SCIENCE NORTH SCIENCE NORD
SUDBURY, ONTARIO, CANADA

Let's Build a Tree House | Grade 1: Materials, Objects and Everyday Structures

Lesson Plan

Coding Tool	Bee Bot
Cross-curricular	Language Arts

Big Ideas

- Materials are used to make structures
- Fasteners are used to connect objects together
- Safety gear needs to be worn when building things

Learning Goals

- Identify what materials are needed to safely build a tree house
- Create a bee bot grit
- Write and test a code to guide a bee bot to collect items to build a tree house

Specific Expectations

2.3 investigate, through experimentation, the properties of various materials

2.4 use technological problem-solving skills, and knowledge acquired from previous investigations, to design, build, and test a structure for a specific purpose

2.5 use appropriate science and technology vocabulary, including *experiment, explore, purpose, rigid, flexible, solid,* and *smooth*, in oral and written communication

3.5 identify the materials that make up objects and structures *(e.g., wood, plastic, steel, paper, polystyrene foam, cloth)*

3.8 list different kinds of fasteners *(e.g., tape, glue, button, zipper)*, and describe the uses of each

Description

This is lesson two of two where students will continue to explore how certain materials can be used to safely build a structure (tree house). The goal of this activity is to code the beebot so that it moves on the grid to collect materials needed to build a tree house.

Materials

- Bee-bots (1 per 2 students)
- Bee-bot grids (Bristol board/chart paper/roll paper divided into a 3x4 grid with squares that measure 15cm x 15cm) (1 per 2 students)
- Anchor Chart paper

Computational Thinking Skills

- Image based coding
- Sequential Thinking
- Computational Problem Solving

• Images from Appendix A • Glue stick • Activity packages (1 per student)	

Introduction

Review:

- *Preparation: Anchor chart (A picture of the tree house and a table with three categories: building materials, safety materials, fastener.), Pre-cut material images, glue stick*
- Show students the picture of the tree house.
- Ask students to name the materials they will need to **safely** build the structure.
- *Listen for: safety gloves, safety helmet, safety goggles, wood, hammer, nails*
- Ask students what the fastener is.
- *Listen for: nails*
- As students share their answers, invite them to glue images (Appendix A) onto chart paper into the following three categories: safety materials, building materials, fastener
- Ask students to explain why each material is useful
- *Listen for things like: wood because it is strong, nails because it can hold pieces of wood together*
- Ask students to share what they remember about the coding from last week.

Bee-Bot Introduction

- Hold up the Bee-Bot and ask the students what they notice
- *Listen for: direction buttons*
- Hold up a Bee-Bot grid. Invite students to draw tree house materials on the grid.
- As a class, draw the code on the grid and test it with the bee bot.
- As the Bee-Bot passes over items, check it off on the checklist.

Action

Bee-Bot Guidelines

- Review safety guidelines for respectful group work
- E.g., *take turns, listen to others when they are speaking, only one person touches the bee bot at a time.*

Bee-Bot Challenge

- The goal of the Bee-Bot Challenge is for students to identify materials needed to build a tree house by drawing them on a Bee-Bot grid. Students will then plan and evaluate a Bee-Bot code to guide a Bee-Bot through the grid to collect the tree house materials.
- Students work in pairs.
- Students draw all 5 materials (wood, nails, safety goggles, safety helmet, and safety gloves) on different squares on their activity booklet (pg. 1 of activity booklet).
- Students then draw their code on their activity booklet grid.
- Once they have received teacher approval, they receive a Bee-Bot grid (pre-drawn 4x3 square grid, 15cm x 15cm squares; see materials for further information).
- Students re-create their activity booklet grid on the Bee-Bot grid by drawing the materials on the corresponding squares.
- Following the code in their activity booklet, one student reads out the arrows, they other person types it into the Bee-Bot.
- Students place the Bee-Bot on the Bee-Bot grid to test out their code. Students make adjustments as necessary.
- As the Bee-Bot passes over a material, students check it off on the checklist (pg. 2 of activity booklet).

Consolidation/Extension

Reflection

- Students put materials away.
- Students return to their desks or carpet area with a pencil and their activity booklet.
- The teacher reads the reflection questions (pg. 3 of activity booklet). Students circle yes or no to answer each question.
- The teacher can use the reflect questions to prompt further class discussion. (E.g., *what was a challenge you had? What was a success you had? How would you explain coding to someone who's never done it before?*)

Assessment

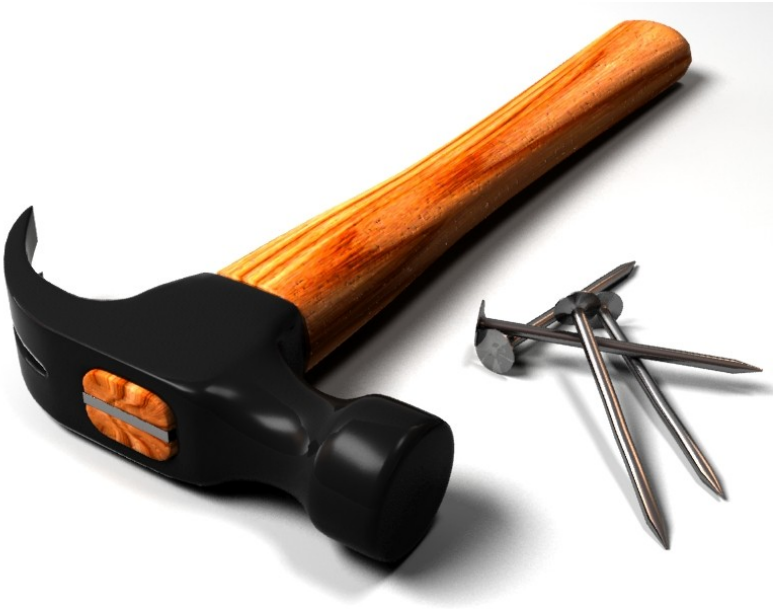
- Class discussion
- Looking at student games
- Worksheet

Appendix A: Images for Materials Anchor Chart

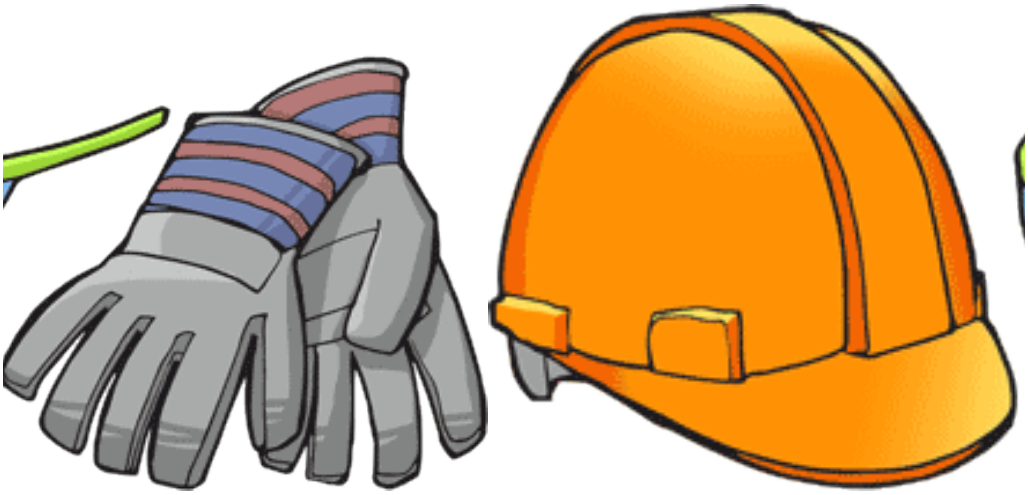
Cut out these images and glue them on a Materials Anchor Chart in the categories below.

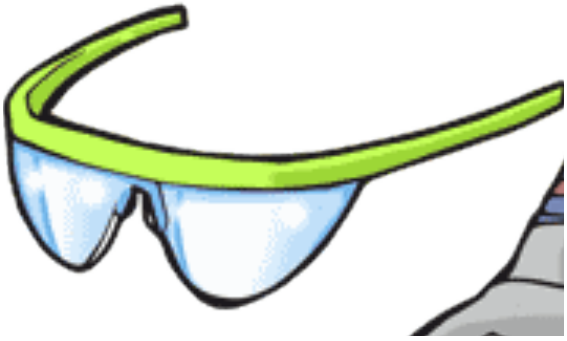
Materials

Fastener



Safety Materials





Tree House