Coding Dance Bots

Description	**Materials**
Students will practice essential pre-coding skills like giving and following instructions, sequencing, left-to-right reading, and identifying patterns	- Shape printouts - Supporting video - Optional: left/right labels for room or students' hands
Explicit Teaching Points • Instructions: these are explicit, ordered directions that describe how to complete an action or a task. Instructions are clear, simple, and follow a specific order. You can explain it to your students by referencing times you give them instructions or steps to follow, like "put on your boots" or "join me on the carpet". • Sequence: this is the specific order in which steps or events occur. Sequencing is an essential coding skill, and supports their logical reasoning, numeracy, and even understanding narrative. When explaining it to your students, using language like "first", "then", "next", and "finally" can help them figure out the order and sequence. Tying it to daily routines, like getting ready for lunch, also helps (e.g. First, we wash our hands. Then, we sit down at our table. Next, we unzip our lunchbag. Finally, we can enjoy our lunch!)	**Specific Expectations** **B11.** Coding Skills: use foundational coding concepts and skills **A7.1** identify, describe, and create patterns **A7.2** identify the core of a pattern and describe why it is important **A9.1** identify, sort, and compare the most common two-dimensional shapes, including circle, hexagon, rhombus, and trapezoid **B11.1** use directional and positional language to create and follow instructions involving movement

• Pattern: patterns are repeated arrangements of objects – this can be numbers, shapes, colours, sounds, even movements! Patterns follow a predictable rule, which we sometimes label with letters to describe each section or element of a pattern. Recognizing and creating patterns is a fundamental math skill that supports their logic, reasoning, and early algebra! Your students will understand patterns when you identify them – repeating phrases in books or songs, creating patterns with common objects or manipulatives, and pointing out naturally-occurring patterns (i.e., the chairs are stacked in a pattern! See how they go red-blue-red-blue?) • Left-to-right reading: in English, we read text left-to-right. This can also be true in following visual directions, and as a way to scan and decode codes and puzzles. This directionality is essential in building literacy skills, symbolic understanding, and for emerging coders to follow the path of a program. You can make it easier to understand for your students by pointing it out when you're reading to them, and reinforcing it in smaller groups when you're reading together. • Coding: coding is the combination of all of these skills! At its core, coding is creating sequential or step-by-step instructions that tell a computer, robot, or other system which actions or tasks to perform.	

Eventually, your students will likely move to block coding and then text coding, but for now, you can help them build coding skills by reinforcing that coding is telling someone or something what to do, like “take two steps forward” or “jump up and down five times, then turn in a circle”.	

Provocation (Introductory Book, WOW Demo, etc)

Teacher read-aloud: Teacher choice, any story with repeated phrases/chorus to discuss the pattern of the repeated words

Suggestions:

- We All Play by Julie Flett
- Brown Bear, Brown Bear, What Do You See? By Eric Carle
- Bringing the Outside In by Mary McKenna Siddals

Learning Plan

Introduction

After the read-aloud and discussing noticing patterns, introduce students to coding by talking about instructions and sequencing, using the explicit teaching points for guidance. Explain that things like robots and computers follow a set of instructions, that we call a code, to perform the actions that we’d like them to, like vacuuming our house or playing a video. A person had to write those instructions, and we call those instructions a code. We are going to act like those coders and create some instructions to follow to code our friends to be dancing robots! Practice creating and following instructions by playing a simple game of “Simon Says”.

Coding Video

Play the accompanying Coding Dance Bots video to help guide students through the coding activity, introducing them to the shape+ colour combination codes, and get warmed up for playing.

Create a Dance Code

Using the included shapes templates, students can colour and cut out their own shape instructions in small groups, or alone. They can designate associated body parts and moves to create their own code,

and create a sequence for their group members to follow. Groups can also present their code to the whole class, teaching them what the symbols mean and coding the whole class to follow their dance! These can be displayed on the board, using an overhead camera, placing them in a pocket chart, etc. Reinforce their new vocabulary by celebrating the sequence, encouraging students to follow instructions, using terms to refer to their creations like "code", highlighting created patterns, and reminding students that we read left-to-right and follow instructions the same way.

Consolidation/Extension

- Have groups create their own sequences and teach them to the class.
- Create dance patterns by assigning standard patterning language (AB, AAB, ABC, etc.) and encouraging students to create codes using those patterns.
- Connect left-to-right coding to reading in small groups by connecting following the code to reading the words on the page.
- Use codes to learn new classroom routines. When it starts getting cold out, create a code (remember: a code is a set of instructions!) for entry after a wintry recess – boots off, coats hung up, mitts in baskets!

Notes/ Context/ Reminders

- Mixing up left and right: you can place arrows, hands, or other labels on each side of the room or whiteboard to give visual clues! Alternatively, stickers or stamps on one hand may also help them remember!
- Shape or colour confusion: Some students may need you to introduce new shapes and colours one at a time. You can build on that

Assessment and Evaluation

Pedagogical Documentation – observation, student questions, action plan for next steps

Success Criteria

Students will:

- Demonstrate foundational coding concepts and skills to create a dance
- Recognize, identify, describe, and compare

learning until they are comfortable with a set of shapes and colours! • Students that finish early: there's no limit to the number of shapes or colours they can use, or the length of the code! Challenge your coding champs by encouraging them extend, create new code symbols, and create longer or more complicated patterns!	patterns found in the dance codes • Create repeating patterns in their dance code sequences • Identify familiar two-dimensional shapes • Give and follow directions in a coding activity