Game Design Lesson Plan

Overview

Game Design is a complete theme designed to be completed over eight, 45-75 minute sessions. For each lesson, students will watch a series of videos and create one coding project with opportunities to personalize their work using "Add-Ons," which are mini-coding challenges that build on top of the core project.

Game Design: At-A-Glance

In Game Design, students learn basic video game coding concepts by making different types of games, including racing, platform, launching, and more! If you get stuck, review the Game Design Solution Sheets. Digital materials are accessible online. For more details on using CS First, review the Starter Guide.

Game Design: Theme Outline

Lesson 1: Gaming Story	Students learn about how CS First works, then create a gaming story using *Scratch for CS First*.
Lesson 2: Racing Game	Students create a two-player racing game in which players control movement with the keyboard.
Lesson 3: Maze Game	In this lesson, club members create a game in which the player guides a sprite through a maze.
Lesson 4: Platform Game	Students create and learn about platform games. Students program a player sprite to move and jump across platforms.
Lesson 5: Escape Game	Students create an escape game in which a player must avoid other sprites that move randomly.
Lesson 6: Launcher Game	Students create a launcher game using key press events, clones, and variables.
Lesson 7: Quest Game	Students learn how to use storytelling in video game design while building an RPG style Quest Game.
Lesson 8: Cave Surfing Game	Students create a game with a side scrolling background (similar to the popular game Flappy Bird).

Lesson 1: Introduction and Discovery

Gaming Story: At-A-Glance

In this first lesson, students create a gaming story using *Scratch for CS First*.

Topics introduced:

- Storytelling in games
- CS First and *Scratch for CS First*

Gaming Story Starter project

Gaming Story Example project

If you get stuck, review the Gaming Story Solution Sheet.

Gaming Story: Agenda Highlights

1. Direct students to g.co/csfirst/go, login, and watch the first video. For more details on how to teach using CS First, review the CS First Starter Guide (g.co/csfirst/starter-guide).
2. Students watch videos and create a "Gaming Story" project using *Scratch for CS First*.
    - **Video 2:** Students who are exploring the costumes or sounds tab may not understand the coding aspect of this lesson. Remind them of the task, and try to answer any questions they have.
3. Students choose Add-ons to enhance their project.
4. When there are five minutes left in class, instruct students to find the Wrap Up page and complete the short survey.
5. Your students' projects are automatically shared with your teacher account. Encourage students to also show their projects to a neighbor/classmate.
6. Discuss the lesson and facilitate a brief discussion about what students learned and experienced.
    - *What story did you tell about gaming?*
    - *What was your favorite part of this lesson?*
    - *What blocks did you use, and what did they do?*

Lesson 5: Escape Game

Escape Game: At-A-Glance

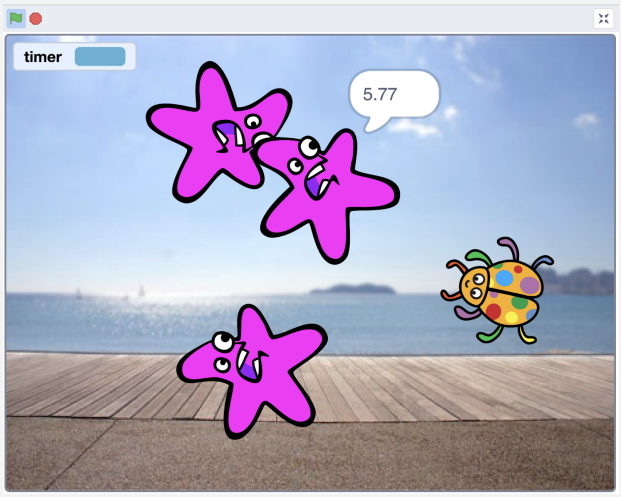
In this lesson, students create an escape game in which a player must avoid other sprites that move randomly. Users increase their score by avoiding these sprites.

Topics introduced

- Variables
- Randomness

Escape Game Example project

If you get stuck, review the Escape Game Solution Sheet



Escape Game: Agenda Highlights

1. Recap the last lesson and have students log in to the CS First website using their student accounts.
2. Students watch videos and create an "Escape Game" project in *Scratch for CS First*. Check in with students as they watch the videos and complete their projects.
    - **Video 1:** This lesson does not have a starter project. Students open *Scratch for CS First* and create a new project.
    - **Video 2:** Before moving on to this step, students should have added two sprites and a backdrop to their programs. Students will program the main character.
    - **Video 3:** Students will program the chaser sprite and should still only have two sprites on their screen. Watch for students who are in the design window, as this may indicate difficulty with the programming. Either redirect these students back to the video, or talk with them about what they're working on.
    - **Video 4:** Students will program their game to keep score. Watch for students who have difficulty finding and working with the timer block (located in sensing).
3. Students choose Add-ons to enhance their project.
4. When there are five minutes left in class, instruct students to find the Wrap Up page and complete the short survey.
5. Your students' projects are automatically shared with your teacher account. Encourage students to also show their projects to a neighbor/classmate.
6. Discuss the lesson and facilitate a brief discussion about what students learned and experienced.
    - *What was your favorite part of this lesson?*
    - *How did you use randomness in the project?*
    - *How did you use variables?*

Lesson 7: Quest Game

Quest Game: At-A-Glance

In this lesson, students learn how to use storytelling in video game design while building an RPG style Quest Game.

Topics introduced

- Broadcast (events)

Quest Game Starter project

Quest Game Example project

If you get stuck, review the Quest Game Solution Sheet

Quest Game: Agenda Highlights

1. Recap the last lesson and have students log in to the CS First website using their student accounts.
2. Students watch videos and create a "Quest Game" project in *Scratch for CS First*.
    - **Video 2:** Circulate around the room and ensure that students are moving on from the survey. This lesson has more videos than most, so maintaining time is important.
    - **Video 3:** Students must copy code from one entrance sprite to the other entrance sprites. To do this, drag and drop the three code stacks from one sprite to the others, and change the values in the "switch backdrop to" block.
    - **Video 4:** This video uses many different events and looks blocks with different values. In debugging students' programs, it may help to read the code aloud to find any potential errors.
    - **Video 5:** In this video, students hide an object at one location in the game. This serves as the game's plot.
    - **Video 6:** Students will add slides that play at the beginning of the story. If students continue to work on their story after this video (like with the add-ons), you may choose to instruct them to disable this block stack by removing the "when flag clicked" block for the time being. Doing this will temporarily stop the title slides from showing and enable students to test their code more quickly.
3. Students choose Add-ons to enhance their project.
4. When there are five minutes left in class, instruct students to find the Wrap Up page and complete the short survey.
5. Your students' projects are automatically shared with your teacher account. Encourage students to also show their projects to a neighbor/classmate.
6. Discuss the lesson and facilitate a brief discussion about what students learned and experienced.
    - *What was your favorite part of the lesson?*
    - *What was the most challenging aspect of building this project?*
    - *What are some new things that you learned or discovered?*

CS First projects are coded using Scratch, a block-based coding tool developed by the Scratch Foundation in collaboration with the Lifelong Kindergarten group at the MIT Media Lab. Learn more about Scratch at scratch.mit.edu.