How to Read a Scientific Paper: A Guided Worksheet

I find this guide helpful when reading scientific papers, take a look:
[How to Read and Understand a Scientific Paper](#)

Paper information

1. Title:
2. First Author:
3. **Why are we reading this paper in this class? (1–2 sentences)**

Before you begin: reading mindset (2 minutes)

1. ☐ I will **not** try to understand everything in one pass.
2. ☐ I will keep a **running glossary** of unfamiliar terms.
3. ☐ I will focus on the **question → approach → evidence → claim**.
4. ☐ I will look for **limitations/assumptions**, not just conclusions.

Step 1: Read the Abstract and Introduction first

As you read the Abstract and Introduction, answer:

(a) What problem is the broader field trying to solve? ("the big question")
(b) What is the gap? What couldn't previous studies do?
(c) What is the paper's motivation? Why does the gap matter?

Step 2: Summarize the background in 5 sentences or fewer

Write a **five-sentence max** background summary that sets up the study.

Step 3: Identify the specific research question(s)

List the specific question(s) the authors claim to answer.
1. Question 1:
2. Question 2:
3. Question 3:

If hypotheses are stated, write them here:

Step 4: Identify the approach (the game plan)

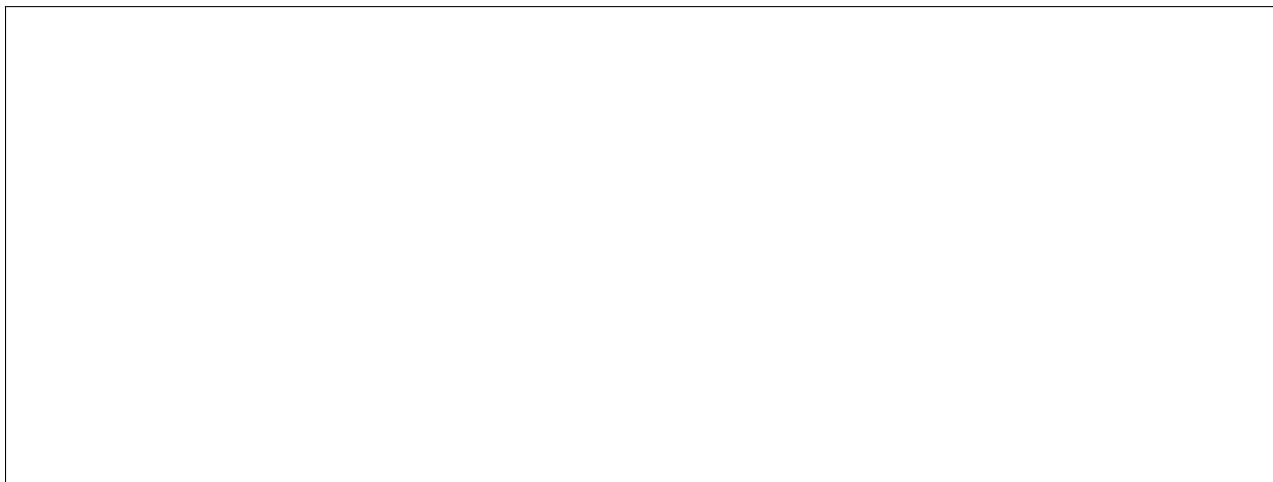**In plain language: what do the authors do to answer the question(s)?**

_____

Key data types (check all that apply):
☐ field observations   ☐ lab measurements   ☐ experiments   ☐ modeling   ☐ compilation/meta-analysis   ☐ other: _____

Step 5: Methods map (draw it)

You do **not** need to replicate the study, but you should be able to explain the workflow.
1. What are the samples / study system?
2. What are the key variables measured?
3. What is the comparison / test?
4. What are the key assumptions in the methods?

Draw a simple diagram of the workflow here (boxes + arrows):

Step 6: Results inventory (figure-by-figure)

Do not interpret yet. Just record what the results are.

Fig/Table	What was measured / shown?	What is the key pattern / number?
1		
2		
3		
4		
5		

Step 7: Do the results answer the specific question(s)? (your interpretation)

For each specific question, answer: "yes/no/partly" and explain why.

1. Question 1:
2. Question 2:
3. Question 3:

Your best one-paragraph interpretation (before reading Discussion):

Step 8: Read the Discussion/Conclusion (authors' interpretation)

(a) What are the authors' main claims? (list 2–4)
1.
2.
3.
(b) What evidence supports each claim? (cite figure/table numbers)
(c) What limitations do the authors acknowledge?
(d) What limitations/assumptions do *you* think matter most?
(e) What do they propose as the next step?

Step 9: Now read the Abstract (last)

Does the abstract match what the paper actually shows?
☐ yes   ☐ mostly   ☐ not really

One thing the abstract emphasized that you think is overstated or unclear:

One important nuance the abstract underplays or omits:

Final takeaway (the 30-second explanation)

Imagine you're explaining this paper to a classmate who missed the reading. Fill in:

This paper asks: ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

They test it by: ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

They find: ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

So they argue: ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

The biggest caveat is: ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯