

Typical structure of a scientific paper (**IMRAD** structure)

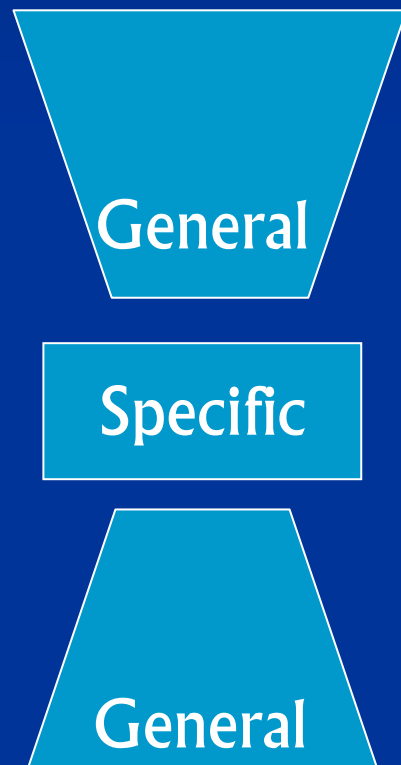
- Title
- Abstract
- **I**ntroduction (What did you study? Why did you study this?)
- **M**aterials and Methods (How did you do?)
- **R**esults (What did you find?)
- **D**iscussion (What does it mean?)
- Acknowledgements
- References

A bad beginning makes a bad ending.

— Euripides

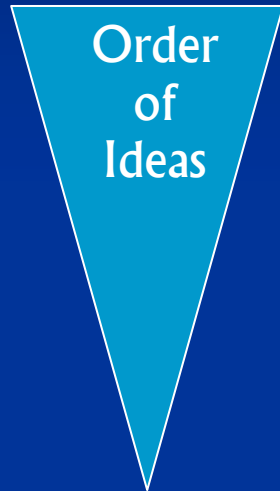


The order of ideas in research paper normally follows the pattern G-S-G



The introduction usually has from **four** to **six** stages (moves) moving from the general to the more specific:

General



Specific

- 1st stage: ?
- 2nd stage: ?
- 3rd stage: ?
- 4th stage: ?
- 5th stage: ?
- 6th stage: ?



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Specific

1st stage: establishing a context

Useful expressions:

1st stage

establishing a context

- Injury **is** the main cause of death in people under fifty years old.
- The cell population types constituting multicellular organisms **can be roughly classified**, based on their kinetics, into three main groups:
- Paleoecology **shows** that vegetation has continually changed with climate.
- Clean water **is** a basic human need.
- During the past forty years, computers **have become** essential tools in many walks of life.

Some “skeletal” examples

- Recently, there has been growing interest in ...
- The possibility of ... has generated wide interest in ...
- The development of ... is a classic problem in ...
- The development of ... has led to the hope that ...
- The ... has become a favorite topic for analysis ...
- Knowledge of ... has a great importance for ...
- The study of ... has become an important aspect of ...
- A central issue in ... is ...
- The ... has been extensively studied in recent years
- Many investigators have recently turned to ...
- The relationship between ... has been investigated by many researchers.
- Many recent studies have focused on ...

The introduction usually has from **four** to **six** stages (moves) moving from the general to the more specific:

General



1st stage: establishing a context

2nd stage: reviewing the literature



Specific

Tense patterns in reporting

1. **Past** – single study and researcher as agent – *Jones (1998) investigated the causes of bark beetle outbreaks*
2. **Present perfect** – area of inquiry – *There have been several investigations into the causes of bark beetle outbreaks (Brie 1966, Jones 1998)*
3. **Present** – reference to current knowledge (but not direct reference to research activity) – *The causes of bark beetle outbreaks appear to be complex (Brie 1966, Jones 1998)*

What is the difference?

- Smith (1993) **found** that the number of fires **was** correlated most closely with
- Smith (1993) **found** that the number of fires **is** correlated most closely with

Citational Present

- Plato argues that ...
- Confucius says ...
- The Bibles says ...
- The constitution states ...

3RD Stage: establishing a gap

Here you signal to the reader that literature review is finished. Your review should point a gap in the literature, i.e. an important research area not investigated by other authors because:

- They **overlooked or ignored** this area, or
- There **is conflict** about the area, or
- Your area is **a kind of extension or continuation** of other research

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3rd stage: establishing a research gap

Some "negative" verbs:

"However, previous research field has ...

1. concentrated on ...
2. disregarded ...
3. failed to consider ...
4. ignored ...
5. been limited to ...
6. misinterpreted ...
7. neglected to consider ...
8. overestimated ...
9. overlooked ...
10. been restricted to ...
11. suffered from ...
12. underestimated

Some “negative” adjectives:

“Nevertheless, these attempts to establish a link between secondary smoke and lung cancer are at present ...

- **controversial**
- **incomplete**
- **inconclusive**
- **misguided**
- **unconvincing**
- **questionable**
- **unsatisfactory**

Note the use of **no/none** of

- **No** studies/data/calculations ...
- **None** of these studies/findings/calculations

What is the difference in the following pairs of sentences?

- He has little research experience/ He has a little research experience
- The department has few computers/ The department has a few computers

Negative openings

However, ...

■ little ... ?

■ few ... ?

information, attention, researcher,
research, data, attempt, work,
study, investigation

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General



Specific

1st stage: establishing a context

2nd stage: reviewing the literature

3rd stage: establishing a research gap

4th stage: stating the purpose

Divide sentences into two groups

1. The aim of the present paper is to give ...
2. This paper reports on the results obtained ...
3. In this paper we give preliminary results for ..
4. The main purpose of the experiment reported here was to ...
5. This study was designed to evaluate ...
6. The present work extends the use of the last model by ...
7. We now report the interaction between ...
8. The primary focus of this paper ...
9. The aim of this investigation was to test ...
10. It is the purpose of the present paper to provide ...

Remarks

- Note: **uses of this, the present, here**
- Switch from the impersonal to the personal by using **we** or **I**
- “We present the results of three experiments in this paper” **or** “In this paper we present the results of three experiments” **?????**

Tense in Purpose Statements

- Present or Past (was or is) ???

- It depends on how you refer to **your work**:

if your work is **the text** then you must use **present tense** because when you write, “The aim of the paper was to ...,”

if your work is **the investigation** then you either **was** or **is**, and there is a tendency to use **is**

4th stage: stating the purpose of the research

- This paper **explores** the question of how browsing affects the regeneration of...
- The aim of the present study **was to determine** whether... and to observe the response of...
- This study **attempts to give a partial answer to question** posed in the introduction: does vegetation grow differently under artificial snow?
- In this paper **we report on the results** of survey conducted to determine the...
- A thorough review of the research and theory related to this phenomenon is obviously beyond the scope of this study