

# 7 Computer Science Unit 03: Game Design with Sustainable Development Goals

Content Area: **Technology**  
Course(s):  
Time Period: **November**  
Length: **3 Weeks**  
Status: **Published**

## Unit Overview

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- Problem Solving and Computing
  - 17 UN Sustainable Development Goals (SDG)
  - Create a virtual reality/augmented reality (VR/AR) environment that will solve a problem from SDG
  - Implement the design process

## Standards

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CS.6-8.8.1.8.AP.1	Design and illustrate algorithms that solve complex problems using flowcharts and/or pseudocode.
CS.6-8.8.1.8.AP.2	Create clearly named variables that represent different data types and perform operations on their values.
CS.6-8.8.1.8.AP.4	Decompose problems and sub-problems into parts to facilitate the design, implementation, and review of programs.
CS.6-8.8.1.8.AP.6	Refine a solution that meets users' needs by incorporating feedback from team members and users.
CS.6-8.8.1.8.AP.8	Systematically test and refine programs using a range of test cases and users.
CS.6-8.8.1.8.AP.9	Document programs in order to make them easier to follow, test, and debug.
CS.6-8.8.1.8.CS.1	Recommend improvements to computing devices in order to improve the ways users interact with the devices.
CS.6-8.8.1.8.CS.2	Design a system that combines hardware and software components to process data.
CS.6-8.8.1.8.CS.3	Justify design decisions and explain potential system trade-offs.
CS.6-8.8.1.8.CS.4	Systematically apply troubleshooting strategies to identify and resolve hardware and software problems in computing systems.
CS.6-8.8.1.8.DA.1	Organize and transform data collected using computational tools to make it usable for a specific purpose.
CS.6-8.8.1.8.DA.5	Test, analyze, and refine computational models.
CS.6-8.8.1.8.IC.1	Compare the trade-offs associated with computing technologies that affect individual's everyday activities and career options.
CS.6-8.8.1.8.IC.2	Describe issues of bias and accessibility in the design of existing technologies.
CS.6-8.8.2.8.ITH.3	Evaluate the impact of sustainability on the development of a designed product or system.
CS.6-8.8.2.8.ITH.4	Identify technologies that have been designed to reduce the negative consequences of other technologies and explain the change in impact.

## **Materials**

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- Chromebook
- Brainpop
- CoSpaces
- Merge Cube
- Tinkercad

## **Assessment**

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### **Formative Assessment**

- Teacher Observation
- Checks for Understanding
- Exit Tickets

### **Summative Assessment**

- Performance Tasks & Projects

## **Accommodations & Modifications**

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### **Special Education**

- Follow IEP Plan which may contain some of the following examples...
- In class/pull out support with special ed teacher or assistant
- Preferred seating
- Directions repeated/clarified
- Extended time for completing tasks
- Vocabulary support
- Limit number of tasks

### **504**

- In class/pull out support with special ed teacher or assistant
- Preferred seating
- Directions repeated/clarified
- Extended time for completing tasks
- Vocabulary support
- Limit number of tasks

### **ELL**

- Translation device/dictionary
- Preferred seating
- Directions repeated/clarified

- Extended time for completing tasks
- Vocabulary support
- Limit number of tasks

### **At-risk of Failure**

- Preferred seating
- Directions repeated/clarified
- Extended time for completing tasks
- Vocabulary support
- Limit number of tasks

### **Gifted & Talented**

- Independent projects
- Online games
- Extension activities

## **Interdisciplinary Connections**

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## **21st Century Life Literacies & Key Skills**

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TECH.9.4.8.CT.1

Evaluate diverse solutions proposed by a variety of individuals, organizations, and/or agencies to a local or global problem, such as climate change, and use critical thinking skills to predict which one(s) are likely to be effective (e.g., MS-ETS1-2).

TECH.9.4.8.CT.2

Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option (e.g., MS-ETS1-4, 6.1.8.CivicsDP.1).