Lesson 4: Sequencing with Scrat

45 minutes

Overview

In this **skill-building** lesson, students will develop sequential algorithms to move a squirrel character from one side of a maze to the acorn at the other side. To do this they will stack code blocks together in a linear sequence.

Purpose

In this lesson, students will develop programming and debugging skills on a computer platform. The block-based format of these puzzles help students learn about sequence and concepts, without having to worry about perfecting syntax.

Standards

Full Course Alignment

CSTA K-12 Computer Science Standards (2017)

- ▶ **AP** - Algorithms & Programming
- ▶ **IC** - Impacts of Computing

Agenda

Warm Up (10 minutes)
- **Behaving in the Computer Lab**

Bridging Activity - Choose One (10 minutes)
- **Dragging and Dropping Algorithms**
- **Previewing Online Puzzles as a Class**

Main Activity (20 minutes)
- **Programming with Blocks**

Wrap Up (5 minutes)
- **Reflection**

Extended Learning

Objectives

Students will be able to:

- Experiment with standard block-based programming actions such as: clicking, drag and drop, etc.
- Model proper computer lab behaviors

Preparation

- Cut out direction blocks from ***Manipulatives** to use with the Happy Maps bridging activity.
- Make sure each student has a Reflection Journal..

Links

Heads Up! Please make a copy of any documents you plan to share with students.

For the teachers

- **CSF Course A Lesson Slides** - Slides (**Download**) ▾ Make a Copy
- **Wiggles - GoNoodle** - Video

For the students

- **Pair Programming** - Student Video
- **Unplugged Blockly Blocks (Grades K-1)** - Manipulatives ▾ Make a Copy

Vocabulary

- **Click** - Press the mouse button
- **Double-Click** - Press the mouse button very quickly
- **Drag** - Click your mouse button and hold as you move the mouse pointer to a new location

- **Drop** - Release your mouse button to "let go" of an item that you are dragging

Teaching Guide

Warm Up (10 minutes)

Behaving in the Computer Lab

Display: Show "Computer Lab Expectations" slide

Review expectations and how to behave when they enter the computer lab.

Discuss: Have a good discussion around your computer lab expectations to make sure that students understand the rules. Some topics of discussion might include:

- Is running in the computer lab okay?
- How loudly should we walk when we are in the computer lab?
- What should you do if you get stuck on a puzzle?
- If you get frustrated, will it help to hit the computer?
- When we're about to go to the computer lab, how should we get ready?

Teaching Tip

Some possible things to cover:

- Use calm bodies in the lab.
- Remember not to chew gum or candy.
- Sanitize your hands.
- Sit with your partner at one computer.
- Make sure that the first "driver" can reach the mouse.
- When you get frustrated, don't hit or shake the computer or monitor.
- Follow the 20/20/20 Rule (Prevent eye strain by taking a 20 second break every 20 minutes to look at something 20 feet away.)
- How to deal with the **Wiggles** every 20-30 minutes (requires a free login on GoNoodle).
- Ask your partner before you ask the teacher.
- Keep volume down so everyone else can hear their partners.
- Use your journal for keeping track of feelings and solutions.

Display: Show "Vocabulary" slide

Say:

- **Click** - Press the mouse button.
- **Double-Click** - Press the mouse button very quickly.
- **Drag** - Click your mouse button and hold as you move the mouse pointer to a new location.
- **Drop** - Release your mouse button to “let go” of an item that you are dragging.

Bridging Activity - Choose One (10 minutes)

These activities will help bring the unplugged concepts from Happy Maps into the online world that the students are moving into. Choose *one* of the following to do with your class:

Choose *one* of the following to do with your class:

Dragging and Dropping Algorithms

Display: Show "Option 1: Dragging and Dropping Algorithms" slide

Project one of the maps from the "Happy Maps" activity and display it for the students to see. On a projector or in front of the class, put some direction blocks from the ***Manipulatives** in random order and practice "dragging and dropping" by pressing your finger on one of the paper pieces and moving it across the screen. Explain that you can "click" to select this block by tapping your finger on it, or you can "drag" the block by pressing your finger on it and moving it. To "drop" the block, release your finger.

After showing this to the class, ask for volunteers to create an algorithm for the Happy Map by "dragging and dropping" the necessary blocks.

-or-

Previewing Online Puzzles as a Class

Display: Show "Option 2: Previewing Puzzles as a Class" slide

Project a puzzle from the lesson. Show the class how to click on a block and place it in the correct spot by dragging and dropping. Purposely make mistakes such as clicking the background or dropping the image before it's at the right spot. Ask for help from volunteers in the class when you run into these problems, and help them use the skills that they developed in the last unplugged lesson to make things right.

Main Activity (20 minutes)

Programming with Blocks

Display: Show “Video: Intro to Code Studio” slide

1 **Video: Programming with Blocks**

Online Puzzles

This will teach students how to use Code.org to complete online puzzles.

Display: Show “Video: Pair Programming” slide

Watch the ***Pair Programming** video with your students, then assign them to pairs. This should help students start off in the right direction.

Teachers play a vital role in computer science education and supporting a collaborative and vibrant classroom environment. During online activities, the role of the teacher is primarily one of encouragement and support. Online lessons are meant to be student-centered, so teachers should avoid stepping in when students get stuck. Some ideas on how to do this are:

- Utilize pair programming whenever possible during the activity.
- Encourage students with questions/challenges to start by asking their partner.
- Unanswered questions can be escalated to a nearby group, who might already know the solution.
- Remind students to use the debugging process before you approach.
- Have students describe the problem that they're seeing. What is it supposed to do? What does it do? What does that tell you?
- Remind frustrated students that frustration is a step on the path to learning, and that persistence will pay off.
- If a student is still stuck after all of this, ask leading questions to get the student to spot an error on their own.

Teaching Tip

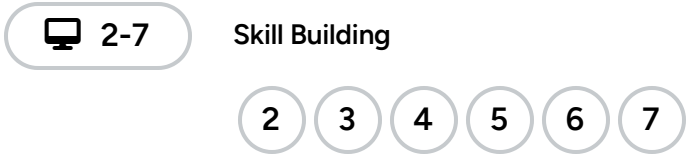
Show the students the right way to help classmates:

- Don't sit in the classmate's chair.
- Don't use the classmate's keyboard.
- Don't touch the classmate's mouse.
- Make sure the classmate can describe the solution to you out loud before you walk away.

Display: Show "Decompose it!" slide

Remind students to try coding one block at a time. Make sure they press "Run" frequently in order to break the following challenges down into small steps.

Display: Show "Level 2-7 - Skill Building" slide



Wrap Up (5 minutes)

Reflection

Prompts:

Display: Show "Reflection" slide

- Can you draw a sequence for getting ready to go to the computer lab?
- Draw a computer lab "Do" and a "Don't".
- Draw a face that shows how you felt about today's lesson in the corner of your journal page.

Extended Learning

Use these activities to enhance student learning. They can be used as outside of class activities or other enrichment.

If students complete the puzzles from this lesson early, have them spend some time trying to come up with their own puzzles in their journal.

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