

Reading Paper Like a Real Scholar

Content

- **Paper Types and Structures**
- **Guidelines for Reading Paper**
- **Readout The Paper Outline**

[Please click here to see the Lecture Video](#)

- **Paper Types and Structures**

Two Types of Scientific Papers

- **Research Article:**

A research article reports the results of **original** research, assesses its contribution to the body of knowledge in a given area, and is published in a peer-reviewed scholarly journal.

- **Review Article:**

A review article is an article that **summarizes** the current state of understanding on a topic

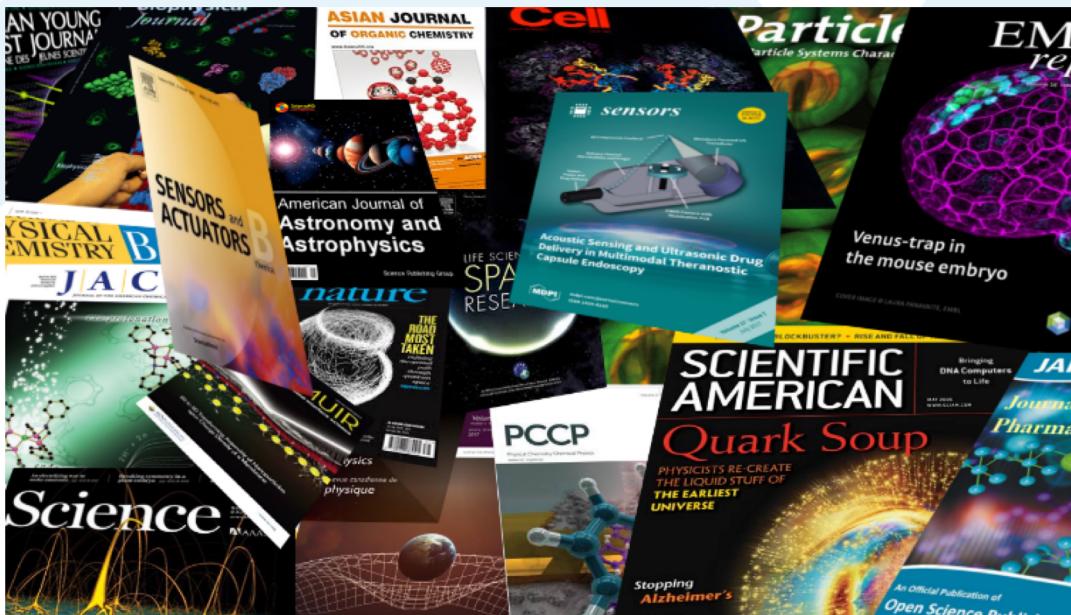
The Structure of Research Articles



- ❖ Title
- ❖ Abstract
- ❖ Introduction
- ❖ Method
- ❖ Results and Discussion
- ❖ Conclusion
- ❖ References

Body

The Structure of Review Articles



- ❖ Title
- ❖ Abstract
- ❖ Introduction
- ❖ **Body**
- ❖ Conclusion
- ❖ References



Leading the logic through subheadings

Characteristics for Each Section

- Title: precise, attractive and catchy
- Abstract: High level summary
- Conclusion: Restate the main findings and point out the direction in the future study

Precise

Characteristics for Each Section

- Introduction: Background info in the field and related research leading up to this paper
- Methods: Highly detailed section on the study that was conducted, how it was set up, any instruments used, and finally, the process and workflow
- Results: Authors talk about the data that was created or collected, it should read as an unbiased account of what occurred
- Discussions: This is where authors interpret the results, and convince readers of their findings and hypothesis
- References: Any other literature that was cited in the body of the text will show up here

Details

- Guidelines for Reading Papers

Why Learn to Read Papers?

Why Read Papers

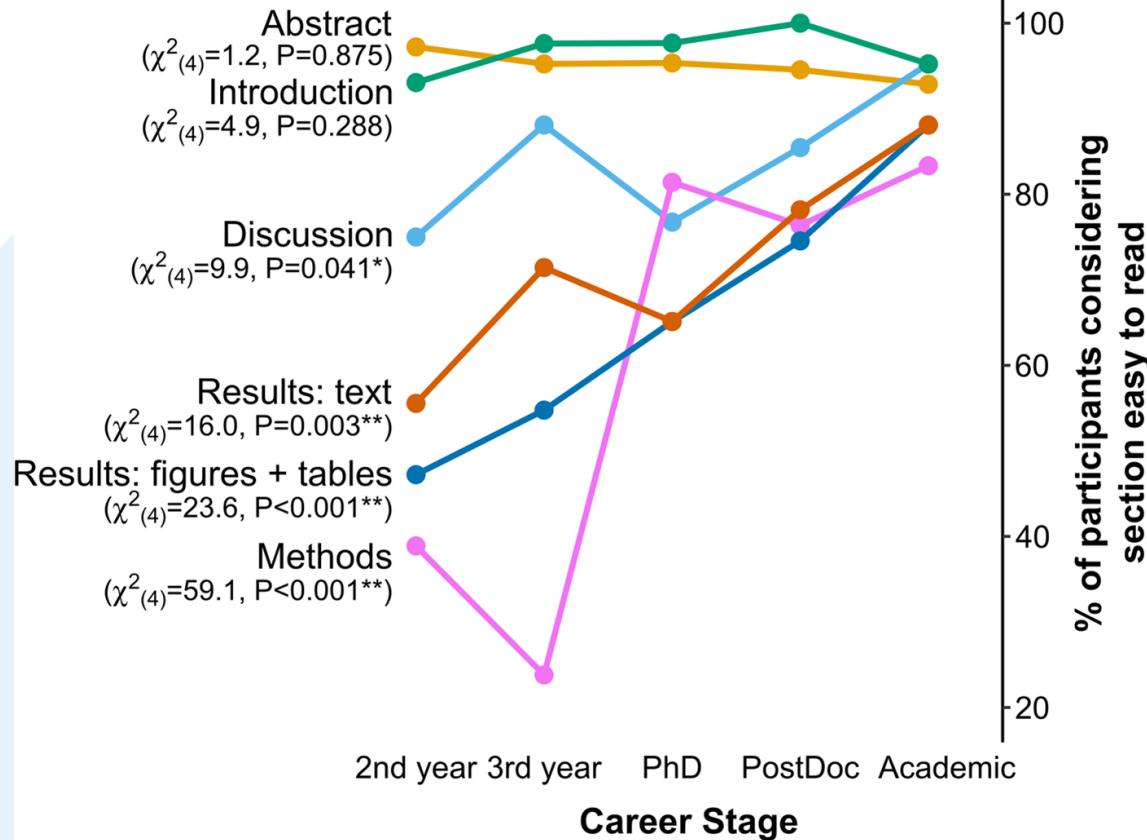
- To review papers for a conference or a class
- To keep current in their field
- For a literature survey of a new field

Why **Learn to** Read Papers

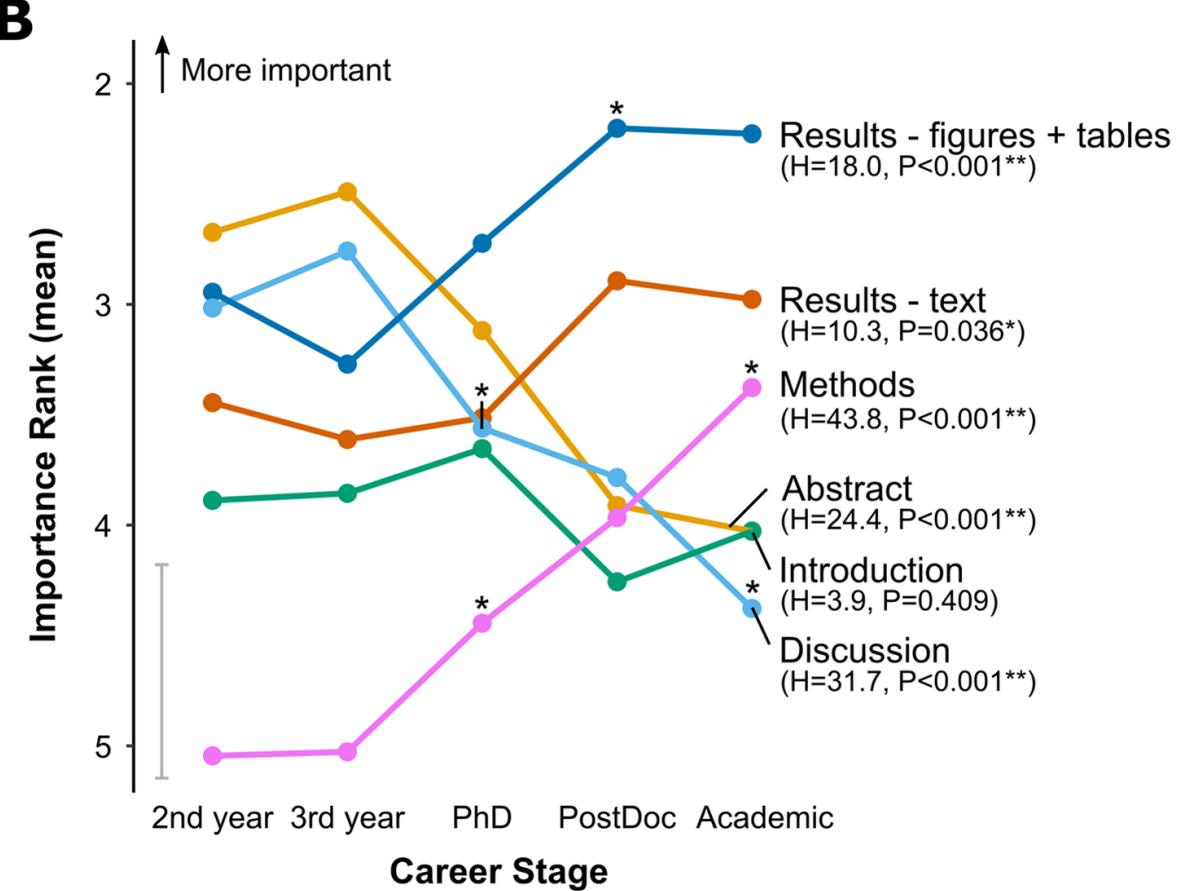
- Too much to be read
- Beginners often falls into in details and ignores the key findings
- Save time and effort

Where Difficulties Arise, Lie In the Opportunities...

A



B



A: The proportion of participants considering a section easy to read

B: The mean importance rank of sections as a function of career stage

The Three-Pass Approach

The key idea is that you should read the paper in three passes, instead of starting at the beginning and plow-ing your way to the end. Each pass accomplishes specific goals and builds upon the previous pass:

- The **first pass** gives you a general idea about the paper.
- The **second pass** lets you grasp the paper's content, but not its details.
- The **third pass** helps you understand the paper in depth.

We will make more explanations in the following slides ...

The First Pass

Bird's Eye View

To Do:

- Carefully read the **title, abstract, and introduction.**
- Read the section and sub-section headings, and ignore everything else.
- Read the **conclusions.**
- Glance over the references, mentally ticking off the ones you've already read.

To Answer:

- Category: What types of paper is it?
- Context: What is the objective of the work? Why is it important? What have been done previously (other people's work)? What's the specific problem that needs to be solved? Which theoretical frameworks were used to analyze the problem? What are the conclusions (the key findings)?
- Correctness: Do the assumptions appear to be valid?
- Contributions: What are the paper's main contributions?
- Clarity: Is the paper well written?

The Second Pass

With greater care, but still ignore details

- Look carefully at the figures, tables and other illustrations in the paper. Pay special attention to **graphs**: What do they mean? What conclusions can be drawn in your own view? Are they consisted with the context? Why or why not?
- Remember to mark relevant unread references for further reading.
(This is a good way to learn more about the background of the paper)

Characteristics for Each Section

- **Title: precise, attractive and catchy**
- **Abstract: High level summary**
- Introduction: Background info in the field and related research leading up to this paper
- Methods: Highly detailed section on the study that was conducted, how it was set up, any instruments used, and finally, the process and workflow
- Results: Authors talk about the data that was created or collected, it should read as an unbiased account of what occurred
- Discussions: This is where authors interpret the results, and convince readers of their findings and hypothesis
- **Conclusion: Restate the main findings and point out the direction in the future study**
- References: Any other literature that was cited in the body of the text will show up here

The Third Pass

- For most situations, it is enough to do the first two-pass.
- For the ones that really make you interested, it is necessary to do the third pass.

The key to the third pass is to attempt to virtually re-implement the paper: that is, making the same assumptions as the authors, re-create the work.

- This pass requires great attention to **detail**. You should identify and challenge every assumption in every statement. Moreover, you should think about how you would present a particular idea. This comparison of the actual with the virtual lends a sharp insight into the proof and presentation techniques in the paper and you can very likely add this to your repertoire of tools. During this pass, you should also jot down ideas for future work.

- **Readout the Paper Outline**

Reading Card for the Research Articles

Now, you can build up your own reading cards by filling out the information bellow, which constructs the outline for the paper you read. It is a good habit to accumulate materials and knowledge.

Title:

Authors:

Type:

Abstract: Could you find out the sentences for background summary, what kind of problem exists, which **hypothesis** is raised up, what kind of **methods** are used, and what's the conclusion?

Introduction: What's the objective? Why is it important? What's the **background**? What's the problem to be solved? Is there any hypothesis? What's the **key finding**?

Reading Card for the Research Articles

Method: What's the method/material/data to be used? What kind of question the experiment can test? What's the measurable outcome?

Results: Choose one or two **result(s)** to read **in detail**, tell why it is important to help to reach the conclusion.

Discussion: What conclusion have been drawn from the **figures/tables**? Are they reasonable?

Conclusion: What's the key finding? What does it imply? What's direction of future study?

References: Pick out the important ones

Reading Card for the Review Articles

Title:

Authors:

Type:

Abstract: Could you find out the sentences for background summary, what kind of problem exists, what conclusions have been obtained?

Introduction: What's the objective? Why is it important? What's the background? What have been done? What still need to be done? Why write this review? How is it organized?

Reading Card for the Review Articles

Body: Pay attention to the subheadings and make a **concise summary** for the context that covered by the subheading. Can the order of subheadings reflects the logical flow?

Conclusion: Make a comparison for the conclusive statements appearance in abstract, introduction and conclusion. What's direction of future study?

References: Pick out the important ones

The background features abstract, semi-transparent light blue shapes resembling clouds or organic forms, with one large rounded rectangle on the left and two smaller circles above it.

Thanks!