

Code the Rainbow	Kindergarten	
Lesson Plan (Coding)	Coding Tool	Unplugged
Problem Solving and Innovation <ul style="list-style-type: none"> Demonstrate an ability to use problem-solving skills in a variety of contexts Use the processes and skills of an inquiry stance Use technological problem-solving skills, on their own and with others, in the process of creating and designing 	Specific Expectations <p>4.1 use a variety of strategies to solve problems</p> <p>13.1 state problems and pose questions in different contexts and for different reasons</p> <p>14.3 recognize, explore, describe and compare patterns in the natural and built environment</p> <p>20.5 investigate and describe how objects can be collected, grouped and organized according to similarities and differences</p> <p>24.3 make predictions and observations as part of the process of creating and designing</p>	
Description Your students will learn about rainbows and their colours while learning basic computational thinking skills. An essential skill in coding is being able to follow instructions sequentially, which students will do by putting the colours of the rainbow in order.		
Materials <ul style="list-style-type: none"> Draw the Rainbow Handout Colour Squares Handout Large space to move (in class) 	Computational Thinking Skills <ul style="list-style-type: none"> Conditional statement IF THEN Statement Algorithm 	
Introduction Science Background What is a rainbow? Why do you think it is called a Rainbow? We call it that because it needs rain to show all those beautiful colours and it forms the shape of a bow (arc). The colours of the rainbow appear when the sun shines through falling rain. To see a rainbow, it needs to be sunny and raining at the same time, but most importantly, you have to be between the sun and the rain, with your back to the sun. When light travels through water, the light bends and is reflected. When the light bends in different ways and spreads out, the white light of the sun splits into the 7 colours of the rainbow: Red, Orange, Yellow, Green, Blue, Indigo and Violet. You can demonstrate how water bends light by dipping a pen in a clear glass of water. The pen will appear to be broken or bent because the light travelling in different directions. If you imagine the glass of water as raindrops and the pen as sunshine, this is similar to what is		

happening with the light.

Coding Background

In coding, an algorithm is a set of steps (or instructions) that tells a computer program how to accomplish a task. Using good algorithms — writing good instructions — lets programmers create interesting and important programs.

A computer program cannot interpret instructions and make their own decisions like humans do. They can only follow instructions exactly as they are written. They can't add steps or change their order. As such, it's important when coding that instructions are followed in a clear and specific way that follows a sequence.

The idea of an algorithm can be demonstrated at a young level by having students follow instructions and putting things in order. This lesson does it with a rainbow, but the concept can be applied in many different ways.

Action

In this lesson, students will create a rainbow in the class. Each student will receive a square with a colour on it. The colour is one of the colours on the rainbow and the goal is to put them in order. **Please note:** the number of squares is not the same number for every colour since the outside colours cover more area.

With the help of your students, ask them which colour is first, second, third, etc. You can use coding language by saying statements like: "IF red is the outside colour THEN what comes next? IF my next colour is green THEN what is on either side?" You could also have a picture on a rainbow on the screen as a reference. Here are many ways how you can proceed:

- Sit and Stand: Call out the colour and have the students stand if it is their colour and sit if it is not. As you go through all the colours, call out the colours faster and faster and student need to stand and sit.
- One Row: Have the left side or back of your class be the outside of the rainbow and the right side or front of your class be the inside of the rainbow. Ask the students to stand beside/behind each other in the correct order. Start with the first colour and use the IF THEN statement (shown above).
- Multiple Rows: Students with the same colours all stand in a line or form a group. You can let the student group themselves by prompting them to find the same colours as theirs. Once they are in their respected groups. Ask the students to form a line (they can cross their arms together for added fun). As a line, the students have to move together in order to put their rainbow in order (teacher help may be required). Keep

going until all the colours are placed then ask the students to bend in the shape of an arc.

For virtual learning,

- Assign a colour to each student. Start by asking the students to raise their hand if the colour mentioned it their colour. You can also take this a step further and have them turn on or off their camera if the colour applies or step in and out of frame. Once everyone knows their colour, start by establishing the order of those colours. Ask the students to help you out on the order.
- Once the students are assigned a colour, give each colour a dance move, a hand gesture, a funny sound and do them in order of the colours of the rainbow.

Consolidation/Assessment

Review the order of the colours of a rainbow with your students. Have students colour the **Draw the Rainbow** handout by putting the colours in the right order. This can be collected and reviewed for assessment.

Additional Resources

Make Your Own Rainbow: Bring a spray bottle filled with water outside on a very sunny day. Make sure you have your back to the sun and point de bottle up in front of you. Spray some water in the sunlight. You may need the help of a friend or a family member to find the perfect spot to make your rainbow.