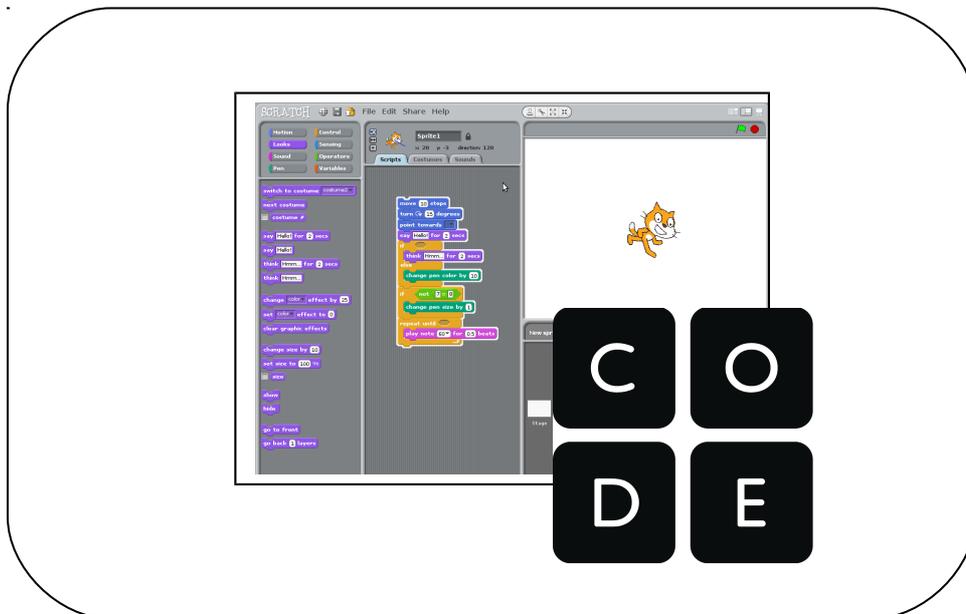# GRUP D'EXPERIMENTACIÓ PER AL PLURILINGÜISME

LEARNING TO CODE

Tecnologia

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GRUP D'EXPERIMENTACIÓ PER AL PLURILINGÜISME

LEARNING TO CODE

Material elaborat durant la realització de la formació adreçada als docents que implementen el pilotatge del GEP (Grup d'Experimentació per al Plurilingüisme) durant el curs 2015-2016, realitzada amb la formadora Rachel Playfair, de OUP

SG de Llengua i Plurilingüisme
Servei de Llengües Estrangeres

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Teaching tips

- ❖ Students should have a clear idea about what they are supposed to achieve, about the goals and objectives of the activity
- ❖ Students should have a justified feedback about their work, as close as possible to the handing in of work itself.
- ❖ Students should participate in their evaluation
- ❖ Activities and tasks have to be meaningful, connected to reality and linked to real problems if possible
- ❖ Teacher should take into account the ability of students to work autonomously. If possible, they should be allowed to choose and decide some part of the work.
- ❖ Teacher should help when they are not able to do things alone, but allow them to work by themselves if possible.
- ❖ Mistakes are a way to learn and are not forbidden but encouraged. What's forbidden is not to correct and learn from them.
- ❖ Diversity: As much as possible, combine. Combine individual work with small groups and full class activities. Combine different kinds of information (written, speech, video, pictures...). Combine different kinds of work (mechanic, creative, information search, analysis...)
- ❖ *Work as best as you can, enjoy as much as you can, and forget perfectionism.*

Learning objectives

Students should be able to...

1. Understand the significance of coding in our society
2. Learn to use the basic structures of coding (sequences, loops and ifs) to write a short program
3. Look for information (coding courses in this case) in a limited list of webs
4. Evaluate the reliability of a web.
5. Follow autonomously one simple course attainable to their level of coding
6. Evaluate the quality of the courses they have found
7. Integrate the information they have found in a short recommendation and an oral presentation
8. Assess and evaluate their work and their classmates work.

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The hour of code video

In this first part we are going to use two texts:

A promotional video from the hour of code:

https://www.youtube.com/watch?v=FC5FbmsH4fw

A tutorial from the hour of code:

https://code.org/mc

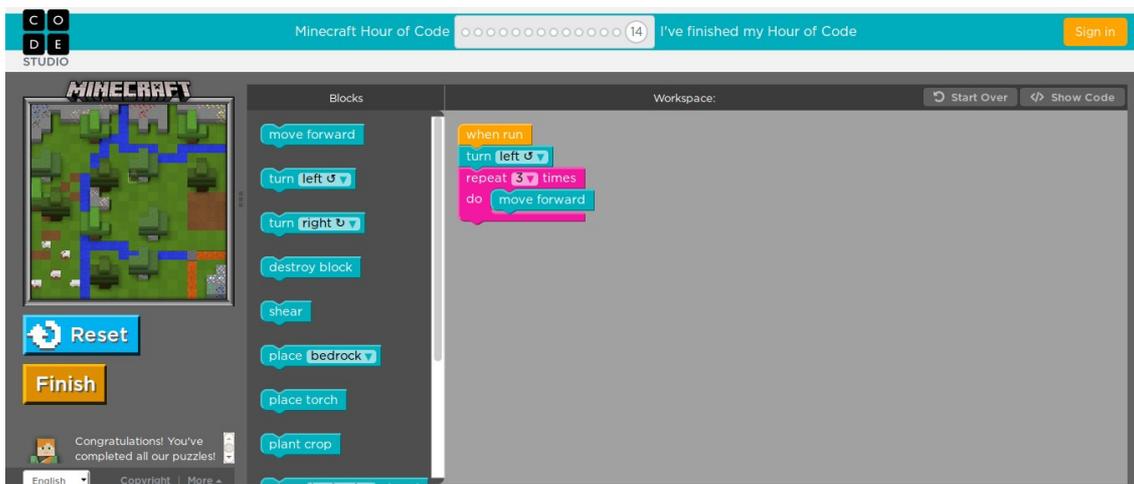# GRUP D'EXPERIMENTACIÓ PER AL PLURILINGÜISME

Activities

Explicit

Video questions:

1. Who are Leigha and Tanya and what do they pretend with this video?
2. The maximum number of lines someone codes in the video is:
   a) 120
   b) 75
   c) 99
   d) 80
3. List the arguments given in the video to support the idea that learning to code it's important

Tutorial questions

1. Here you have a screen shot of the computer. Write the names of the four main parts and link the names with their utility:

PLAY SPACE	It contains all the available instructions, that can be dragged and dropped to the workspace. Instructions dragged and dropped from workspace to this space are deleted
INSTRUCTIONS	Where you construct your program. You have to place here, correctly ordered, the commands you want to implement.
TOOL BOX	Where you can see the result of your program when executed
WORKSPACE	Contains the explanations you need to complete the puzzle

2. How many lines of code have you written in the puzzles of the table? How many accumulated lines until here? Fill in the table

Puzzle	Lines in this puzzle	Accumulated lines
2		
5		
9		
12		

Implicit

Video questions:

4. Do you think that the arguments given in the video to support the idea that learning to code it's important are significant for you or people around you?
5. Which do you think is the main idea the video wants to transmit?

Tutorial questions

3. What are loops usefull for? When do we use them?
4. What are if statements useful for? When do we use them?

Referential

5. Explain what do this sets of instructions do:

repeat 4 times do move forward turn left ↺	
if empty ahead do plant crop	
repeat 6 times do move forward if water ahead do place bedrock	
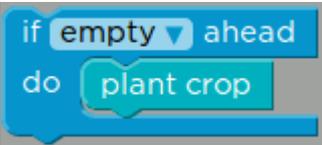
6. Explain what have you coded in the last puzzle

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Revision

You have learned the basic structures of coding!!
Let's try to recognize them in another tutorial!!. You can choose between

Frozen characters drawing:
https://studio.code.org/s/frozen/stage/1/puzzle/1

Angry birds:
https://studio.code.org/hoc/1

1) Do you remember the three structures we have used? Relate first and second column:

Linear sequence	Repeat the same sequence a certain amount of times. Useful to avoid repeating code.
Loops	Executes or not a sequence or orders depending on one condition. Useful to collect information and react to it.
If statements	Execute a list of orders, one after another. Every order is executed when the previous one is finished.

2) For each puzzle you finish, mark the structures you have used

	Simple linear sequence	Loop	If statement
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

13			
14			
15			
16			
17			
18			
19			
20			

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Extension

You have learned coding basic notions. Now you are going to try a language that is similar to the one we have used, but a bit more complex: scratch.

Try this tutorial:

https://scratch.mit.edu/projects/85963232/?tip_bar=hide#editor

What have you learned?

Which structures were already present in the minecraft tutorial?

What new instructions have you been able to use that were not present in minecraft?

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Project: collaborative problem solving

You have tried some online tutorials

In fact, Internet is full with tutorials to learn programming by yourself.

You have to look for tutorials, try them, and present to the classroom an evaluation and recommendation of the on line tutorial you have done

OBJECTIVE.
To prepare an oral presentation that explains to the classroom the evaluation of a tutorial you have tried.

You have to follow 4 steps

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1. LOCATING ON LINE TUTORIALS

In four students group:
- Create a google docs and share it with the four students in the group and your teacher.
- Distribute the pages between the four students (look at the "Where to look for" box)
- During 15 minutes, look for online courses or tutorials. For those that look interesting, write in google docs the URL adress, the kind of language or application they use, the level of the course (begginers, medium, high) and the time it's supposed to last (1 hour, between 2 and 10 hours, more then 10 hours)

You can create in the google docs a table like this one:

URL	Language	Level (beginners, medium, high)	Time (1 hour, 2-10 hours, +10 hours)	Student responsible

All the group together are going to share and discuss result and problems you have encountered in this steep.

FINAL RESULT OF FIRST STEEP.
The shared googledoc with 2 to 4 courses analyzed by every student in the group

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Where to look for

There are so many tutorials on line, about so many different coding languages, with so many different levels... it's not easy to choose them.
You can look for in this pages:

- Hour of code extra contents:
  https://code.org/learn/beyond
  https://studio.code.org/

- Code academy:
  https://www.codecademy.com

- Scratch web:
https://scratch.mit.edu/help/

- Khan academy:
  https://www.khanacademy.org
  https://www.khanacademy.org/computing/hour-of-code/hour-of-drawing-code/v/welcome-hour-of-code
- MiriadaX
  https://miriadax.net
  https://miriadax.net/web/pensamiento-computacional-en-la-escuela-2ed

- edX:
  https://www.edx.org/course/introduction-computer-science-mitx-6-00-1x-6
  https://www.edx.org/course/introduction-computer-science-harvardx-cs50x

- coursera
  https://www.coursera.org/learn/a-programar
  https://www.coursera.org/course/cs101

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2. EVALUATING WEB PAGES

Not all web pages are reliable, and it's important to be able to evaluate the quality of a web.
We are going to use an simple adaptation of REAL methodology, by Alan November

In two students group (divide the group in pairs):
- Choose one of the courses from your googledoc shared list.
- Apply REAL methodology
- Send the document to your teacher by moodle

FINAL RESULT OF SECOND STEEP.
The evaluation REAL document sent to your teacher by every pair of students. Every base group have to send two documents at least.

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REAL Method
(adapted from http://www.eduteka.org/modulos/1/162/931/1)

Web evaluated:	Yes	No
R: Read the URL		
1. Do you recognize the main page?	🟩	
2. Can you trust the extension? (.*com*, .*org*, .*net*...have no filter. .*edu* are universities)	🟩	
3. Is it a personal web? (it contains ~ or %, or is a personal blog)	🟧	
E: Examine the content		
4. It contains useful information?	🟩	🟧
5. Is information actualized?	🟩	🟧
6. Do they have comertial, ideological or any other particular interest?	🟧	🟩
A: Ask about the autor and publisher		
7. Do you know who is the author or responsible for the information?	🟩	🟧
8. Is there a way to contact ot information about it?	🟩	
L: Look at the links		
9. Are they actualized and they work?	🟩	🟧
10. Are they trustful (they don't change the initial URL and they belong to trustfull webs)	🟩	🟧

Mark the right conclusion:

Your course is in a web

☐ Totally reliable (no orange answers market, some green answers market)

☐ Quite reliable (two orange answers maximum, some green answers market)

☐ Not very reliable (more than two orange answers). Better try another.

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3. TRYING TUTORIALS

Time to try a tutorial by yourselves

- In one or two students group (you can decide):
- Choose the reliable tutorial you feel more curios about.
- Try to follow it for half hour at least, during the complete hour if you can.
- After half an hour, you can change the tutorial if the one you have tried is too hard
- For every tutorial you test, you have to collect all the information in the "Information to collect" box in an individual document. Send it to your teacher via moodle task

FINAL RESULT OF THIRD STEP.
The information collected by every student. It's an individual document uploaded in moodle

Information to collect

For every tutorial you try, you have to evaluate, in a scale from 0 to 10, the level of:

- Language difficulty: Is the English used complicated? Are you able to understand it?
- Coding difficult: Are explanations clear, have you understood what you where supposed to learn?
- Initial technical difficulty. Before you begin to code, do you need to install any program, or register in some web?
- Amusement: Is the tutorial funny or entertaining?

Finally decide, in a scale from 0 to 10... would you recommend this tutorial to your classmates? Would you like to finish it?

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4. ORAL EXPOSITION

Now you have to explain your conclusions to all the class.

In the original group of 4 students, you have to prepare an oral exposition:

- Of about 6 minutes for every group

- With a visual presentation (1 slide for every tested tutorial)

For every tutorial, you have to:

- Describe the main characteristics of the tutorial:URL, organization providing the tutorial, coding language, working time).

- Describe the technical requirements: Do you need to install some program, or do you need internet?.

- Give your recommendation about the tutorial, according to the information you have

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Assessment

NAME: ....

Evaluate the work of your group with this rubric for all the four members of your team (some grades may differ between different students)

List of courses	All the team participants have collaborated with 3 courses at least. Courses are completely described (link, language, level and extension)	Not all team participants wrote three courses, or some courses are not completely described (Not both at the same time)	Not all participants propose courses, and some of them are not correctly described	Google doc created and shared, but no information inside
Web evaluation	All web evaluation items completed and reasoned conclusion.	All web evaluation items completed but conclusion too short.	Some items not evaluated without explanation or conclusion missing.	Conclusion missing and some items not completed.
Course done	The team of two have worked well on tutorials for one hour and have collected all the information asked.	The team of two have worked well on tutorials for one hour but some part of the information is missing.	Concentration during working time working has not been maintained during the hour, but information is collected	Concentration during working time working has not been maintained during the hour and information is not collected.
Oral presentation	Complete content. Explanation learned (no reading). Clear way of explaining. Complete and clear slide.	One of the previous items fails.	Two of the previous items fail	Three of the previous items fail.

Students name				You:
List of courses				
Web evaluation				
Course				
Presentation				

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Checklist

Think about what you have learned in this project, ans answer the questions:

1. What have you done right in this project?
2. What can you improve?

Here you have the list with the objectives of this activity. Do you think you have achieved them?

Mark the right column:

- **A:** Great!!: I've totally achieved the objective
- **B:** I may improve: I've partially achieved this objective.
- **C:** Failed: I haven't achieved this objective

	A	B	C
Understand the significance of coding in our society			
Learn to use the basic structures of coding (sequences, loops and ifs) to write a short program			
Look for information (coding courses in this case) in a limited list of webs			
Evaluate the reliability of a web.			
Follow autonomously one simple course attainable to your level of coding			
Evaluate the quality of the courses you have found			
Integrate the information you have found in a recommendation and an oral presentation			
Assess and evaluate your work and your classmates work.			