



Generalitat de Catalunya
Departament d'Ensenyament
**Centre de Recursos Pedagògics Específics
de Suport a la Innovació i la Recerca Educativa**

cesire*

Musicoding

Programació informàtica i música
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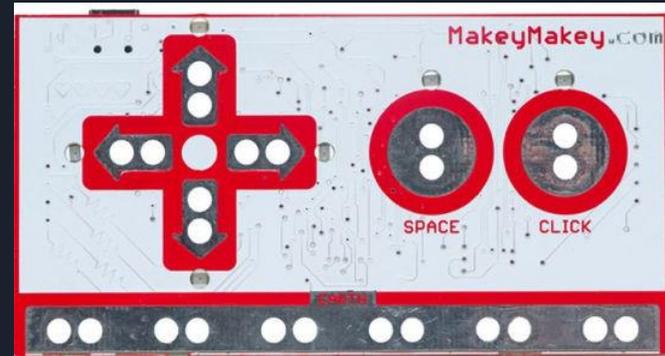
STEAM Education

STEAM is an educational approach to learning that uses Science, Technology, Engineering, the Arts and Mathematics as access points for guiding student inquiry, dialogue, and critical thinking. The end results are students who take thoughtful risks, engage in experiential learning, persist in problem-solving, embrace collaboration, and work through the creative process. These are the innovators, educators, leaders, and learners of the 21st century!

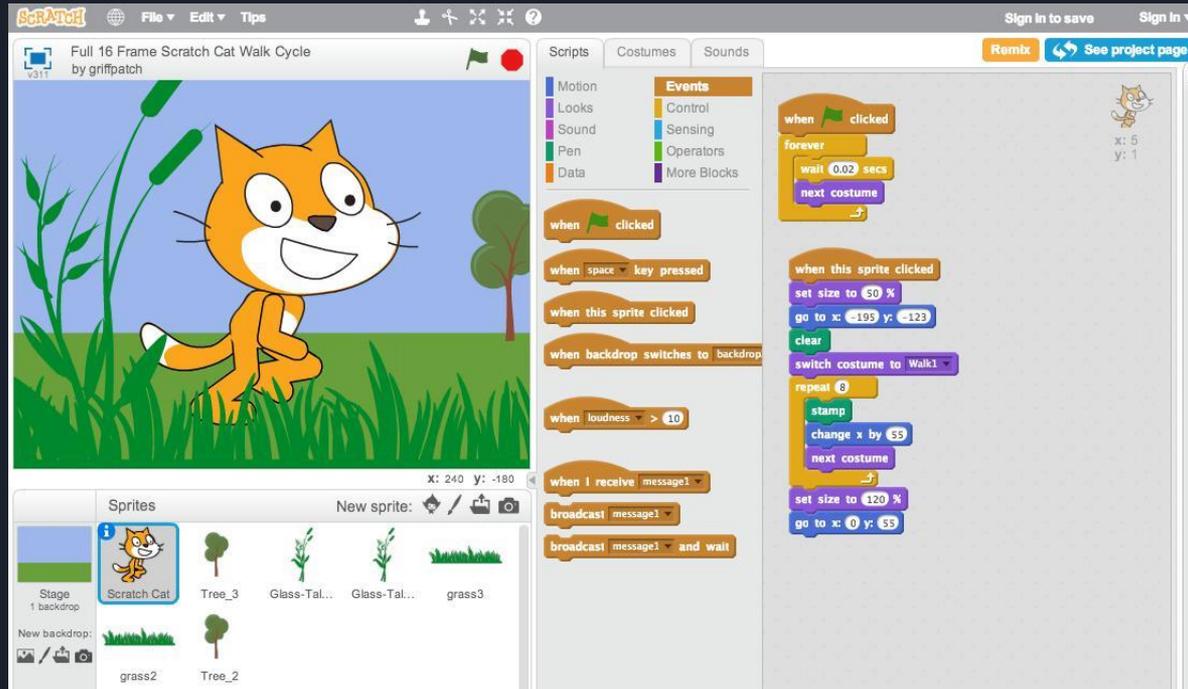
Susan Riley

Estructura de la sessió:

1. Primària (cicles mitjà i superior): Scratch
2. Secundària: Sonic Pi
3. Tots els nivells: Makey Makey



Scratch:



<https://scratch.mit.edu>

Partitura

Twinkle Twinkle Little Star



Twinkle, twin- kle, lit - tle star, how I won- der what you are!

5



Up a - bove the sky so high, like a dia- mond in the sky.

9



Twinkle, twin- kle, lit - tle star, how I won - der what you are!

Sonic Pi

The screenshot displays the Sonic Pi application window. At the top, there are control buttons for Run, Stop, Save, and Rec. The main code editor contains the following code:

```
1 use_bpm 300
2
3 #Load sample "000cTap.wav"
4 load_sample :drum_ton_lo_soft
5 load_sample :drum_ton_mid_soft
6
7 clapping = [1, 1, 1, 0, 1, 1, 0, 1, 0, 1, 1, 0]
8
9 13.times do |cycle|
10   puts "Cycle: #{cycle}"
11   4.times do |reps|
12     12.times do |beat|
13       sample :drum_ton_lo_soft, pan: -0.5 if clapping[beat] -- 1
14       sample :drum_ton_mid_soft, attack: 0.05, pan: 0.5 if clapping[(cycle + beat)]
15     end
16   end
17 end
18 end
```

The log window on the right shows the execution output:

```
log
[Run 1, Time 5.6]
|- sample :drum_ton_lo_soft, {pan: -0.5}
+| sample :drum_ton_mid_soft, {attack: 0.05, pan: 0.5}

[Run 1, Time 5.8]
|- sample :drum_ton_lo_soft, {pan: -0.5}
+| sample :drum_ton_mid_soft, {attack: 0.05, pan: 0.5}

[Run 1, Time 6.2]
|- sample :drum_ton_lo_soft, {pan: -0.5}
+| sample :drum_ton_mid_soft, {attack: 0.05, pan: 0.5}

[Run 1, Time 6.6]
|- sample :drum_ton_lo_soft, {pan: -0.5}
+| sample :drum_ton_mid_soft, {attack: 0.05, pan: 0.5}

[Run 1, Time 6.8]
|- sample :drum_ton_lo_soft, {pan: -0.5}
+| sample :drum_ton_mid_soft, {attack: 0.05, pan: 0.5}

--> Stopping all runs...
--> Completed run!
```

At the bottom, the Help window is open to the '7.1 Controlling Running Synths' section, showing the following code:

```
Once we have s, we can start controlling it via the control function:

s = play 60, release: 5
sleep 0.5
control s, note: 65
sleep 0.5
control s, note: 67
sleep 3
control s, note: 72
```



Comandes (I):

play: toca una nota

Exemples: "play 60", "play :C", "play `:C3"

sample: reprodueix un so del programa

Exemples: "sample :bd_haus"

sleep: espera els temps "o fraccions" indicats

Exemples: "sleep 1", "sleep 0.5"



Comandes (II)

use bpm: canvia el tempo de la cançó especificat en pulsacions per minut

Exemples: “use_bpm 120”

live_loop: crea un bucle amb un codi determinat que pot ser paral·lel a d'altres

Exemple:

```
live_loop :nomdelloop do
  sample :bd_haus
  sleep 1
  sample :sn_dolf
  sleep 1
end
```

Partitura

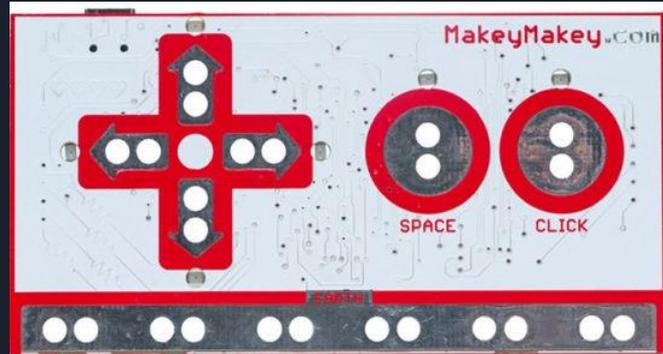
bd_haus

sn_dolf

The image shows a musical score for two parts: 'bd_haus' and 'sn_dolf'. The time signature is 4/4. The 'bd_haus' part consists of two measures. The first measure contains a quarter note, a quarter rest, a beamed eighth-note pair, and a quarter rest. The second measure contains a quarter note, a quarter rest, a beamed eighth-note pair, and a quarter rest. The 'sn_dolf' part also consists of two measures. The first measure contains a quarter rest, a quarter note, a quarter rest, and a quarter note. The second measure contains a quarter rest, a quarter note, a quarter rest, and a quarter note. The score ends with a double bar line.

Makey Makey

Sorpresa!





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