

# The scientific method - lab report example

[Science](#), [Biology](#)



## **The Scientific Method**

The Scientific Method Exercise Response to question one. The fish appear to increase when the amount of oxygen increases and they require dissolved oxygen for their survival.

Response to question two.

In this study, we hypothesize that increasing the amount of dissolved oxygen measured in a water sample increases the number of fish seen in the body of water.

Response to question three.

In order to test this hypothesis, a scientific method would be used so as to establish the required answers to the specific questions. In this case, quantitative studies of dissolving oxygen in water would be used together with experimental tools. Scientific method involves observation making, hypothesis formulation, and performing the scientific experiment. These approaches will facilitate the biological process exploration that would lead to the establishment of a clear functional relationship among the different components under consideration (Demeyer, 2000). The quantity of oxygen dissolved would be controlled by beginning from 20ppm and twenty fish. After this the amount of oxygen would be lowered slowly up to 0ppm. In this instant, as per the hypothesis set, there would be zero fish within the water.

Response to question four.

In this study the independent variable would be the amount of dissolved oxygen measured in water where as the dependent variable is the number of fish seen in a body of water.

Response to question five.

The control variable for this experiment would be temperature of water. This is so because for accurate results of this experiment, the temperature of water needs to be kept constant. Otherwise it will alter or give out biased the results of the experiment.

Response to question six.

For this data set, a line graph would be most appropriate representation.

This is so because line graphs are normally used in making comparison and representing data that have a time series. This graph is the most appropriate for this data, because it displays a clear magnitude change.

Response to question seven.

A graph showing the effect of dissolved oxygen on the number of fish

Response to question eight.

Fish do survive in water whenever the oxygen within the water is at about 12ppm. However, when the oxygen level drops to 0ppm, the fish will die due to lack of oxygen (Demeyer, 2000).

Exercise 2.

Response to question one.

Observation A.

In this observation, we hypothesize that the rate at which the plant grows depends on the quantity of sunlight. The null Hypothesis for this observation would be; the rate at which a plant grows is not controlled by the quantity or degree of sunlight. The approach used would be moving the plant around the specific room. The dependent variable shall be the plant growth whereas the independent variable shall be the sunlight amount. The control variable for this observation shall be a plant placed in the shade. Data shall be collected

using a pencil, stopwatch, ruler and a clipboard. Presentation of data shall be done using a bar graph. This data would be interpreted using an excel program or an SSPS program.

#### Observation B.

In this observation, we hypothesize that the Bank tellers having brown hair with brown eyes certainly would be taller in height. The null Hypothesis, in this case, shall be the bank tellers height has no relationship with their eye or hair color. The approach of experimentation to be used would be observing tellers who work at different banks. The dependent variable for this observation is the bank teller's height and the independent variables are the bank teller's eye color. The control variable, on the other hand, shall be the RCB bank. Data collection shall be made by use of a table and the representation of the data made possible by use of a bar graph.

#### Observation C.

In this observation, we hypothesize that a large number of fish would be captured if fishing is done in the morning. The null hypothesis is that the number of fish captured does not depend on the time of the day. The approach of experimentation in this observation shall be observing fishermen doing fishing at different times of the day. In this case, the dependent variable shall be number of captured fish where as the dependent variable shall be the time of the day the control variable shall be some other river.

#### Observation D.

In this observation, we hypothesize that Billy obtains more sales than Joe. The null hypothesis shall be that Joe makes more sales than Billy. The

approach of experimentation shall be calling Smith & co to inquire whoever makes the most sales. The dependent variable shall be money made by Billy and Joe where as the independent variable shall be the amount of sales made. The control variable shall be a different Smith & Co employee (Bob).

#### Observation E.

In this observation, we hypothesize that the blood pressure of Sally pressure is connected to the amount of exercises that she does. The null hypothesis, in this observation, shall be that the blood pressure of Sally is not associated with her lifestyle habits like exercise. The approach of experimentation shall be monitoring the blood pressure of Sally by following her around for a number of weeks. The dependent variable shall be the blood pressure of Sally where as the independent variable shall be the lifestyle habits like exercising, and consumption of fatty food. In this observation, there would be no control variable.

#### Observation F.

In this observation, we hypothesize that we shall visit a restaurant that is open for supper. The null hypothesis shall be that we shall visit a restaurant that is closed for dinner. The experimental approach shall be going out at nine pm for dinner. The dependent variable shall be the restaurant visited where as the independent variable shall be the closing time of the restaurant. The control variable is any other restaurant that closes down at ten p. m.

#### Observation G.

In this observation, the hypothesis shall be the shirts having golf clubs in the back are sold at \$20. The null hypothesis shall be that all the shirts that are

sold cost \$20. The approach of experimentation shall be going to the store then purchasing a shirt. The dependent variable is the shirt's price whereas the independent variable is the shirt's image. A shirt that is blue with no picture shall be the control variable.

#### Observation H

The hypothesis for this observation shall be that whenever clouds appear, the rain starts after a period of fifteen minutes later. The null hypothesis shall be that the onset of clouds does not predict the beginning of rain 15 minutes later. The approach of experimentation shall be observing the onset of clouds and time the beginning of the rain. The independent variable shall be the onset of clouds where as the dependent variable shall be the rain. The control variable shall be another day in a different place.

#### Observation J.

The hypothesis for this observation is that increasing the amount of heat increases the rate at which ice melts. The null hypothesis for this experiment is that there is no relationship between the amount of heat and the rate of melting ice. The approach of experimentation involves observing the behavior of ice placed on a warm summer day and that place on a cold winter day. The independent variable for this experiment is the amount of heat or temperature whereas the dependent variable is the rate at which ice melts. The control variable is the behavior of ice on a normal nay.

#### Response to question Two.

Applying the scientific method to an everyday problem involves observation the problem formulating a tentative answer to the problem, then seeking the correct answer through performing a scientific experiment. A good example

is whenever a child is sick. First you observe the child to verify the symptoms of the disease. Next you give out a tentative solution like giving the child first aid or pain relievers. After this, you take the child to the hospital for a scientific experimentation to ascertain the real disease.

References.

Demeyer, A (2000). Water Quality Conditions in Physiology of Fishs. New York: Chapman and Hall press.