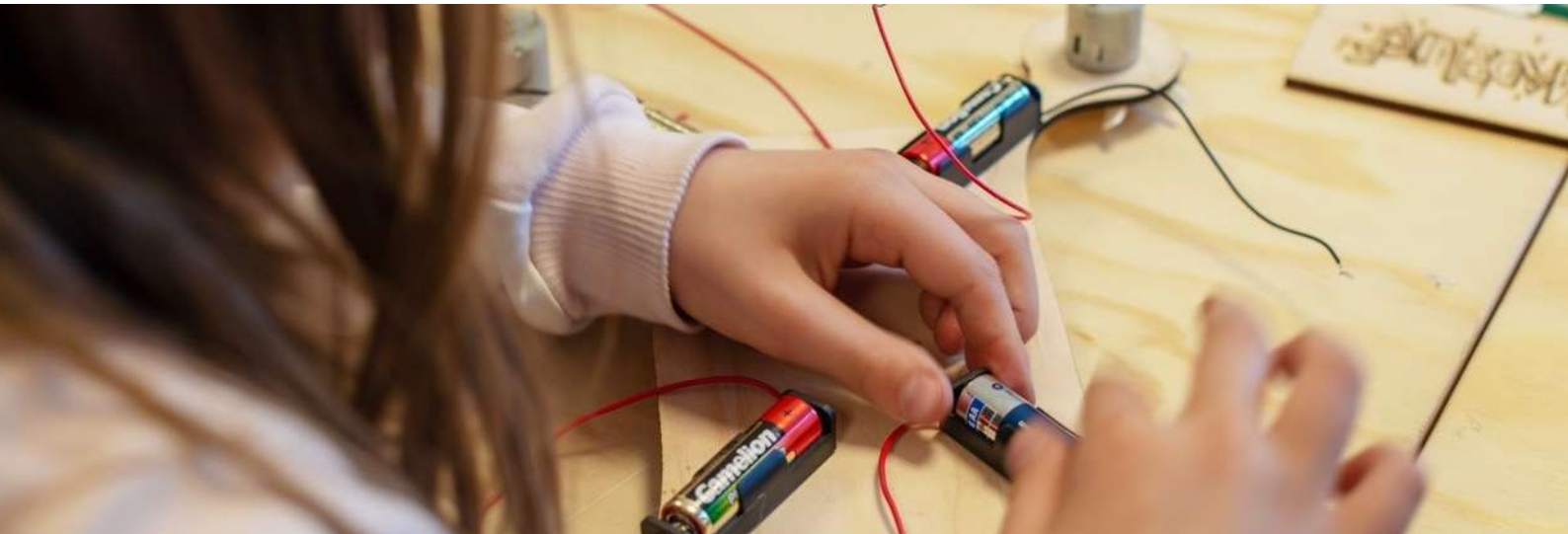




Entrepreneurial skills
for young social innovators
in an open digital world



Workshop Description

Natural robots



This project has received funding from
the European Union's Horizon 2020 research and innovation
programme under grant agreement No 770063



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Natural robots (UC Syd)

In this workshop the children worked on building garbage robots with inspiration from nature. By looking at animals and analyzing their attributes the children build robots that included some of these qualities.



Duration: 4 sessions
Setting: In classrooms
Group size: 36 children
Age: 7-9 year

Day 1

Materials needed:

- Ball
- Musicplayer
- Nets for fishing
- Glasses or buckets
- Computers
- Paper
- Magazines/newspapers
- Scissors
- Pens
- Waste

Welcome and introduction – 15 min.

Aim: Make children feel welcome and at ease in the new situation

Facilitator instructions:

Activity to learn names. Throwing a ball around and saying name, age and hobby when receiving the ball.





Introduction - 15 min

Introduce the topic of the workshop series

Facilitator Instructions:

- Briefly tell what the programme of the workshop series is going to be
- Explain what the rules for the coming days are (agree on a sign for silence and listening, how to work together as teams, when there are breaks ect.)
- Explain what the final objective is (making a prototype for sustainable development)
- Explain how we are going to do this (design, digital fabrication)
- Tell what we will do today

Play exercise – stop dance – 10 min

Aim:

- The children get comfortable with the new facilitators
- Have fun and build trust through laughs
- Spark their courage

Facilitator Instructions:

“Stop dance”.

The kids are supposed to quickly hand over an spoon to each other in a circle and the one who has it when the music stops are out of the game.

Workshop by the river – 60 min.

We take the kids to the river, where they are supposed to catch 2-5 small river animals.

Aim:

- We will use the attributes of the animals they catch as a storyline for the upcoming workshop.

Facilitator instructions:

- Make sure to inform the children to be careful with the animals
- Have buckets or glasses of water to keep the animals in

Instructions:

- The children use small nets to catch the animals
- They should take pictures or draw their animals when studying them
- When they are done the animals should be let out again

Break – 10 min.

Back to the classroom and take a break





Mind map – 50 min

Using the mind-map method the students should explore ideas and notions about how to transport garbage. They should work on identifying different types of waste and how to transport it. Check out the Mindmap tool from DOIT [HERE](#)

Aim:

- Circular thinking
- Corporation
- Co-creation

Facilitator instructions:

- Have different waste materials at hand for the students to explore

Instructions:

- Think of a problem you are trying to solve. Or think of a goal you want to achieve.
- By hand, draw a circle in the middle of a piece of paper.
- Draw about 6 lines extending from the circle. The lines touch the main circle
- In the center of the circle, write the main problem, goal, etc. If you thinking visually and want images or symbols along with the words—include them.
- On each of the 6 extended lines write or draw images of various aspects or issues of the problem or goal you are working on
- You can also have lines that branch out from each line—with words or images about each issue
- Make your map colorful—use at least 3 colors
- Use keywords and write in all upper- or lower-case letters
- Develop your own particular style of mind-mapping. Make it represent YOU!

Wrap-up and clean up – 10 min.

Everyone helps to clean up and store the prototypes safely





Day 2

Materials needed:

Paper
Scissors
Pens
Materials for prototyping (waste, cardboard ect.)
Glueguns
Computers

Welcome - 10 minutes

- Hand out and Talk about the mindmaps from last

Facts about the animals – 30 min.

The children should each make a box with facts about the animals they caught.

Aim:

- Finding the attributes of the animals
- Get inspired (and challenged) by nature

Instructions:

- Use the pictures or drawings to identify the animals
- Use a computer or go to the library to research facts about the animals
- Identify 2-3 attributes you like about your animals

Break – 5 minutes

Brainstorm and blueprint – 30 minutes

Aim:

The children should dream up a transport robot using their knowledge from the mindmap and the animals.

Instructions:

- Get together in groups of 3-5
- Use the mindmaps and factboxes to brainstorm robots for transporting waste using attributes from the animals
- Draw up a blueprint of the ideas and choose one to work further on

Prototyping– 40 min





Build a prototype of the chosen solution

Aim: The children should build a quick prototype from the materials available. They should be able to explain basic functionalities based on their prototype

Instructions:

- Using the materials available (paper, scissors, waste ect.) build a quick prototype of your robot to show what it should look like and be able to do
- Write everything down or record it so you can remember it next time

Present – 30 min.

Every group presents their prototype

Aim:

- Practice presentation and communication
- Get feedback from peers

Instructions

- Every group gets 2 minutes to present their prototype
- 2 minutes feedback from their classmates.
- Note down any suggestions

Wrap-up and clean up – 10 min.

Everyone helps to clean up and store the prototypes safely

Day 3

Ipads

WeDos

Waste

Welcome - 5 minutes

Sum up what was done the last time

Aim:

- Get in the maker-mood
- Set the scene for robotics





Instructions:

- Get the children to help recollecting some of the great ideas and feedback from last time

Warm-up: instructed build – 40 minutes

Aim:

- Getting a feel for the robotics
- Learning basic functions

Facilitator Instructions:

- Introduce the material and show how to open the WeDo app on the I pads
- Depending on the childrens prior knowledge and age choose an appropriate instruction from LEGO Education – we used MIL0
- Be available to help, but let the children work with the WeDos and instructions themselves

Instructions for children:

- Each group should build a construct from the instructions

Break – 10 minutes

1st build – 60 min.

Aim: Build the first model based on their prototype

Instructions:

- Based on your fprototype from last, build a working model from the WeDo
- Explore which functions you need for your robot to work
- Build and test accordingly

Test and present – 40 min

Aim: Get feedback from their peers and iterate 1st build

Instructions:

- Each group makes a short introduction of their robots, and why they choose to build it this way
- Get feedback from classmates
- Write down the feed back for next time

Wrap-up and clean up – 10 min.





Everyone helps to clean up and store the prototypes safely

Day 4

Materials Needed:

Ipads
WeDos
Waste
Paper
Scissors
Materials for posters

Welcome – 5 minutes

Aim:
Quick overview of the day

Iteration – 40 minutes

Aim:
Based on the feedback from last the groups get a chance to iterate on their designs and test them again

Instructions:

- Use the notes from last time, and see if you want to make any changes to your robots
- Try and think about how you could make your robot even better, more efficient or stronger
- Redesign and test accordingly

Posters – 50 minutes

Aim: develop a poster that can present the robot to an audience (eg. Parents)

Instructions:

- Make a poster that can help you tell other people about you and your cool robot
 - Who is in the group?
 - What is the best thing about your robot?
 - Why do someone need your robot?
 - What makes your robot better than other robots?





Break 10 minutes

Presentation – 50 minutes

Each groups presents their poster and robot

Goodbye – 5 minutes

