

biology coursework

AIM The aim of these experiments and this coursework as a whole is to find out whether or not light affects the number of bubbles produced by pondweed.

INTRODUCTION In biology I will be investigating if and how, how far away light is affects the amount of bubbles produced by pondweed in warm water. I will do the experiments in class in a group of four with Danny, George and Ali. We will use various bits of equipment and materials and each person will have their own little jobs while doing the series of experiments. I was in charge of measuring the distance between the pondweed and lamp and also the timing. We will do six different distances of the lamp to the weed so we get a basic idea of how light affects the production of air bubbles by pondweed.

FAIR TEST To make sure I do not get any duff results, every distance we do will be done twice and an average of the two results will be taken. As we are trying to find out if how far light is affect the amount of bubbles produced by pondweed in warm water, so I will be changing the distance between the lamp and the pondweed. I will be using six different distances, which are 0cm, 20cm, 40cm, 60cm, 80cm and 100cm. To make this a fair test I have to keep everything the same, apart from the distances, this is the

output. I will use exactly the same equipment and make sure they are clean each time I use them. I will be using the same lamp, beaker and test tube. The most important things to keep the same are the temperatures of the water and to use the same piece of pondweed. I will count the number of bubbles produced by the pondweed and exactly one minute. To make my results as accurate as possible I will ensure that the experiment is done in the shade, so that no sunrays can heat the water holding the pondweed.

PREDICTION I think the six distances I am doing for my experiment will come in a particular order, I think the pondweed with the light closest to it will produce most bubbles and the pondweed with the lamp furthest away will produce the least bubbles.

PRELIMINARY WORK In our preliminary work we came up with pretty decent result, analysing the results we found the results matches what I said in my prediction. There was a fixed pattern which could have been shown clearly if put in a graph with a line of best fit.

When we were to do our main experiment we would have to make a few changes, I'd say we should have two people counting the bubbles encase one lost count also we should have one person just concentrating on the time encase he takes his eye off the time and it runs past one minute.

Overall I think the preliminary work went well and here are our results for the preliminary

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work, as it was only preliminary work we only observed three distances.

<u>Distance</u>	<u>Start temp</u>	<u>Fin temp</u>	<u>Bubbles</u>
100cm	26 c	26 c	5
60cm	26 c	25 c	6
20cm	26 c	26 c	27

EQUIPMENT

1 beaker
1 test tube
Warm water
1 piece of pond weed
1 timer

METHOD First our group will form and after we have collected all the equipment we will get to work. We will set up all the equipment we will place the beaker on a firm part of the desk and then fill the test tube up with warm water and then put in one piece of pond weed we will use through out the experiment into the test tube and then the test tube into the beaker. We will put the lamp 100cm away from the beaker without yet turning it on. The timer will get ready and when he is ready he will shout clearly "GO" at this time the two counters will start counting the bubbles the light will turn on and the time will start. After a minute the timer will shout, "STOP", the lamp will go off at this time. The counters will say how many they counted and it will be filled in on the table.

We will repeat the exact same experiment again. Then we will change one thing the distance between the beaker and lamp to 80 then 60,40,20 and finally 0cm filling in the table as we go. Each of us will draw up a table at the end after packing away all the equipment for later use.

ANALYSIS By just looking at the table I can see that the shorter the distance between the beaker and the lamp the more bubbles produced by the pondweed as I predicted from the start. It is clear to see that if the distance is 20cm or below the light intensity is one thousand and above.

From the graphs it is clear to see that when the distance is increased the less bubbles are produced which shows not as much photosynthesis is taking place. This is clear to see in both graphs.

I can also see by looking at one of the graphs is that I have made a mistake in my results, there is an anomaly this anomaly is circled in the second graph. Apart from the random result the other results are fine and look good in the line of best-fit graph.

EVALUATION I'd say the quality of my results are a good set, fairly easy to understand and read so overall I am very pleased with my first attempt at coursework.

In my results there is a pattern best shown in the graphs. But there is an odd result, called the anomaly, which does not fit into the best-fit line.

I have one anomaly, which was in the second group of tests, unlike all the others that gradually get less each time the distance is

increased by 20cm, this result decreases by a whopping 32 bubbles and the next result is 27 bubbles higher than the anomaly. I think the reason we got the random result is because both bubble counters miss-counted. Another reason could have been that the lamp was more than 20cm away from the beaker and pond weed.

I feel I had a pretty good method because I only had one random result, which really is no bad thing, talking to the other members of the class I realized that I have a better method and I was more organized than I first thought. At this time I cant think of a better procedure I could have carried out as I think my method was good enough.

Conclusion The main thing I have learnt from the experiments and coursework as a whole is that it is essential for a plant to have light to grow and survive and the further away light is the less food can be made via photosynthesis so my prediction has been proven correct. Overall the coursework has been successful and I am pleased with outcome.