



Science and Digital Tools

Digital Science

There are increasing opportunities for science to be taught through digital technologies

This also contributes towards the integration of the digital technology areas of the curriculum to be deployed in cross-curricular contexts

Sensors

The increasing number of sensors available on mobile devices is opening up new avenues for inquiry-based activities that capture data from the environment, and “many mobile devices are equipped with a vast array of sensors and versatile components” These include sensors for motion, position and environment.



APA

Dabney, M. H., Dean, B. C. & Rogers, T. (2013, March). No sensor left behind: enriching computing education with mobile devices. In *Proceedings of the 44th ACM technical symposium on Computer science education* (pp. 627-632). ACM.

Built-in Sensors in Our Smartphones



Using Sensors in Applications

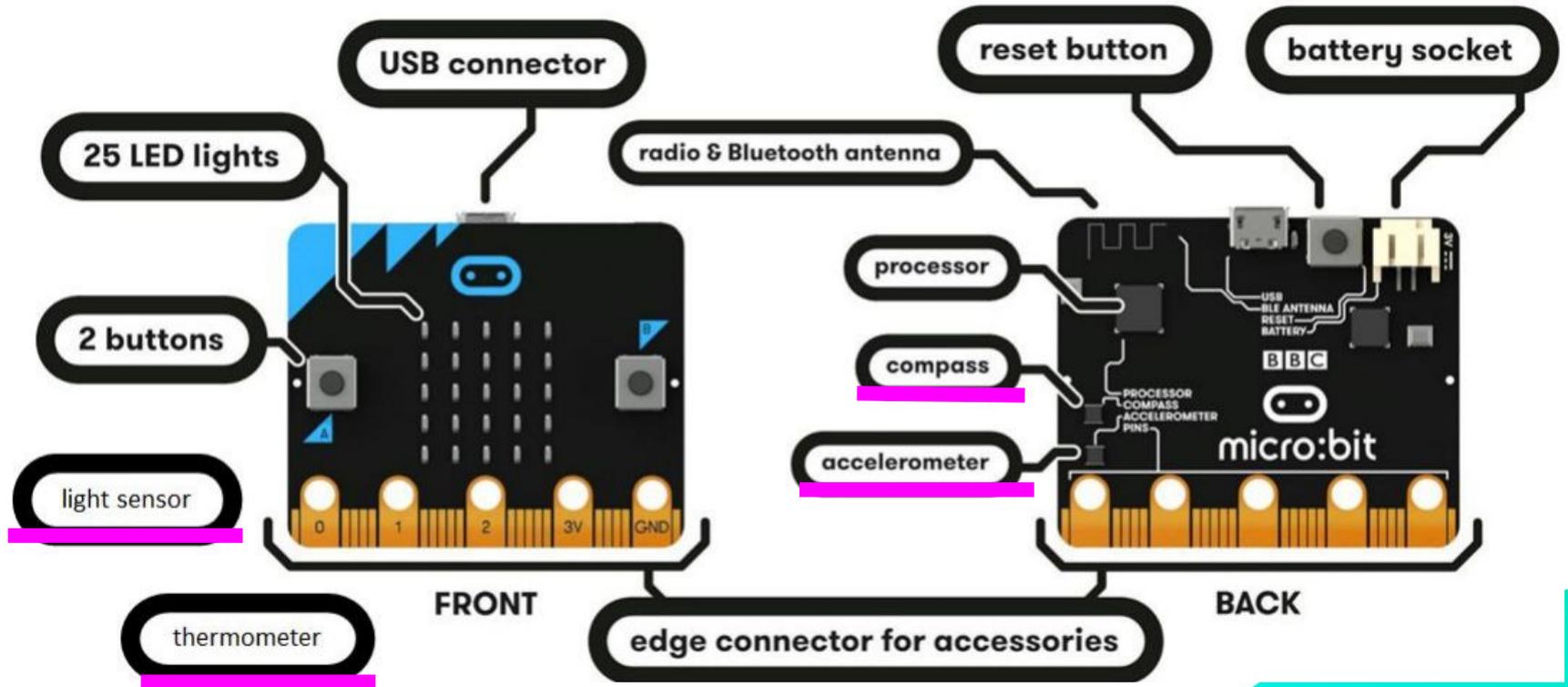
Sensors can be applied in many different ways. "For example, a game might track readings from a device's gravity sensor to infer complex user gestures and motions... a weather application might use a device's temperature sensor and humidity sensor ... or a travel application might report a compass bearing."



Android Developers. (n.d.) Sensors Overview. Retrieved from:

https://developer.android.com/guide/topics/sensors/sensors_overview.html

Micro:bit Sensors

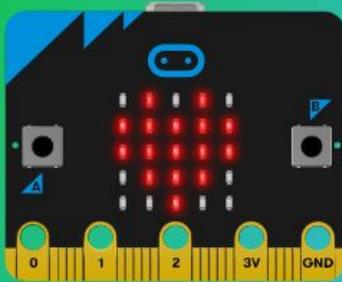


<https://microbit.org/> - Educational Foundation

 micro:bit

[Get started](#) | [Projects](#) | [Lessons](#) | [Let's code](#) | [Impact](#) | [Buy](#) | [News](#)

BBC micro:bit



Create | **Learn** | **Code**

Get creative, get connected, get coding!

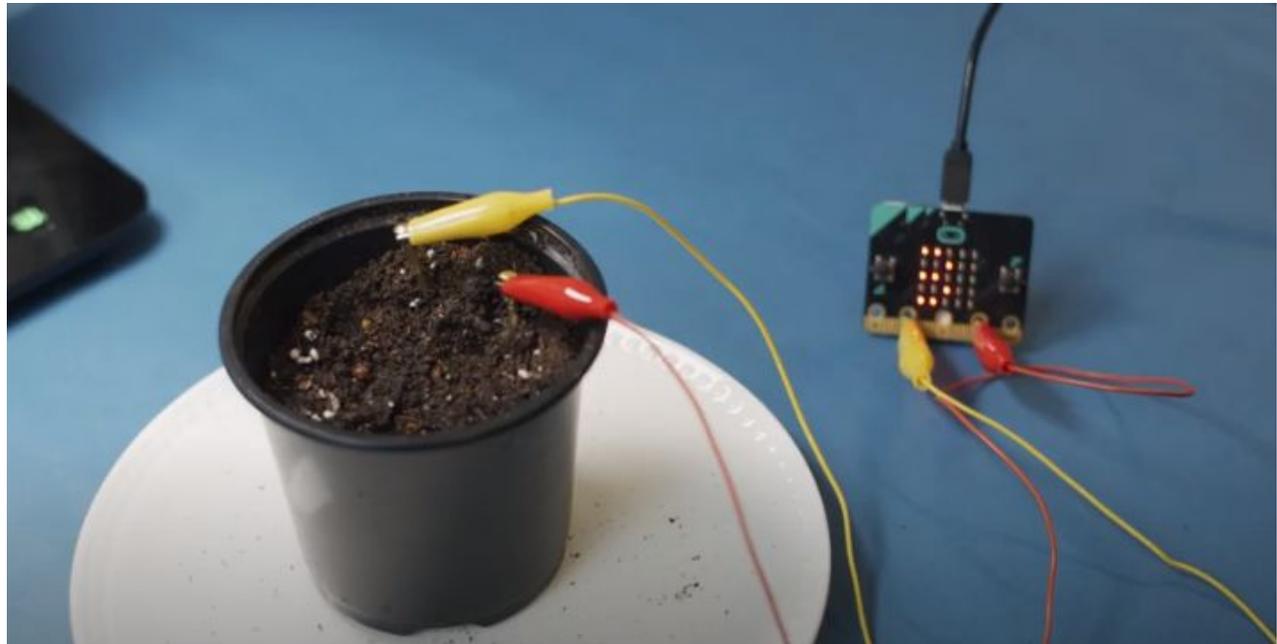
The pocket-sized computer transforming the world

[Learn at home](#)



Micro:bit Science Activity (1)

Physically connect a micro:bit to measure soil moisture



micro:bit Science Activity (2)

Use the micro:bit temperature sensor and radio connection to configure a remote device to record temperature data over time



Citizen Science

Engaging in citizen science allows people to experience, first-hand, the scientific process and engage scientific thinking at the same time as increasing their knowledge of the specific research topic.

Citizen scientists are members of the general public that volunteer their time to work and collaborate with professional scientists to collect data and solve problems on real scientific research questions.



Masters, K., Oh, E. Y., Cox, J., Simmons, B., Lintott, C., Graham, G., Greenhill, A., & Holmes, K. (2016). Science learning via participation in online citizen science. *Journal of Science Communication*, 15(3), 1-33.

Zooniverse

Zooniverse gives people of all ages and backgrounds the chance to participate in real research with over 50 active online citizen science projects.



FEATURED PROJECTS



SUPERWASP VARIABLE STARS



CHIMP & SEE



SKINK SPOTTER NZ



CASTAWAY

Project Types

Zooniverse has many project types, and quite a few of these relate to the sciences



BIOLOGY



CLIMATE



MEDICINE



NATURE



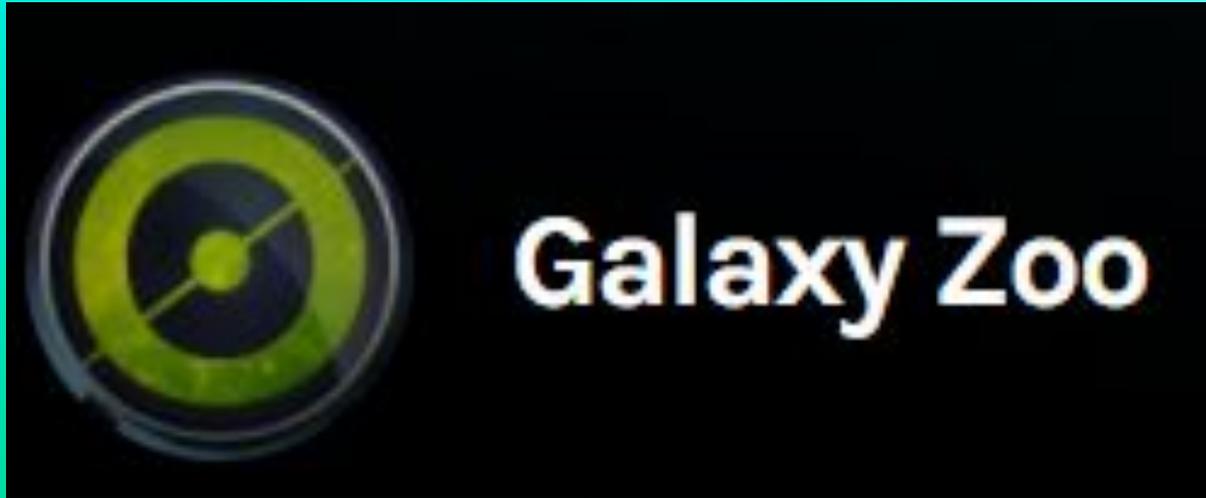
PHYSICS



SPACE

Galaxy Zoo - The Original Project

“For more than a decade, we've asked volunteers to help us explore galaxies near and far, sampling a fraction of the roughly one hundred billion that are scattered throughout the observable Universe.”



nQuire

A Citizen Science platform developed by The Open University in partnership with the BBC.

The site allows you to add your own projects (Confidential missions / Social missions)

The screenshot displays the nQuire website interface. At the top, the logo 'nQuire' is accompanied by the tagline 'EXPLORE YOUR WORLD'. Navigation links for 'Home', 'Discover', 'About', 'Register', and 'Sign in' are visible. The main content area features several mission cards:

- OU Pollinator Watch:** A card with a close-up image of a bee on a purple flower. The text reads: 'Help us discover more about insect pollinators'. It has 7,560 participants.
- Covid-19: Fact or fake:** A card with an image of a woman wearing a face mask holding a smartphone. The text reads: 'Can you tell which Covid-19 news stories are reliable?'. It has 688 participants.

Below these is a section titled 'Join missions to explore your world' which lists more missions:

- BRAIN YAWN:** A card with a blue background and a brain diagram. The text reads: 'Remember, remember, the...what was it? How efficient is your memory?'. It has 68 participants.
- Corona: feit of fake:** A card with an image of a woman wearing a face mask. The text reads: 'Weet jij welk Coronanieuws betrouwbaar is?'. It has 546 participants.
- The Novels Survey: Class and Society:** A card with a green background and an image of people. The text reads: 'Rate our selection of novels about class and society'. It has 359 participants.
- The FOREST 404 Experiment:** A card with an image of a woman's profile and a tree. The text reads: 'The FOREST 404 Experiment'.
- Tractor:** A card with an image of a green tractor in a field.

nQuire Science

Some science related missions from the nQuire website



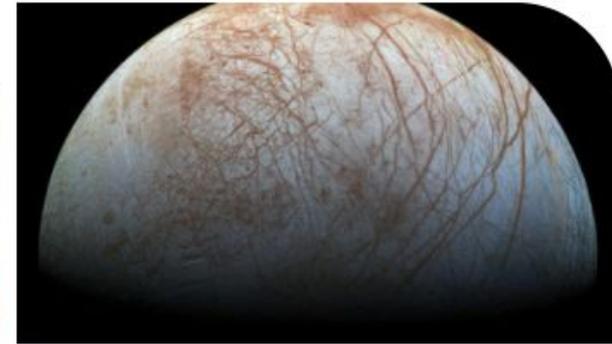
Cloud Spotting Challenge

Share your photos of clouds and help identify cloud types.



Noise map

How noisy is your classroom or workplace?



Astrobiology: thoughts, views and attitudes

Exploring people's views about astrobiology-related research

Ahi Kā Rangers

Care for the Papatūānuku by Completing Citizen-Science Missions



Select your mission...

Healthy Monarchs

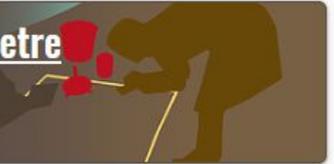
50 points



Help us find out how healthy NZ's monarch butterflies are by observing them in your back yard.

Marine Metre Squared

60 points



Observe saltwater shoreline wildlife and help us understand NZ's marine life.

Rate NZ's Packaging

100 points



Have a closer look at your groceries and help us design a way to rate NZ's packaging.

COLLECTION

Experiments for Learning

This is a collection of experiments that teachers, parents, and students have found helpful, whether in the classroom or learning from home. Create music, make art, take virtual field trips, and more. If you're a developer with a project you think could be helpful for learning, submit it above.



Experiments With Google

Experiments are projects that push the boundaries of art, technology, design and culture. Experiments inspire, teach, and delight.

experiments.withgoogle.com/experiments

Or

experiments.withgoogle.com/collection/experimentsforlearning

Science Experiments with Google



AR INSECTS IN GOOGLE SEARCH

by Google

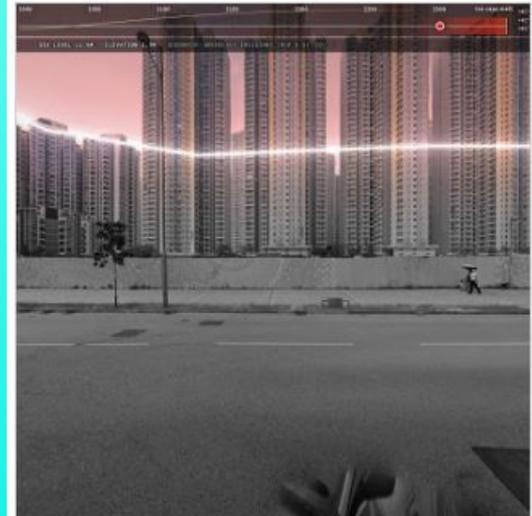
We put 23 AR insects in Google Search. Using a mobile phone, search one of these insects then "view ...



TIMELINES

by Fabian Oefner

Witness the shocking glacial retreat of two glaciers in Switzerland over the last 140 years. All dat...



COASTLINE PARADOX

by Timo Aho and Pekka Niittyvirta

A Map and Street View experiment visualising the actual and predicted global sea level rise caused b...

Microsoft AI Lab

Explore, learn, and code the latest breakthrough AI innovations by Microsoft.

www.microsoft.com/en-us/ai/ai-lab



AI Lab projects

Explore, learn, and code with the latest breakthrough AI innovations by Microsoft.

Innovation sandbox

Innovation sandbox

Business Scenarios

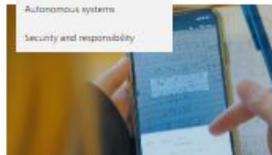
AI for Society

Autonomous systems

Security and responsibility

Innovation sandbox

Explore new projects that showcase the potential for creativity, then bring new ideas and code to your own AI innovations.



Cognitive

Microsoft Math

Microsoft Math uses optical character recognition (OCR) for handwriting to extract a math equation from a student's photo of their notes. The problem is then standardized, classified, solved, and returned with solution steps and similar problems.

[Learn about Microsoft Math >](#)



Cognitive

Celebs Like Me

Celebs Like Me uses facial recognition to match the user's photo to similar-looking celebrities. Powered by a Deep Neural Net (DNN) model, it was trained using Bing Seton Knowledge Graph and Bing Image Graph.

[Learn about Celebs Like Me >](#)

[Experience Celebs Like Me >](#)



Cognitive, AI for Good

Pix2Story

Pix2Story uses Natural Language Processing (NLP) for storytelling. AI scans a picture, applies a writing style, and generates a story—demonstrating how AI can drive creativity.

[Learn about Pix2Story >](#) [Explore Pix2Story >](#)



Cognitive

Snip Insights

Snip Insights helps users find intelligent insights from a snip or screenshot. AI services convert a captured image to translated text, automatically detecting and tagging image content.

[Learn about Snip Insights >](#)

[Install Snip Insights >](#)



ML, OCR

Machine Reading

Machine Reading Comprehension (MRC) answers questions about written text. Using a neural network, MRC mimics the process of human readers. Ask a question and MRC reads a document until an answer is formed.

[Learn about MRC >](#) [Check out MRC >](#)



Cognitive

Sketch2Code

Sketch2Code converts hand-written drawings to HTML prototypes. Designers share ideas on a whiteboard, then changes are shown instantly in the browser—helping improve collaboration between the designer, developer, and customer.

[Learn about Sketch2Code >](#)

[Experience Sketch2Code >](#)



Cognitive, AI for Good

Gen Studio

Gen Studio is a prototype created with collaborators from the Metropolitan Museum of Art, Microsoft, and MIT. Gen Studio uses AI to visually navigate The Met's art collection.

[Learn about Gen Studio >](#)

[Explore Gen Studio >](#)