4-H AT HOME

Chalk Coding

Use Sidewalk Chalk to Make basic
Code for your Family and Friends to Follow.

Muria Everitt, 4-H Afterschool Coordinator
Shannon Cromwell, Extension Associate Professor
Matt Palmer, Extension Associate Professor
Brandi Reber, Youth Programs Coordinator
Utah State University Extension, Sanpete County

EXTENSION❀
UtahStateUniversity®

Introduction

More than 1,000 years ago, soldiers in the Roman army got exercise by hopping through numbered squares drawn on the ground. Little kids liked the game so much that they copied it. They drew their own smaller squares, and that's where hopscotch came from. This kit will allow youth to make a very modern day hopscotch game, more of a sidewalk chalk obstacle course written in code. Youth will use computational thinking to break down their chalk obstacle course into individual precise steps. They will then write the algorithms (set of instructions designed to perform a specific task) in chalk for someone to follow. The kit includes a Chalk Code card that can be used for reference, but youth can also make up their own codes and put them together to make an algorithm. Writing algorithms in code with chalk is similar to writing them for computers. Coding is the method of giving directions to a computer to perform a specific task. You may have also heard it referred to as "software programming" or "computer programming." Writing code with chalk is similar because it is writing directions or actions for a person to perform.

Objectives

Youth will gain an understanding that using computational thinking to write effective algorithms in code with chalk is essential to giving instructions to someone on how to perform a task. For example, the individual performing the activity will go from START to END while completing all tasks written in between. This is similar to how coding is used to give computers directions to perform a task, such as moving a character across the screen.

Supply List

- Instructions
- Sidewalk Chalk
- "Chalk Codes" Laminated Card

Do:
Step 1

Review the activity

1.Lay the supplies out and read the instructions.

2.Start planning in your head or on a piece of paper what codes or directions you would like to write with the chalk. (See step 2 for more coding information). This requires computational thinking, or breaking down the entire process into individual, precise steps.
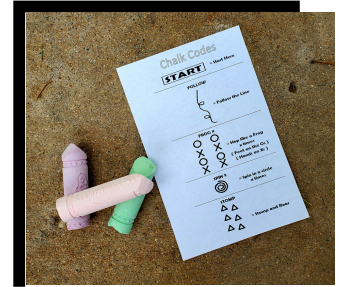

Step 2

Understanding Chalk Code

1.When coding not only do you write the code (or action), you also write how many times you do the action. For example, if you want to put 5 frog jumps in your code you would write FROG x 5 and then put the O and X's 5 times on the sidewalk (see chalk code chart for frog jump code).

2. If you would like to have your friends or family spin 2 times you would write SPIN x 2 and draw the spiral.

3. Putting all the codes into a set is creating an algorithm for someone to follow. Put each precise step into the algorithm to make a full obstacle course to follow.

Step 3

Write Your Chalk Code

1.Start writing your algorithm on the sidewalk.

2.You can alternate between colors and codes to make more or less challenging courses.

3.Use your own codes too, you are not limited to the ones on your Chalk Code card.
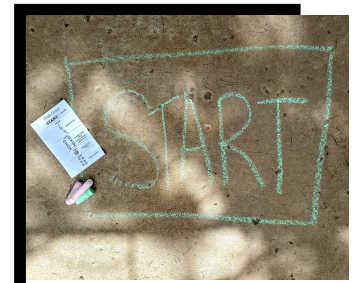
Step 4

TEST

1.Test out your code. Is it how you want it?

2.Make any adjustments or improvements to your code. You can always erase code with water if you want to change it.

Final Product

Now you have a fun algorithm of codes that make up a chalk obstacle course. Your family and friends can enjoy the course until it gets washed away. Don't worry though, you can always make a new one.
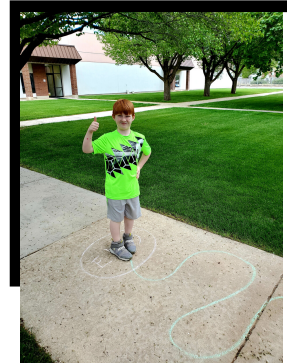
Reflect

- Did your family and friends understand your algorithm?
- Why is it important to write the number of times you want someone to do something?
- How is chalk coding like computer coding?
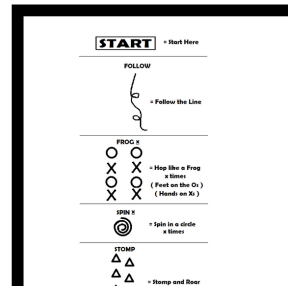
Apply

- Giving directions clearly is important. Using computational thinking allows you to break down the directions to very simple steps. Think about coding the next time you give someone directions to do something. Were your instructions clear? Did they understand what you were asking them to do?
- Try using computational thinking with someone. Have them give you instructions on how to make a peanut butter and jelly sandwich. Follow their instructions literally, just like a computer would. If they say put the peanut butter on the bread you would take the jar of peanut butter and place it on top of the loaf of bread. You want specific instructions. For example, remove one slice of bread from the bag and lay it on the plate. Open the jar of peanut butter, etc.

Mastery

- Try coding on the computer. There are many programs online that can help you learn basic computer code. Try http://www.familycodenight.org/start.html
- For more advanced algorithms you can add in:
  Loops-Sequences that repeat over and over (for example they can frog jump, then spin and then repeat for a determined number of times before they move to the next task.
  Conditionals- Add in "if, then" statements. For example, there could be a code at the beginning that says IF the chalk changes color THEN you need to turn to the right.

For additional Help

Please watch our tutorial on You Tube:
https://www.youtube.com/watch?v=RTPbiBkh50c