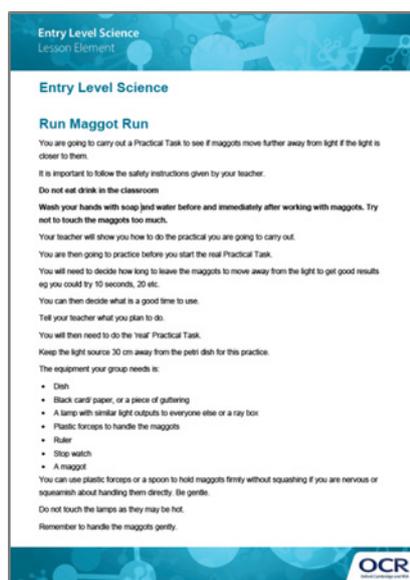


Entry Level Science

Run Maggot Run

Instructions and answers for teachers

These instructions should accompany the OCR resource 'Run Maggot Run' activity which supports OCR Entry Level Science.



The Activity:

This resource comprises of 2 tasks.



This activity offers an opportunity for English skills development.



This activity offers an opportunity for maths skills development.

Associated materials:

'Run Maggot Run' Lesson Element learner activity sheet.

This Practical Task studies the response of a maggot to light. The practical offers opportunities to discuss how maggots respond to how close the light source is.

Maggots usually behave in a predictable way in response to a stimulus in their surroundings. A few days before they pupate they will crawl away from light. The photonegative response has a survival value: it increases the likelihood that the maggot will reach a suitable environment. At any stage, a photonegative response makes the maggots more likely to burrow into their food (such as a carcass) which reduces the risk of desiccation and predation at the surface.

This experiment is worth repeating but the class can pool results for the activity.

Fully grown maggots just before pupation are the most suitable for this Practical Task. Maggots are available from fishing tackle shops.

The school should be aware that maggots from fishing shops may not be available all year round as it depends on the fishing season, so the school needs to plan when in the academic year is the best time to carry out this Practical Task.

It is sensible to ensure that the maggots are kept in a box with a lid that allows air to circulate so that the maggots can survive.

The students are going to investigate how far maggots move away from light in a fixed amount of time and if this is dependent on how close the light source is to the maggot. The students will need to be allowed time to practice the procedure to find out what is a sensible amount of time to allow the maggot's exposure to the light to give meaningful results. Allow the students to carry out preliminary experiments to decide how long to leave the maggots to move away from the light to get meaningful results eg try 10 seconds, 20 etc, how many times to observe each maggot's behaviour, and how to present the results of the Practical Task and analyse the results.

It is important the students appreciate that maggots are living animals and should be treated with respect and care. They should be handled gently using plastic tweezers or a spoon. At the end of the Practical Task the school should dispose of the maggots humanely.

For each group of students:

- Petri dish (a plastic dish or any suitable flat container would do for this investigation)
- Black card/ paper, or a piece of guttering
- Lamps with similar light outputs or ray boxes
- Plastic forceps/spoon to handle the maggots
- Ruler
- Stop watch

For the class – set up by technician/teacher:

- Laboratory that can be ‘blacked out’ if possible
- Maggots – each group will require more than one possibly, though one maggot per group should suffice.
- Hand washing resources to be made available

Hygiene procedures to observe when handling maggots must be made clear to students before starting the practical:

- no eating or drinking while in the classroom,
- cover any open cuts or wounds on hands with waterproof adhesive dressings, suitable non – allergenic protective gloves could be made available if required
- wash your hands with soap and water before and immediately after working with maggots.

Some sample results are below:

Distance of lamp from maggot (cm)	Distance maggot moved in 20 s (cm)			
	Try 1	Try 2	Try 3	Average
20	1.2	1.3	1.2	
15	2.6	2.3	2.3	
10	3.8	3.2	3.4	
5	4.1	4.2	4.1	

You are going to carry out a Practical Task to see if maggots move further away from light if the light is closer to them.

It is important to follow the safety instructions given by your teacher.

Do not eat or drink in the classroom

Wash your hands with soap and water before and immediately after working with maggots. Try not to touch the maggots too much.

Your teacher will show you how to do the practical you are going to carry out.

You are then going to practice before you start the real Practical Task.

You will need to decide how long to leave the maggots to move away from the light to get good results eg you could try 10 seconds, 20 etc.

You can then decide what is a good time to use.

Tell your teacher what you plan to do.

You will then need to do the 'real' Practical Task.

Keep the light source 30 cm away from the petri dish for this practice.

The equipment your group needs is:

- Dish
- Black card/paper, or a piece of guttering
- A lamp with similar light outputs to everyone else or a ray box
- Plastic forceps to handle the maggots
- Ruler
- Stop watch
- A maggot

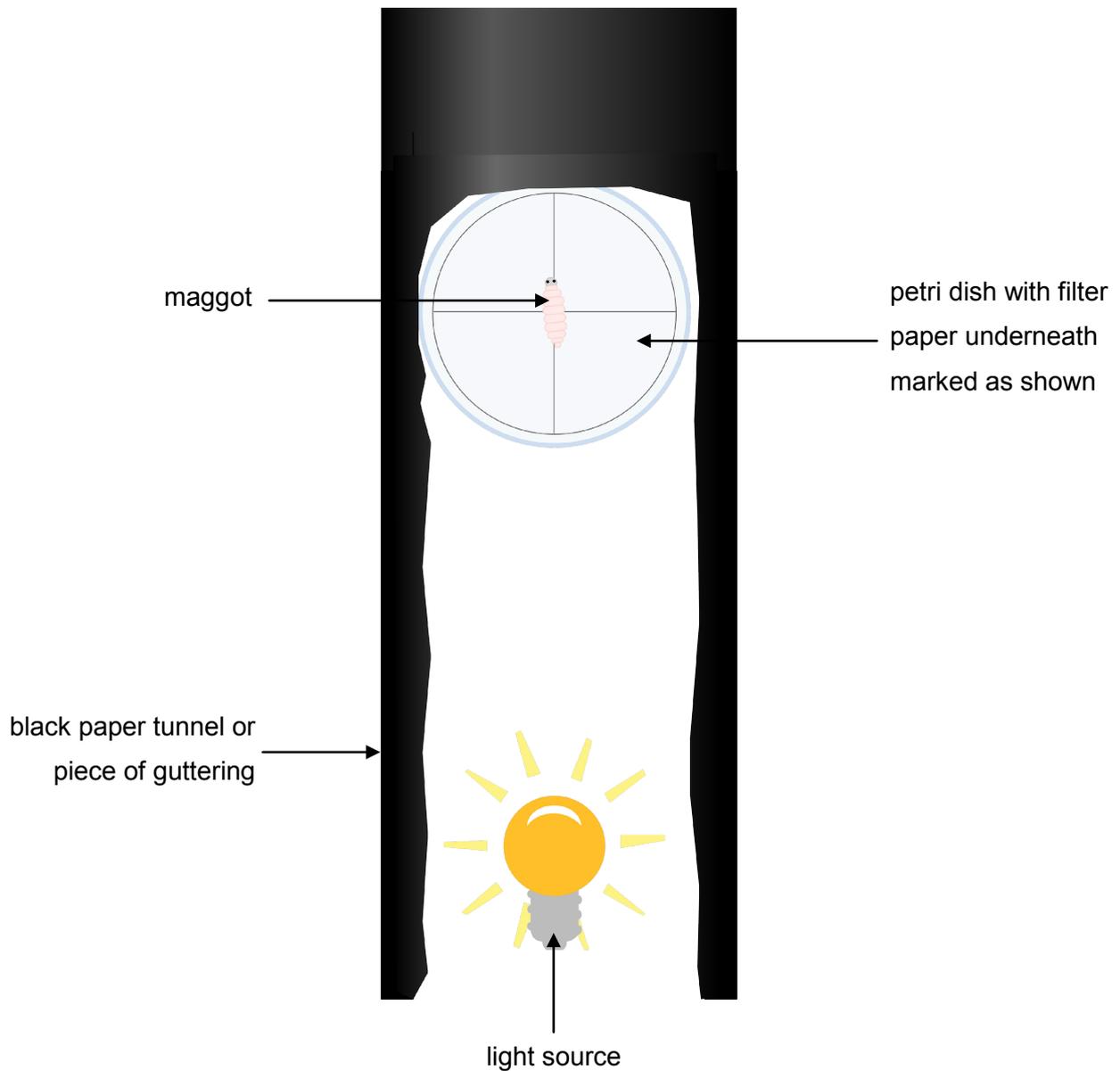
You can use plastic forceps or a spoon to hold maggots firmly without squashing if you are nervous or squeamish about handling them directly. Be gentle.

Do not touch the lamps as they may be hot.

Remember to handle the maggots gently.

Method

- Collect the equipment
- Set it up as shown in the diagram



- Put one maggot in the centre of the petri dish
- Put the guttering or paper over the top, so the light, when you turn it on is directly aiming at the maggot
- Turn the light on
- Start the stop watch
- Turn the light off after the set amount of time you have decided is right from your practice experiment.

Task 2 Writing up your practical task

Title of my Practical Task:

What I did:

What equipment I used:

How I made my Practical Task safe:

My results table (don't forget, units, headings, repeats and work out an average for each distance moved by the maggot for all the lamp distances you tried):



Draw a graph to show how far maggots move at each lamp distance. Don't forget a title and labels on your axes.



Can you notice any pattern in your results? Try to make an 'er...er' statement about it.

Can you think of any scientific reason why you got these results? If you can, write it here. If you can't try to think what your results might mean.

Can you make a comment about your Practical Task?

Try to say how you carried out the experiment and how it affected your results.

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