

Introduction into Coding

Summary: In this group discussion and activity, you as a teacher will inquire into the knowledge about coding that is already present in the students and supply additional insights. You will also explore together what makes a (good) algorithm.

Timeframe: 30 minutes

Learning outcomes:

- 1.1. Algorithms
- 1.2 Sequences
- 2.4 Abstraction
- 3.1 Working together
- 3.3 Describing thought processes
- 3.4 Learning from vicarious experiences
- 5.1 Problem identification
- 5.3 Implementation
- 5.4 Evaluation & reflection
- 6.1 Group animation
- 6.2 Non-formal teaching

Implementation:

Explain briefly what the purpose of this training program is (learning to code and picking up pedagogical skills, so the students can lead similar activities with children) and what they will learn across the five sessions.

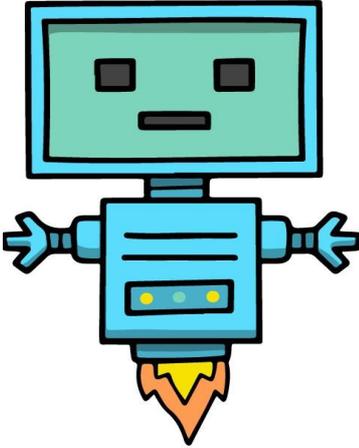
Next, you will continue the activity with a group discussion. You can use the following questions as a guideline, but feel free to add your own.

- What is code? Who knows what code does and who creates it?
- How are digital games, computer programs and smartphone apps made?
- Have you ever created a game, app or program yourself?
- Has anyone ever used the Scratch coding language before?
- What is an algorithm?

What is an algorithm?

An algorithm is a list of instructions you give to a computer or digital device, to solve a problem or get something done.

After inquiring into their knowledge into coding and algorithms, hand out pen and worksheet 1, along with the following assignment. They can complete their assignment together with another student, or alone.



Sally the Robot loves drinking tea, but she is not programmed by her creator to brew it herself.

Can you write down an algorithm for Sally on how to make and drink a nice cup of tea?

(Pssst: Sally needs very specific instructions, so she doesn't make any mistakes. Make sure she doesn't put too much water in her cup.)

Give your students a few minutes to write down their algorithms. Afterwards, you can have a short group discussion on what makes a good algorithm and where they might have gone wrong. Common mistakes when writing a first algorithm are:

- Not being specific enough, i.e. when you tell Sally to pour water into a cup, she will keep pouring until you tell her to stop.
- Putting steps in the wrong order, i.e. turning the cooker on before filling it with water.
- Forgetting about steps we humans think are obvious, but a robot doesn't know about.

Tips and tricks:

Are you looking for a fun way to brighten up the discussion or give a starting point to your students? The BBC made a great series of videos for children on computing and the concepts behind it. Take a look at these two together with your students for inspiration:

Algorithms: <http://bit.ly/bbc-algorithms>

Coding: <http://bit.ly/bbc-coding>

Materials:

For this activity you will need:

- Pens and paper
- A computer with a beamer and a screen to project on
- Worksheet 1 for every student (or per two)