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## SUITABLE AND QUALITY FOOD FOR

### ASTRONAUTS

- AIMS:**
1. Students to investigate and learn the specific characteristics of the food of the astronauts.
  2. The teams from Spain and Bulgaria to select typical national meals that meet the necessary requirements to feed the astronauts.
  3. To create and produce various menus and meals for astronauts.
  4. To familiarize students with the methods of preparation, storing and packaging food products for astronauts, hospitals, soldiers, winter reserves, etc.
  5. To introduce and understand the concepts of “suitable” and “quality” of food.



**Conclusion:** With this type of activity the students are working on and practicing skills that are valuable in real life. The obtained knowledge and working methods will be very useful not only in the future for the food in the space, but will be of great importance in our today's world to prevent starvation or solve problems of food supplies in developing countries and as well for the development of new products in the current food market.

Christina Aristodimou | St. Paul & St. Peter High School | Limassol | Cyprus  
Georgios Villias | 2nd High School of Agioi Anargiroi | Athens | Greece

## ESCAPING with SCIENCE

### Darwin meets Newton

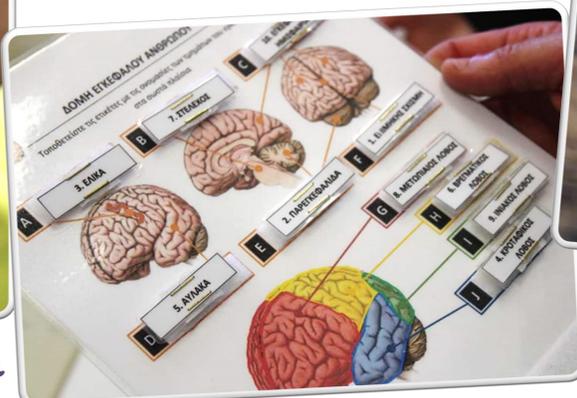
*Escaping* boring lectures. *Escaping* exam stress. *Escaping* daily school routine. *Escaping* working alone. **ESCAPING with SCIENCE!**



This joint project attempts to bring closer the worlds of **Biology** and **Physics**, as well as groups of Greek and Cypriot high school students, through the design and implementation of several syllabus-focused Educational Escape Room activities (EERs). **EERs are innovative game-based didactic approaches that offer an immersive learning experience, promote active participation and facilitate students to develop problem-solving and other 21st century skills (critical thinking, creativity, collaboration, communication).**



Active participation



Content knowledge



Challenges



#### “Spartan Corpus: An industrial espionage case”

Heart structure – Circulatory system – Blood diseases



#### “CSI: The brain collector serial killer case”

Brain 3D structure – MRI imaging – Neural system diseases – Synaesthesia



#### “Monsters living among us. Fake news or an inconvenient truth?”

Darwin’s voyage – Tree of Life – Theory of natural selection - Speciation



#### “Space mining race on Mars”

Linear motion – Measurements

Syllabus-focused  
EER activities

Escaping didactic routines can lead us to the  
discovery of new learning paths!  
Maybe it is time to escape your ordinary classroom ...

Stay  
tuned!



Scan me

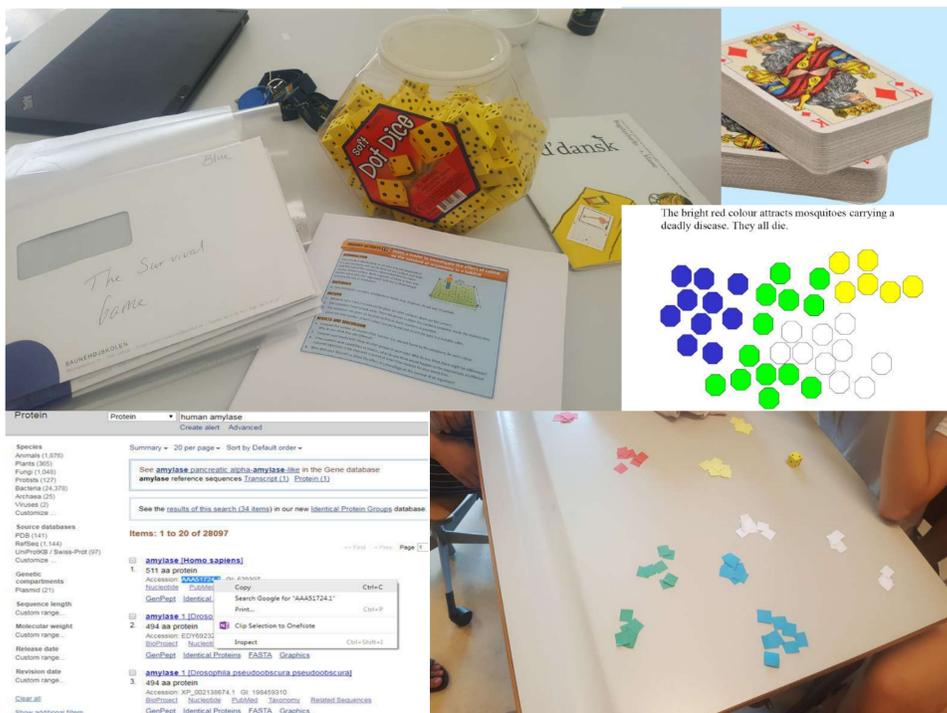
Line Nygård Mikkelsen, Baunehøjsskolen, Denmark

Declan Cathcart, Temple Carrig School, Ireland

## “How did we get here?”

### An evolutionary journey

This Irish-Danish collaboration explored active and game-based approaches to teaching evolution, where students carried out a variety of classroom and outdoor activities. These included role-play, games, narratives, virtual labs, and bioinformatics. Lesson activities were sequenced to scaffold student learning. We put an emphasis on numeracy, digital skills, and biological literacy, as well as student misconceptions about evolution. Activities were designed to be low-cost and useful in science classrooms everywhere.



### Evolution Activities:

- ***Hunting Jelly Beans***
- ***Beaky feeding frenzy***
- ***They have some neck!***
- ***The Survival Game***
- ***Game of Clones***
- ***My Cousin is a Fruit Fly***

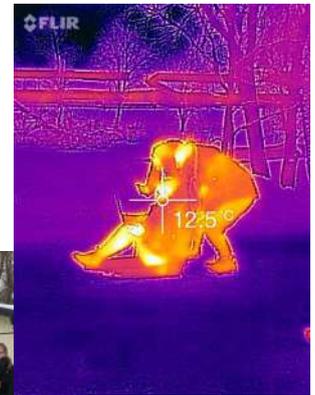
**Conclusion:** We have developed a suite of hands-on group activities - games, investigations, role-play and digital labs - that enable students to collaborate, share and discuss ideas, while allowing teachers to assess learning and identify misconceptions. These activities also encourage numeracy, biological literacy and digital skill development.

Kalle Vähä-Heikkilä, Iveta Štefančinová | TSYK, GJAR | Turku, Presov | Finland, Slovakia

## PHYSICAL PROPERTIES OF SNOW

Seasonal snow is an important part of Earth's climate system. Snow is a living environment for many organisms, it protects animals and plants, reflects light back to the sky and is a source of joy for people. The physical properties of snow are an unknown topic in the curriculum of physics although the subject could be easily connected with student's everyday life.

Project focused on how to measure physical properties (friction, thermal conductivity, density and sound pressure) of snow quantitatively. This out of the classroom project was carried out with homemade equipment.



*Friction of snow*



*Density of snow*



*Sound pressure of snow*

### Conclusion: The project

- gave deeper qualitative and quantitative understanding about snow.
- encouraged students to develop own ways to measure snow.
- increased the use of mathematical modelling of physics.



## Germany

Mira Büllesbach | Albert-Schweitzer-Schule Bergheim Mitte  
Stephanie Cremer | Lessingschule ZiBB Freiburg

## Netherlands

Bert Nagel

# From mouth to toilet

Digestion is what happens on a daily basis when food enters our bodies. This process can take between 20 and 120 hours.

### Description:

At different stations students simulate the digestive processes **step by step, learning independently** through play and explanation videos **from children of other countries** who already did the project. Additional displays (torso, pictures, feeling on the body) help the students understand how digestion works **in their own bodies**.



### Project Goal:

To make the digestive processes **comprehensible** to **all students** by involving imagination and multiple senses: seeing, touching, feeling. In this way learning can be **independent of cognition, culture or language** of the children. While explaining to children in other countries, the children become little teachers and develop a lot of intrinsically motivation to understand contents.

**Conclusion:** By proposing individualised, differentiated, and action-centric tasks students can explore, understand and explain the complex process of digestion together in inclusive settings – each to their own ability.

Maraffi Sabina | IC Poggiali Spizzichino | Roma | Italy

Ingólfssdóttir Ásdís | Kvennaskólinn í Reykjavík | Reykjavík | Iceland

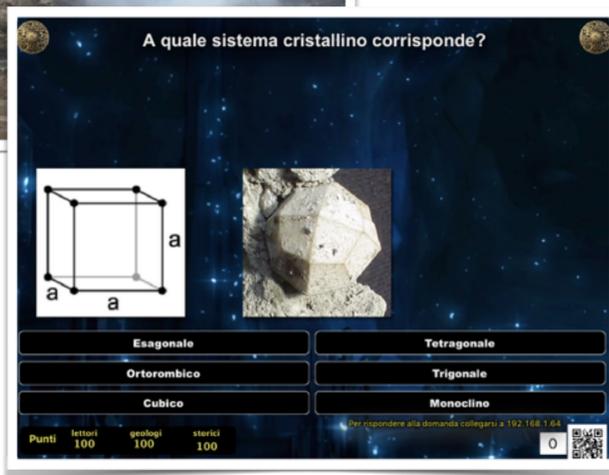
Sacerdoti Francesco | e-voluzione srl | Napoli | Italy

## GeoQuest Project

### Remote Educational Gaming for Geoscience

GeoQuest is a digital classroom game that creates an innovative learning environment, which gets the full involvement of the players, in cooperative learning and in interactive mode.

Each school has created a path designed and written entirely by the students, who created the subject, the storytelling, the script and the illustrative materials.



At the moment, GeoQuest has 8 adventure pathways, 7 of which focus on Earth Sciences in an interdisciplinary and multilingual key.

### Experience outcomes:

- 🎧 Socialisation of the experience with the classmates
- 🎧 Storytelling is the best way to pass on, memorize and learn
- 🎧 Education on the correct use of ICT
- 🎧 Knowledge and acceptance of different cultures.

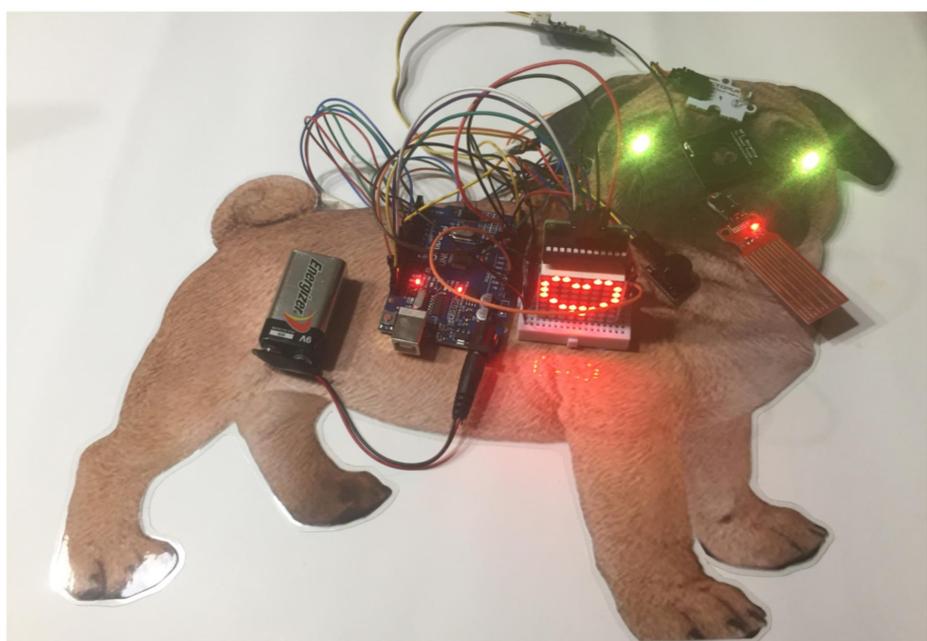
Mirek Hančl (Lessing-Gymnasium, Uelzen, Germany)

Immaculada Abad Nebot (Cor de Maria, Valls, Spain)

## CoALA - Code A Little Animal

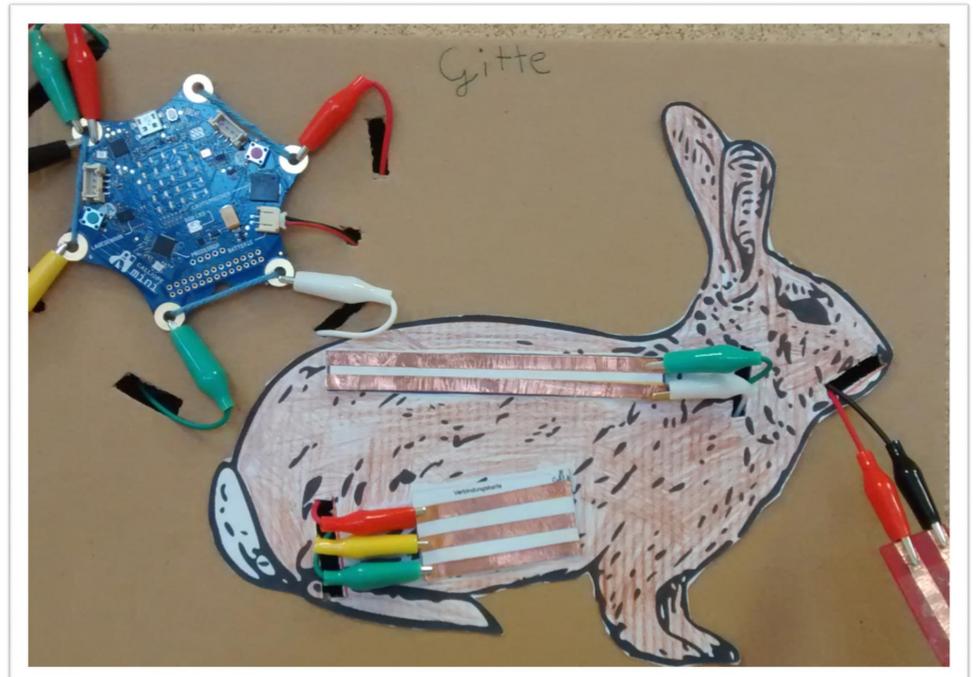
An interactive pet for 3<sup>rd</sup>-6<sup>th</sup> graders

What child does not want to own a pet?  
CoALA is a **pet simulator** addressed to students of grades 3 to 6 (9 to 13 years old). The pet is controlled by a single-board computer and uses **internal** and **external sensors** imitating the needs of a pet.

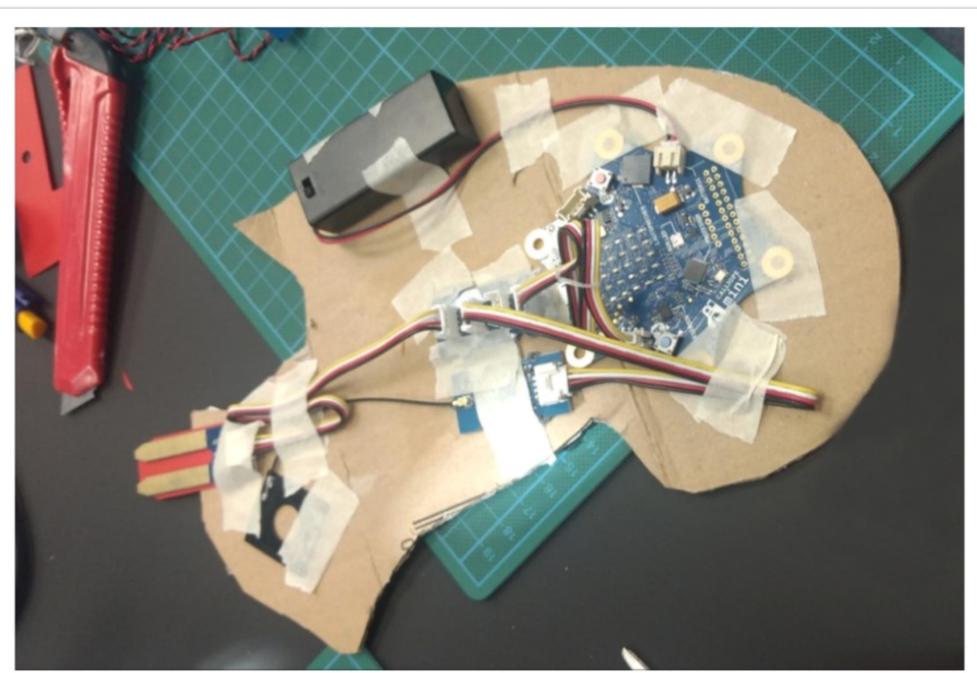


CoALA uses **Calliope mini** or **BBC micro:bit** for primary/secondary students and **Arduino** for secondary students.

In Calliope and micro:bit version, the algorithm is programmed using **MakeCode**, a visual programming language (easy to code). The Arduino is programmed with the textual programming language **C/C++**.



Beyond assembling the sensors and actors and implementing the code, cheap craft supplies like **Cardboard** are used to make the pet simulator.



**Conclusion: CoALA pairs Coding and Making activities in one STEAM project and is suitable for different age groups and inner differentiation.**

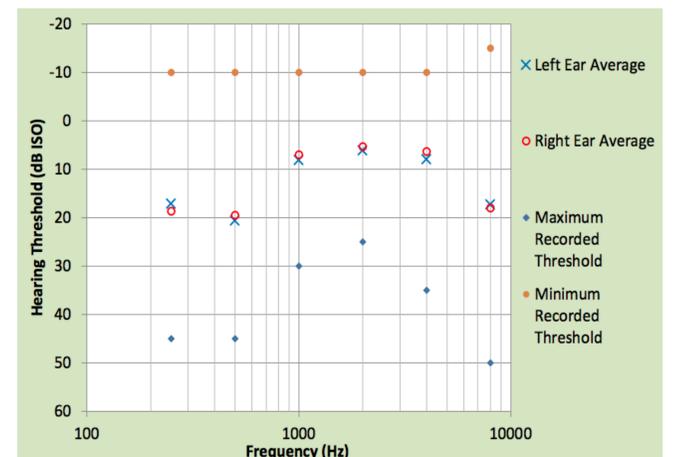
Jennie Hargreaves | Lockerbie Academy | Scotland, UK |  
Nelson Correia | Escola Secundária Maria Lamas | Portugal |

## Hear Today - Gone Tomorrow

### Is Loud Music Damaging Hearing?

Data is still being collected

Students performed hearing tests and music level tests, in order to compare the hearing ability and listening habits of students in Scotland and Portugal.

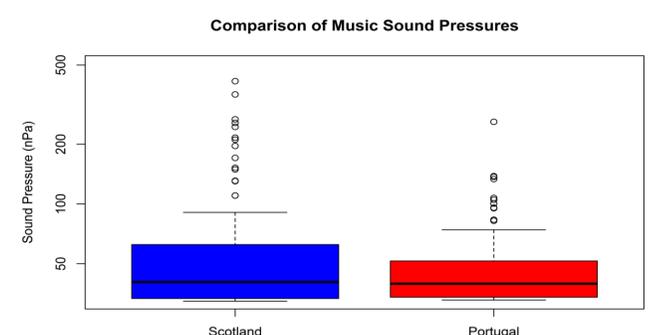
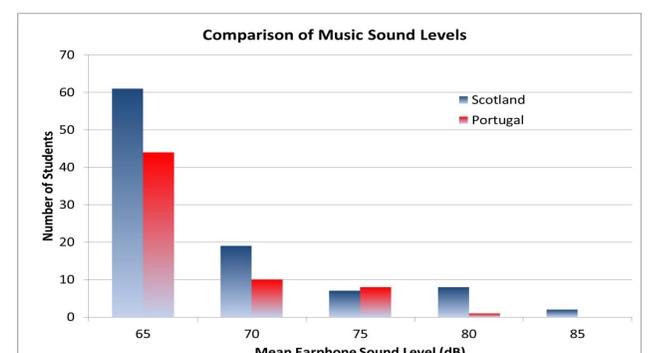


The Portuguese teacher was trained in Scotland and one audiometer was purchased for the school.

Rosie, a pink head with a Raspberry Pi and a sound sensor, was taken to Portugal to perform music level tests.



Additional analysis of data from students that listen at high levels, indicates that most do not have worse hearing than students who listen at lower sound levels.



### Some interesting findings

One hearing test can take up to 20 min. Students are not as comfortable with potential hearing loss (wearing hearing aids) as they are with sight loss (wearing glasses). Several staff and students have started using hearing aids due to our findings. Should hearing tests be mandatory in schools?

**Conclusions: The students' hearing and listening habits are similar in both countries. Our results are very similar to professional tests.**

Emma Crisell | Richard Taylor CE Primary School | Harrogate | England  
Prof. Federico Andreoletti | Istituto scolastico "Don Bosco" | Brescia | Italy

## Beyond the Water

### Learning through exploration on an international scale

The project involved primary school students from Italy, Ukraine and United Kingdom, carrying out experiments about water. They shared their activities using google hangouts online with photos, videos, messages and suggestions; presenting their work on a global scale.

The main aim was not to explain what water is, but to arouse the students' interest in all the scientific laws they can reach through water.



This project enabled us to build a scientific community within our schools, sharing expertise as teachers and students. It inspired the children to collaborate, reflect and refine their thinking, giving credibility to their questions and observations.



Following the stimulus of an introductory video or demonstration, the children carried out simple, low cost experiments, following their own line of enquiry.

- Static soap bubbles
- Oil drops in water
- Water rockets
- Cartesian diver
- Hydrogel water marbles

The excitement of talking to a fellow scientist in another country raised their aspirations and idea of working as part of a scientific community, where distance is no longer a barrier.

**Conclusion: Providing an exciting stimulus and opportunity to play, explore and collaborate across countries, motivates children and creates a purposeful context for communicating scientifically.**

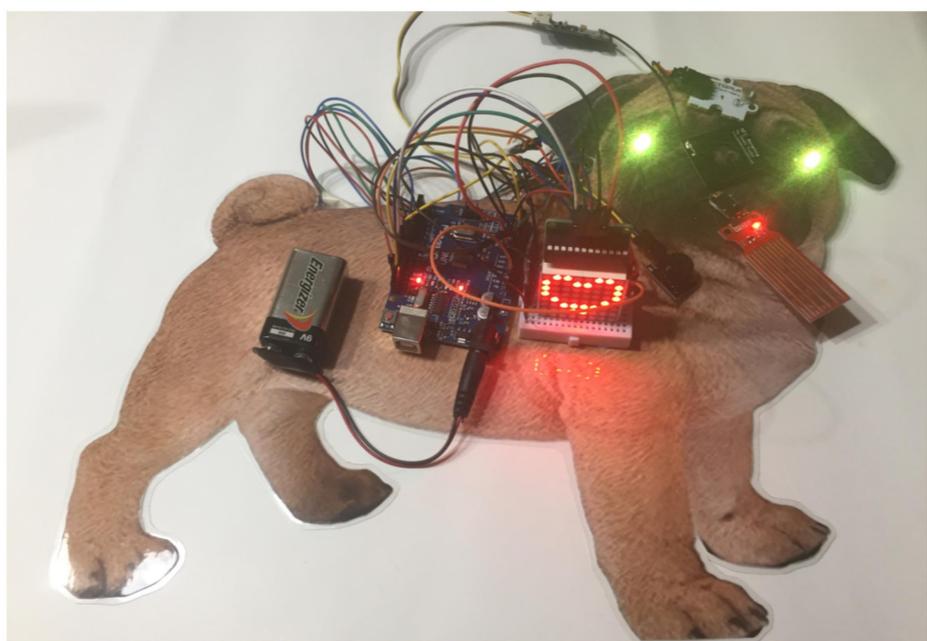
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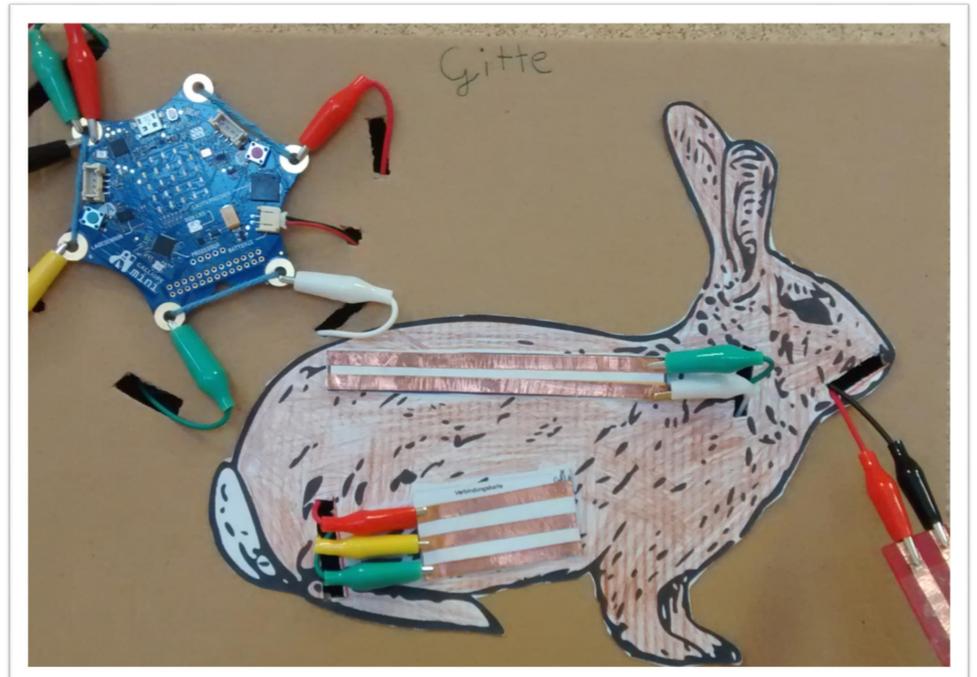
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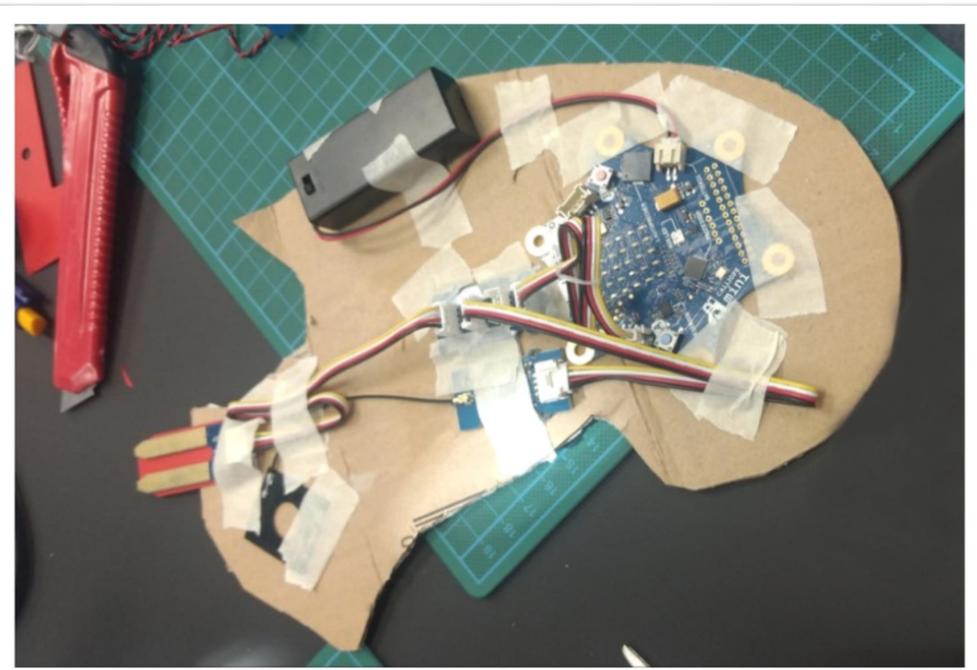


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