



# rosy

Teacher's guide

génélab.

# Introduction

Digital culture plays a key role in today's world. Understanding and taming it is becoming essential for educational environments. As part of the monumental task facing today's teachers, a turnkey tool where students are autonomous in their learning is more than welcome. That's why we created Rosy.

The course combines the development of digital skills such as computer thinking and programming for an intermediate level, with the exploration of concepts such as light, tardigrades, infrared, electromagnetic waves, solar sensors and satellites.

In short, a completely autonomous cross-curricular course for Cycle 2 students.

The following document is designed to give you a section-by-section overview of the kit. It includes: themes covered, knowledge related to the learning area and additional resources.

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Responsible for special education

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## Bibliography

# Installation

## Individual path

- Each student has a Rosy kit and access to a computer connected to the Internet. Each kit has a unique access code, enabling students to progress at their own pace. Progress will be maintained.



# Section 1

1. Educational planning
2. Challenge 1: corrected



# Section 1: TARDIGRADES

**Grades:** 1st and 2nd secondary

## Topics

- Tardigrades
- History of science and technology: the tardigrade
- The micro:bit

**Training area:** Science and technology

- Technological universe - electrical engineering
- Earth and space: astronomical phenomena

## Digital development continuum

- Develop and mobilize technological skills
  - Thinking and computer programming, intermediate level
- Exploiting the potential of digital technology for learning
  - Intermediate skills development

## How section 1 works

1. Rosy Part 1
2. Tardigrades
3. Dormant tardigrades
4. Scientific history of tardigrades
5. Quiz 1
6. First steps with the micro:bit

## Digital resources

- <https://www.genielab.co>
- <https://makecode.microbit.org/>
- <https://lemagdesanimaux.ouest-france.fr/dossier-1046-tardigrade.html>
- <https://www.nationalgeographic.fr/sciences/cet-animal-pourrait-resister-tout-meme-lapocalypse>

# Challenge 1: corrected

The image shows a Scratch script with the following blocks:

- au démarrage** (when green flag clicked):
  - afficher texte** (show text) with the text "Rosy!"
- toujours** (forever loop):
  - si geste secouer est actif alors** (if shaken gesture is active then):
    - montrer LEDs** (show LEDs) with a 5x5 grid where the top-left, top-middle, and middle-middle LEDs are lit.
    - pause (ms)** (wait) with the value 200.
  - sinon si geste incliner à droite est actif alors** (otherwise if tilted right gesture is active then):
    - montrer LEDs** (show LEDs) with a 5x5 grid where the top-right, middle-right, and bottom-right LEDs are lit.
    - pause (ms)** (wait) with the value 200.
  - sinon si bouton A est pressé alors** (otherwise if button A is pressed then):
    - montrer l'icône** (show icon) with the icon of a 3x3 grid.
  - sinon** (otherwise):
    - montrer l'icône** (show icon) with the icon of a 3x3 grid.

# Section 2

## 1. Educational planning





# Section 2: THE LIGHT

**School level:** Secondary cycle 1 and 2

## Themes

- Tardigrades
- Early astronomy
- The light
- Waves
- The electromagnetic spectrum

**Training area:** Science and technology

- Material universe - waves
- Technological universe - electrical engineering
- Earth and space: astronomical phenomena

## Digital development continuum

- Develop and mobilize technological skills
  - Thinking and computer programming, intermediate level
- Exploiting the potential of digital technology for learning
  - Intermediate skills development

## How section 1 works

1. Rosy Part 1
2. Tardigrades
3. Dormant tardigrades
4. Scientific history of tardigrades
5. Quiz 1
6. First steps with the micro:bit

## Digital resources

- <https://www.genielab.co>
- <https://makecode.microbit.org/>
- [L'histoire cachée des étoiles](#)

# Section 3

1. Educational planning
2. Activity 1: corrected



# Section 3: THE INFRARED

**School level:** Secondary cycle 1 and 2

## Themes

- Infrared rays
- History of science and technology:: Light

**Training area:** Science and technology

- Material universe - waves
- Technological universe - electrical engineering
- Earth and space: astronomical phenomena

## Digital development continuum

- Develop and mobilize technological skills
  - Thinking and computer programming, intermediate level
- Exploiting the potential of digital technology for learning
  - Intermediate skills development

## How section 1 works

1. Rosy Part 3
2. Observing the invisible
3. The infrared challenge
4. A little history
5. Quiz 3
6. Activity 1

## Digital resources

- <https://www.genielab.co>
- <https://makecode.microbit.org/>

# Activity 1: Answer key

## Creation of an infrared sensor using a micro:bit.

Tip: It would be interesting to test different materials between the heat source and the collector.

The image shows a Scratch script for a micro:bit project. The script starts with an 'au démarrage' (when started) block, followed by a 'toujours' (forever) loop. Inside the loop, the first block is 'définir' (set) 'à projeter' (to project) 'mesure temperature' (temperature measurement) 'Object' (Object) 'de' (of) 'mesure temperature' (temperature measurement) 'Ambient' (Ambient) 'et' (and) '35' (35) 'à' (to) '0' (0) 'et' (and) '50' (50). This is followed by an 'if' block: 'si' (if) 'bouton A' (button A) 'est pressé' (is pressed) 'alors' (then). Inside this 'if' block, there is a 'plot bar graph of' (plot bar graph of) 'source' (source) 'up to' (up to) '50' (50) block with a '+' sign. Below this is a 'sinon' (otherwise) block with a '-' sign. Inside the 'sinon' block, there is another 'if' block: 'si' (if) '1' (1) '<' (less than) 'source' (source) 'alors' (then). Inside this second 'if' block, there is a 'montrer LEDs' (show LEDs) block with a grid of 10x10 LEDs, where the top row is lit. Below this is another 'sinon' (otherwise) block with a '-' sign, containing an 'effacer l'écran' (clear screen) block. Finally, there is a 'pause (ms)' (pause in milliseconds) block with the value '500' (500).

# Section 4

## 1. Educational planning



# Section 4: EXOPLANES

**School level:** Secondary cycle 1 and 2

## Themes

- Exoplanets
- Habitable zones in space

**Training area:** Science and technology

- Technological universe - electrical engineering
- Earth and space: astronomical phenomena

## Digital development continuum

- Develop and mobilize technological skills
  - Thinking and computer programming, intermediate level
- Exploiting the potential of digital technology for learning
  - Intermediate skills development

## How section 4 works

1. Rosy 34th part
2. exoplanets
3. How do I find an exoplanet?
4. Quiz 4

## Digital resources

- <https://www.genielab.co>
- <https://makecode.microbit.org/>

## Literary resources

- Il y a de la vie sur les exoplanètes
- L'humain dans l'espace : entre réel et fiction
- Extraterrestres

# Section 5

1. Educational planning
2. Activity 2: corrected



# Section 5: SOLAR PANELS

**School level:** Secondary cycle 1 and 2

## Themes

- solar panels

**Training area:** Science and technology

- Technological universe - electrical engineering
- Earth and space: astronomical phenomena

## Digital development continuum

- Develop and mobilize technological skills
  - Thinking and computer programming, intermediate level
- Exploiting the potential of digital technology for learning
  - Intermediate skills development

## Sequence of events in section 5

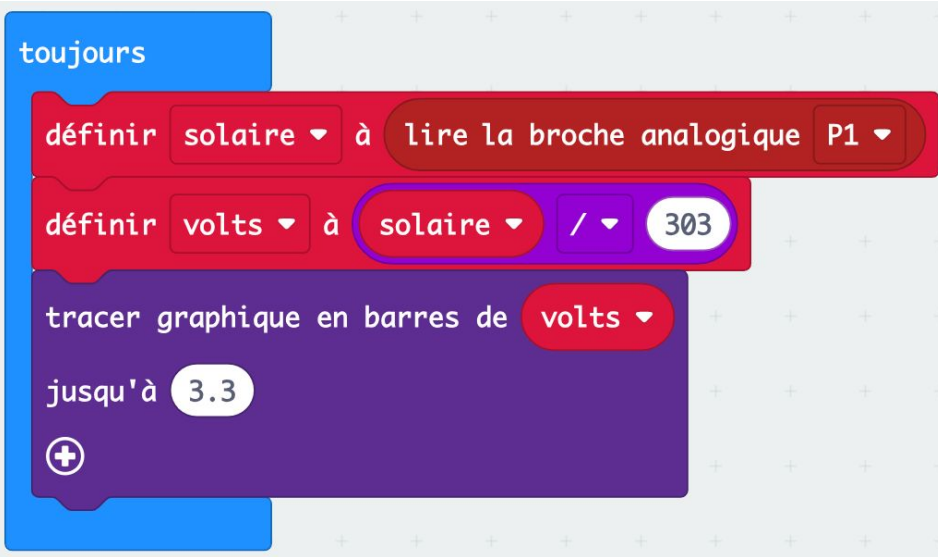
1. Rosy part 4
2. Solar panels part 1
3. Solar panels part 2
4. Quiz 5
5. Activity 2

## Digital resources

- <https://www.genielab.co>
- <https://makecode.microbit.org/>



# Activity 2A: solution



```
toujours
définir solaire à lire la broche analogique P1
définir volts à solaire / 303
tracer graphique en barres de volts
jusqu'à 3.3
```

The image shows a Scratch script on a light gray grid background. It starts with a blue 'toujours' (forever) loop block. Inside the loop, there are three stacked blocks: a red 'définir' (define) block for 'solaire' (solar) to 'lire la broche analogique P1' (read the analog pin P1); a red 'définir' block for 'volts' to 'solaire / 303' (solar divided by 303); and a purple 'tracer graphique en barres de volts' (draw bar graph of volts) block with a 'jusqu'à 3.3' (until 3.3) sub-block. A plus sign icon is visible at the bottom left of the purple block.

Display the electrical voltage emitted by the solar panel.

# Activity 2B: solution

Directs electricity to different systems according to the energy available.

```
au démarrage
  écrire sur la broche P1 la valeur 1

toujours
  définir Solaire à lire la broche analogique P1
  définir Volts à Solaire / 303
  tracer graphique en barres de Volts
  jusqu'à 3.3
  si Volts > 2.1 alors
    écrire sur la broche P8 la valeur 1
    écrire sur la broche P2 la valeur 0
  sinon si Volts ≤ 2.1 et Volts > 1.2 alors
    écrire sur la broche P2 la valeur 1
    écrire sur la broche P8 la valeur 0
  sinon
    écrire sur la broche P8 la valeur 0
    écrire sur la broche P2 la valeur 0
```

The image shows a Scratch script with two main sections: 'au démarrage' (at startup) and 'toujours' (forever loop). The 'au démarrage' section contains a single block: 'écrire sur la broche P1 la valeur 1'. The 'toujours' section contains several blocks: 'définir Solaire à lire la broche analogique P1', 'définir Volts à Solaire / 303', 'tracer graphique en barres de Volts' (with a 'jusqu'à 3.3' block), and a conditional logic structure. The conditional logic starts with a 'si' block: 'si Volts > 2.1 alors'. This block contains two 'écrire sur la broche' blocks: 'écrire sur la broche P8 la valeur 1' and 'écrire sur la broche P2 la valeur 0'. Below this is a 'sinon si' block: 'sinon si Volts ≤ 2.1 et Volts > 1.2 alors'. This block contains two 'écrire sur la broche' blocks: 'écrire sur la broche P2 la valeur 1' and 'écrire sur la broche P8 la valeur 0'. Finally, there is a 'sinon' block containing two 'écrire sur la broche' blocks: 'écrire sur la broche P8 la valeur 0' and 'écrire sur la broche P2 la valeur 0'. The script ends with a '+' sign in a teal bar.

# Section 6

## 1. Educational planning



# Section 6: SATELLITES

**School level:** Secondary cycle 1 and 2

## Themes

- les satellites

**Domaine de formation:** Science et technologie

- Univers technologique - ingénierie électrique
- Terre et espace: phénomènes astronomiques

## Digital development continuum

- Develop and mobilize technological skills
  - Thinking and computer programming, intermediate level
- Exploiting the potential of digital technology for learning
  - Intermediate skills development

## Sequence of events in section 5

1. Rosy part 5
2. Satellites part 1
3. Satellites part 2
4. Quiz 6
5. Rosy part 6
6. Activity 3
7. Rosy part 7

## Digital resources

- <https://www.genielab.co>
- <https://makecode.microbit.org/>

# Group activity 3: code completed

The image shows a Scratch code editor with the following blocks:

- au démarrage** (when started):
  - radio définir groupe 3
- toujours** (forever loop):
  - définir solaire à lire la broche analogique P1
  - définir volts à solaire / 303
  - si volts > 2 alors:
    - envoyer la chaîne "Soleil" par radio
    - pause (ms) 100
- lorsque le bouton A est pressé** (when button A pressed):
  - envoyer la chaîne "Message 1" par radio
- lorsque le bouton B est pressé** (when button B pressed):
  - envoyer la chaîne "Message 2" par radio
- quand une donnée est reçue par radio** (when data received by radio):
  - si receivedString = "Soleil" alors:
    - montrer LEDs (grid of 5x5 LEDs)
  - sinon:
    - afficher texte receivedString

Sends messages by radio and turns the micro:bit into a weather station.

# Activity 3 solo: code completed

```
au démarrage
  appel TrouverUneEtoile

fonction TrouverUneEtoile
  définir coord_x à choisir au hasard de -1023 à 1023
  définir coord_y à choisir au hasard de -1023 à 1023

  toujours
    série écrire ligne "Nouvelle lecture"
    série écrire valeur "x = " + accélération (mg) x
    si accélération (mg) x > coord_x - 200 et accélération (mg) x < coord_x + 200 alors
      définir étoile_x à vrai
    sinon
      définir étoile_x à faux
    série écrire valeur "y = " + accélération (mg) y
    si accélération (mg) y > coord_y - 200 et accélération (mg) y < coord_y + 200 alors
      définir étoile_y à vrai
    sinon
      définir étoile_y à faux
    si étoile_x == vrai et étoile_y == vrai alors
      concaténation
        "Étoile trouvée !"
        "x : "
        accélération (mg) x
        ", y : "
        accélération (mg) y
      série écrire ligne
      pause (ms) 5000
      appel TrouverUneEtoile
    pause (ms) 100
```

Agility game where you have to find the right angle to tilt the micro:bit to simulate the inclination of a satellite's antenna or solar panels.

# Bibliography

- <https://www.sciencesetavenir.fr/espace/vie-extraterrestre>
- <https://www.ontarioparks.com/parcsblog/lhistoire-cachee-des-etoiles-un-coeur-rempli-de-fierte/>
- <https://www.alloprof.qc.ca/fr/eleves/bv/histoire/conquete-de-l-espace-h1125>
- <https://ici.exploratv.ca/blogue/apollo-11-50-archives-nasa-evenements-marquants-espace/>
- <https://www.asc-csa.gc.ca/fra/astronomie/fiches-information/etoiles.asp>
- <https://espacepurlavie.ca/les-exoplanetes>
- <https://www.lefigaro.fr/sciences/les-projets-fous-du-solaire-spatial-20211026>
- <https://www.thecanadianencyclopedia.ca/satellite-communication>
- <https://lemagdesanimaux.ouest-france.fr/dossier-1046-tardigrade.html>

# End

You have completed the activity.

**Congratulations!**







**génélab.**

DRIVING DIGITAL CREATION