|  |  |
| --- | --- |
| Experimental Design 3.11  Experiment:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **Write on** |
| **Problem*** Clearly state what you are going to investigate (the experimental situation.)
* Use contextual and statistical knowledge informed by research to develop an investigative question.
* Pose a causal relationship question that can be investigated by conducting an experiment.
* Hypothesise about the results of the experiment.

**Plan**Planning and conducting an experiment using experimental design principles.* Identify the type of experiment to be conducted.
* Identify the experimental units.
* Identify the treatment variable and how it will be manipulated.
* Identify the response variable and how it is measured.
* Justify how the treatment variable (including levels and groups) and response variable were defined for the experiment.
* Justify the allocation of the treatment to the experimental units
* Identify other sources of variation (factors) and how they might affect the experiment.
* Use contextual knowledge to identify relevant variables that could affect the response variable.
* Use statistical knowledge to describe how these sources of variation could be controlled or balanced.

**Data and Analysis*** Collect and record the data from the experiment, identifying any issues that arose during the experiment and how they might affect their findings.
* Reflect on how the experiment was conducted, identifying key issues in the design and explaining how any design issues might be addressed.
* Produce displays and statistics appropriate to the design of the experiment.
* Describe key features of the displays and statistics relevant to the experiment.
* Use an appropriate statistical method to obtain evidence to answer the investigative question.
* Use statistical insight to justify their method in relation to the **causal relationship.**

**Conclusion*** Make an appropriate formal statistical inference.
* Assess and interpret the strength of the evidence for the inference about the causal relationship investigated.
* Communicate the findings in a conclusion.
* Discuss how your findings relate to other research findings.
* Use informed contextual knowledge to generalise to the wider experimental situation in their discussion of their findings.
 |  |