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## READING A SCIENTIFIC PAPER

*Other Handouts:*

- Scientific Writing
- Scientific Laboratory Reports

### Step 1: Have a goal in mind whilst you read

Always read a scientific paper with a specific goal in mind, such as answering specific questions or understanding particular concepts.

**Tip!**

*Don't read it from beginning to end. Read it as a problem to solve.*

### Step 2: Read the abstract

Read the abstract and ask yourself the following questions:

- What was done?
- Why was it done?
- How was it done?
- What were the results?
- What do the author/s conclude?

### Step 3: Read the introduction

Briefly look at the introduction, which will also usually include a review of the key literature in the field and ask yourself:

- Who is the author or authors?
- Is there any information provided about the author's background?
- Look at the reference list to see whether the author has published other work in the field?
- Is the reference list current and up to date?
- What else have you read in this area?
- Have any of the references used by the authors been mentioned elsewhere, such as in your lectures or textbooks?

### Step 4: Read the discussion section

Jump to the discussion section, which is the interesting part of the article in which the authors are putting forward what they think the results mean. Ask yourself the following questions:

- What sort of claims are the authors making?

- What kinds of evidence would they need to substantiate their claim?
- How does this discussion link into the research already done in the field that was described in the introduction /literature review section?

### **Step 5: Read the results section**

Ask yourself:

- What are the main results from the study?
- What kinds of data do the authors use to back up their argument?
- How valid is it?

### **Step 6: Review the discussion section**

Ask yourself:

- What sort of inferences are drawn between the results and the discussion?
- Are the inferences being drawn, reasonable?
- Is there sufficient data to back up the interpretation in the discussion section?
- Are there any inconsistencies or unsubstantiated claims?
- How reliable is the evidence in support of the discussion?

### **Step 7: Read the tables & figures (graphs/diagrams/images)**

Examine the tables & figures and ask:

- What is the information telling you?
- Do any comparisons (for example between x versus y axis) make sense?
- Are the author's claims reasonable given the information given in the tables or figures?

### **Step 8: Read the materials and methods section**

Ask yourself:

- How was the data collected?
- What methods were used?
- Are these methods appropriate to the study?
- On the basis of the details given could this research be repeated?

### **Step 9: Read the conclusion**

Ask yourself:

- What conclusion do the author/s come to?
- Is it important?
- Why is it important?
- What are the practical implications?
- Do they offer areas for future research?

## Step 10: Read the entire paper

Now read the entire paper through from beginning to end and make notes in the margins about:

- Questions about the material
- References to look up
- Summaries of the main points
- Supplementary material you have learned or read elsewhere and keep asking yourself: 'what does this material mean?'

## Step 11: Write a summary and evaluation of the paper

To understand information it is necessary to use that information. One way to make sure that you take in what you have read is to write about it. Write a response to all of the questions posed above to form a paragraph to summarise and evaluate the paper. Always give an accurate description of the:

- Aims of the author/s,
- Results
- Interpretation of those results.
- Value of the work to....

***Tip!***

*Make it a habit to never read without also writing!*