

Qoopers series course

Section 7

《Little Guardian B》

Curriculum objectives

Knowledge and skill

1. Learn about the usage of double lamps of mainboard, and learn further about the usage of matrix screen;
2. Complete the procedure task that Little Guardian get into cavern to explore;

Process and methods

1. Exercise students' ability of thinking problem and solving problem by task analysing;

Emotional attitude and values

1. Train students' attitude for exploring positively and living optimistically in lessons.



The entrance of cavern that have energy fluctuation only allow Little Guardian to get in, it adds level of difficult of detection task, because not only we don't know the condition in cavern, but also it is dark in cavern.



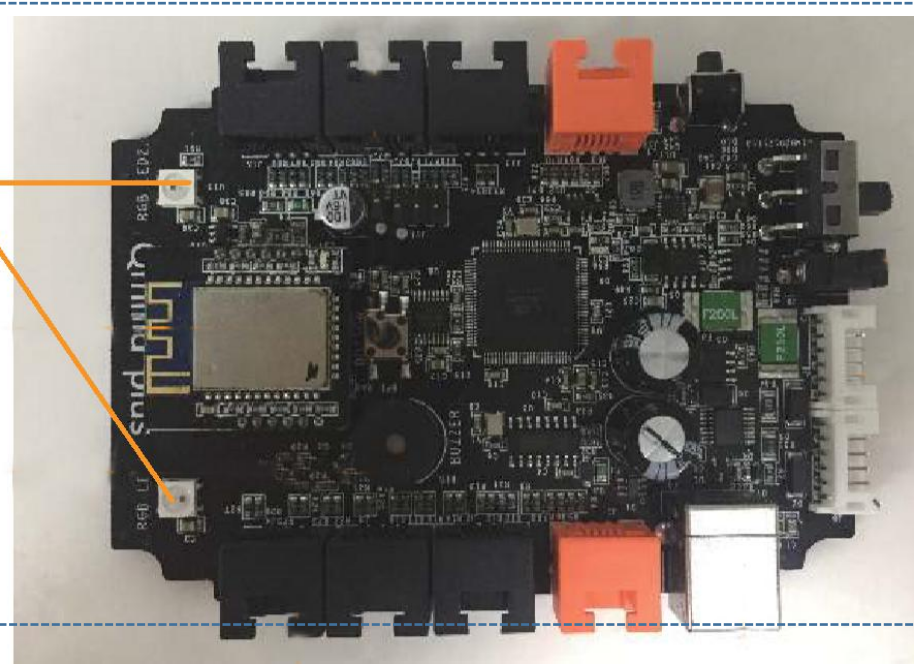
Facing dark environment, searchlight, which has lighting function, reveals so important.

Qoopers, which covered all functions, also have light device to reply tasks in different environment.


It installed RGB light on left and right of mainboard of Qoopers' members.

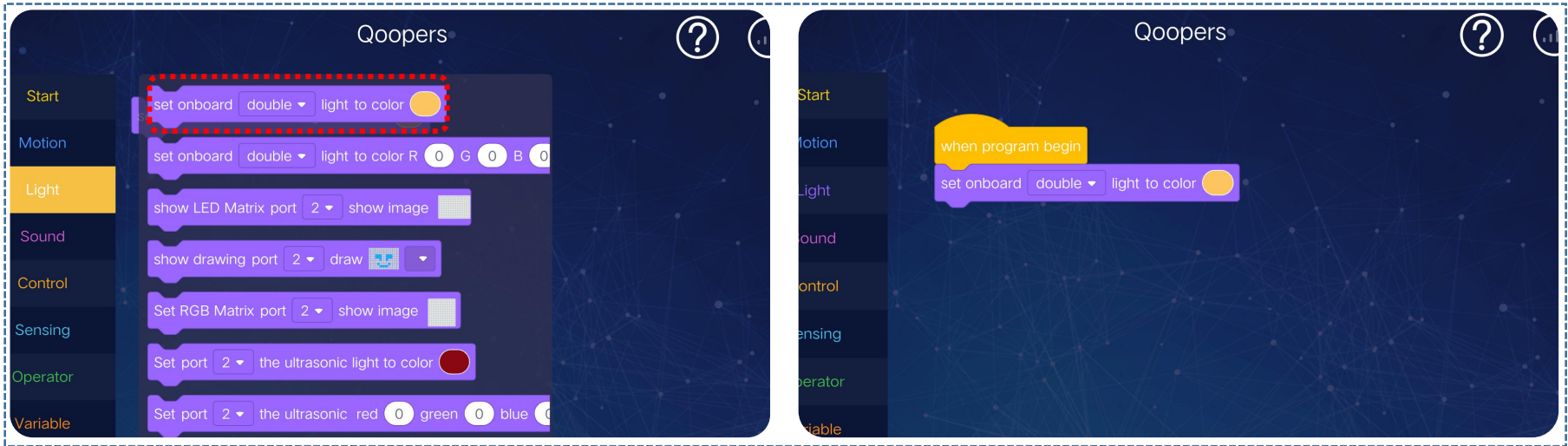
It can send clear and bright-coloured colourful light with mixed by RGB and LED's red, green, blue light. When there is signal get in, RGB and LED light board will light needed coloured light on the basis of command.

RGB light



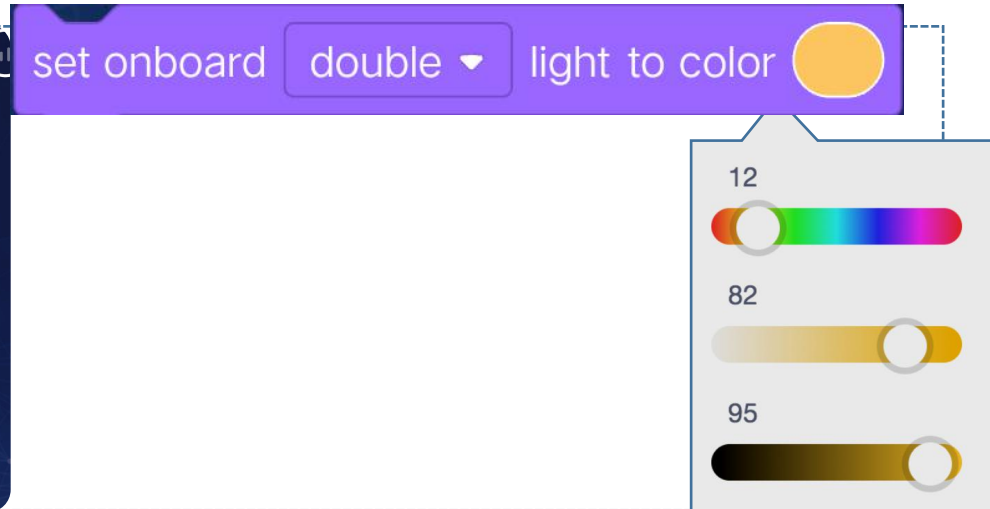
Knowledge explanation

In programming area, choose [set onboard double light to color ], which is in the light module. drag it into programming area, and set color of RGB light.



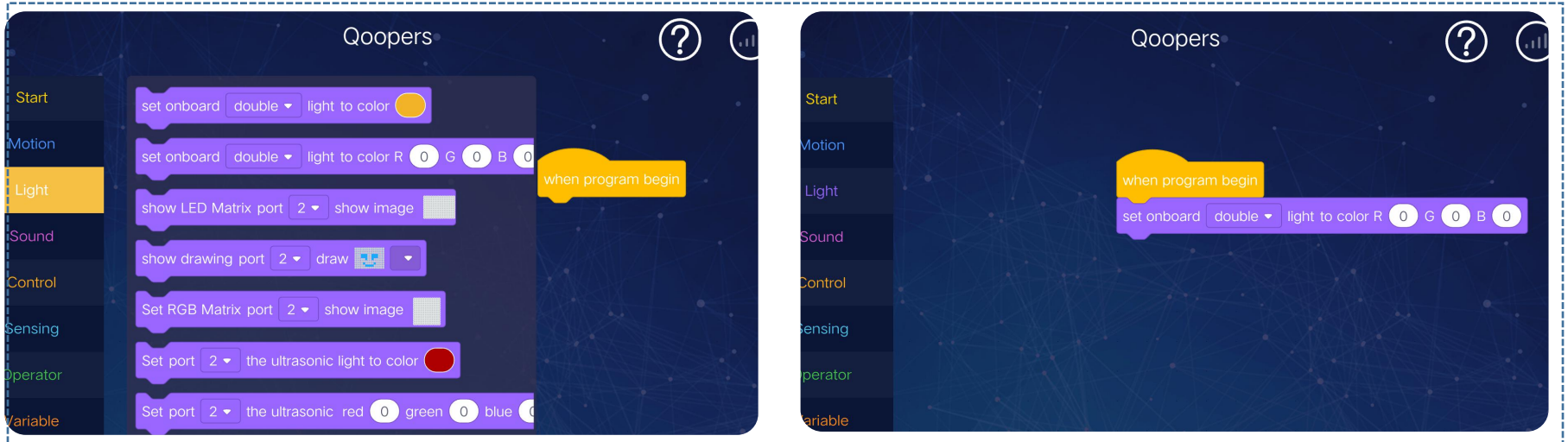
Knowledge explanation

Connect **set onboard** **double** **light to color** and icon of “when program begin”, then you can set which lamp light and the color of double lamp, left lamp, right lamp of mainboard RGB lamp.



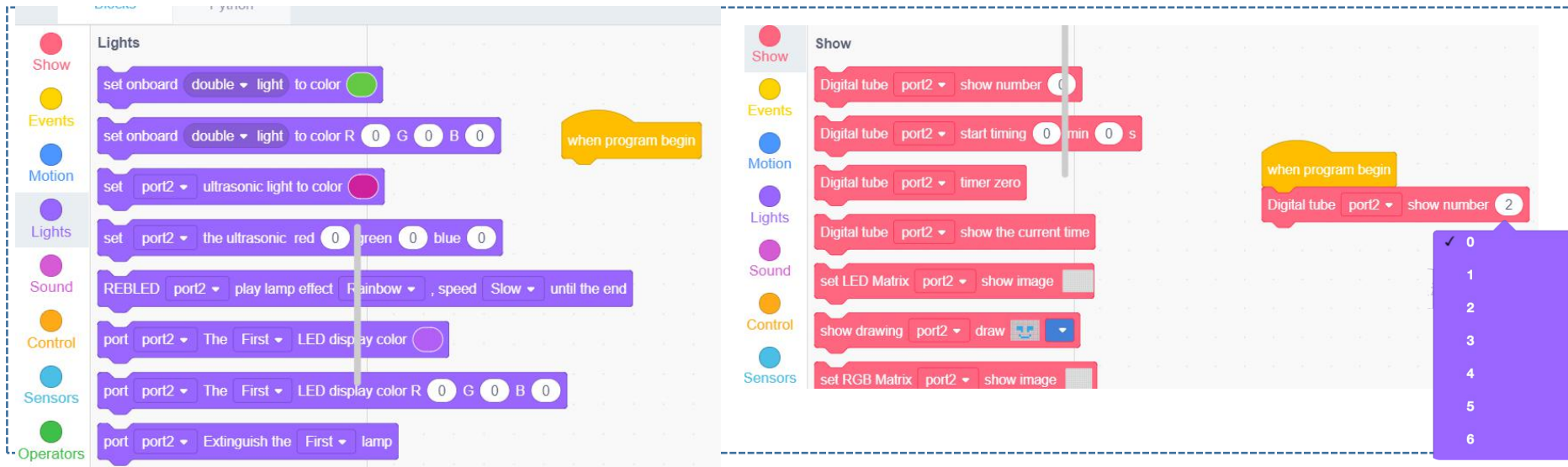
Knowledge explanation

The light color can be setted by inputting red, green, blue, the number among 0-255, because main control board RGB and LED light are mixed by red, green, blue.



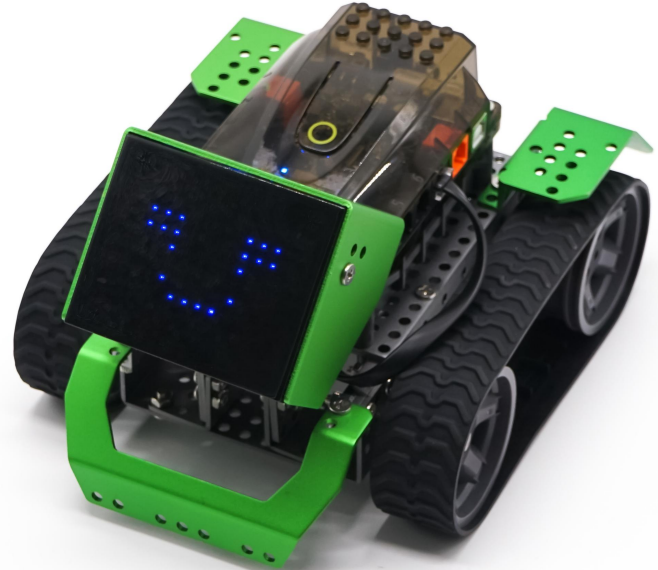
Knowledge explanation

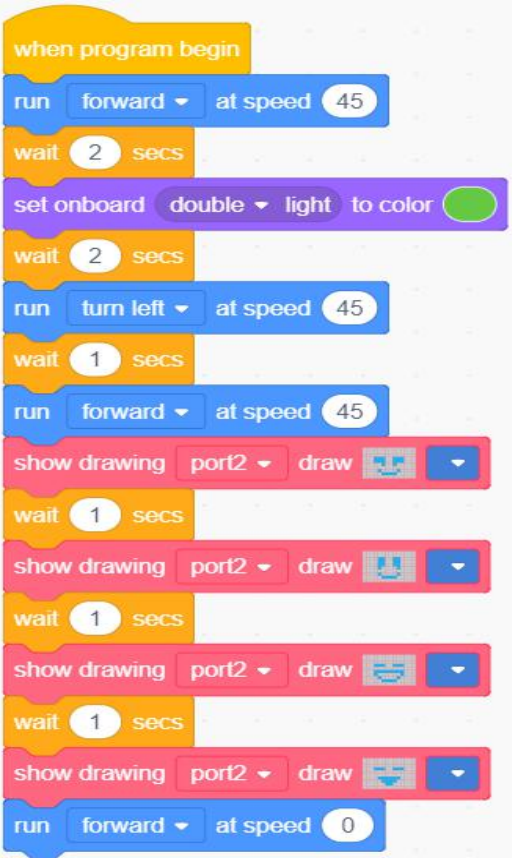
We learned matrix screen expression display at before lessons, actually, matrix screen also can reveal figures, letters, and symbols etc. except expression.



The image displays two Scratch scripts side-by-side. The left script, titled 'Lights', is located in the 'Lights' category and contains the following blocks: 'when program begin' (highlighted in yellow), 'set onboard double light to color green', 'set onboard double light to color R 0 G 0 B 0', 'set port2 ultrasonic light to color red', 'set port2 the ultrasonic red 0 green 0 blue 0', 'REBLED port2 play lamp effect Rainbow, speed Slow until the end', 'port port2 The First LED display color', 'port port2 The First LED display color R 0 G 0 B 0', and 'port port2 Extinguish the First lamp'. The right script, titled 'Show', is located in the 'Show' category and contains: 'when program begin' (highlighted in yellow), 'Digital tube port2 show number 0', 'Digital tube port2 start timing 0 min 0 s', 'Digital tube port2 timer zero', 'Digital tube port2 show the current time', 'set LED Matrix port2 show image', 'show drawing port2 draw [smiley face]', and 'set RGB Matrix port2 show image'. A dropdown menu is open on the right side of the 'Show' script, showing a list of numbers from 0 to 6, with '0' selected and marked with a checkmark.

Task requirements: Little Guardian need to light double lamps after get into cavern for lighting; After finishing detection task, turning and returning, then matrix screen count down from 3 to 1.





```
when program begin
  run forward at speed 45
  wait 2 secs
  set onboard double light to color green
  wait 2 secs
  run turn left at speed 45
  wait 1 secs
  run forward at speed 45
  show drawing port2 draw [cave icon]
  wait 1 secs
  show drawing port2 draw [cave icon]
  wait 1 secs
  show drawing port2 draw [cave icon]
  wait 1 secs
  show drawing port2 draw [cave icon]
  run forward at speed 0
```

The code block is a vertical sequence of Scratch-style blocks. It starts with a yellow 'when program begin' block. This is followed by a blue 'run forward at speed 45' block, an orange 'wait 2 secs' block, a purple 'set onboard double light to color green' block, another orange 'wait 2 secs' block, a blue 'run turn left at speed 45' block, an orange 'wait 1 secs' block, a blue 'run forward at speed 45' block, a pink 'show drawing port2 draw [cave icon]' block, an orange 'wait 1 secs' block, another pink 'show drawing port2 draw [cave icon]' block, an orange 'wait 1 secs' block, a third pink 'show drawing port2 draw [cave icon]' block, an orange 'wait 1 secs' block, a fourth pink 'show drawing port2 draw [cave icon]' block, and finally a blue 'run forward at speed 0' block.

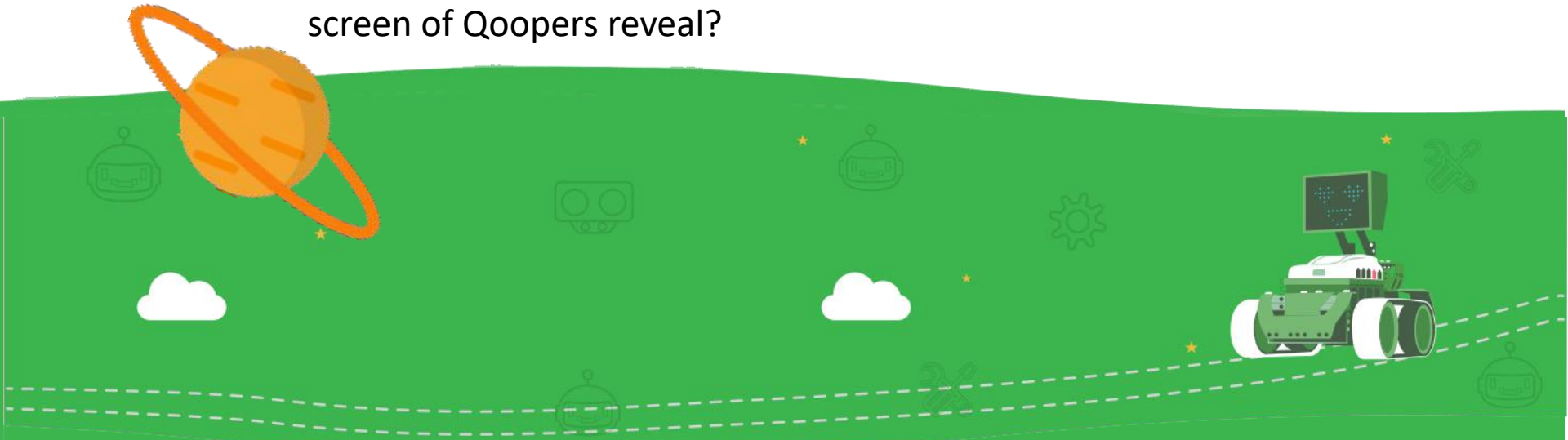
According to reference procedure, debugging speed and motion time of electrical machinery, let Little Guardian search information safely and return to outside of cavern.

Using remote control mode, control Little Guardian to get into cavern for detecting.



1. How many methods can be set in the programming of RGB double lamps' color of main control board?

2. Talk about how many kinds of pattern are matrix screen of Qoopers reveal?



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