

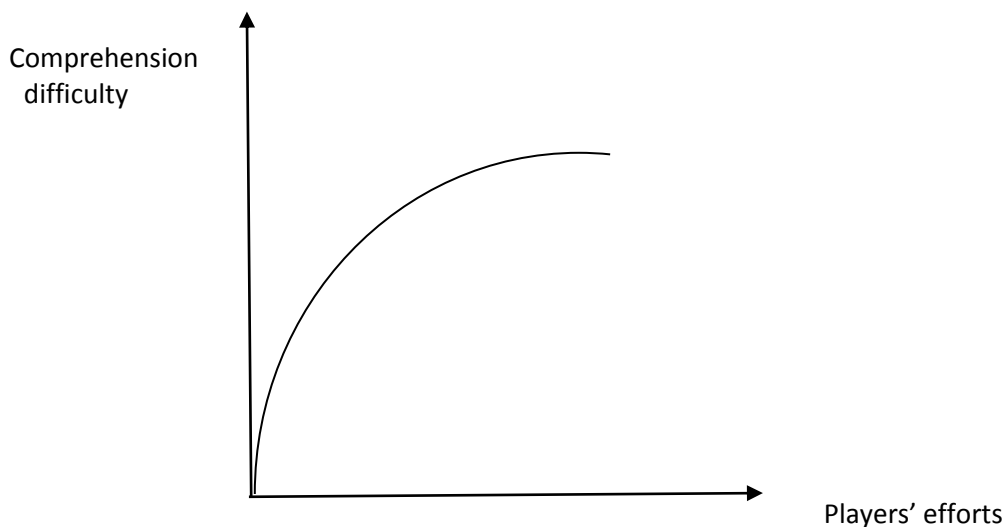
Lesson 3: Game Mechanics Design

Teacher: Claire Lin	Grade: 3-5	Time Required: 90 minutes
Subject: Game Mechanics Design	Teaching objectives: Students will 1) Know how to design game mechanics for a game: <i>Design rules for the racing games.</i> 2) Know how to spice up their prototypes by adding game mechanics.	
Teaching Materials		New Concepts
Teacher: Codey, a computer	Students: Codey, computers	Game mechanics Coding blocks: <i>Sensing, Conditional statements</i>
Instructions:		
<p>Introduction: Give students an overview of the lesson</p> <p>Objectives: Students will have an understanding of: ① the concept of game mechanics; ② what common game mechanics are; ③ how to design game mechanics for a game.</p> <p>(The teacher guiding students): “A good game should include well-designed game rules which clearly define what players are going to do in the game. And, the game rules here are called game mechanics.</p> <p>Through the game mechanics, players understand what they should do and shouldn't do in the game.</p> <p>Game mechanics are an indispensable part of a game because they influence how a game is played and proceeds. Moreover, game mechanics contribute to the gaming experiences of players. So, we need to design a set of game rules for our games. One thing to keep in mind: The game mechanics should be clear and easy to understand so that the gaming experience can be smoother.”</p>		

Examples:

① **Rules of *Super Mario*:** Mario has to run to the destination “flagpole” and run back without touching any of the obstacles. ② **Rules of the game *Word Guessing*:** One person describes a word without using the word itself and the other person guesses what the word is. ③ **Rules of *Go bang*:** The game has two players. The one who first builds a row of five consecutive stones wins.

The teacher’s instructions: “Players have to figure out what the game rules are as they play the game. So, game rules should not be too complex, or else they will hinder players from enjoying the game, and game rules should not be too simple, or else players might fail to get satisfied feelings out of overcoming challenges and will not come back to the games. So, knowing how to strike a balance is important when we design game mechanics. We have to create game rules that are clear yet still challenging.”



The teacher: “Generally, game mechanics have three components: 1) rules for defining objects and concepts; 2) rules for defining behaviors; 3) rules for defining results.”

The teacher will take *Super Mario* as an example:

Rules for defining objects and concepts: Mario is defined as an ordinary person. He runs, jumps, eats

golden coins and mushrooms. Mushrooms make him lose health points. Gold coins make him rich.

Rules for defining behaviors: Mario has to avoid mushrooms. Otherwise, he will die.

Rules for defining results: Mario has to jump and grab the Goal Pole to finish the level.

The teacher says: “When we design game rules, there is a precondition: every player ought to obey the same set of rules, keeping the game fair. This is why we always say no to downloading cheating programs. The game has to be fair and transparent.”

Guided Practice:

1) Brainstorming: Let students think about what kind of game rules suits racing games.

The teacher showcases students the racing game that was designed yesterday: “This is the racing game I designed yesterday. Does the game have any game rules? No, it has no rules. **The car runs freely without being constrained. It will keep running even when it is off the track.** So, we must make our games complete. Now, we’ll have to learn how to design rules for games.”

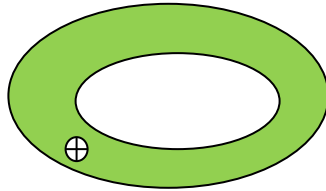
The teacher guides students: “Can you think of any games rules in racing games? **(The teacher will show some examples in the slide)** OK. You’ve known so many game rules now. What kind of rules will you design for your racing game? You can discuss in groups.” Leave students enough time to figure out the solution: how to design appropriate and engaging rules for specific games. Ask students to think like a game player.

The teacher says: “Each of you has a great idea. And each of you creates different game mechanics, so each of your racing games is unique. Want to know my game mechanics design? **The rule is: The racing car has to run inside the track. Once the car runs outside the track, it has to return to the starting place and**

start all over again.”

2) Prototyping: Students will know how to use mBlock 5 to design game mechanics.

Physical prototype



Digital prototype: (The teacher saying to students) “Let’s start to program using mBlock 5 now. Before programming, you should connect Codey to your computer. After that, we will work on the characters and scenes design. If you want to use Codey to control the racing car in mBlock 5, you have to learn about how to use “**Broadcast**” first. [Check out the slide for details.](#)”

Game rules:

The car has to run inside the track.

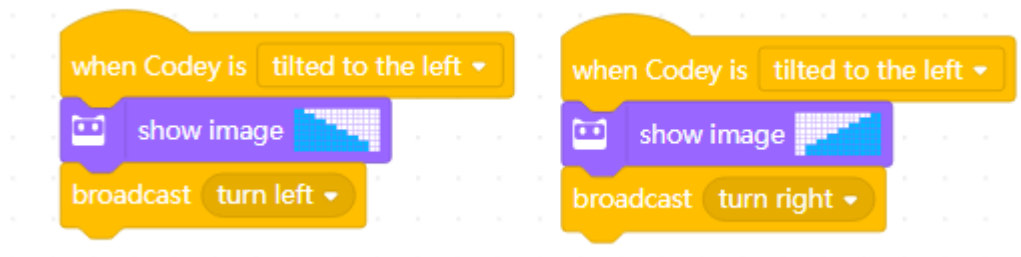
Results:

- ① If the car runs outside the track, it has to return to the starting place. The game will start all over again;
- ② If the car runs inside the track, the game continues.

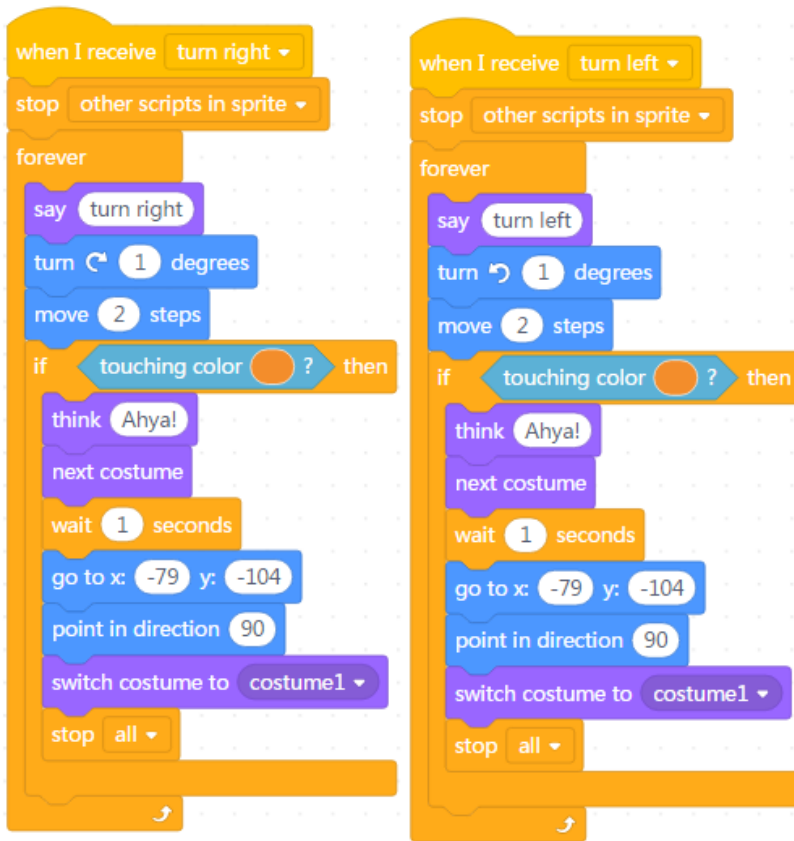
Thinking:

(Ask students) “How to decide whether the car runs outside the track?”

Write the following code for Codey:



Write the following code for the character:



3) Playtesting: Students will have a better understanding of Playtesting - a pivotal step in game design.

The teacher asks students: “Anyone wants to try this game and share with us what you think of it? Is there anything to improve about the game? Or is there anything that you feel not right?”

4) Reiterating & Implementing: Students will know how to reiterate the game prototype and implement it.

The teacher will make modifications based on the feedback from students.

Independent Practice:

It's Your Turn!

1) Selecting a solution: “We’ve just discussed how to make your racing game more engaging. You came up with so many ideas, but now you have to narrow down the ideas to only one. Then you can add game

rules and goals to your racing games.”

2) Prototyping: “Draw a draft or create a prototype based on your idea. Or you can use mBlock 5 to write programs straightaway.”

3) Playtesting: “When your game is ready, put your hands up. Then, invite some target players to experience your prototype. Of course, you can invite me to try it.”

4) Reiterating & Implementing: “Fix bugs based on the players’ feedback. Perfect your game.”

Share:

Presentation

Allow each student to share his or her own game project with the class and tell them to invite classmates to experience their game.

At the end of this session, let students vote for the best design of the day.

Differentiation & Modification

For advanced students	For struggling students	Strategies to maximize engagement
Increase the difficulty of rules: ①The car has to finish one lap within the required time; ②Narrow the track.	Make the game rules simple: ①The car has to run inside the track; ②Broaden the track.	In the Share session, let students try the game prototypes and vote for the best game of the day.

Comments:

Teachers’ Reflections: