Unplugged Computing

By Phil Bagge

code-it.co.uk
@baggiepr

CAS Regional Coordinator (South)
Computing Science Teacher Five Schools
Links

Unplugged Computing Keynote
http://code-it.co.uk/links.html

Computing Science Resources
http://code-it.co.uk/csplanning.html

Twenty Primary Scratch Programming Projects
http://code-it.co.uk/scratch/scratchplan.html
Put chalk down on playground
repeat next 2 commands 4 times
forward 1 meter
right 90 degrees
remove chalk from playground
KS1 POS Programming Burger

Pupils should be taught to:

- understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions

- create and debug simple programs (algorithms)

- use logical reasoning to predict the behaviour of simple programs
KS2 Programming Sandwich with Internet Side Salad

- design, write and debug programs *(algorithms)* that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- use sequence, selection, and repetition in programs; work with variables and various forms of input and output
- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
- understand computer networks including the internet; how they can provide multiple services, such as the world wide web
- appreciate how internet search results are selected and ranked
Human Robots at KS1

Solve maze whilst blindfolded on paper
Solve masking tape maze whilst blindfolded in hall or chalk maze outside
Moving towards complete set of instructions before attempting

Original idea by Jon Chippendal  https://www.youtube.com/watch?v=m0uMVn0kDk4
Getting Up Algorithm

- [http://code-it.co.uk/unplugged/gettingup.html](http://code-it.co.uk/unplugged/gettingup.html)
Everyday Algorithms Extended

• Let them choose everyday task to write an algorithm for
• Decompose into sub sections first
  – Out of bed
  – Washing
  – Changed
  – Breakfast
  – Journey to school
• Test them in action
Human Crane Algorithm

Start above left bowl

Use letters to create algorithm

Full planning is here

http://code-it.co.uk/csplanning.html
Playground Games

Start

Find a large rectangular playing area and set two safe ends opposite each other

Choose one child to be the chaser

You are a runner Go and stand in one of the safe areas with all the other runners

Are you the chaser?

No

Yes

Go and stand in the middle of the area
Jam Sandwich Algorithm

Planning
http://code-it.co.uk/unplugged/writesandwichalgorithm2.pdf

Out Takes Video (Teachers use only)
http://www.youtube.com/watch?v=leBEFaVHllE

SEN Joined Words Sheet
http://code-it.co.uk/unplugged/sandwichalgorithmSEN.pdf
<table>
<thead>
<tr>
<th>Right Hand</th>
<th>spread</th>
<th>butter</th>
<th>fast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Hand</td>
<td>scoop</td>
<td>tub</td>
<td>repeat</td>
</tr>
<tr>
<td>Pick up</td>
<td>packet</td>
<td>bread</td>
<td>hard</td>
</tr>
<tr>
<td>Press down</td>
<td>knife</td>
<td>slice</td>
<td>soft</td>
</tr>
<tr>
<td>cut</td>
<td>blade</td>
<td>plate</td>
<td>forward</td>
</tr>
<tr>
<td>Put down</td>
<td>handle</td>
<td>turn</td>
<td>back</td>
</tr>
<tr>
<td>hold</td>
<td>jam</td>
<td>top</td>
<td>put</td>
</tr>
<tr>
<td>unscrew</td>
<td>jar</td>
<td>bottom</td>
<td>Table</td>
</tr>
<tr>
<td>remove</td>
<td>lid</td>
<td>slow</td>
<td>Surface</td>
</tr>
</tbody>
</table>
Selection PowerPoint

```plaintext
if It rains
  I get wet
else
  I stay dry
```

POS use sequence, selection, and repetition in programs
Exchange Sorting Investigation

1

2

3 Overlapping pairs left to right repeated

http://code-it.co.uk/unplugged/sort/sortoverview.html
Work in pairs

Example

Ends to centre

Find as many different ways to compare the cards
Work in pairs

Example

Ends to centre

Find as many different ways to compare the cards
Work in pairs

Example

Ends to centre

Find as many different ways to compare the cards
Find as many different ways to compare the cards
Record on your sheets
Use brackets or lines to show which cards to compare with which and numbers to show order
Sorting Rule

Rule
If the number on the left is greater swap the cards

left right

Test each pattern on the sheet until it has sorted the numbers or looks like it will never sort the numbers. Record your findings on the sheet.
From Unplugged to Plugged

http://code-it.co.uk/scratch/train_computer_do_maths/traincomputermathsoverview.html