

Develop a Plan and Create a Game 7-8th grade Computer Science Sample

Notes & Preparation

- Project length 3 classes
- Instructor note Assess student levels and adjust lesson accordingly. Lesson is designed for student creativity.





Engage

Unit Theme Introduction



Remind the students they have been learning about responsibility this year. They have explored digital responsibility, personal responsibility, and financial responsibility. In this unit we will discuss the responsibility we have in presenting ourselves online with a healthy digital footprint. Ask students the question "how can I be responsible online in how I present myself?" Watch: Teen Voices: Presenting Yourself Online. Discuss why or why not it matters how we present ourselves online? Discuss the reasons people have for putting up a false self online and what are those results.

Make Code Introduction

Students will be using Microsoft's Make Code Arcade platform write a game. Make Code Arcade is a web-based coding editor that allows people to code their own video game. It allows users to use either block code (similar to Scratch) or JavaScript (computer language) to learn the basics of programming code. Students will apply their knowledge of algorithms, decomposition, debugging, loops, events, conditionals, and variables to create a program.

Project Description

In this project students will apply the coding skills they have been learning to design and develop a game that solves a problem. The problem will focus on how to show responsibility towards your environment, community, or people. For instance, a game that has the user try to pick up as much trash as possible before the timer runs out exhibits showing responsibility towards your environment. Students may remix an existing game or develop their own game using the coding platform Make Code Arcade. Lastly, students will reflect on and describe the process program of development.



Exploration

 Navigate to the following website to aid in Make Code Arcade instruction: https://arcade.makecode.com/courses/csintro1



Additional Emphasis

- Use the <u>Orange Coding Book</u> file to help with reviewing coding concepts.
- Demonstrate each coding concept as needed for student comprehension.
- Demonstrate how to remix existing projects.
- Allow for pair programming.

Learning Outcomes

Students will:

• Design a game that exhibits showing responsibility towards others.



- Create a game that involves variables, events, loops, and conditionals.
- Test and debug their program to ensure it accomplishes the intended task.
- Describe the program development process.

Project

Have the students:



Making Connections: Developing a Plan

- 1. Launch a Multimedia Program
- 2. Open file named Orange Coding Book
- 3. Switch to slide 11
- 4. Answer the questions
- 5. Format the font color of the answers
- 6. Save file

Make Code Arcade References

- 7. Navigate to https://arcade.makecode.com/reference to review the specific coding blocks and their purpose in Make Code Arcade
- 8. Navigate to https://arcade.makecode.com/docs for further exploration

Beginning Users: Game Creation

- 9. Launch an Internet browser
- 10. Navigate to https://arcade.makecode.com/tutorials
- 11. Explore the tutorials for writing a game
- 12. Choose a game tutorial or existing project
- 13. Open a game tutorial and follow the step by step tutorial on how to build the game
- 14. Be sure to include the following coding in the algorithm:
 - a. Loops



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- c. Conditionals
- d. Variables
- 15. Test and debug steps to ensure the game is successful
- 16. Ask a classmate to play the game to ensure the steps work correctly

Advanced Users: Game Design

- 17. Launch an Internet browser
- 18. Navigate to https://arcade.makecode.com/concepts
- 19. Explore topics to help with building a game
- 20. Open a new tab
- 21. Navigate to https://arcade.makecode.com/#editor
- 22. Use the coding blocks to create a game
- 23. Be sure to include the following coding in the algorithm:
 - a. Loops
 - b. Events
 - c. Conditionals
 - d. Variables
- 24. Test and debug steps to ensure the game is successful
- 25. Ask a classmate to play the game to ensure the steps work correctly

Making Connections: Reflecting

- 26. Launch a Multimedia Program
- 27. Open file named <u>Orange Coding Book</u>
- 28. Switch to slide 12
- 29. Answer the questions
- 30. Format the font color of the answers
- 31. Save file

Reflection



As each class comes to a close, discuss the specific steps that have been taught that day. Ask students to share the games they have developed. Ask students how their game shows responsibility toward others.

Have students check off the learning objectives they focused on

Extend

For differentiated learning or early finishers, students may complete the following optional steps:



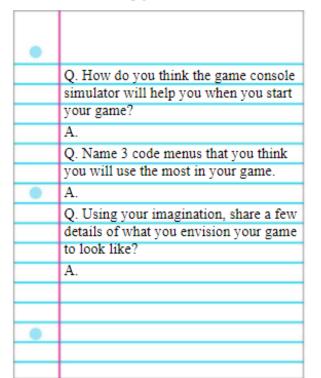
- 1. Continue to build algorithms for your game.
- 2. Explore the Make Code Arcade platform.



Template

Make Code Arcade

After <u>watching</u> the mini tutorial and <u>exploring</u> Make Code Arcade answer the following questions.



Developing a Plan to Solve a Problem

Develop your own plan (program) to solve a problem and create a program.

