

### Where and when:

**Date:** Monday, 11 March 2024

**Time:** 11:00

**Duration:** 30 minutes

**Location:** [bbc.co.uk/livelessons](https://bbc.co.uk/livelessons)

*This programme is available to view from home or school, and no sign-up is required.*

*Simply visit the website on the day and follow the instructions on the page to watch. Subtitles will also be available.*



### Curriculum links:

KS2 Science/Science Second Level/Science & Technology Progression Step 2/KS2 The World Around Us.

### Pupils should:

- Describe the life cycles of some invertebrates – insects and tardigrades.
- Notice that animals have offspring which grow into adults.
- By investigating the life cycles of plants and animals, I can recognise the different stages of their development.
- I can explore relationships between living things, their habitats and their life cycles.

### Setup:

This Live Lesson can be watched on the CBBC channel at 11:00 on Monday, 11 March 2024, or on the BBC Teach website. It will remain online afterwards to be used as a teaching resource whenever you need it.

We will be running a live commentary page on BBC Teach during the live broadcast to share contributions from children watching from home and school.

### How much space and equipment is needed?

The lesson can be viewed in a classroom or at home with a device (computer, tablet or mobile phone) linked to a reliable broadband connection or watched on a television on the CBBC channel. We will ask children to get involved in activities throughout the lesson and have provided downloadable [activity sheets](#) to help guide them through this.

You may wish to hand these out in advance, along with stationery such as pens and pencils. Pupils will still be able to follow the activities if they don't have printed activity sheets to hand.

### **Lesson content:**

This programme is designed to engage primary learners from ages 7 to 11. It covers learning objectives across:

- England national curriculum - Science (Key Stage 2)
- Scotland curriculum for excellence - Sciences (Second Level)
- Curriculum for Wales - Science and Technology (Progression Step 2 and 3)
- Northern Ireland national curriculum - The World around us (Key Stage 2)

### **Section 1- Introduction**

The Live Lesson begins in Professor Goldbug's office, where the presenters Mwaksy Mudenda and Yussef Rafik are tasked with completing three challenges in order to crack the code to escape Professor Goldbug's office. They explain what invertebrates are and, using a butterfly as an example, how metamorphosis works.

We meet Dr Jess French and a team of young bug enthusiasts at the Bug Parc in Norfolk, who will help our presenters with their mission. Together, they explore the life cycle of a leafcutter ant, observing a real-life colony and discovering that complete metamorphosis comprises four stages: egg, larva, pupa, and adult.

### **Section 2 - Complete metamorphosis**

Back in Professor Goldbug's office, the presenters tackle their first challenge. They are asked to put four pictures of a leafcutter ant at different stages of their life cycle in the correct order: egg, larva, pupa and adult.

In activity 1, children are shown pictures of different stages of a beetle's life cycle and asked to match the pictures to the correct stage.

Download activity sheet 1 [here](#).

The presenters will then use the answers from the activity sheet to unlock the first two numbers of the code.

### **Section 3 - Incomplete metamorphosis**

The Professor then introduces the idea that not all invertebrates go through "complete" metamorphosis.

Yussef explains that other invertebrates undergo incomplete metamorphosis, which consists of only three stages. Dr Jess and the team at the Bug Parc look at a praying mantis and explain the difference between complete and incomplete metamorphosis. Unlike leafcutter ants (which undergo a four-stage complete metamorphosis), praying mantises only experience three stages of incomplete metamorphosis: egg, nymph, and adult.

Back in the office, Mwaksy unlocks the professor's virtual reality room and the presenters are shrunk down to meet some invertebrate up close.

In activity 2, children are given descriptions of two mystery invertebrates and are asked to work out what they are and what type of metamorphosis they undergo.

Download activity sheet 2 [here](#).

Mwaksy and Yussef identify the answers to the activity and successfully unlock the next two digits of the code.

#### **Section 4 - Tardigrades**

For the final challenge, Professor Goldbug reads a riddle about a mystery invertebrate:

*I can survive almost anywhere, even up in space,  
But can pause my life cycle, just in case.  
I can be found high up in the mountains or down in the sea,  
But, there's a twist, your eye can't actually see me.*

The final challenge focuses on tardigrades and Dr Jess is joined by tardigrade expert Dr Andy Chandler-Grevatt. Dr Andy introduces the team to a moss safari, explaining how to spot tardigrades with a microscope and detailing their key features including their ability to put their life cycle on hold.

In the third activity, Professor Goldbug reveals a set of microscopic images, challenging children to identify as many tardigrades as possible within a minute.

Download activity sheet 3 [here](#).

After correctly identifying the number of tardigrades, the presenters unlock the final two digits of the code and successfully complete their special escape room challenge.

Professor Goldbug and Dr Jess French then answer questions about insects and invertebrates from children.

#### **Useful links and follow-up activities:**

- [Moss safari - Try doing your own moss safari.](#)
- [Watch this film - what is an entomologist?](#)
- [Quiz: Which Bee would you be?](#)
- [Make your own pooter and go on your own bug hunt](#)
- [Find out more about insects - watch Chris Packham's big bug guide](#)
- [Read more about tardigrades in space](#)
- [Find out about the characteristics of insects](#)

#### **Follow-up activities:**

The Professor's lab contained pictures of entomologists Maria Sibylla Merian, Charles Henry Turner and Margaret Collins. Research their achievements and draw a poster celebrating them. Write about why they are celebrated.