Quick Intro in Coding/Programming in the Classroom

Cameras on please!

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http://bit.ly/coding-in-classroom

Waterfall Chat

...the “waterfall” strategy is when the teacher poses a question, and students type their answer in the chat, but they do not submit their answer until the teacher prompts everyone to hit enter at the same time, resulting in a cascade of student answers in the chat. [source]

Waterfall Chat Activity

Type your response in the chat window but do not hit Enter until you are told to!

What divisions and/or subjects are you being qualified to teach?

Waterfall Chat Activity

Type your response in the chat window but do not hit Enter until you are told to!

How experienced would you say you at coding/programming?

(# responses only)

1) What's coding?
2) A little
3) A fair bit
4) I'm an expert!

Waterfall Chat Activity

Type your response in the chat window but do not hit Enter until you are told to!

Briefly describe your coding experience (e.g., Scratch, Python, Micro:bits, Ozobots, etc.)

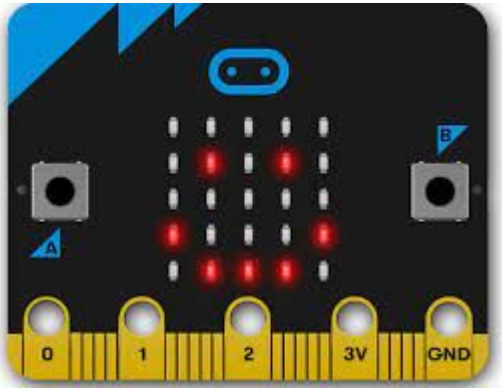
What is Programming?

Programming is a way to instruct the computer to perform various tasks.

But What Is a Computer?!!

A computer is an electronic device that manipulates information, or data. It has the ability to store, retrieve, and process data.

[Source]


B
A
0
1
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LEGO mindstorms
10+
5in1
CODE
CONTROL
PLAY

Block-based vs Text-based Programming


```
import turtle

t = turtle.Pen()

for i in range(0, 4):
    t.forward(250)
    t.right(90)
```

Why Is It Important to Learn How to Code?

- Programming helps children learn to problem-solve
- Computer programming gives kids a challenge and helps them develop resilience
- Coding teaches children how to think
- A child expands their creativity when they learn how to code
- Computer programming is the future
- There is a lack of skills in the software industry
- Coding helps children learn how to have fun with math
- Coding is learning while having fun

[Source]

What Is Computational Thinking?

Computers can be used to help us solve problems. However, before a problem can be tackled, the problem itself and the ways in which it could be solved need to be understood.

Computational thinking allows us to:

- take a complex problem,
- understand what the problem is and
- develop possible solutions.

We can then present these solutions in a way that a computer, a human, or both, can understand.

[Source]

The Four Cornerstones of Computational Thinking

- decomposition - breaking down a complex problem or system into smaller, more manageable parts
- pattern recognition – looking for similarities among and within problems
- abstraction – focusing on the important information only, ignoring irrelevant detail
- algorithms - developing a step-by-step solution to the problem, or the rules to follow to solve the problem

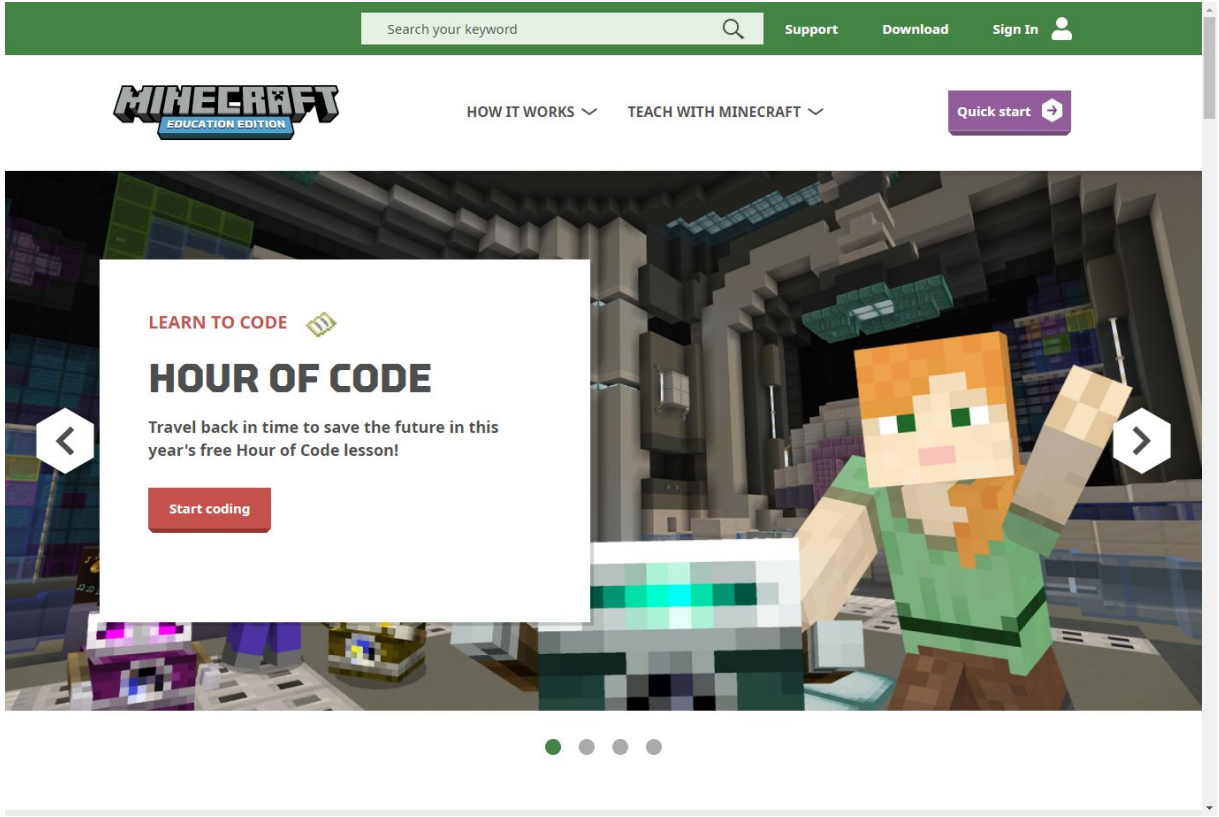
Each cornerstone is as important as the others. They are like legs on a table - if one leg is missing, the table will probably collapse. Correctly applying all four techniques will help when programming a computer.

[Source]

My Plea!

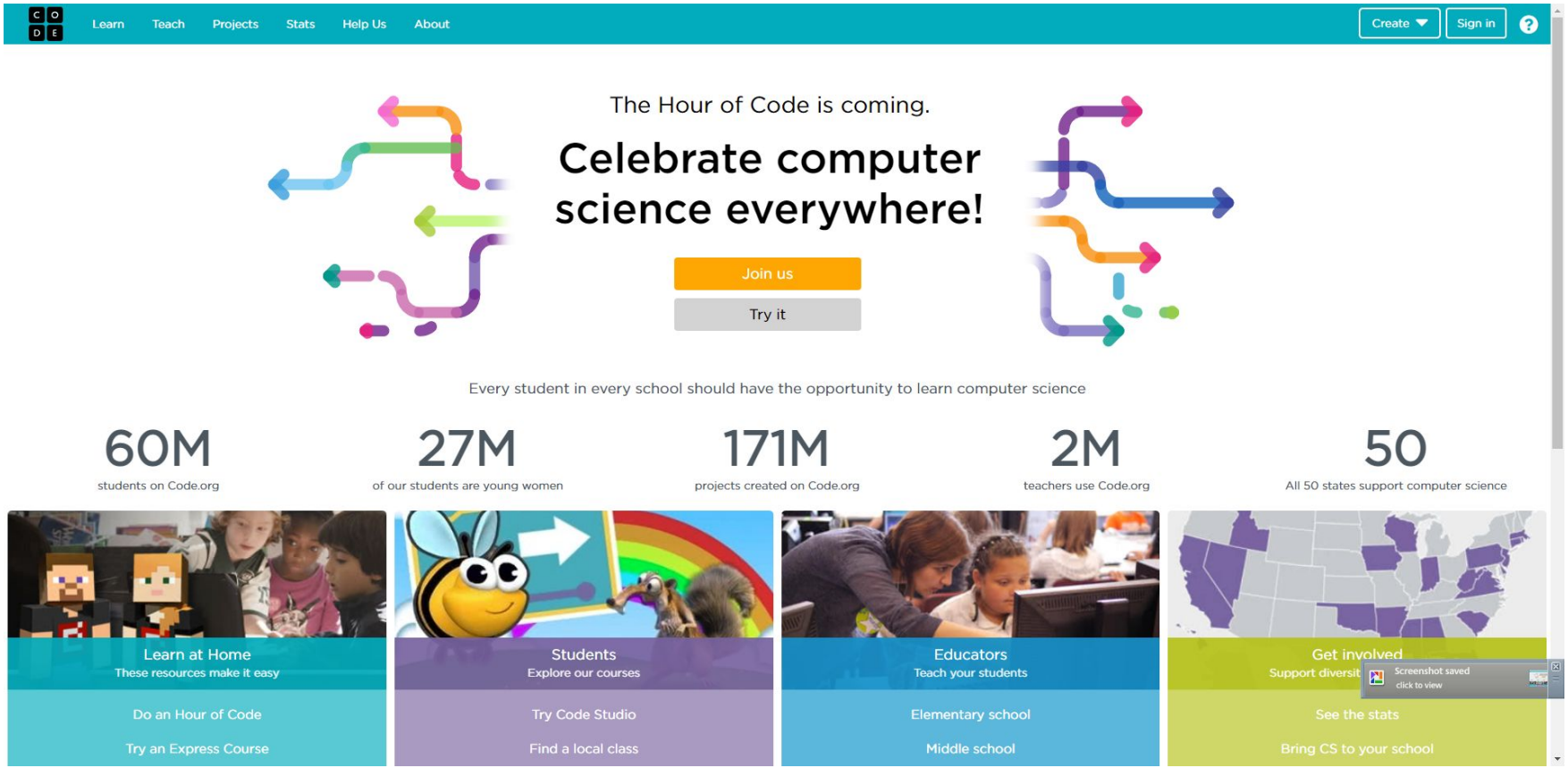
Apply the concepts of Computational Thinking to as many of your coding/programming activities as possible.

Minecraft Education



https://education.minecraft.net/fr-fr/homepage

Code.org



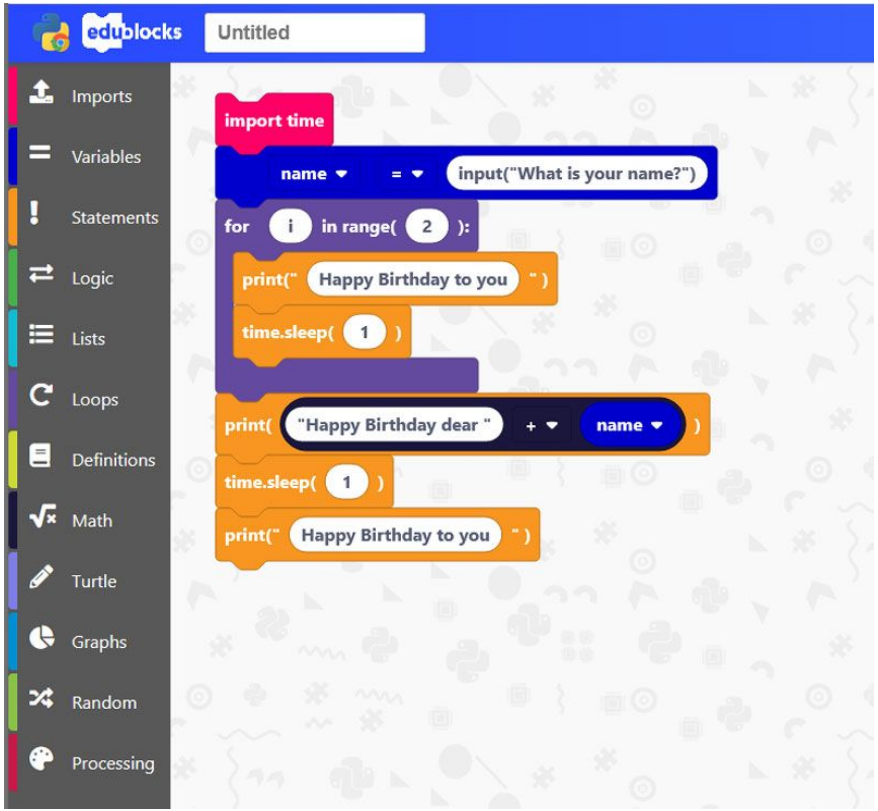
https://code.org/

Where to Learn Python?

- https://cscircles.cemc.uwaterloo.ca/
- https://groklearning.com/hoc/activity/animal-classifier/
- https://developers.google.com/edu/python
- https://www.py4e.com/
- https://www.codecademy.com/learn/learn-python-3/
- https://snakify.org/en/

Block-based Python

https://staging.edublocks.org/



[Image Source]

Jupyter Notebook Options

- Online:
  - Callysto | Teacher Starter Kit | Online Courses
  - Google Colab | Math in Python for Grade 8/9 | Colab for Math Educators (courtesy Karen Spindler)
  - Jupyter.org
- Offline:
  - Anaconda

Quick Colab Demo

http://bit.ly/math-python-notebook-colab

ACSE Mail List

Association for Computer Studies Educators

https://acse.net/mail-list/