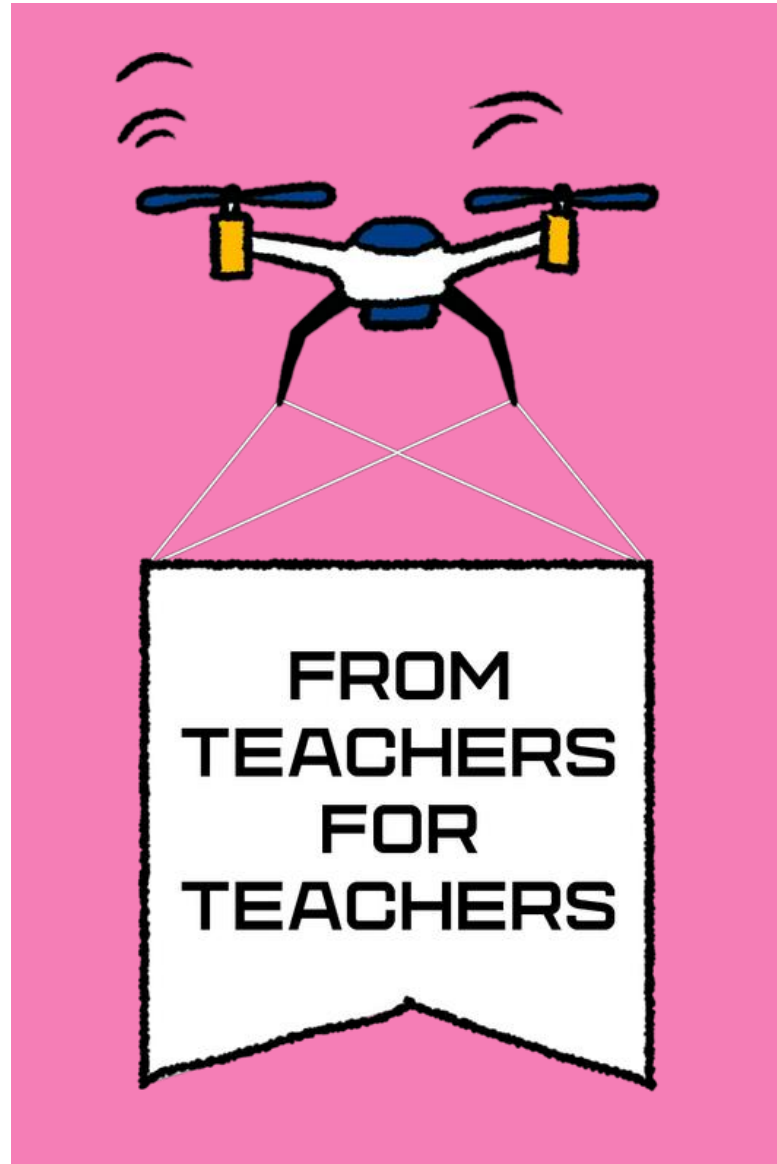
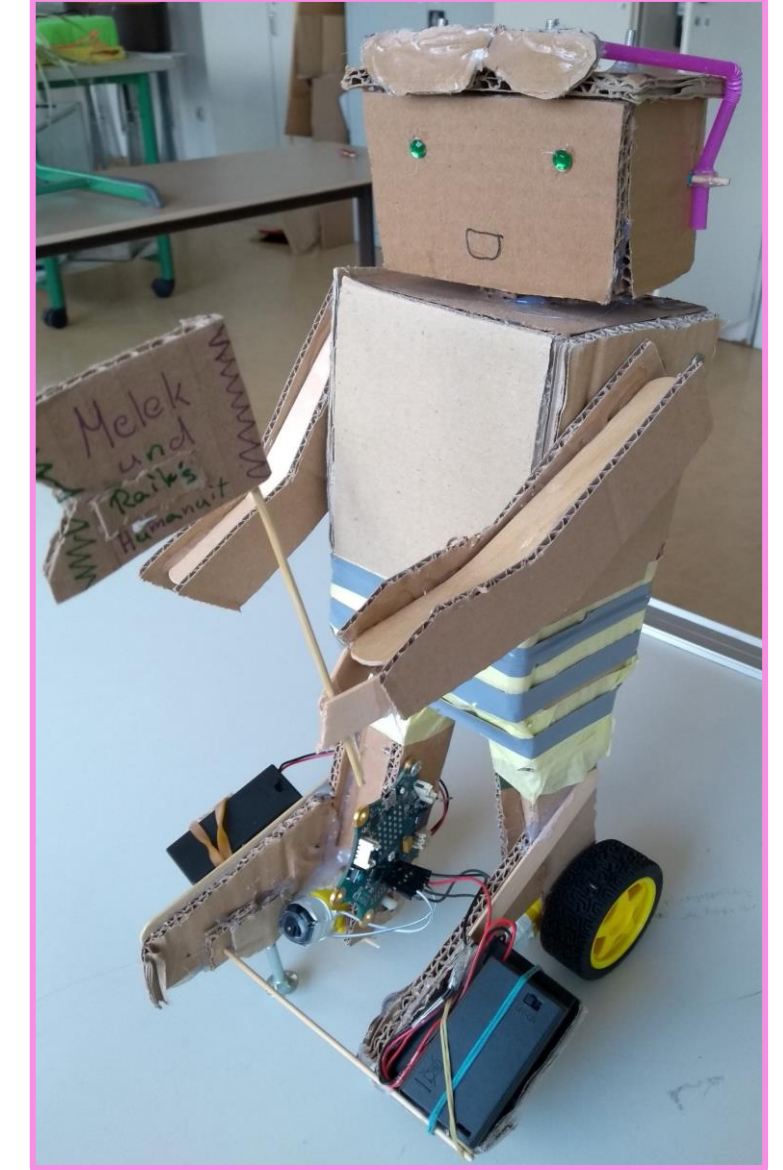




STEM WITH ARTS



Jan Günther
Maria Hellmann
Julia Trummheller

Ernst-Göbel-Schule Höchst Germany

Create and code your own artful cardboard robot

The students can create and code their own cardboard-bots with the help of the Calliope mini (a single-board computer). The students are highly motivated because they can express themselves creatively. The low-cost project attracts both boys and girls.

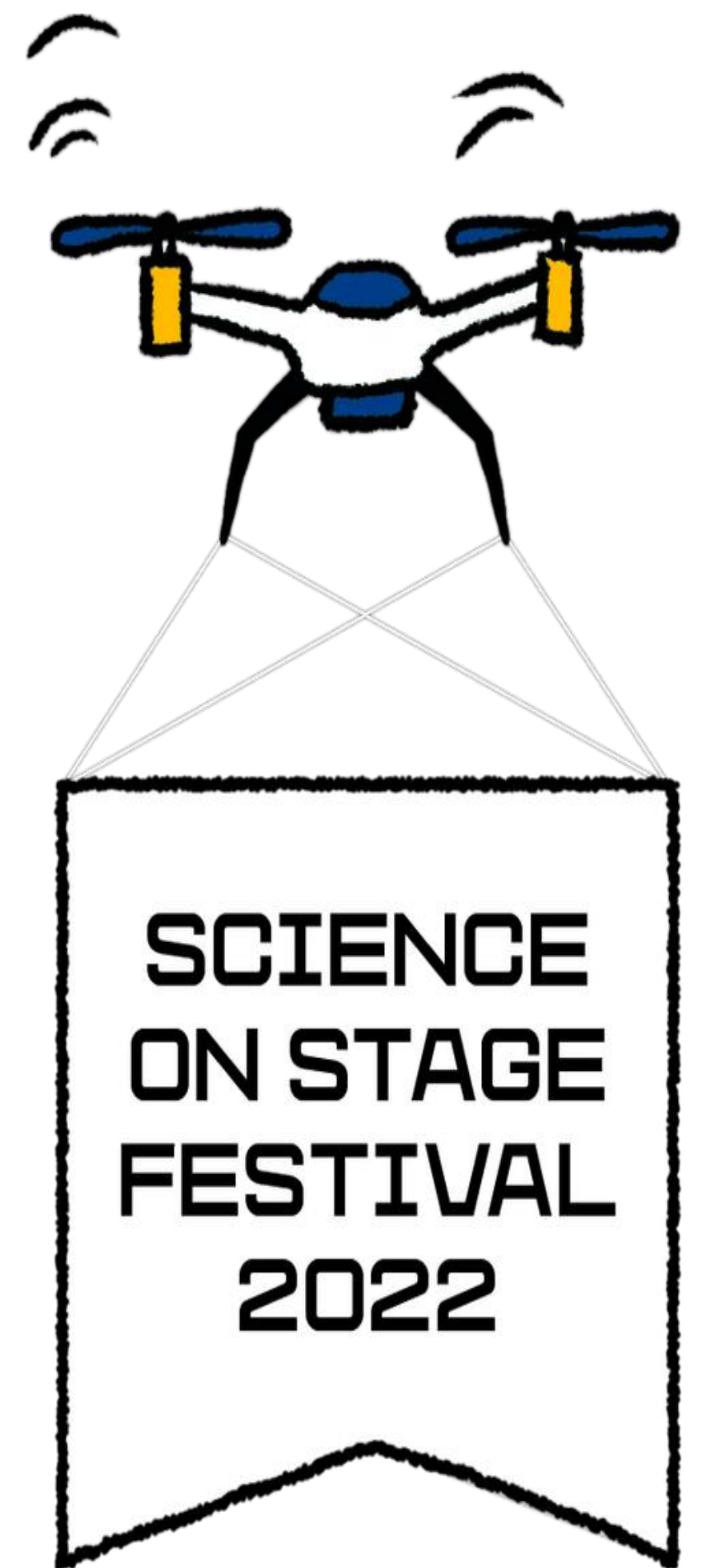
Group of learners:

16 students from all types of (secondary) school, aged 10-13
(also possible at an earlier age, probably 8)

step 1: build a two-wheel cardboard robot



step 2: decorate it with different materials, using a hot glue gun



step 3: coding

```

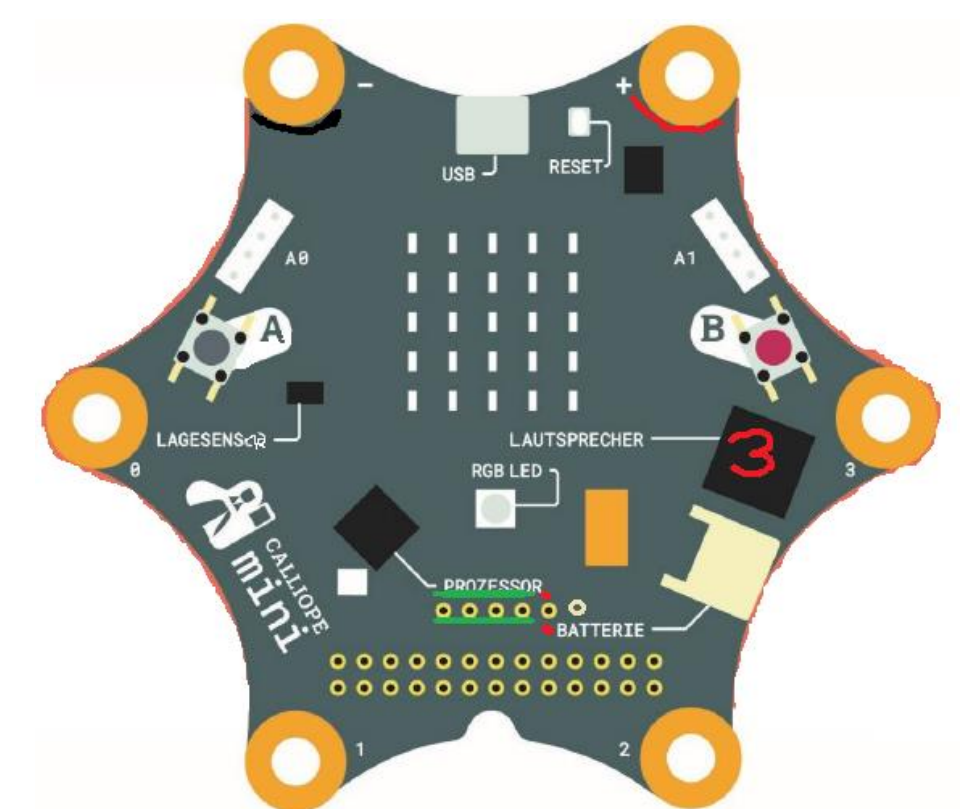
+ start
wait ms 2000
repeat indefinitely
do
  motor Port_A on speed % 100
  Port_B on speed % 100
  + if get value % light sensor ≥ 27
  do
    motor Port_B on speed % 0
  
```

Scratch: NEPO by Open Roberta Lab

```

+ start
repeat indefinitely
do
  motor Port_A on speed % 100
  Port_B on speed % 100
  + if get distance cm ultrasonic sensor A1 < 40
  do
    stop motor Port_A float
    motor Port_B on speed % 100
  wait ms 2000
  
```

microcontroller
Calliope Mini



This leads to a great variety of individual, artful cardboard bots. As the materials are very cheap and easily available, students may carry out further projects at home.