

YEAR 7

Interactive diorama

B

Systems help organise resources to reduce risk.

Key: Systems
Related: Resources
Context: Scientific and Technical Innovation
Technologies: ESP32, Microblocks w motors, servos, neopixels, buttons, IR etc.
Materials: Card, pine, possible laser cutting or 3D printing

Use the provided **resources** to create a complete self-enclosed **system** in the form of an **interactive diorama** on a theme of interest to the student. Use a combination of electronics and mechanics, block programming and graphic design principles.



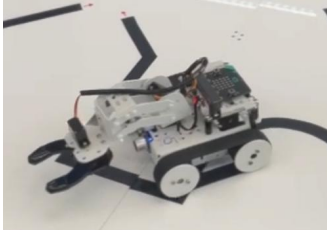
Intelligent robots

C

Identity can be enhanced by functional community projects

Key: Communities
Related: Function
Context: Identities and relationships (Social development, health, wellbeing and lifestyle choices)
Tech: Qtruck, Microbit, Makecode.

How can **functional** robots contribute to the **community**? Solve the challenges involved with programming functional robots to perform useful tasks. Culminate in conquering the robotic obstacle course.



YEAR 8

Tamagotchi keychain

A

Designers enhance the form of a product to meet the needs of communities

Key: Communities
Related: Form
Context: Identities and relationships (adaptation, form)
Tech: Shaper3D, ESP32, LCD, Wifi / BLE, MicroPython

Using the **form** of a wearable or a keychain for your school bag, create a **community** of interactive STC **Tamagotchis**. Use wifi / BLE to meet/socialise with other Tamagotchis nearby to earn life points. Design and 3D print your protective case to your own style and needs.



IoT lamps

C

Functional products can be developed and adapted using components.

Key: Development
Related: Form
Context: Scientific and technical innovation (adaption, ingenuity, progress)
Tech: ESP32, MicroPython, Neopixels, Wifi

Using the **form** provided by your Fo Tan Factor lamp, **develop** an **Internet of Things** controlled lamp that you can use your phone to can on / off, set a visual alarm, design pre-programmed colour sequences with the Neopixels.



YEAR 9

Smart plant pots 1

A B

The development of sustainable systems positively improves the environment.

Key: Systems
Related: Sustainability
Context: Globalisation and sustainability (human impact on the environment)
Tech: Shaper3D

Help promote the **sustainability** of increased greenery at home or in our classrooms, by designing a **system** for an IoT connected **self-watering** pot that nurtures your plant according to it's requirements.



Smart plant pots 2

C D

Social entrepreneurs can innovate and influence communities.

Key: Communities
Related: Innovation
Context: Fairness and development (social entrepreneurs)
Tech: ESP32, MicroPython, Pump, Moisture sensor, Temperature sensor, Wifi, IoT

Use your **social entrepreneurial** skills to construct an **innovative**, smart pot planter to nurture your plants.

