate directly to the media which learners being studied. Teaching and learning process which is happening now is the teacher and blackboard are in the front of the room. The learners sit in straight rows, listen and answer questions at one at a time, or quietly read their textbooks and do their work in their exercise books, so it is only happened to the extent of learning in the classroom. Teacher should be able to accomodate and facilitate all student. Actualy, the more student could interact with the presented material, the more student could understand to the points inside of the presented material. So that, Game technology which is used by a teacher can provide different activities in the classroom. students can be more interested in the presented material. Research shows that integrating games within a classroom with children can be beneficial for academic achievement, motivation, and classroom dynamics [10]. Content of the game as valuable knowledge is infused through all relational aspects of the game as the player's activities accomplishments: character selection, art, narrative, programming, goals, game structures and play
The scenario of the game is the game that takes place in our college of UPI exactly in FPTK, Learners move to the object (electronic component) being displayed in the corner of the place after taking the object (electronic component), it appears automatically the note of that component, so that learner could know the component. In future, this technology will be widely used by all academic fields because it will greatly contribute to the success of the teaching and learning process.

1 Introduction

Now days, Games have been used in schools for many years to help children learn skills in all any kinds of fields, such as science, engineering and other fields, in an interesting and motivating way. Research shows that integrating games within a classroom to facilitate children learn can be beneficial for academic achievement, motivation, and classroom dynamics [1][10]. There is also evidence that the teaching methods based on educational games are not only attractive to the schoolchildren, but also to university students [2]. There have been conducted researches on games concept and game development used in higher education. Games can provide teachers in higher education with teaching aids that can promote more active students, provide alternative
teaching methods to improve variation, and enable social learning through multiplayer learning games.

Games can be integrated in higher education in three ways. First, games can be used instead of traditional exercises in motivating students to put extra effort in doing the exercises and giving the teacher and/or teaching assistants an opportunity to monitor how the students work with the exercises in real time [6, 7]. Second, games can be used within lectures to improve the participation and motivation of students [8, 9]. In this approach, the students and the teacher participate in knowledge-based games. Third, the students are required to develop a game as a part of a course using a game development framework to learn skills within computer science or software engineering [10].

2 The problem

In the learning and teaching process, teacher need some innovative media to bring his own lesson particularly for the subject of electronic component course, learners need some of a real visual object (electronic component) for the presented material being understood. If the teacher just describes the character or condition of the object without some of the real sample component in front of student, it would make them confused. In addition, some of students, they often forget how to read out and identify the value of passive component particularly resistor, it needs the meaning of colour which stick around on the resistor and recognizes level of the resistor. Even they have already received some of the lesson how to read out and identify it. So that, on this paper we would like to rise the topic about how to build a media/tool to represent the material which could attract student to recognize and identify game that has relation to the those passive component. Through games, learner also could interactively learn passive component.

3 The methods used.

Media/tool of learning and teaching process should make learners feel like in their home, in order to make them comfortable with their living room. So the scenario of the game is taking place in our college at Indonesia University of Education (UPI) exactly in our faculty of FPTK, the procedure is when user (learner) gets start on the game automatically he has already been in our faculty, he could move to all direction to find out where the objects are, by meant to come over to the object (electronic component) being displayed exactly in the corner of the building and he could select which one at the first time, being identified after taking the object (electronic component), it appears automatically the note of that component, so that learner could know the component.

3.1 Feature of Technology Objectives

- Use game-engine technology in a “low-cost, low overhead” solution to provide hands-on, immersive virtual training.
- Architecture is expandable to various levels of command.
- Architecture that is ‘capabilities-based’, rather than ‘facilities centric,’ means that extends to where units need to conduct training.
- Learning content that has been customized by the instructional designers who are neither technicians nor programmers.
- Integration with live, virtual and constructive training scenarios, systems and processes.

4 The findings of the work and their significance

Prensky (2001) explained that games are a form of fun and play that provides enjoyment and pleasure to all of us. Games have goals, rules and state the winner that give users structure and
motivation. They also are very interactive in providing users with positive and negative outcomes and feedback throughout the play. Other features of a game are the challenge for adrenaline, the problem solving for creativity and the representation of the story for emotion.

Computer games provide straightforward navigation and increased motivation, which is easier for students to stay with the game in order to learn the concepts. The game attracts users with clear stated goals and brief instructions. Scrabble is easy to get started and keeps users focused. As game plays continues, Scrabble increases in challenge and competition, which keeps users motivated to continue to play and win.

5 Their implications for future work appearance.

Though many factors influence the successful implementation of an educational innovation like VISOLE, teachers are always significant throughout the whole process [10]. It is because they are the ultimate designers of the teaching and learning activities at school. Researchers (e.g., [11], [12], [13], [14]) advocated that it is crucial to study teachers’ concerns about an educational innovation when they are engaged in implementing the innovation. A better understanding of teachers’ concerns can help contribute to interventions pertinent to their actual needs so as to assist them in the application of that innovation.

Based on the theory developed by Hall and Hord [12], Cheung and Yip [13] observed that when teachers are confronted with an educational innovation, they will have 5 stages of concern, namely “evaluation”, “information”, “management”, “consequence” and “refocusing” (the full description of these stages is shown in Table 1). Any teacher can experience several stages of concern concurrently, but there are differential degrees of intensity, depending on factors, such as the nature of the innovation and the kind of assistance provided during the implementation process. This paper discusses a quantitative study of the concerns that 28 secondary teachers experienced as they were engaged in the implementation of the VISOLE pedagogy. By adopting Cheung and Yip’s [13] conceptual framework of teachers’ concerns with educational innovation, a 25-item questionnaire was designed to measure teachers’ 5 stages of concern about VISOLE. The results were supported further with the qualitative data collected during field observations and in-depth teacher interviews.

6 Reference


