



# Research on the gamified teaching mode of information technology in the smart classroom environment

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**Abstract.** With the increase of the degree of social informatization, the platforms, facilities and equipment of smart education emerge in an endless stream, and the demand for information technology talents in all walks of life is also increasing, so schools pay more and more attention to the teaching of information technology to students. Integrating gamified teaching into information technology classrooms can better stimulate students' interest in learning information technology courses, mobilize students to actively participate in classroom teaching, and promote students' all-round development. Therefore, this paper explores the gamified teaching mode in the smart classroom environment, and discusses how to organize teaching in the mode with the help of specific cases, so as to better promote student learning and teacher teaching.

**Keywords:** Smart classroom; Information technology; Gamified teaching.

## 1 Introduction

In the teaching process of information technology courses in most primary and secondary schools, the classroom teaching is still based on the teacher's teaching, demonstration operation, and then allowing students to practice independently. In some classrooms, students' initiative in learning is not fully mobilized, but only follows the teacher's steps, and in the process, students' computational thinking is not cultivated, and their innovation ability is not stimulated. This requires information technology teachers to explore new teaching methods in combination with the characteristics of students in the teaching process<sup>[1]</sup>.

In summary, in order to better promote students' learning and stimulate students' interest in learning, this paper proposes a gamified teaching model in the smart classroom environment.

## **2 Definition of relevant concepts**

### **2.1 Overview of Smart Classroom**

The smart classroom realizes the wisdom of promoting students' learning from both education and learning, and provides a variety of teaching tools and teaching modes throughout the classroom teaching process to promote teachers' teaching and students' learning to a greater extent<sup>[2]</sup>.

### **2.2 Overview of gamified teaching**

The most attractive part of the game is its timely feedback mechanism, which can enable players to get a timely feedback, so as to gain a sense of achievement, players can know whether their game results fail or fail in time, and integrating the game into the field of education will undoubtedly make classroom teaching interesting<sup>[3]</sup>.

In the field of education, gamification teaching has created a way for us to reconcile with games, and the purpose of the gamification teaching model is to make students feel the joy of learning and realize learning through play<sup>[4]</sup>.

## **3 Design of gamification teaching case of information technology in the smart classroom environment**

This section uses the programming game of hitting an airplane as an example to analyze the teaching design of digital games in the teaching of information technology classrooms. It mainly includes four links: creating a situation, designing tasks, independent exploration, and evaluation and feedback.

### **3.1 Teaching Objectives**

In the process of completing the "Hit the Airplane" programming game, students are able to apply what they have learned to solve specific problems. At the same time, students' computational thinking, analytical and problem-solving skills should also be improved in this process.

### **3.2 Design ideas**

At the beginning of the class, the teacher first shows the finished game to the students, and then leads the students to recall the knowledge points needed for the game, and then asks the students to decompose the whole game task into several sub-tasks through group discussion, and finally the students complete the design of the whole game by themselves, and at the end of the students' independent design, the difficulty of the game task can be adjusted according to the students' knowledge mastery. Respect each student's ideas throughout the process and immerse students in it. The process is shown in Figure 1:

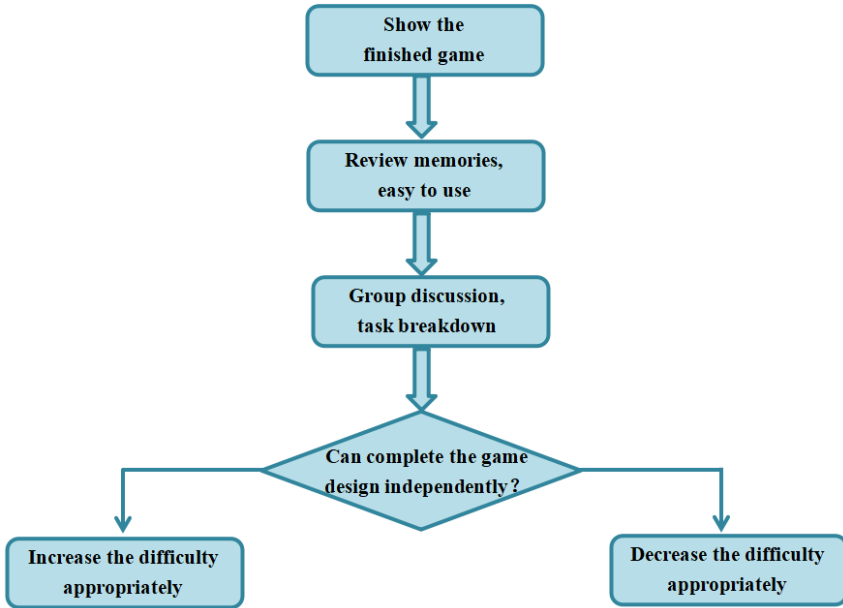


Fig. 1. Design ideas

### 3.3 Teaching process

#### (1) Create a situation

The key to the use of digital games in the IT classroom is what kind of game tasks drive student learning. In the case of the Strike Plane programming game, the teacher can introduce the lesson by showing the program that has already been done<sup>[5]</sup>. While motivating students to learn, use students' curiosity about the game to ask questions at the right time, such as have you played such a game before? Do you know how this fun game was programmed? These questions can bring students into the situation, prompt students to think proactively, and improve the effectiveness of the task.

#### (2) Review old knowledge to facilitate application

Publish relevant practice questions on the platform, use the automatic statistics function of the platform to count the completion of students, understand the students' mastery of knowledge, and focus on the parts that are not ideal<sup>[6]</sup>.

#### (3) Group discussion and breakdown of tasks

The teacher can guide the students to divide the overall teaching task into multiple small tasks, and reasonably integrate these small tasks into the classroom, so that students can actively participate in the task situation. For example, the task is broken down into first solving how to display and control the movement of the player's plane, and then using the same principle to solve the problem of displaying and moving enemy

planes and bullets<sup>[7]</sup>. Then, the judgment and processing operation after the bullet hits the enemy plane, and finally the game ends.

#### **(4) Independent inquiry**

When solving related game tasks in the teaching classroom of information technology, it is usually the teacher who provides students with clues to solve the task, so that students can use their subjective initiative to explore according to these clues, so that the problem can be solved. In this process, students can seek help from teachers on the platform, and classmates can inspire each other, learn from each other, and achieve common progress through mutual learning<sup>[8]</sup>.

#### **(5) Evaluation feedback**

Evaluation and feedback are indispensable links in the teaching process, after students complete the learning task, teachers evaluate their knowledge and skills mastery, and appropriate and timely evaluation has a guiding and promoting effect on students' learning. Teachers can evaluate themselves or among students<sup>[9]</sup>. In the case of "Designing a Striking Airplane Game", the teacher can select different groups to comment on the completion of each sub-task, so as to ensure that each group has the opportunity to be evaluated, so that students can get timely feedback and strengthen students' self-efficacy. Teachers can also get inspiration from students' work to better improve their teaching in the future<sup>[10]</sup>.

## **4 Revelation**

### **4.1 Choose the right educational game**

Teachers should pay special attention to choosing appropriate games, and different teaching content should be equipped with different educational game aids, and choose according to the differences of students<sup>[11]</sup>. In the gamification teaching of information technology, special attention should be paid to the development of students' logical thinking and computational thinking, and the ability to solve problems. At the same time, it is important to note that the games you choose must be able to support the completion of the teaching objectives of the lesson.

### **4.2 Set up the appropriate game format**

In the intelligent classroom environment, the game-based teaching should choose the appropriate game mode, such as in the import stage can choose to design some simple games, on the one hand, it can stimulate students' interest in the content of this class, on the other hand, it can make students transfer their attention to the class and welcome the new knowledge with a happy and curious attitude. In addition, at the stage of teaching new knowledge, teachers should seriously consider which knowledge points can rely on the way of games to teach, it is more beneficial to students' study to combine game teaching with traditional teaching, which can enhance students' understanding of

new knowledge to a great extent. As well as in the practice consolidation stage and the summary stage can use some similar even look at the small game, send the small frog home classification game to organize.

### 4.3 Balance playing and teaching

When using the game-based teaching model to organize teaching, teachers should pay special attention to the balance between games and education. In order to achieve the balance between the game and teaching should pay special attention to: first, in the game to generate teaching. The teacher constructs the new curriculum content according to the students' interest and needs in the process of the game, and this curriculum content also happens to be discovered by the students themselves, which helps to stimulate the students' curiosity, it is helpful to the construction of students' direct experience. Second, the spirit of the game into teaching. In order to achieve the balance between teaching and game, we must first achieve the integration of game and teaching. This integration is not simply the design of the game into the classroom learning process, but the game behind the spirit of exploration into learning, not to suppress students' imagination, autonomy.

## 5 Conclusion

In short, by integrating the gamification teaching model into the environment of the smart classroom, on the one hand, the smart classroom provides convenient conditions for teachers to organize classroom teaching; On the other hand, it can also make the information technology classroom change the monotony and boring in the past, and students can actively participate in the classroom and apply the knowledge they have learned to the specific environment, so that their innovation ability, computational thinking, and problem-solving ability can be improved to a certain extent.

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