**EXAMPLE OF AN INVESTIGATION LAB REPORT**

**Title of investigation, name and date:**

Plant growth investigation Carlos Buenagente 14/01/2014

**Research question:**

How does the amount of sunlight affect the growth of a plant?



**Background information:**

Plants make their own glucose by means of the photosynthesis process. To carry out photosynthesis, plants need three things - water, carbon dioxide and sunlight (BBC 2008). If they have a lack of one of these things then their growth will be limited. Glucose is used as energy to perform the three vital functions, or converted to cellulose for structural support.

**Objective**

I will investigate the research question by changing the amount of sunlight for 5 plants and measuring how much they grow.

**Hypothesis**

I think the plant with the most sunlight will grow the most because it can perform the most photosynthesis and therefore make the most glucose. The more glucose available, the more energy the plant will have to prepare its cells to reproduce and the more cellulose it can produce for structural reasons. I think the plant with no sunlight will not grow because it cannot do photosynthesis and therefore will have less glucose available.

**Variables**

***Independent variable*** - I will change the amount of sunlight by putting one plant in a box with no hours of sunlight, one plant in the sunlight for 4 hours/day and another plant in the sunlight for 8 hours/day.

***Dependent variable*** - I will measure the height of three plants for each condition in cm, with a ruler from the surface of the soil, to the top of the highest leaf.

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***Control variables*** - I will control the amount of water for each plant by giving each one 20 mL water every day (measured with a measuring cylinder). I will control the amount of gases and the temperature by keeping the plants in the same room. I will control the minerals that each plant receives by using the same soil for each plant. I will control the type of plant by using the same type of seed for each one. I will measure the plants at the same time, once a day for a total of 1 week.

**List of materials**

* 9 lentil seeds
* 3 pots containing the same soil
* 1 box to cover the first plant
* 1 ruler
* Water
* 1 measuring cylinder

**Method**

1. Place 1 seed in each pot of soil and cover it with a small amount of soil.
2. Give each plant 20 mL water using a measuring cylinder.
3. On the first day place Plant 1 in the box, Plants 2 and 3 by the window.
4. After 4 hours, place Plant 2 in a box.
5. After 8 hours, place Plant 3 in a box.
6. Measure the height of each plant with a ruler as described and write the data in a table.
7. Repeat this process every day for 1 week.

**Results**

**Table of data**

Table to show the height of Plant 1, 2 and 3 every day for a week

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Pot-plant number | Day 1 height (cm) | Day 2 height (cm) | Day 3 height (cm) | Day 4 height (cm) | Day 5 height (cm) | Day 6 height (cm) | Day 7 height (cm) |
| 1-1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1-2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1-3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2-1 | 1 | 2 | 3 | 2 | 5 | 6 | 7 |
| 2-2 | 2 | 2 | 2 | 5 | 6 | 5 | 7 |
| 2-3 | 0 | 2 | 4 | 5 | 4 | 7 | 7 |
| 3-1 | 2 | 4 | 6 | 8 | 10 | 12 | 14 |
| 3-2 | 2 | 2 | 6 | 9 | 10 | 13 | 12 |
| 3-3 | 2 | 6 | 6 | 7 | 10  | 11 | 16 |

**Calculations**

The average is calculated for each plant. To do so, I have to sum all the heights for the same plant and day, and divided between 3.

Table to show the average of height of Plant 1, 2 and 3 every day for a week



**Graph**

**Legend**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Plant 1  | X | Plant 2 | X | Plant 3 | X |

**Conclusion**

My results show that the plant with no sunlight did not grow at all (0 cm), the plant with 6 hours of sunlight grew quite well (6 cm) and the plant with the most sunlight grew very well (14 cm). These results match my hypothesis very well. As I explained in the hypothesis, I think this is because plants need sunlight to grow so the plant with the most sunlight grew the most and the plant with no sunlight did not grow at all.

**Evaluation**

I think that I carried out this experiment accurately because the results matched my hypothesis and all of the data points are very close to the line of best fit. One error that might have affected my results was that not every day was sunny so sometimes Plants 1 and 2 maybe received less than 6 or 12 hours of sunlight. To improve this I could use a lamp with each plant so that they both received light for the time that they were supposed to. The temperature of Plant 1 might have been higher than 2 and 3 because it was closer to the heater in my bedroom. This might have affected the growth. To improve this I could put all of the plants in exactly the same place.

**APA-style reference list**

* + - 1. Aces.uiuc.edu, (2014). *Requirements for Plant Growth*. [online] Available at: http://www.aces.uiuc.edu/vista/html\_pubs/hydro/require.html [Accessed 1 Jul. 2014].
			2. David Whiting, C. (2010). *Plant Growth Factors: Photosynthesis, Respiration, and Transpiration*. [online] Ext.colostate.edu. Available at: http://www.ext.colostate.edu/mg/gardennotes/141.html [Accessed 1 Jul. 2014].

3. BBC (2008) Plant growth [online] <http://www.bbc.co.uk/education/guides/zpwmxnb/revision> [Accessed 1 Jul. 2014].