Queen Mary
University of London
Science and Engineering

Unplugged computing and semantic waves

Analysing Crazy Characters

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Queen Mary University of London · LTC · Queen Mary University of London · Barefoot · institute of CODING

Aim

To explore the use of semantic waves as a way to better understand the effectiveness of unplugged computing activities

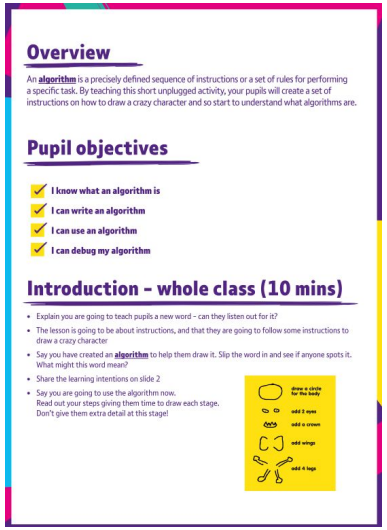
By analysing the semantic profile of a popular unplugged teaching activity

Rational for our study

- Research on effectiveness of unplugged approach mixed (Feaster et al., 2011; Thies and Vahrenhold, 2016; Rodriguez et al., 2017).
- Suggestion that physical enactment makes concepts concrete and memorable (Curzon et al., 2009; Baraslou et al., 2003).
- LCT provides a way to explore how and why unplugged works (or not)

Method :

- Technique: Simplified semantic profiling approach for exploratory case study (Maton, 2014).
- Case study: Appropriate for in depth description/analysis of an instance in action (Merriam 2009; Stake 1995).
- Resource: Most popular product Barefoot (The Royal Society, 2017) Crazy Characters lesson plan.



Overview

An **algorithm** is a precisely defined sequence of instructions or a set of rules for performing a specific task. By teaching this short unplugged activity, your pupils will create a set of instructions on how to draw a crazy character and so start to understand what algorithms are.

Pupil objectives

- I know what an algorithm is
- I can write an algorithm
- I can use an algorithm
- I can debug my algorithm

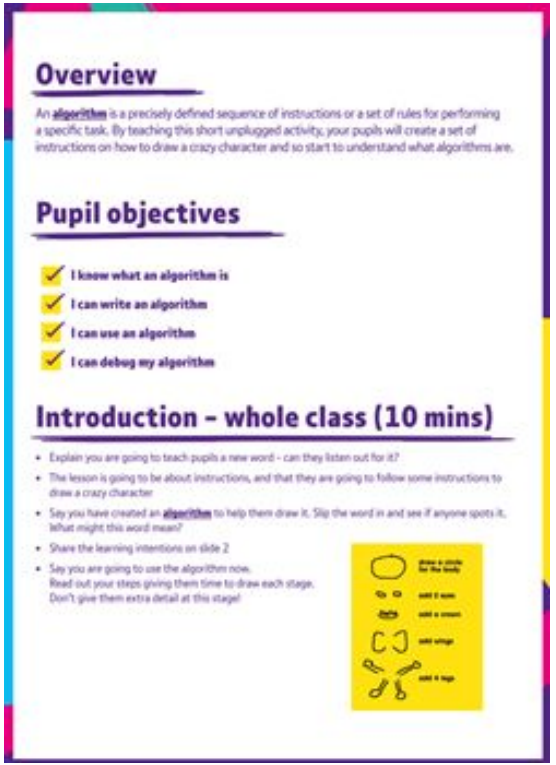
Introduction – whole class (10 mins)

- Explain you are going to teach pupils a new word – can they listen out for it?
- The lesson is going to be about instructions, and that they are going to follow some instructions to draw a crazy character
- Say you have created an **algorithm** to help them draw it. Slip the word in and see if anyone spots it. What might this word mean?
- Share the learning intentions on slide 2
- Say you are going to use the algorithm now. Read out your steps giving them time to draw each stage. Don't give them extra detail at this stage!

draw a circle for the body
add 2 eyes
add a crown
add wings
add 4 legs

From Barefoot. With kind permission of BCS and BT.
https://www.barefootcomputing.org/resources/crazy-character-algorithms

Let’s do crazy characters



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  Read out your steps giving them time to draw each stage.
  Don’t give them extra detail at this stage!

Semantic Profile for Crazy Character's whole class introduction

Lesson Plan Steps	Explain you are going to use a new word – can they listen out?	Share the learning intention.	Say you are going to use the algorithm now.	Read out your steps and learners draw the crazy characters. Model adding extra detail.	Ask pupils to show what they have drawn. I didn't expect that.	How could you change that?	Ask what the algorithm was. Explain what an algorithm is
Semantic Profile Notes	**Signalling** A signal that a high is coming on the semantic profile.	**Concept Introduction** This is what you are going to learn about.	**Connecting** Connecting the theory to the concrete.	**Concrete activity** Practical activity with high semantic gravity. Learners are adding knowledge if the meaning is connected. The extra detail adds flow.	**Counter expectancy** Alternative options are introduced, increasing density.	**Staged return** Density increases as context is reduced	**Packing** Develop/reveal the definition and pack the concept.

Back to Paul ...

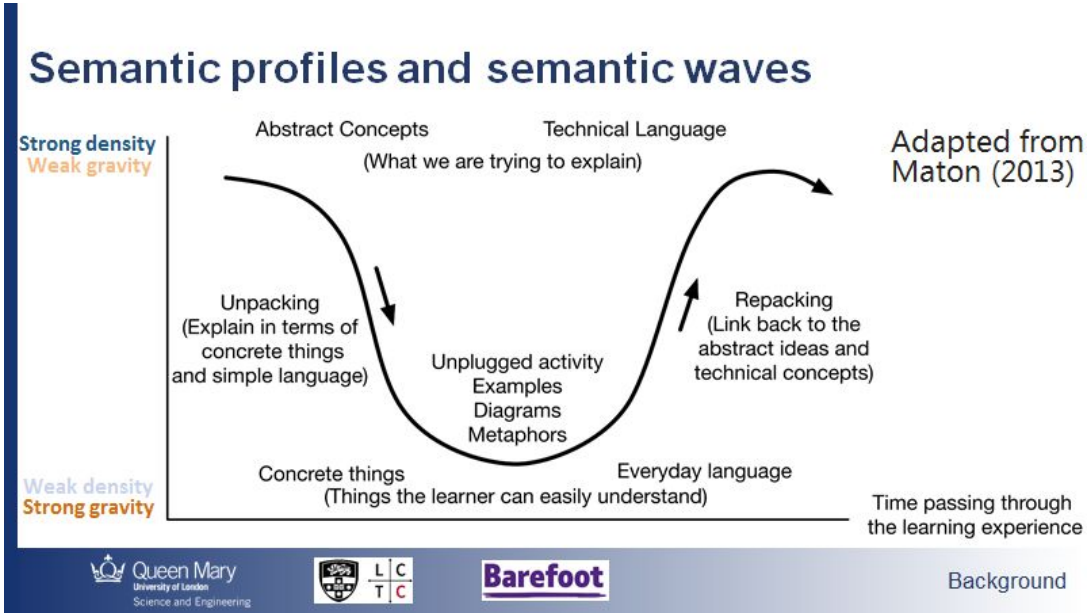
Discussion Points

What are the different ways to pack and unpack knowledge? (Discussion 1)

Who packs and unpacks?

(Discussion 1)

Google doc http://bit.ly/LCTSept



Discussion Points...back to Paul

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Layers, ladders and routes…
What routes can you follow between metaphor and concept?
(Discussion 2)

How important are waves within waves?
(Discussion 2)

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