

Coding, Computational Thinking, & Maker Education

Please Note: There are several hyperlinks throughout the document.

Introduction

Young learners explorations and learning include several tactile, visual, and auditory experiences. The tools and ideas shared build on the efforts of educators who provide environments that are conducive for exploration and learning.

We hope these lesson plans assist you in teaching coding and computational thinking in the form of maker education in your classroom.

Lesson Ideas

Choose from the activities found in the links below. We recommend choosing at least 2 centres, either using a rotational schedule, or over a period of 2 days.

1. [Scratch Jr. - Chromebook/iPad Required](#)
2. [Cubetto and his world - Cubetto Kit Required](#)
3. [Kibo Motion Robot - Kibo Kit Required](#)
4. [OSMO - OSMO Kit Required](#)
5. [OSMO Coded Tangram - OSMO Kit Required](#)
6. [Coding Games and Apps - Device Required](#)
7. [Blockly Coding Puzzle and Maze - Device Required](#)

Suggested Time

1. **Settling In:** 5 minutes
2. **Thinking About:** 5 minutes
3. **Demonstrating:** 2-3 minutes
4. **Exploring:** 10 minutes
5. **Challenges:** 20 minutes
6. **Consolidating:** 10 minutes
7. **Exit Tickets** 3-5 minutes

Teacher Tips

- Where the number of materials are sufficient, work on the same activity in small groups.
- **Suggested group size:** 4-6 students.
- If you are using centres/stations, it is important to have an adult at



each station to monitor the tech being used. A group discussion can be used to introduce/close the station meaningfully

- You can choose to complete centres in a library, gym, classroom, or other communal space.
- View students as apprentices to help them develop transferable skills. Ask students to think of which job would relate to the tasks they are working on (i.e. designer, media, scientist, engineer, mathematician, modelling, etc.).
- You may view your role as a facilitator or supervisor in a workplace or lab. This will allow students to engage, observe, explore, question, and play in a productive learning environment.

Exit Ticket & Sharing Beyond the Classroom

Students are very eager to share, draw, and write about new and fun experiences. In these activities, we have included a variety of drawings, questions, and exit tickets students can complete to consolidate their learning. Please adapt these to your students' needs.

Students will be excited and proud to talk about their designs, robots, colours, and so much more. This is why we have included a printable [Letter to Parents/Guardians](#) so that they can continue to share and learn outside of the classroom.

Overall Curricular Connections:

- Measurement: linear, angles
- Sequence
- Colours, sizes, steps, cardinality of numbers
- Movement and location
- Repetition, addition, multiplicative steps and properties
- Etc.

Coding & Technology concepts

As the following coding concepts and processes arise during the activities, you may explore them with students:

- **Parallelism & Simultaneity:** Things that happen at the same time
- **Writing Code:** Devices that perform steps in homes and in the outdoors that follow steps in real life
- **Procedures:** in a series, such as starting and stopping.
- **Inputs, events, sensors, outputs, effectors, logic**
- **Remixing:** modifying existing code, loops and logic, etc.
- **Debugging:** finding an error in the assembled code in the digital tangible.
- **Project Work:** Setting out to solve a challenge or design a project.



