Lesson 2: Order Matters

Powerful Ideas of Computer Science	Algorithms
Powerful Ideas of Literacy	Sequencing
PTD	Communication
Palette of Virtues	Curiosity, Open-mindedness, Optimism
Children will be able to…	• Compare and contrast humans and computers in terms of their characteristics and language used to communicate with them. • Identify the role of order in algorithms. • Use prior knowledge to write a How-to-Book
Vocabulary	• Order: the way a list of things is set up • Algorithm: instructions for a computer to solve a problem in a particular order
Teacher Preparation	• Read lesson plan. • Print and cut out Cut Out Words or open slides to project. • Print Lesson 2 Design Journal for each child or refer to Full Design Journal.

Warm Up

- **Did that Sentence Make Sense?** *(Suggested Time: 5 minutes)*
    - Remind children that ScratchJr is a programming language: a language we use to talk to computers. Explain that all different types of languages need words to be put in a certain **order** to make sense.
    - Use Cut Out Words of the sentence ("The cat is on the mat"), scramble them, and read out/have someone read the scrambled sentence (e.g., "mat the on is cat the").
    - Discuss if this makes sense and ask children to put the words in the right order.
    - Explain that language needs to be in the right order to be understood.

Opening Tech Circle

- **What is an Algorithm?** *(Suggested Time: 5 minutes)*

- Explain that language with computers is a lot like giving instructions to a friend. You have to tell the computer exactly what to do, in the right order, to make the computer work. Instructions for computers are called **algorithms.**
- Explain what an algorithm is.
  - A sequence of steps in the right order
- Collect examples of activities that need to be done in a certain order.
  - E.g., brushing your teeth, putting on socks and shoes

ScratchJr Time

Structure Challenge:

- **What is Cat Doing?** *(Suggested Time: 10 minutes)*
  - Explain that in ScratchJr, our programming blocks are our algorithms, and our ScratchJr characters are the computers we're talking to. Our programs tell Cat what to do!
  - Share your ScratchJr project again with the class.
  - Have children look at a few different programs and guess what the instructions will tell Cat to do, then run the programs so the children can see if their guesses are right!
  - Remind children that algorithms are all about the order of steps.
  - Ask children to suggest a new program using at least three motion blocks.
  - Then, ask another student to suggest changes to the used blocks. What happens? What's similar or different?

Unplugged Time

- **Program the Teacher (***Suggested Time: 10 minutes)*
  - Tell children that the teacher will now be the computer, so children will get to program the teacher! Remind children that they need to say all the steps in the right order!
  - Children will be responsible for verbally directing their teacher to special destinations in the classroom (e.g., to a bookcase or a closet) or doing a task (e.g., making a sandwich).
  - The instructions the children give to the teacher must be specific. For example, children should not simply say, "Move forward." They should instead say, "Move forward ____ steps," or "Put the peanut butter on the bread" should be "Open the peanut butter jar and use your knife to scoop the peanut butter onto the bread."
  - When sequences of instructions do not work (perhaps because the number of steps taken was incorrect), children should alter their instructions.
  - If you have time, ask children to try the same programming exercise with a partner.
  - Discuss how important it is to be specific and how important order is in programming.

Word Time

- How-To-Book - Design Journal *(Suggested Time: 10 minutes)*
    - In the Lesson 2 Design Journal, children write instructions for a younger sibling who doesn't know how to brush their teeth. Remind them they need to be specific and put all the steps in the right order, just like when they were programming the teacher!

Closing Tech Circle

- **Design Journal Share (***Suggested Time: 5 minutes)*
    - Ask for one or two volunteers to share what they wrote in their Design Journal.
    - Discuss the differences between how-to books as everyone brushes their teeth a little differently.

Opportunities for Differentiation

- **Virtual Learning**
    - Children give the teacher instructions to do something (e.g., "raise your arm"), and the teacher asks clarification questions (e.g., "Which arm? How high?") to get children to be as precise and orderly as possible.