
Micro:bit – Micro Pet

Overview:

This project can be done individually or with a partner. Students create their own micro:pet or create one for a partner that they have interviewed in an unplugged activity.

If you are making your own micro:pet students create a sketch of what they find appealing in a pet to create a prototype of their ideal pet.

If working with a partner students create interview questions about what their partner feels are good qualities of a pet. They should then use whatever materials are available to create a prototype of a pet their partner would like. Students sketch a few designs on paper first, then consult with their partner to see which aspects of those designs they find most appealing.

The purpose of prototyping is to gather more feedback to help you in your final design (“I like this part from A, and I like this part from idea B...”).

Learning Standards:

Applied Design, Skills and Technologies

- Understanding Context
 - Gathering information about or from potential users.
- Defining
 - Choose a design opportunity
 - Identify the main objective for the design and any constraints
- Ideating
 - Generate potential ideas and add to others' ideas
 - Screen ideas against the objective and constraints
 - Choose an idea to pursue
- Prototyping
 - Outline a general plan, identifying tools and materials
 - Construct a first version of the product, making changes to tools, materials and procedures as needed
- Testing
 - Test the product
 - Make changes and test again, repeating until satisfied with the product
- Making
 - Construct the final product incorporating planned changes
- Sharing
 - Demonstrate their product and describe their process

- Reflect on their design thinking processes, and their ability to work effectively both as individuals and collaboratively in a group, including their ability to share and maintain a co-operative work space
- ☑ Use materials, tools and technologies in a safe manner and with an awareness of the safety of others, in both physical and digital environments.

Communication – Collaborate to plan, carry out and review a common goal and activities

- ☑ I can work with others to achieve a common goal; I do my share.
- ☑ I can take on roles and responsibilities in a group.

Critical Thinking – analyze and critique, and develop and design.

- ☑ I can reflect on and evaluate my thinking, products and actions
- ☑ I can experiment with different ways of doing things
- ☑ I can monitor my progress and adjust my actions to make sure I achieve what I want

Creative Thinking – novelty and value, generating ideas and developing ideas.

- ☑ I build on others' ideas and add new ideas of my own, or combine other people's ideas in new ways to create new things or solve straightforward problems
- ☑ I can usually make my ideas work within the constraints of a given form, problem and materials if I keep playing with them

Prior Knowledge:

The class should have an understanding of:

- ☑ Block coding
- ☑ Downloading projects on PC or iPad
- ☑ Syncing micro:bit to iPad

Materials:

- ☑ Micro-bit kit
- ☑ iPads
- ☑ Assorted materials for making the micro:pet

Lesson:

This lesson is from the microbit.org website.

<https://makecode.microbit.org/courses/csintro/making/project>

Build a micro:pet that:

- Matches what you or your partner find to be good qualities of a pet
- Supports the micro:bit and its battery pack

- Allows you to easily access the micro:bit to turn it on and off

Your design should use whatever materials are available to support the micro:bit so that its face is showing. You can be creative and decide how to mount the board, and how to decorate your critter.

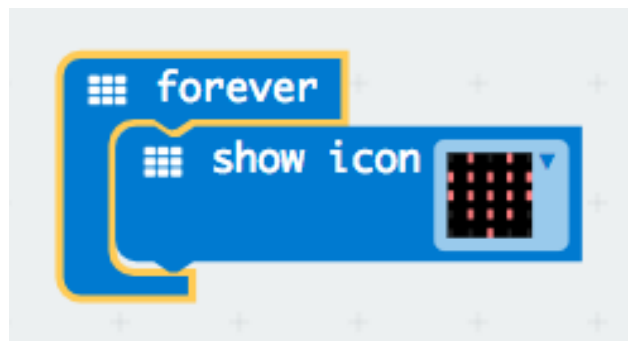
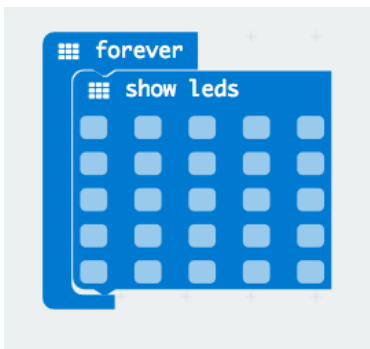
Think about the following questions when you construct it:

- Will it be an animal? A plant? A robot? A bug?
- Will it have any moving parts?
- If it moves, how can you hold the micro:bit securely?

Some photos of sample micro:pets below.



Code the micro:bit to make a face and attach to your pet. A couple of options are for coding are shown below. The first sample is where they can click on the boxes to make their own face and the second is a sample where they can select one from a list that is already created.



Extensions:

- Find a way to make part of the animal move.
- Give your animal a natural habitat.
- Create a way to carry your animal.
- Create an animal that reacts when you pet it or move it (find a way to detect when the micro:bit is moved or when its position changes in a certain way.)

Assessment:

Have students write a reflection addressing the any of the following points:

- Summarize the feedback you got from your partner on your idea. How would you revise your design, if you were to go back and create another version?
- What was it like to have someone designing a pet for you? Was it a pet you would have enjoyed? Why or why not? What advice did you give them that might help them redesign?
- What was it like to interview your partner? What was it like to be listened to?
- What was something that was surprising to you about the process of designing the micro:pet?
- Describe a difficult point in the process of designing the micro:pet, and explain how you resolved it.

For creative projects such as these, we normally don't use a qualitative rubric to grade the creativity or the match with their partner's needs. We just check to make sure that the micro:pet meets the required specifications:

- Program properly downloaded to micro:bit
- micro:bit supported so the face is showing
- micro:bit can be turned on and off without taking critter apart
- Turned in notes on interview process
- Written reflection (prompt is above)