



by: <https://www.playosmo.com/en/coding/>



The phrase “concrete to abstract” is heard frequently in Montessori education of young children. The phrase can be rather ambiguous, especially to parents who may have little working knowledge of Montessori practices. I have applied this Montessori philosophy in teaching my granddaughter how to code.

Concrete	Representational	Abstract
A problem is introduced with manipulatives; students explore solving the problem using the manipulatives in writing code.	The manipulatives are replaced with representational pictures; students demonstrate writing code at a pictorial level.	The representational pictures are replaced with a symbolic language; (numbers, operation signs, etc.); students demonstrate writing code using a programming language.

My first entry in this series was the learning environment Kodable. The Kodable beginner exercises fall in the “Representational” arena. “Osmo Coding Awbie” is for younger children in the Concrete learning stage. My granddaughter, Rheannon, started using this at age 5. She was able to run the application on her own after some initial guidance.

“Osmo Coding Awbie” for iPad, is available through the Playosmo store (<https://www.playosmo.com/en/coding/>) and the Apple store. Make sure you are

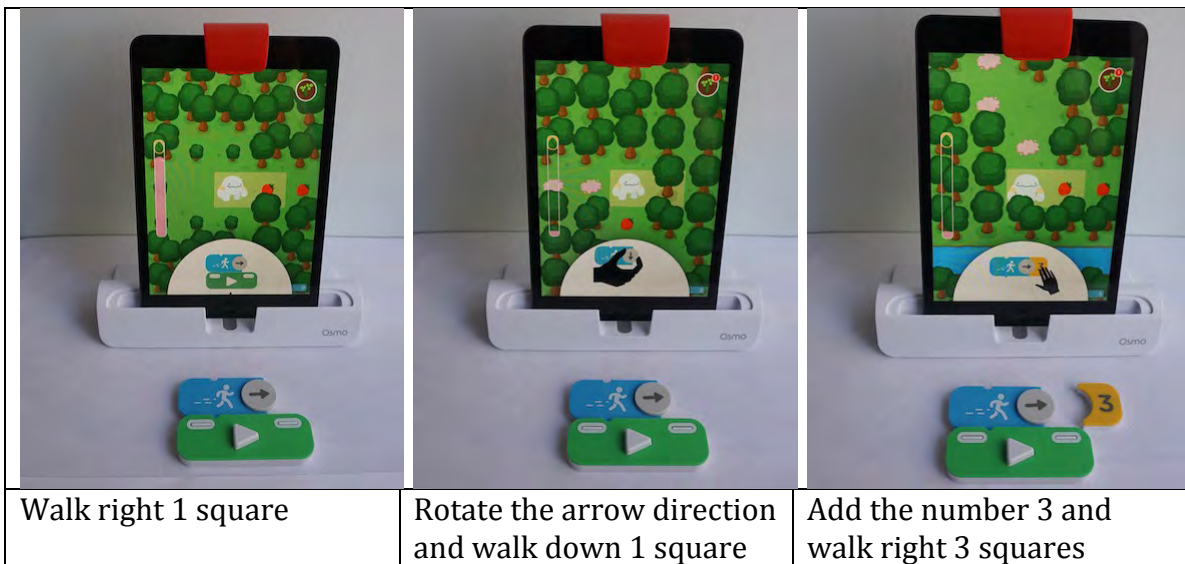
purchasing “Coding Awbie” because several other apps are also available making things a bit confusing. You will need an iPad, an Osmo base station (\$30), and a Coding Awbie kit (\$50).

For young children, Maria Montessori believed that “what the hand does, the mind remembers”. The OSMO programming tiles can be felt and manipulated so that the



hand is always involved in the learning process. You write code by assembling tiles in front of the iPad. The child has tactile feedback. Instead of building a Lego structure, the child uses tiles to build code to manipulate an environment. Each tile has an icon (e.g., walk, jump, loop) so reading skills are not required. The arrow on the tile is rotated to indicate direction. Numbers are attached to the tile to indicate how many steps or jumps to take. The iPad camera sees the tiles and moves a figure on the iPad screen following the code from top to bottom in sequence after you press the “start” tile. Early levels have animated graphics with a hand going through the motions assembling tiles.

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The on-screen animated help disappears as the child advances through the lessons. They reappear when a new concept begins (e.g., loops). Early lessons include a “Sign Post” offering a suggestion on what tiles to use. Screen help begins to disappear as the child advances through the training exercises.

