

## Lecture 8: How to Write a Scientific Paper in 10 Simple Steps

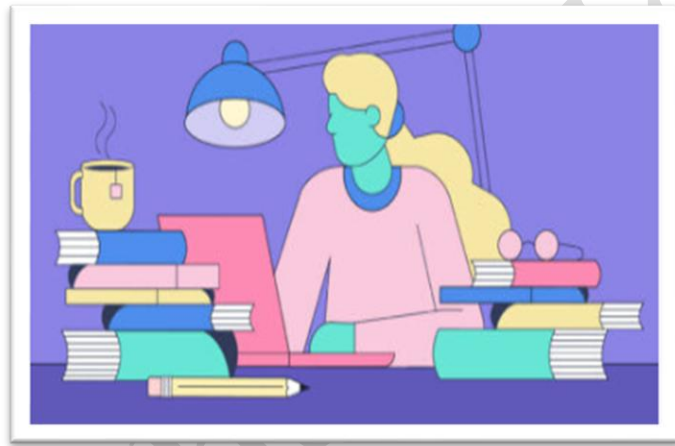
(With Examples from Biology)

### 1. Start with Your Main Idea

Write one short sentence about the most important thing you found in your study. Ask yourself: What is the main message I want people to learn? This will help you stay focused.

#### Example:

“My study shows that using biochar with *Pseudomonas putida* improves tomato plant growth.”

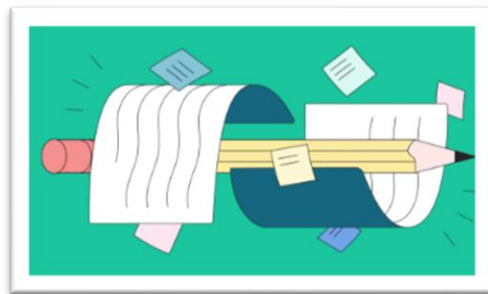


### 2. Don't Begin with the Introduction

Don't start with the abstract or introduction. Start with the parts that are easier — like results or figures. The introduction can be written later after you understand your findings.

#### Example:

You might first write about how your tomato plants grew in different soils, and later explain why you tested biochar in the introduction.



### 3. Make Your Figures First

Collect all your data, tables, and charts before writing. Figures show your story clearly and help you see what is missing.

#### Example:

- Figure 1: Tomato plant height in normal soil vs. biochar soil.
- Figure 2: Number of bacteria in the soil after adding *Pseudomonas putida*.

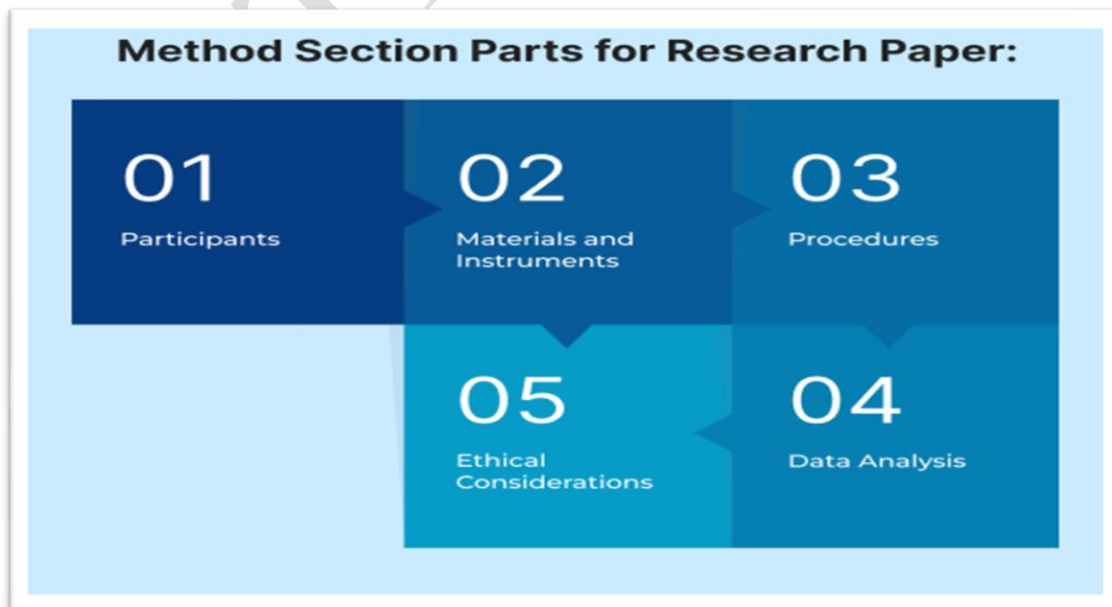


### 4. Write the Methods

Explain exactly what you did in your experiment so others can repeat it. Include the materials, tools, and steps. Do not write results here — just describe what you did.

#### Example:

“Tomato seeds were planted in pots containing 10% biochar and watered every two days. The soil bacteria were counted using the plate count method.”



## 5. Write the Results and Discussion

Now explain what you found and what it means. Use your figures to guide you.

Write three small parts for each figure:

1. Result: What happened?
2. Discussion: Why did it happen?
3. Importance: Why is it important to biology?

### Example:

“The plants with biochar grew 30% taller than the control group. This may be because biochar helps soil keep more nutrients. These results support using biochar for sustainable agriculture.”



## 6. Write the Introduction

Now that you know your results, write the background. Start with what is already known, then explain what is missing and what you studied.

### Example:

“Many studies show that biochar improves soil quality. However, few studies tested the effect of biochar combined with beneficial bacteria. This study investigates the impact of biochar and *Pseudomonas putida* on tomato growth.”

## 7. Write the Conclusion

End with what you learned and what it means. You can also suggest ideas for future research.

### Example:

“Adding biochar and *Pseudomonas putida* improved tomato growth. Future studies should test other crops to see if the same results happen.”

## 8. Write the Abstract

Write a short summary (about 150–250 words). Include:

- What you studied
- How you studied it
- What you found
- Why it matters

### Example (short abstract):

“This study tested the effect of biochar and *Pseudomonas putida* on tomato growth. Tomato plants were grown in soil with and without biochar. Results showed higher growth and more soil bacteria in the biochar group. The combination improved soil quality and plant health, showing that biochar can support sustainable farming.”

## 9. Add References

List all the papers and books you used. Use the same reference style the journal asks for (for example, Harvard style).

### Example:

Lehmann, J. & Joseph, S. (2015). *Biochar for Environmental Management: Science and Technology*. Earthscan, London.

## 10. Read and Edit

Read your paper many times. Check for clear sentences, correct spelling, and correct biology terms. Ask a classmate or teacher to read it — they might find mistakes you missed.

Remember: Writing a scientific paper is like telling the story of your discovery. Be clear, simple, and honest — and always connect your findings to biology and real life.



## References:

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