

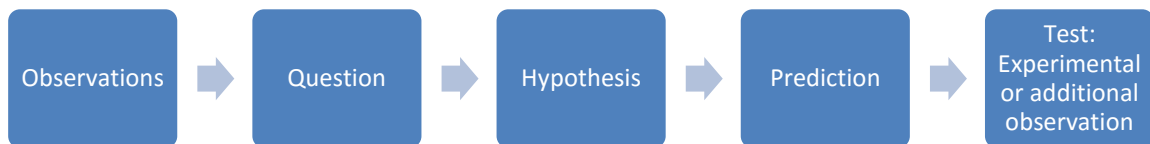
BUILDING BLOCKS FOR SCIENCE STUDENTS | BSC100 | NOTES EXTRACTS FOR SAMPLE

Scientific Method:

- **Presupposition Evidence Logic (PEL) Model:**
 - Common principles (PEL)
 - The world is orderly and comprehensible
 - Our sense perceptions are generally reliable
 - Ideas can be checked against a 'real' world
- * This cannot be proved and may be called science's faith

Evidence:

- **Hypothesis Testing:**
 - Hypothesis explains how the world works
 - Leads to a prediction
 - Prediction often states 'if- then'
 - Predictions tested by observation or experiment
 - The aim is to DISPROVE



- **Observations:**
 - Just because two things correlate, doesn't mean they are causal
- **Inductive Logic:**
 - Argue from a specific to a generality. E.g. this mouse has a brain → all mice have brains.
 - Inferential statistics can be regarded as applied inductive logic.
 - Induction can be strong or weak, depending on the specific and the extent of the generalisation.
- **Deductive Logic:**
 - Arguing from the general to the specific.
 - Deductions are either right or wrong; they cannot be weak or strong.

ETHICAL CONSEQUENCES OF EXPERIMENT SUBJECTS

SUMMARY:

- 1. DESCRIBE THE PEL MODEL OF SCIENCE:**
Presupposition, evidence and logic are required to engage in science.
- 2. EXPLAIN WHAT QUESTIONS ARE BEYOND SCIENCE:**
Any question that cannot obtain evidence through observation or testing.
- 3. DESCRIBE THE HYPOTHESIS TESTING APPROACH TO ANSWERING SCIENTIFIC QUESTIONS:**
Hypothesis approach is to falsify the aim of the test, thus a theory cannot be developed.
- 4. EXPLAIN THE ROLES OF CONTROLS AND REPLICATES IN SCIENTIFIC EXPERIMENTS:**
To prove that the relationship is causal and not just related.
- 5. DISTINGUISH BETWEEN DEDUCTION AND INDUCTION:**
Deduction is a conclusion arrived to by using evidence; Induction uses evidence to arrive to a conclusion.

REFERENCING AND ACADEMIC INTEGRITY:

- **Respect**- Acknowledge when you use other's ideas | don't steal other's ideas
- **Trust**- what you read doesn't have omissions | was actually done | written by who it says it was
- **Plagiarism**: Poor acknowledgment through to copying intentionally
 - o **Copying with no attribution**
 - o **Collusion**- working with someone else to produce work
 - o **Ghost writing**- getting someone else to write your work
 - **Agree to be accountable for all aspects of the work**
 - o **Purloining**- submitting someone else's work/ assignment

DON'T:

- o Forget footnotes
- o Quote- paraphrasing is better. Still need to reference where ideas came from
- o Reference incorrectly
- o Use too many references- need to include own ideas
- o Use unreliable resources

ESSAY STRUCTURE

- Break down essay question
- Make sure you understand what is required
- Research | readings, lectures
- Spend 30% of time on research and planning
- Spend 70% of time on writing essay
- ANSWER THE QUESTION
- Take own opinion- leads to thesis statement
- Compose a thesis statement
- Write first draft
 - o Introduction
 - Broad statement
 - Restate essay question
 - Thesis statement
 - Summary of main points that you will argue
 - o Body: Supporting arguments
 - Assertion
 - Reasoning
 - Evidence
 - o Conclusion
 - Restate main points
 - Explain how main points work together to support overall thesis
 - DO NOT INTRODUCE NEW EVIDENCE OR ARGUMENT
- Edit, revise, review, research some more
- Not enough kinds of stories