Inspiring children - a journey: Diversity and computing education

Celine Boudier - 11th July 2017 - EuroPython

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Hi, I'm Celine

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Code For Life Team Lead at Ocado
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Dinosaurs
Mazes and Microscopes

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Where are the stairs / lifts / ladders / ropes / Boulders...??
Mentor: Primary school teacher
First computers! Theory of evolution! Newts!...
Mentors: older cousins
Magic tricks, creativity, Pacman...
Comic book
Physics...
Tintin, Destination Moon
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... Real life physicists

Marie Curie
Vocations?

Science? Literature?

Egyptologist
Architect
Writer
Actor
Perfumer
Physicist
Exobiologist
Magician
Vocations?

Science!

Linguistics, Computer science...

First programs!

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Vocations?

Lycée V. Duruy, Paris, 2002-2003

My final year of High School, spec. Science
~50% women
Vocations?


20% women in my preparatory class for engineering schools
Vocations?

In France, 2008

31% women go to non medical scientific studies after scientific high school (vs 53% men)

Just 13% computer science students in the UK were women in 2014
Vocations?

Microsoft study
Vocations?

Agathe Begault - Women on Rails
+ Speaks in schools

Microsoft study
Vocations?

40% women, 2005 (record breaking)

~Master of engineering
Computer Science!
Robots! AI! Quantum physics! Art History! Lots of other things!
Vocations?

Software Engineer Internship at Exalead - working closely with a diverse team, 2008

Computer Science R&D + Languages!
Vocations?

Only permanent full time female software engineer, 2008

Few female software leads, 2013

Product owner + lead, 2014
Changing Mind

Before

Enjoyed being an outsider

Wanted the world to change magically

After

Bad experiences

Hidden problems

Less hidden problems

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Changing Lives - Ask NAO

We changed a few lives, including ours

Teaching tool for learning goals
Repetitive, never gets angry, non judgemental
Bridge between computers and humans

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Moving - New minds to change
Moving - New minds to change

Paris

London

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Moving - New minds to change

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Code For Life is a non profit initiative that delivers free, open-source games that help all students learn computing.
Wait, what?
Why?

2014

UK introduces computing in the primary school curriculum
“Teaching children to program is not just about nurturing the next generation of software engineers; being able to write code is a transformative and disruptive meta-skill that needs to be seen as being of huge potential value whatever your future holds. I would go so far as to say that it is a survival skill that our children need to acquire to flourish in the increasingly digital and online future that awaits them.”

Paul Clarke, Ocado CTO
Linda Liukas - Hello Ruby, a delightful way to teach kids about computers
Cat Lamin - Why do kids need to learn how to code

Useful skills?

- Basic understanding of how a computer works makes life easier for everyone
- Encourages fun, project-based learning
- Links to real life e.g. computer games, digital effects in films
- Programming skills are cross-curricular
What about the teachers?

I HAVE NO IDEA WHAT I'M DOING
What about the teachers?
What about the teachers?
What about the teachers?
Rapid Router: From Blockly to Python

1st game, for primary schools

From visual programming in Blockly to Python

Progression in computing concepts

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Materials and Role Models

- Lesson plans
- Unplugged activities
- Teacher solutions
- How to guides
- Students' progress
Materials and Role Models

Dedicated to Sharon Harrison

Sharon was instrumental in helping to create Code for Life. At the beginning of 2014 she was recruited to act as our Educational Consultant. The project drew on her previous skills as a pioneering computing teacher and education consultant.

Sharon has left a lasting legacy by creating something which will help teach STEM skills to the next generation of computer scientists across the world.

Videos of Ocado employees: what they do, coding concepts

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Old Vs New

codeforlife.education   @codeforlifeuk
Games are programmed...

```python
import van

v = van.Van()

while not v.at_destination():
    v.move_forwards()
```

Console Output

??

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AI:MMO Secondary School Game

Python and AI concepts

Teenagers (12 - 16)

Massively Multiplayer

User code running server side...
AI:MMO - Next steps

User research / Design

Good fit to teenagers' current skillset and tastes
Some other next steps

Code for Life has **100,000 users** across the world.
MORE!! Translations in progress

- iOS app for iPads:
  - Used in schools
  - Offline mode
  - Accessibility (mouse-free)

Essex Library Services:
Not everyone has a computer

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Time Travel
What if?
What if?
What if?

pyladies

black girls code

STEM ettes

greenlight for girls

The future is full of possibilities

techE ladies

WOMEN ON RAILS

django girls

Helen

Senior Software Engineer

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Code for Life Volunteers

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Code for Life Volunteers

Inspire kids

Free, fun, open source games

Diversity

Learning ourselves

Still a lot of children to reach!
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Get involved

www.codeforlife.education

codeforlife.education/help/#contact

https://github.com/ocadotechnology/codeforlife-portal
https://github.com/ocadotechnology/rapid-router
https://github.com/ocadotechnology/aimmo
https://github.com/ocadotechnology/rapid-router-unity

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https://crowdin.com/project/code-for-life (translations)
Thanks! Questions?
Annex - Stack

- Django
- Skulpt
- Python
- JavaScript
- Raphael.js
- Blockly
- Crowdin
- Kubernetes
- GitHub
- Travis CI
- Google Cloud Platform
- Semaphore
- Slack
- Code for Life
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- Ocado Technology