Game-Based Learning System for Teaching English

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# ABSTRACT

Game-based learning systems (GBLS) are designed to support learning using games, but its only focus is the role of the students in the learning process, disregarding the role of the teachers. If we want to *incorporate* the system into education instead of it being a *substitute*, the teacher should be able to participate in the learning process and still be the one to lead the teaching. This paper proposes a game-based learning system for teaching English that will let both teachers and students experience the fun of playing and contributing to the game. This study does not use competitive structure to maximize the effectiveness of the system in promoting positive learning attitudes. To evaluate the learning effects, the system will be employed for a 1-week teaching experiment; subjects will include two classes of fifth grade students of an elementary school in Los Baños, Laguna. Descriptive analysis, independent t-test, and paired t-test will be performed to analyze the data and discuss the results.

# INTRODUCTION

Game-based learning has become widely used in education. It has been a special part of this field for decades. Many researchers agree that games provide motivational learning contexts that are very helpful and effective for a lot of learners, therefore producing a successful learning environment. Games also help students sustain their interest and improve their desire to learn.

Supporting education using games is the primary function of game-based learning systems. However, existing game-based learning systems only focus on the role of the students in the learning process, ignoring and detaching the teachers from the system. This makes game-based learning systems a substitute to education rather than a supplement.

This paper proposes a system where both teachers and students are involved in playing and creating the game. The teachers will not only create and customize the learning process but will also enjoy playing, while the students will not only play, but will also contribute to the game. It's a give and take process just like in any classroom. This will probably increase the meaningfulness of learning for students.

The system will be created using freeware game engine Stencyl and network engine and will follow the framework with components for authoring, training, and reviewing sessions.

With this study, the Institute of Computer Science community is hoped to understand what is needed to know to become a classroom game designer. Also, the researcher hopes that this will be the start of developing different game-based learning systems in the institute.

# RElated Work

A game-based learning system (GBLS) shifts the fun, pleasure, and interactivity into education. A study conducted by Ching-Hsue Cheng and Chung-Ho Su [4] showed that GBLS obviously improves the learning achievements of students. Many related studies were encouraged by the advancement of GBLS, such that students could better learn curriculum. [7] Researchers say that games used in GBLS allow learners to experience situations that are impossible in the real world but have positive impacts on the players' development of a number of different skills. [8]

Constructing a Game-Based Learning System needs substantial amount of time and resources. [9] Yuh-Ming Cheng and his team used game engine and network engine from freeware in creating a competitive game-based learning system, in hopes of enhancing motivation and promoting a cooperative way of learning [5].

Yet, the construction of GBLS alone did not solve all the problems of using games in education. Angela Brennecke and Heidrun Schumann [2] made it clear that games have to be 'integrated into' rather than just 'used during' lessons. Games are focused on the relationship between the game and the student, while education is determined by the relationship between teacher, student, and learning content. This makes the game-based system a substitute to education rather than a supplement. Because of this, they presented a framework that addresses all aspects of education by providing generic components for authoring, training, and reviewing sessions. In addition, Jingguang Liu and Lu Wang [6] designed a teachers' tool in GBLS in order to help teachers fulfill their leading roles and support learners better.

Jui-Hung Cheng's team, [3] on the other hand, combined video-based course materials and game elements with an integrated platform called V-GBL environment where course designers could easily design GBL courses and learners could enjoy their learning activities in a serious adventure game world. All these studies addressed the problems on easy creation of GBLS and the detachment of teachers from the system. However, Wilfried Admiraal suggested that players-as-producers can emphasize the more creative and constructive role of the learner and may therefore trigger more flow with game play and enhance learning effects. [1]

Following Admiraal's suggestion, this study will focus on teachers and students as both players and contributors. The researcher will create tools for teachers for the customization and personalization fof the system. As for the students to contribute to the game, tools for students to be able to submit quests will be implemented as well.

# Methodology

For the teachers to support the students better, this study proposes tools for teachers for them to be able to customize and personalize the system or the learning process:

1. add/modify tasks or quests
2. moderate chat room for questions and feedbacks
3. monitor the students’ performance.

For the students to contribute to the game instead of just being players, they can submit mini games on a topic related to the subject matter that they think the game hasn't covered yet. The teacher can then play the mini games submitted by the students. If the teacher thinks a mini game submitted is a good addition, he can then approve it and let other students play it. In any case that the submitted mini game is rejected, the teacher can give feedback or explanation to the student as to why it isn't a good addition to the game. It's a give and take process just like in any classroom.

**GBLS Specific Goals**

1. Increase learners' vocabulary
2. Gain skills in using the words appropriately
3. Master the eight parts of speech

**Learning Metaphors**

1. Acquisition (concepts transmitted explicitly when an answer is wrong)
2. Discovery (vocabulary can be discovered by exploring the game world)
3. Participation (learners can discuss and compare results in guide room/outside the game)

**Interaction**

The story is divided in 4 situations/scenes to be dealt with by the player.

Interaction is point, click, type, enter. While the player interacts with the characters in the game they will be asked to choose appropriate phrases in their context, fill in the blanks with the right choice, or type a response to attack the enemies. If the player fails an answer then he or she cannot continue (a second chance is given).

The goal is to complete all the situations defined in the game.

The game has a guide room and mini games as well for discussion and time-limited games.

**Description of learning activities**

Before the game - Introduction to the lesson driven by the teacher. Short explanation about the running and interacting with the game.

During the game - Teacher supervises the session, monitors students' performance, and identifies potential problems.

After the game - Collects all assessment reports produced by the game, analyze the results and solve all the misconceptions and errors.

**Guide Room Mechanism**

A guide room is provided for the students to practice and discuss. The students will be able to share their ideas and help each other during the practice session through chat. The teacher is the moderator of the room.

**Mini Games Mechanism**

The Mini Games are designed to add more fun and give students more options. All the games are time limited because an effective way of mastering something is to do it under pressure. Students can create their mini game with their own questions using the templates provided. They can submit the game and wait for their teacher to approve it.

**Scalability**

We want the system to be useful to as many students/teachers as possible. Even though the prototype is built for teaching English, it is modifiable and will also be applicable to use in teaching other subjects like Math for lower levels.

# Evaluation

The researcher will try to test the effectiveness of a game-based learning system which focuses on teachers and students as players and contributors, because it is believed that this will emphasize their creative and constructive roles and will therefore enhance learning effects.

To evaluate the learning effects, the system will be employed for a 1-week teaching experiment. The subjects will include two classes of fifth grade students of an elementary school. At least twenty students will be asked to participate in the study.

One class will be assigned to be the experimental group and the other will be the control group. The experimental group will use the game-based learning system while the control group will have the traditional teaching and will be observed for one week (five school days). A pre test and post test will be conducted in the beginning and the end of the experiment in order to assess the students' learning performance. Descriptive analysis, independent t-test, and paired t-test will be performed to analyze the data and discuss results.

The evaluation approach will also include

1. assessment reports produced by the game
2. monitoring during game play
3. feedback from the student

# TiMELINE

Timeline of how the solution will be implemented:

# 1 - Copy.PNG

# 1.PNG

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