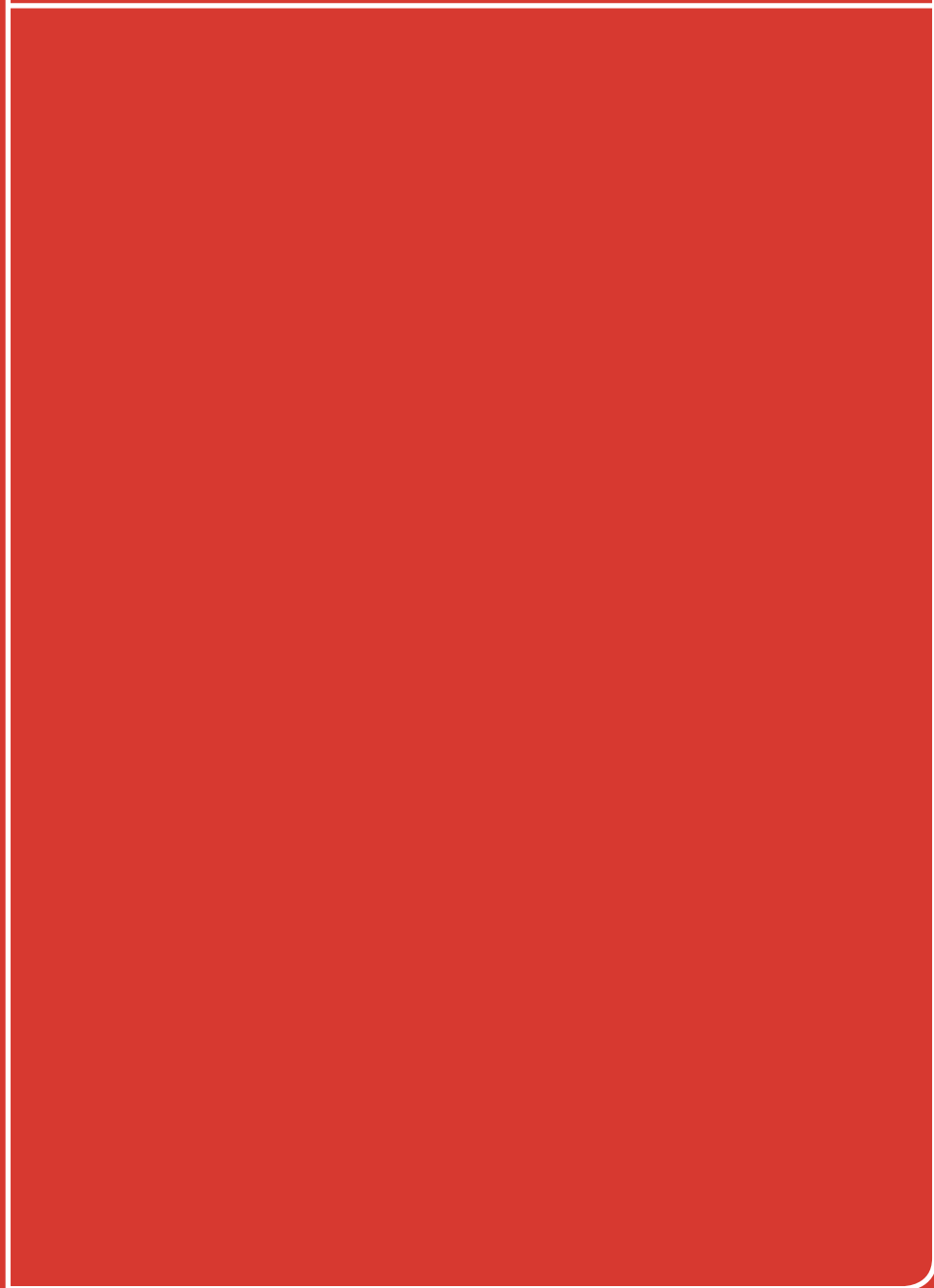


**MAKERVERSITY DIY**

# **MAKE YOUR OWN MICROSCOPE**

**TEACHER'S GUIDE**



# MAKING TOOLS FOR LEARNING

Makerversity DIY is a pioneering curriculum for schools designed by Makerversity, a thriving community of emerging creative businesses in central London, UK.

Our simple and exciting lesson plans enable educators to incorporate making and hands on activities into core subjects. Our lessons empower teachers and pupils to develop new skills, work together and gain knowledge in core subjects.

We believe in the transformative power of hands-on learning. Making encourages pupils to test and learn through iterations and problem-solving. Our dynamic and exciting way of learning makes it easy to excite and educate pupils of all abilities, and it's affordable, something which until now has been very challenging to run in a school environment.

Our first ten lessons enable anyone, anywhere to make their own 'high tech' classrooms and digital learning tools.

# ABOUT THIS LESSON

## MAKE A WEBCAM MICROSCOPE

This lesson is based around a simple hack of a cheap peripheral webcam which, using very basic workshop tools, can be turned into a digital microscope when connected to a laptop or USB enabled tablet.

It aims to teach pupils to 'disrespect' objects, to understand that all objects are designed to serve a specific purpose and that all objects are a sum of parts.

By dismantling an object, observing how it has been assembled and how these components work together, pupils will gain a deeper understanding of the material world around them and can use this curiosity to explore how things work and to invent for themselves.

## CURRICULUM MATCHING

This lesson could be tied into the study of:

- ...electronics and circuitry
- ...lenses and optics
- ...light and refraction
- ...biology cells and structures

## (WALT) WE ARE LEARNING TO...

- ...understand that objects are made up of a sum of components.
- ...identify these different components, learn what they do and where else they are used.

At the end of the session, we'll have turned a webcam into a digital microscope that you can actually use!

## (WILF) WHAT I'M LOOKING FOR...

- ...you to identify different components and recognise them in different products and devices.
- ...you to learn how to use common tools correctly and safely.

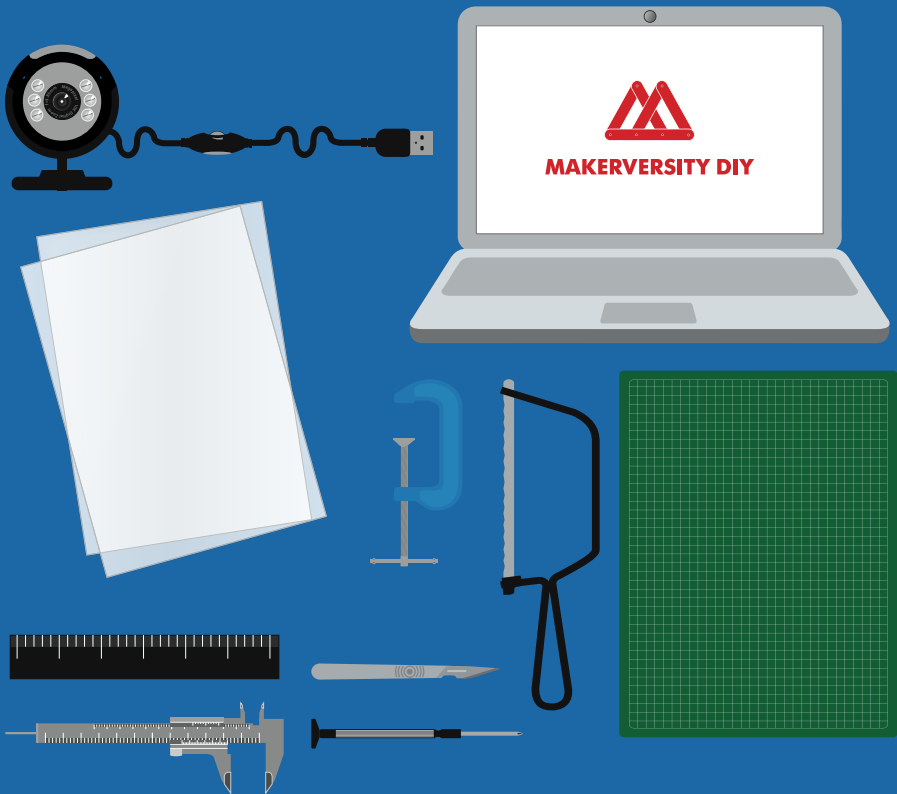
# PREPARING THE LESSON

## SET UP

Divide the class into teams of four. If you can, try to divide the teams so that there is a good mix of skills and personalities so that everyone will find a role.

Each team should be equipped with one USB connected webcam, laptop, small screwdriver, cutting mat, scalpel and ruler and one set of Makerversity DIY Build Your Own Microscope Stand worksheets. Make sure that all webcams are unpacked, plugged in and working before the session begins.

For younger pupils, set up sawing stations for as many staff as you can accommodate, so that they can be supervised whilst performing more technically difficult tasks. A sawing station will consist of a junior hacksaw, cutting matt, g-clamp and gloves.



## KIT LIST

- ...peripheral webcam
- ...laptop/ USB compatible tablet
- ...precision screwdriver
- ...cutting mat
- ...scalpel
- ...steel rule
- ...3 x A3 printed thick paper or card
- ...small g-clamp
- ...junior hacksaw

You might want to also use:

- ...vernier calipers (if available, or use strip of card/dowel/straw)
- ...super glue
- ...latex gloves
- ...double sided tape or glue sticks
- ...scissors



Want more lessons like this?

For more resources, information about upcoming classes, to let us know how you're getting on with our packs or to sign up to our mailing list for updates from Makerversity, visit:

**[makerversity.education](https://makerversity.education)**  
**[@makerversityDIY](https://twitter.com/makerversityDIY)**