



Coding Pirates

Teaching kids programming, IT-creativity and
modern tech

Martin Dybdal
dybber@dybber.dk

DIKU
University of Copenhagen

29 April 2016

Overview

What is Coding Pirates?

Who are Coding Pirates?

Motivation

The Coding Pirates philosophy

Coding Pirates in practice

Showcase of projects

Difficulties ahead

Volunteer Community

DIKU's involvement

What is Coding Pirates?

- ▶ Activity for kids aged 7-17 years
- ▶ A creative playground - not just two more hours of school
- ▶ Volunteer-driven organisation



Who are Coding Pirates?

- ▶ Non-profit organisation
- ▶ +300 volunteers
 - ▶ Teachers, IT professionals, researchers, librarians, IT students
- ▶ 1000+ kids on waiting list
- ▶ 600+ paying members in Denmark
- ▶ 35+ hubs in Denmark



Motivation

- ▶ Digital revolution, Information Age.
- ▶ Democracy: New tech requires new policies. The public should be able to make informed decisions
- ▶ Automatisation
- ▶ Computational thinking is useful everywhere!

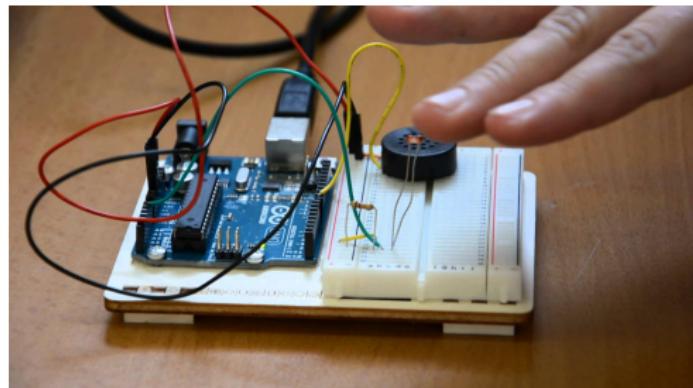
The Coding Pirates philosophy

- ▶ Inspiration from Maker-movement.
- ▶ Curiosity, exploration
- ▶ Accomplishment. Fight imposter syndrome
- ▶ Computational thinking

Manifesto: <http://codingpirates.dk/manifesto/>

In practice

- ▶ ~25-30 kids
- ▶ ~7-10 volunteers
- ▶ 2 hours a week, usually 17:00-19:00
- ▶ 15 minutes break with snacks, cool aid, fruit etc.
- ▶ Bring your own device (BYOD)



Workshops

- ▶ 4-6 week workshops
 - ▶ Scratch
 - ▶ LEGO Mindstorms
 - ▶ 3D-printing (TinkerCAD)
 - ▶ 3D modelling in Blender
 - ▶ Processing(.js)
 - ▶ Arduino (Scratch or C)
 - ▶ Unity (C#)
 - ▶ Python
 - ▶ HTML/CSS
 - ▶ ...
- ▶ Kids can not switch between workshops during these 4-6 weeks
- ▶ Presentations at the end of a 4-6 week period

Example project: Horror teddy bear

by Penelope, 12 years



<https://www.youtube.com/watch?v=Mc21BbiUGxU>

Stickman dungeon

by Alexander and Oscar, 11 years



<https://scratch.mit.edu/projects/57201286/>









Robot-sumo



<https://www.youtube.com/watch?v=qcWTpXh-r0w>

Difficulties

- ▶ Few from age 14 and up
- ▶ Few girls
- ▶ Fostering friendships is hard, but important
 - ▶ Force pair programming?
- ▶ Further education of volunteers

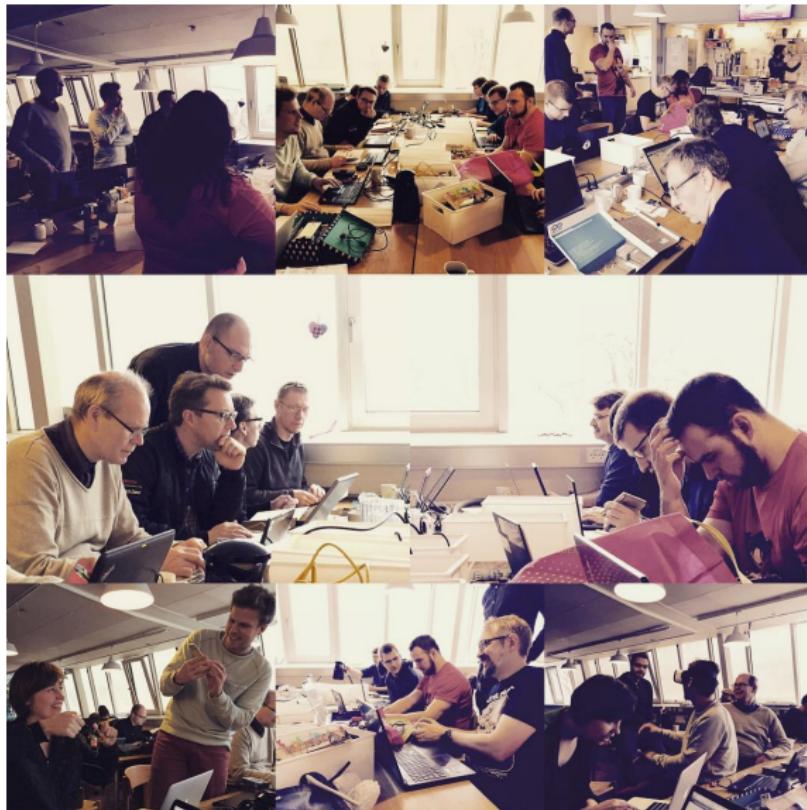
Age and gender (including waiting list)



Percentage of girls by age (including waiting list)



Volunteer community



Arduino workshop for volunteers @ DIKU

Why does a university use time teaching tweens and teens?

- ▶ The teachers needs our expertise
- ▶ Teacher education and re-education
- ▶ Our connections to potential volunteers (alumni)
- ▶ Getting at the table when defining how computing should be taught in schools
- ▶ Potential research area
- ▶ Influence on our own teaching practices

Research questions

- ▶ How do you learn to program?
- ▶ What are the phases that learners go through?
- ▶ How do we best facilitate learning programming?
- ▶ Can programming be used to strengthen learning in other fields?
- ▶ Can we observe the claimed benefits of computational thinking?

Join us!

