Unit 5: Games

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

Unit Overview

Students will be introduced to the computational concepts of conditionals, operators, and data (variables and lists). Students will become more familiar with the computational practices of experimenting and iterating, testing and debugging, reusing and remixing, and abstracting and modularizing by building and extending a self-directed maze, pong, or scrolling game project.

Standards

TEC.5-8.8.1.8.A.5	Select and use appropriate tools and digital resources to accomplish a variety of tasks and to solve problems.
TEC.5-8.8.1.8.D.1	Model appropriate online behaviors related to cyber safety, cyber bullying, cyber security, and cyber ethics.
TEC.5-8.8.1.8 A.1	Use appropriate technology vocabulary.
TEC.5-8.8.1.8 A.2	Use common features of an operating system (e.g., creating and organizing files and folders).
TEC.5-8.8.1.8 B.1	Demonstrate an understanding of how changes in technology impact the workplace and society.
TEC.5-8.8.2.8.E.1	Work in collaboration with peers and experts in the field to develop a product using the design process, data analysis, and trends, and maintain a digital log with annotated sketches to record the development cycle.

Essential Questions

How can creative computing help one use computational concepts across many disciplines and contexts?

How can engaging in creative computing prepare one for a career as a computer scientist or programmer?

How does interacting with a computer as a designer, rather than a consumer, increase knowledge, creativity, imagination, and literacy?

How can reflection enable us to grow and learn?

Application of Knowledge: Students will know that...

- Creative computing offers opportunities to design and make for the computer, not just listen, observe, and use
- Creative computing offers opportunities to engage with others as audience, coaches, and co-creators
- Reflecting about your practice enables one to review and rethink your creation

Application of Skills: Students will be able to...

- Define the following terms: abstracting and modularizing, conditionals, operators, data, variables and lists, sensing
- Describe what a variable is and why variables are useful
- Develop greater fluency with computational concepts (conditionals, operators, data) and practices (experimenting and iterating, testing and debugging, reusing and remixing, abstracting and modularizing)
- Identify and understand common game mechanics
- Identify common design elements of all games
- Investigate a problem and find a solution by testing and debugging

Assessments

- Design Journal (personal reflection and self assessment by student)
- Rubric for game designed

Suggested Activities

- In small groups, students will list as many games as they can within 1-2 minutes (brain dump). They ask what do they have in common? What features of their design make them a game? Then, they will imagine a dream game and write a list of design elements for that game.
- Students will create a starter game project that can be revisited and extended during the Score, Extensions, and Interactions activities. (Maze, Pong, and Scrolling are example starter projects.)
- Students can explore the "Fish Chomp" project for an example of adding score by using variables. Students will incorporated score into their game.
- Students can explore the projects in the Extensions studio as examples of how to add extension to their game (increase difficulty, add levels, etc.).
- Students can explore the Interactions puzzles to add more advanced concepts to their games.
- Students can have a "Feedback Fair" when games are complete -- other students explore the projects, ask questions, and give feedback.
- Students will open the Debug It! program from the Stories Unit Debug It! studio and test and debug at least one challenge.

Activities to Differentiate Instruction

Peer-to-peer "Tech Buddy" support

Students may work at their own pace

Advanced students may use their computer skills to enhance their Scratch program

Students who complete the daily assignment and are up-to-date on all projects may choose from one of the following activities if time premits in the period:

- Practice their math and ELA skills using recommended online educational websites provided by the teacher
- Play activities and games on teacher's website at www.quia.com
- Keyboarding exercises
- Smart Board Challenges

Integrated/Cross-Disciplinary Instruction

ELA -- literacy skills involved in reflective journaling

Math -- sequencing and computation, variables and data

Art -- principles of design

Resources

- Computers with speakers
- Network connection
- Projector or SmartBoard with speakers
- Scratch programming language -- http://scratch.mit.edu
- Maze Handout
- Maze example starter project -- http://scratch.mit.edu/projects/11414041
- Pong Handout
- Pong example starter project -- http://scratch.mit/edu/projects/10128515
- Scrolling Handout
- Scrolling example starter project -- http://scratch.mit.edu/projects/22162012
- Games studio -- http://scratch.mit.edu/studio/487504

- Score Handout
- Score examples studio -- http://scratch.mit.edu/studios/218313
- Fish Chomp starter project -- http://scratch.mit.edu/projects/10859244
- Fish Chomp remix studio -- http://scratch.mit.edu/studios/475615
- Extensions handout
- Extensions studio -- http://scratch.mit.edu/studios/475619