

# Code On Off-Line!



## 1. Want to practice Off-line?

You don't need a computer to learn about computational thinking and writing code. Almost any activity can be turned into a game of coding, or giving commands. When is the last time you listed directions for someone to try something new? Did you miss a step? Was there a step that could be repeated? A typical exercise in computer science is to tell someone how to make a peanut butter and jelly sandwich. Try it and see if it comes out the way you wanted.

This activity helps you to understand what functions or methods are available, is it a screw top or a pop-top on the jar? How can these operations be sequenced properly? What level of detail does the action require based on the tool used? You can try this with almost anything that requires directions. <http://csteachingtips.org/tip/use-pbj-sandwich-activity-introduce-important-components-algorithms>

## 2. Try "CS Unplugged" activities

Visit the CS Unplugged website at <http://csunplugged.org/>

- **Card trick** <http://www.csunplugged.org/error-detection> - I use a deck of cards for this. Make sure to ask the kids how they think it works and give them time to think about it and make guesses. Have the kids do it as well. Explain how this is related to computers (bits are 0 or 1 like a card is face up or face down). Extra bits are added to transmitted messages to make sure that a bit wasn't lost or flipped.
- **Sorting networks** - <http://www.csunplugged.org/sorting-networks> - We do this with sidewalk chalk. Use 4 digit numbers so that the participants have to think to do the comparisons. Make each box wide enough to stand in.
- **Paving stones** - <http://www.csunplugged.org/minimal-spanning-trees> - This one isn't as active but it is a nice introduction to algorithms. Be sure to not only ask them to find the lowest number of paving stones but also ask what was their process. Explain that to program a computer you need an algorithm - a description of how to solve a problem.



## 3. Computer Science in a Box – Unplug from your computer (from the National Center for Women & Information Technology)

Here's an 'unplugged' resource that builds deeper parent and teacher understanding, combining explanation of the CS concepts kids should learn with the unplugged exercises to teach them. Find it here: <https://www.ncwit.org/sites/default/files/resources/computerscience-in-a-box.pdf>

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