

SCENARIO

Title	LETTER AND MOVEMENT	
Summary	This exercise is about learning basics on Block Programming with Mbot. During this exercise student will add letter to screen, Each letter have different movements assigned each time user makes click over they. Rotation, Scale, ...	
Author/s	AIJU	

DIDACTIC OBJECTIVES

- Teach basics of coding by block
- Learning about BLOCK CODING, rotation, movement, scales.

Physics Mathematics Information Technology Robotics Programming

Education Level: 10-12 years 12-14 years

PROBLEM STATEMENT

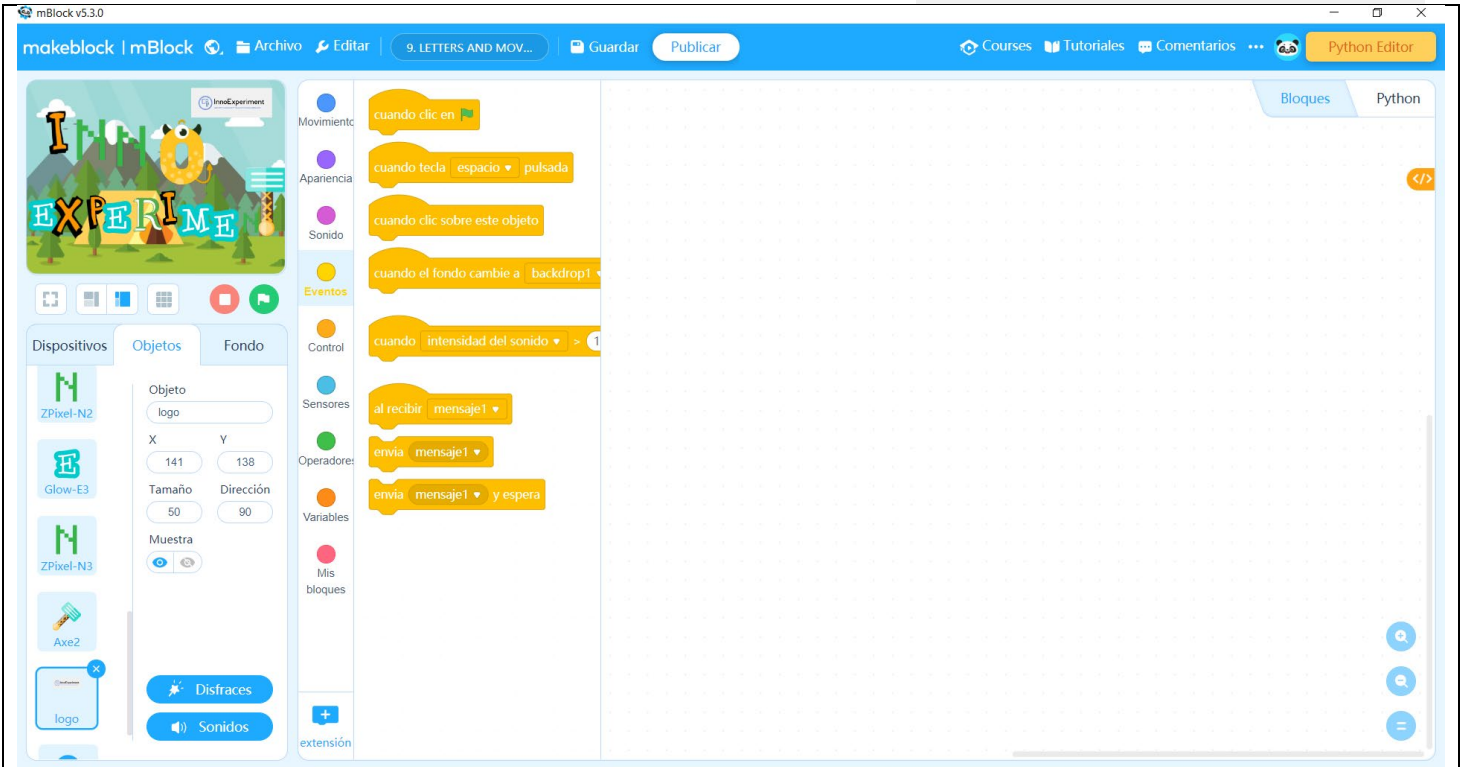
Begin to teach programming to students through simple block language and image assignment. In a simple way, students begin to understand concepts such as variables, assignments, conditionals.

BOM (Bill Of Materials needed)

- MBOT software 5.3.0v
- Assets from MBOT software

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ACTIVITY DESCRIPTION

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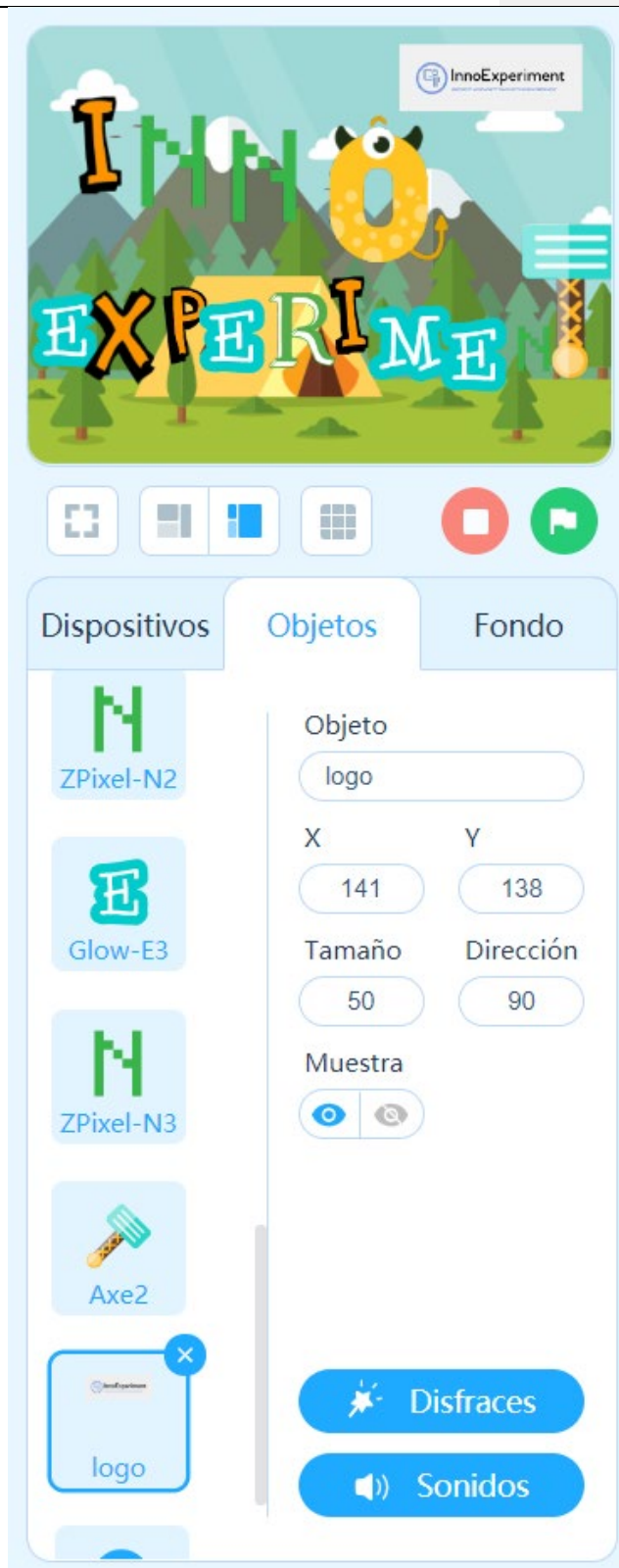
For the development of the activity, we will use software that allows us to unify the game developed in Scratch with the use of the Arduino board. In this case, we have used the mBlock software: (<https://mblock.makeblock.com/en-us/>)

First of all, we will make the graphic composition of the activity:

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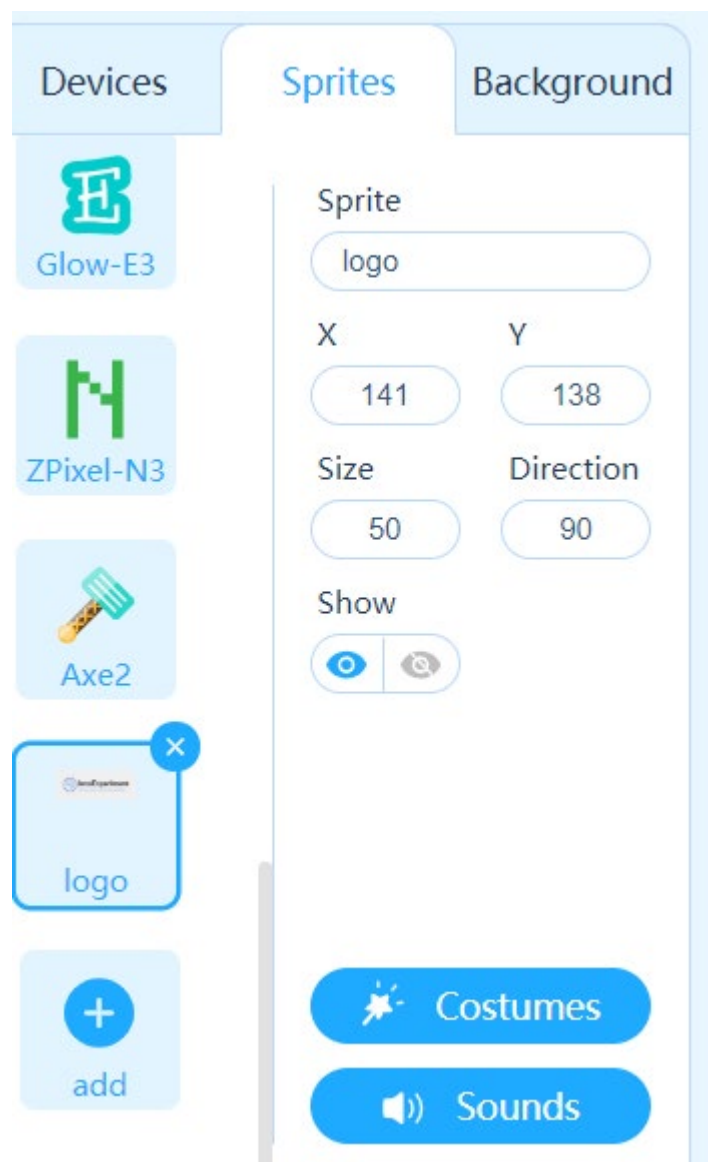
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Using ADD button from SPRITE folder:



Students need to find all letters of INNOEXPERIMENT.



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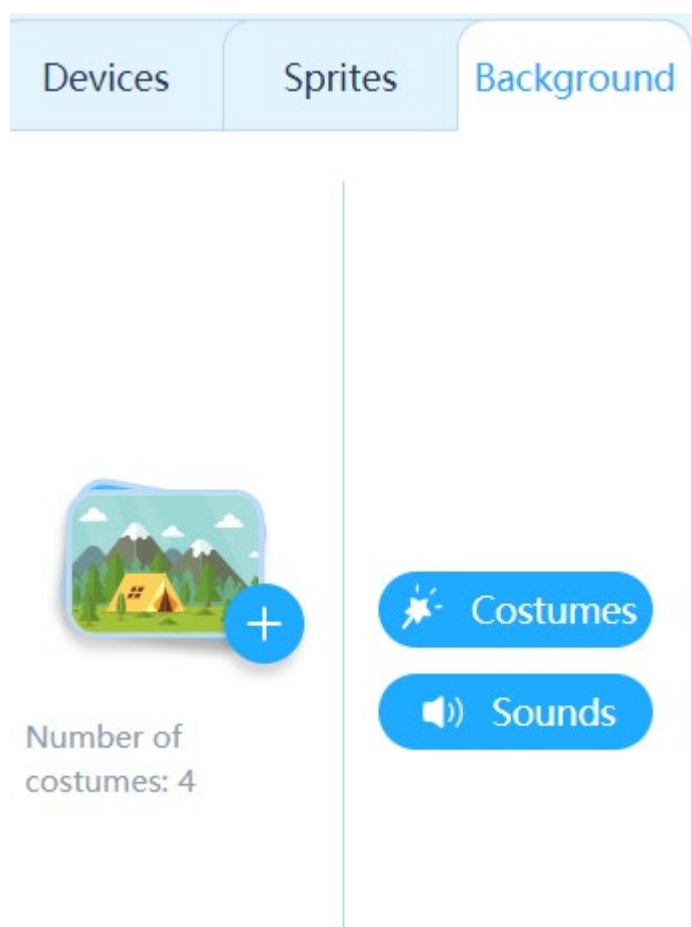
R

Story-R

I

Block-I

We need to add also different backgrounds on costumes, checking in Background folder:



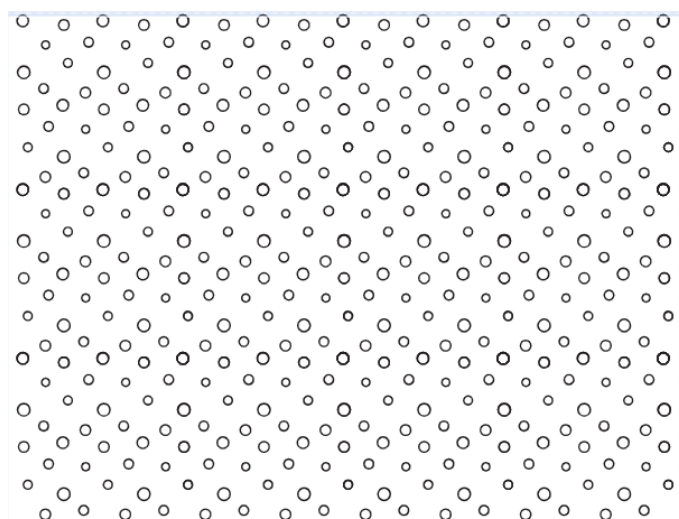
Checking in “+” you can find this backgrounds:

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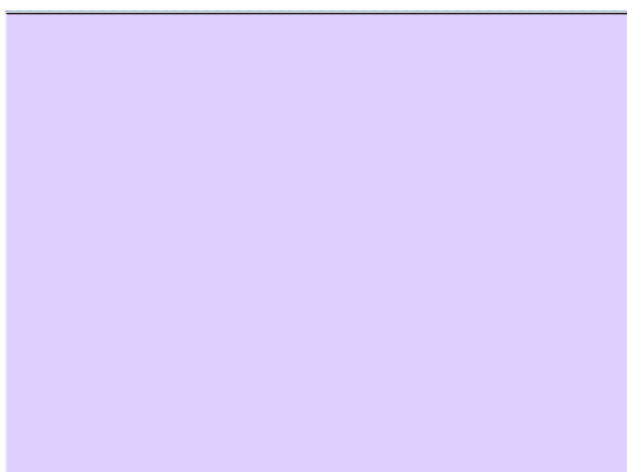
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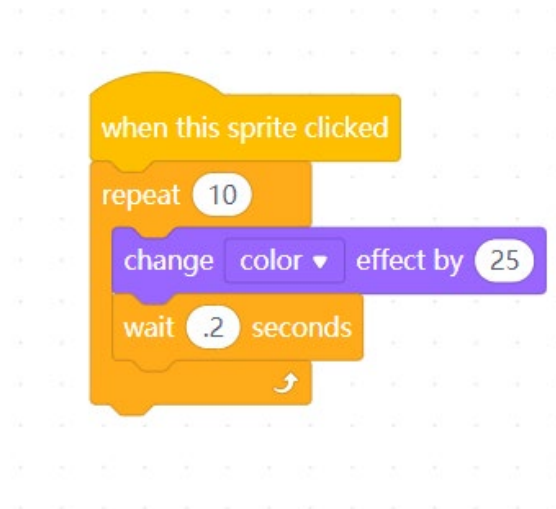
And create one just painting in Pink



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Once we have the graphic composition and the variables created, we will start with the programming adding functionalities at each type of Letter:

1) Letter E – changing colors



2) Letter I – changing scale



3) Letter O -

```
when this sprite clicked
repeat (3)
  wait (0.1) seconds
  switch costume to Animal numbers-1
  wait (0.1) seconds
  switch costume to Animal numbers-2
  wait (0.1) seconds
  switch costume to Animal numbers-3
  wait (0.1) seconds
  switch costume to Animal numbers-4
  wait (0.1) seconds
  switch costume to Animal numbers-5
  wait (0.1) seconds
  switch costume to Animal numbers-6
  wait (0.1) seconds
  switch costume to Animal numbers-7
  wait (0.1) seconds
  switch costume to Animal numbers-8
  wait (0.1) seconds
  switch costume to Animal numbers-9
  wait (0.1) seconds
  switch costume to Animal numbers-0
```

4) Letter N – Changing Background

```
when this sprite clicked
switch backdrop to next backdrop
```

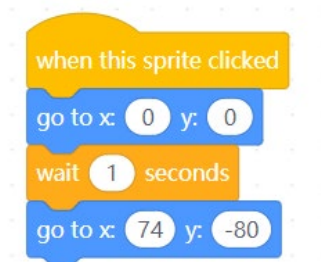
5) Letter X – Playing sounds



6) Letter P – Scaling Out



7) Letter M – Translation to 0,0



Letter T – Complete rotation

```
when this sprite clicked
  turn 45 degrees
  wait 0.2 seconds
  turn 45 degrees
  wait 0.2 seconds
  turn 45 degrees
  wait 0.2 seconds
  turn 45 degrees
  wait 0.2 seconds
  turn 45 degrees
  wait 0.2 seconds
  turn 45 degrees
  wait 0.2 seconds
  turn 45 degrees
  wait 0.2 seconds
  turn 45 degrees
  wait 0.2 seconds
```

STUDENTS' EVALUATION

The way to evaluate the students would be for them to demonstrate on paper how they have developed the exercise and to use the program / game to check the solutions.

SCALABILITY

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Regarding the concept of scalability, the complexity could be increased by adding problems that need more letters and functionalities

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