



Model Construction of Game-Based Teaching Applying in Class

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Abstract

In recent years, game-based teaching is receiving more and more attention, and related research has gradually become a hot spot. Game-based teaching has some advantages in improving the enthusiasm of students in the classroom. Game-based teaching is applied in the teaching links of leading-in, new teaching, exercises and summarizing, and a game-based teaching model is constructed.

Subject Areas

Educational Technology

Keywords

Game-Based Teaching, Class, Conceptual Play Space

1. Introduction

In April 2018, the Organization for Economic Co-operation and Development (OECD) released a new report: Teachers as Designers of Learning Environment: “the Importance of Innovative Pedagogies”. The report pointed out that six teaching methods that were different from traditional teaching methods were in the ascendant around the world, which will profoundly change the future direction of education, and one of them was game-based teaching [1]. There is no unified definition of game-based teaching in academia. In this study, game-based teaching, in a narrow sense, refers to the application of games to teaching. In a broad sense, game-based teaching refers to the application of games or game elements, game mechanics and game concepts to teaching. Game elements here refer to various basic elements used in gamification design, such as points, badges, leaderboards, etc.; game mechanism refers to the structural relationship

and operation mode between various gamification elements, such as reward and punishment mechanism, feedback mechanism and competition mechanism [2].

Game-based learning is similar to game-based teaching. Compared with game-based learning, game-based teaching emphasizes the application of games or game elements to the teaching process from the perspective of teachers. Games are inherently attractive to students. Applying game-based teaching to class can effectively stimulate learning motivation, cultivate learning interest, and improve learning effects.

Malone devotes himself to researching why people love games and put forward the famous theory of Intrinsic Motivations. The theory divides intrinsic motivation into two categories: Individual Motivation and Interpersonal Motivation. Individual Motivations include Challenge, Curiosity, Control and Fantasy. Interpersonal Motivations include Cooperation, Competition, and Recognition [3]. The application of game-based teaching in class often stimulates students' intrinsic motivation, such as competition, self-esteem, cooperation, curiosity, and challenge.

2. The Application of Game-Based Teaching in Class

A class is generally divided into four links: leading-in, new teaching, exercises and summary. The following will introduce the application of game-based teaching in these four links to prepare for the construction of the framework.

2.1. Leading-In

Leading-in can help stimulate interest and activate the atmosphere. The application of game-based teaching in the leading-in link can be mainly divided into relevant leading-in and non-relevant leading-in. Relevant leading-in means that the imported mini-games are related to the content to be taught in this class, while non-relevant leading-in means that the mini-games used in the leading-in are not directly related to the content of this class, but are just signals or reminders to allow students to concentrate and enter the class state. The latter games are generally generic. For relevant leading-in, you can make students answer a certain knowledge point in the previous class in a group, and cannot repeat the knowledge point that other groups have answered. Students can be urged to concentrate and participate in it. This game can be called "knowledge point quiz".

The language relay game "a frog jumps into the water" can be used in the class: Students stand up in turn and say "a frog jumps into the water, poof; two frogs jump into the water, poof poof". Every student speaks a word, and this game is a non-relevant relevant leading-in. This small game has nothing to do with the teaching content, but it can quickly activate students' thinking and allow students to concentrate on the classroom. You can also use the "body writing characters" game, that is, use a certain part of the body to write characters, such as writing your name with the right shoulder, which can quickly mobilize

the mood in the classroom.

2.2. New Teaching and Exercises

The new teaching and exercises links in the class are the core parts of a class, and the conceptual play space theory can provide inspiration in this links.

During a decade-long process of design, development and application Quest Atlantis's research team came up with the concept of conceptual play spaces. Conceptual refers to disciplinary content and practices and related contexts, where disciplinary content includes facts, concepts, methods, tools, and processes. Conceptual Play emphasizes that the best way for students to learn subject content is to “engage”—learning in specific contexts. Conceptual play emphasizes a state of engagement that includes: 1) integration into the character; 2) integration into problem situations that are not entirely fantasy; 3) application of conceptual understanding to understand and ultimately change the situation. The core feature of conceptual play is that the individual plays a role in the play space and is able to engage in and experience some activities. For example, in QA, assign students to play the role of environmental scientists to find out why the number of fish in a virtual river is decreasing, and students may check the quality of dark green water in the river, etc. Conceptual play Space can contextualize teaching content. The design of a conceptual play space consists of four core elements: subject content, narrative framework, rational participation, and game rules (as shown in **Figure 1** below) [4]. In this process, teachers need to develop corresponding rules of the game and integrate rich narratives to create a learning space that supports the content of the subject, so that students can participate reasonably in the corresponding situation.

Conceptual play spaces theory is only one of the ways in which game-based teaching can be applied in new teaching. There are two main ways to use game-based teaching methods in new teaching and exercises: one is to use ready-made games, including video games and traditional tabletop games; the other is to use gamification elements such as points, badges, leaderboards, etc. For the former method, teachers need to find a ready-made game that fits well with the teaching content; the second method is much more flexible, and class activities

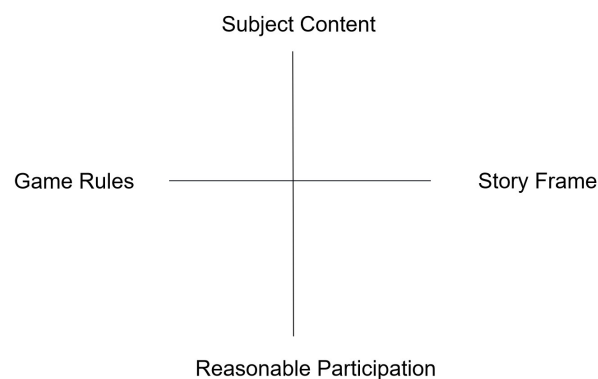


Figure 1. Elements of conceptual play spaces.

can be designed into a game through gamification elements. The new teaching and exercises links in the class are often closely integrated, and sometimes there is not necessarily a clear boundary. Teachers can use the designed ready-made games in the new teaching link. Inform students that there will be games in class, so that students will be fully engaged during the new teaching process by the teacher. In the games in the exercises link, in addition to using ready-made games, game elements are often used, such as relatively simple quizzes. If the cooperation between groups and the point system are adopted, the enthusiasm and enthusiasm of the students will be greatly improved.

The new teaching and exercises stages in the classroom are often combined with inquiry-based learning. Inquiry-based learning was first proposed by Dewey, an American educator and philosopher. He believed that the attitude and way of thinking were more important than the accumulation of knowledge. He emphasized that students needed to learn the process or method of scientific research. Jiang Yu *et al.* (2011) [5] put forward the concept of game-based inquiry learning, based on experiential learning theory, using games as the main learning environment to conduct scientific inquiry learning, the purpose is to improve students' interest in learning, cultivate and develop students' scientific inquiry competencies and cooperative learning. The addition of gamification can make the "academic sense" of inquiry learning more interesting.

2.3. Summary

The summary link of a class helps students form a complete knowledge framework and improve their learning effect. And if the student's participation in this link is low, the effect is greatly reduced. At this point, game-based teaching method can be used. It allows students to write game diaries or mind maps for reflection. If the results can be sent to the online platform or posted in the classroom, students can also communicate and evaluate after class, and vote for the Popularity Award.

3. Construction of the Application Model of Game-Based Teaching in Class

According to the above analysis, such as conceptual space theory, game-based inquiry learning and two methods of game-based teaching method, a model for applying game-based teaching to class is constructed, as shown in **Figure 2** below.

The model is mainly developed according to the four links of class teaching, namely leading-in, new teaching and exercises, and summary. The application of game-based teaching in the leading-in includes two kinds of related leading-in and non-relevant leading-in. The former method needs to be related to the teaching content, and the latter method is mainly to activate the atmosphere and help students enter the state.

In the new teaching and exercises, the conceptual play space theory can be used

Conflicts of Interest

The author declares no conflicts of interest.

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