

# USING THE USB MICROSCOPES

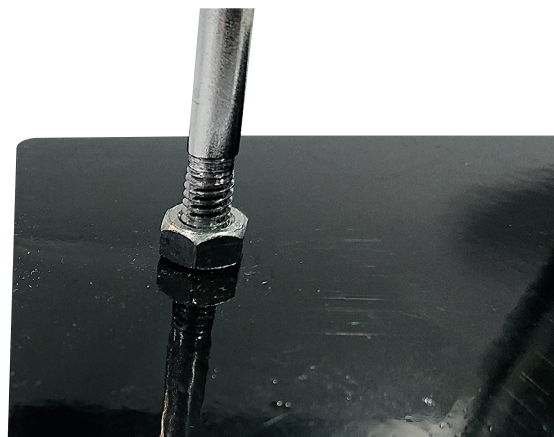
The Borrow the Moon loan box comes with 4 USB microscopes and a set of 4 mini clamps, stands, bases and bosses to allow them to be held steady over your samples.

To view the image from the USB microscope you will need to install webcam viewing software such as VLC media player (*available for free from <https://www.videolan.org/index.en-GB.html>*).

## INITIAL SET UP

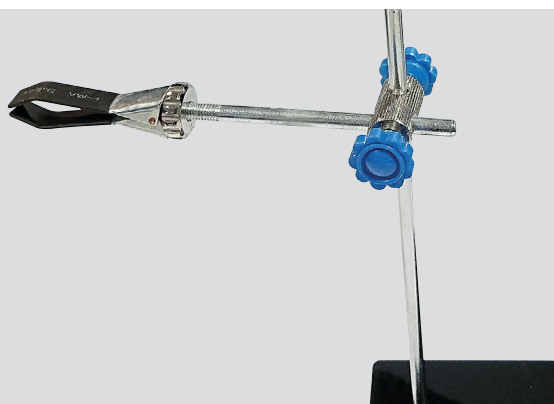
### 1 SETTING UP THE STAND

Take the long metal rod with a thread on one end and start to thread it through the hole in the black base. As soon as the metal rod emerges on the other side of the base, tighten the nut on top. If you allow the rod to go down too much, the stand will be unstable. Your rod and base should look like the image to the right, with some of the tread still visible.



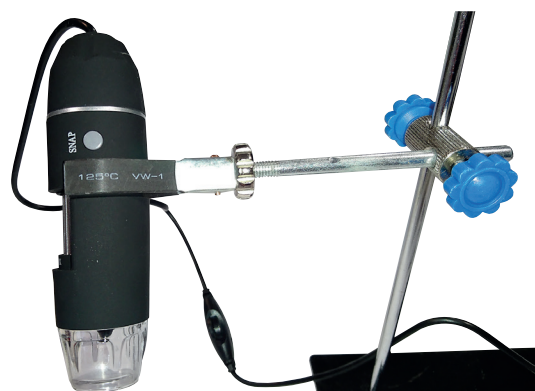
### 2 ATTACHING THE CLAMP

To attach the clamp to the stand, you will have to use the small boss (the cylinder-shaped objects with two holes). Twist the blue screw in an anticlockwise direction to increase the width of one of the holes until you can fit the rod through it. Once the rod is through, twist the blue screw in a clockwise direction to hold the boss tightly in place. Next take the other blue screw and loosen it until you can fit the clamp arm through the hole. Once you have done this, tighten the screw.



### 3 HOLDING THE USB MICROSCOPE

At the base of the clamp jaws there is a screw that can be turned to open and close the clamp jaws. Take the USB microscope and place it between the open jaws. Make sure that when you clamp it, the jaws are not putting pressure on the silver sliding ring as this needs to be free to move to allow you to focus the microscope.



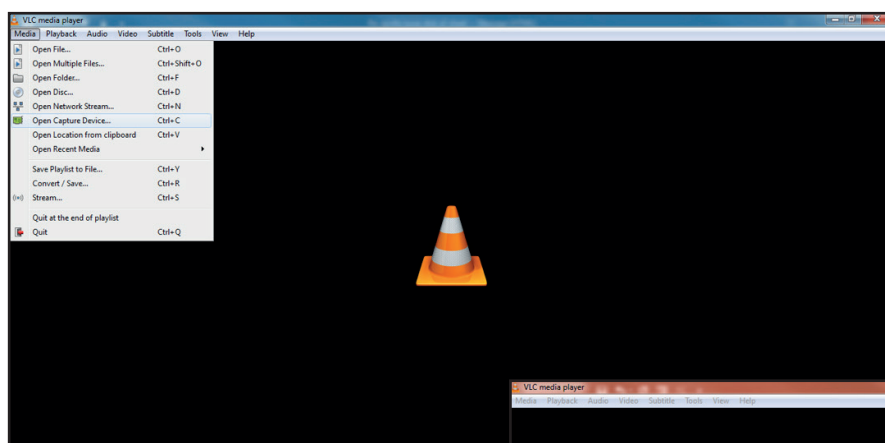
### 4 PLUGGING IN THE MICROSCOPE

Plug the USB cable into any USB port on your computer. This will also provide the power necessary to switch on, and change the brightness of the LED lighting ring. To turn the light on, simply use the dimmer switch that is partway up the cable.



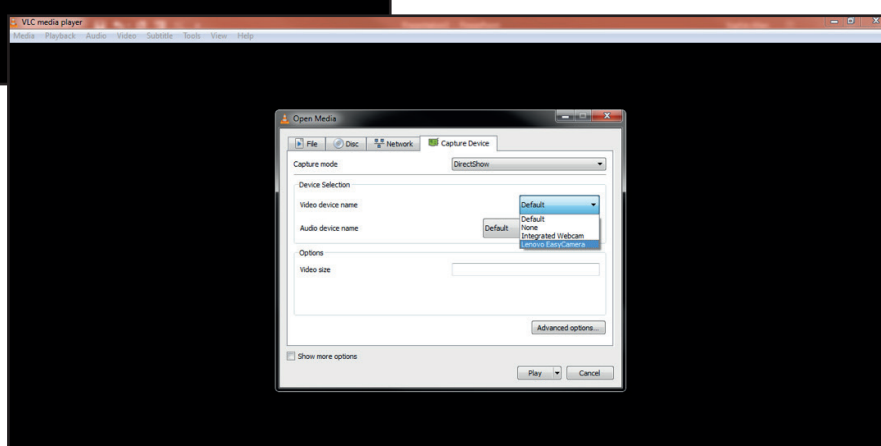
## USING THE USB MICROSCOPES

## OBSERVING YOUR SAMPLES



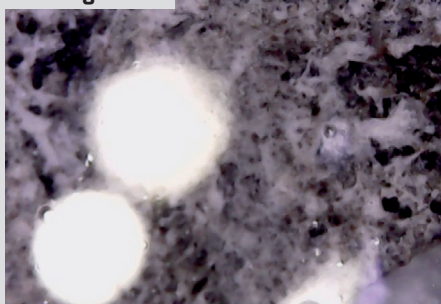
**1** Open VLC media player on your computer. Making sure that the microscope is connected to a USB port, go up to the left hand of the command drop down and click on media. From this menu click on Open Capture Device.

**2** From the video device name drop down menu, select Lenovo EasyCamera and then click on play. This will open a video streaming window. PLEASE NOTE: Depending on your computer there may be some lag between moving the microscope and the image on the screen moving.

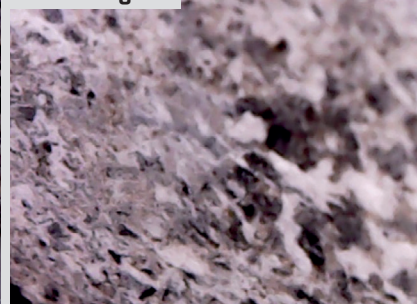


**3** Now it's time to bring your sample into focus on the screen. With the front of the microscope facing you, twist the focus ring anticlockwise as far as it will go. Unscrew the boss where it holds on to the rod, and move the microscope down until it is approximately 1cm from the surface of your sample. Carefully, rotate the focus ring in small increments, keeping the stand as steady as possible, until the image is clear on the screen. If the image doesn't become clear before you run out of rotation on the focus ring, start again but this time slowly move the microscope away from the surface of the sample until the image becomes clear.

With lights



Without lights



Note: When viewing objects that are in the membrane boxes, if the lights are on you will see a reflection of these in the membrane. If the room is well lit you should not need the lights (as can be seen in the comparison picture below) since the software will try to autocorrect the brightness and contrast of the image. In a poorly lit room, you can get around this problem by placing the USB microscope at an angle to the sample, so that the light is not reflected directly back.



If you are getting your students to try this themselves, you may wish to get them to practice first in finding the focus for a coin or a ruler before you let them try it with the handling samples.