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# Style of Scientific Writing

Conference Paper · March 2015

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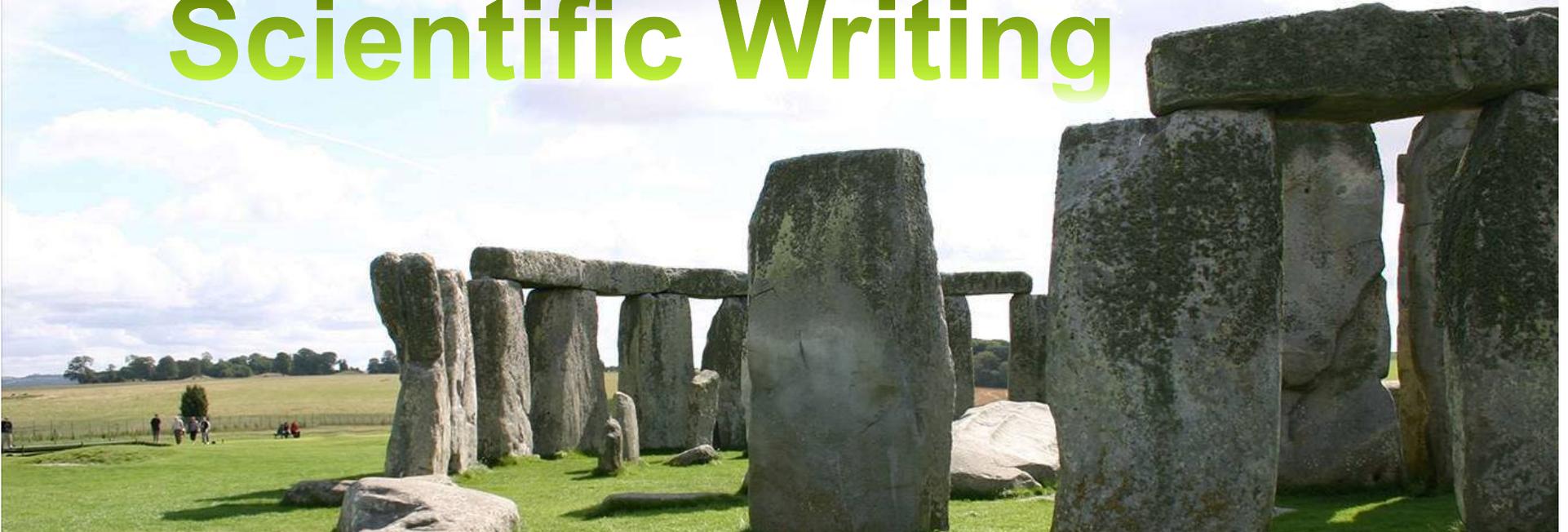
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Some of the authors of this publication are also working on these related projects:



Primary caregiver's knowledge and attitude on the care of Cardio Vascular Accident (CVA) patients [View project](#)

# Writing of Report or Scientific Writing



**Rajesh Kumar Sharma**

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**Swami Rama Himalayan University, Dehradun, Uttarakhand**



Said..

**“Scientists are rated by what they finish, not by what they attempt”**



Said..

**“There is no way to get  
experience except through  
experience.”**



# Boring papers

Congratulations, you are now capable of  
writing technical , impersonal and boring papers  
like myself and the other gentlemen -  
Welcome to Academia

like myself and the other gentlemen -  
Welcome to Academia





Aim of this class is

- ➔ to demystify the style of scientifically writing for publication in different types of journal or in books
  - ➔ to communicate the results or research findings
    - ➔ to contribute to the pool of knowledge within nursing and health care disciplines.



# Scientific Process

It is a research process in which a problem is identified, relevant data are gathered, a hypothesis is formulated from these data, and the hypothesis is empirically tested



Steps of the Scientific Method



# Why does one write an article?

- Conveying research findings is an exciting moment!
- Scientific research is not complete until the results have been published
- Writing an accurate, understandable paper is as important as the research itself

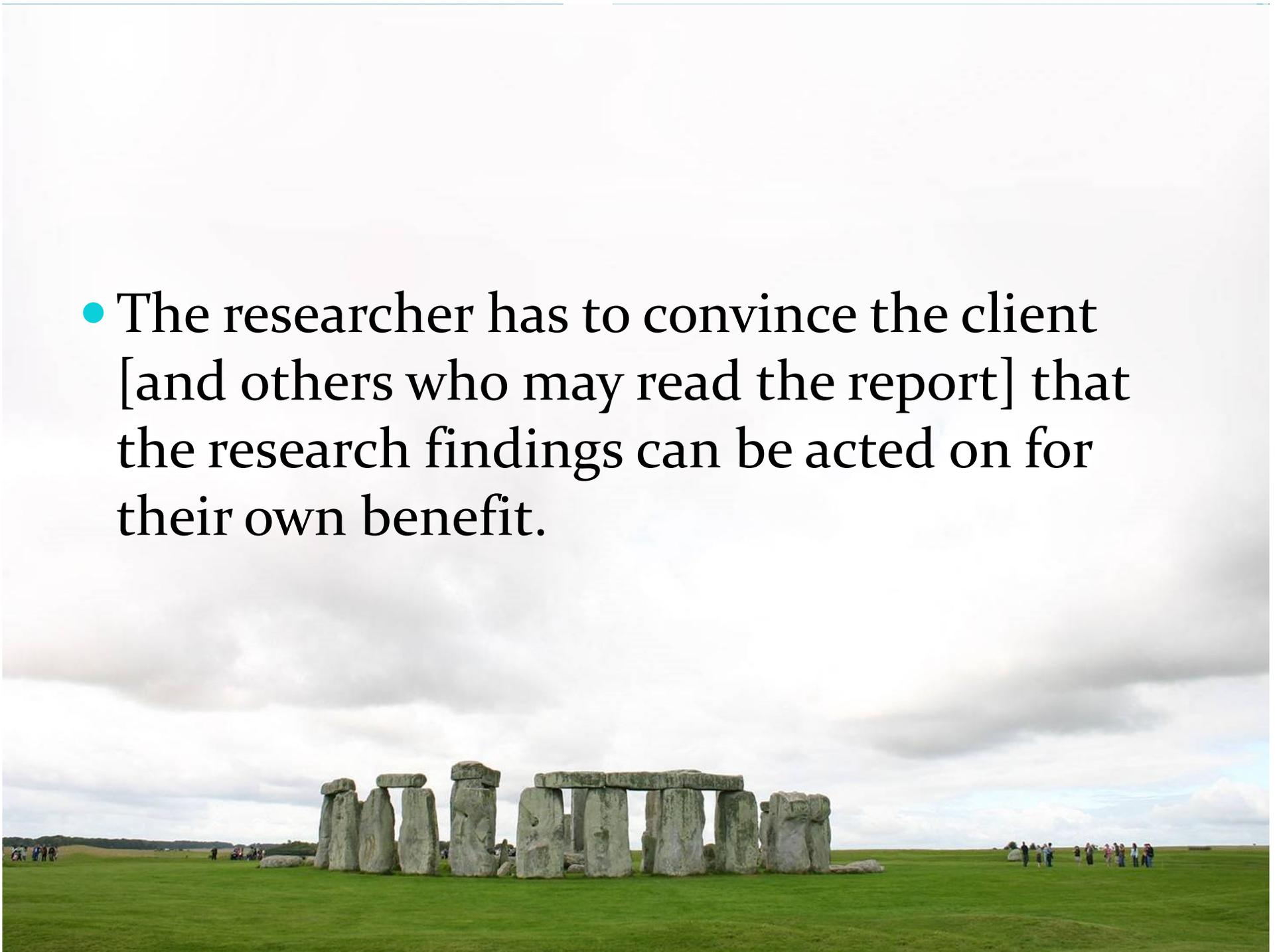


# A research report

- It is a written document or oral presentation based on a written document that communicates the purpose, scope, objective(s), hypotheses, methodology, findings, limitations and finally, recommendations of a research project to others.
- The last stage of a marketing research process.;
- It is more than a summary of findings;
- Rather it is a record of the research process



- The researcher has to convince the client [and others who may read the report] that the research findings can be acted on for their own benefit.

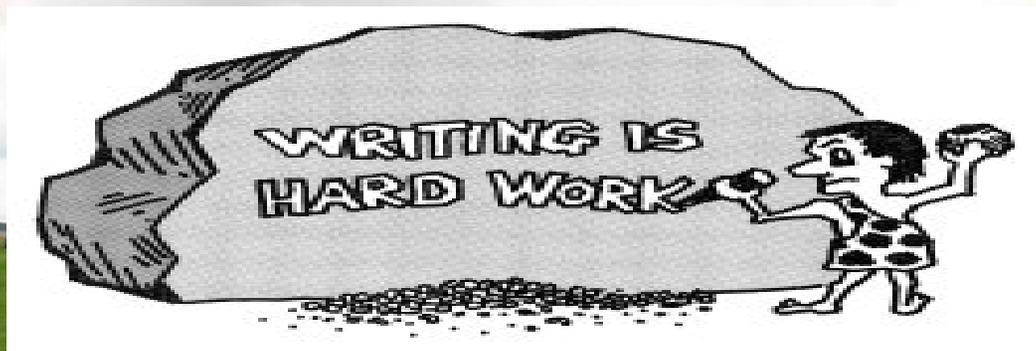


# Critical issue.....

Critical aspect of the Research reporting is

- the reporting of new results
- disseminate the research findings
- Utilize the research finding to practice evidence based Nursing.

Lots of Nursing research has been done by nurses but findings of their work not getting published .



# Types of Research Report I

- Any research report contains:
  - descriptions on methodology,
  - results obtained,
  - and recommendations made.
- The basic orientation of a research report depends on its audience.
- Before writing the report – the researcher must know his or her audience; – he/she may have to make assumptions about the composition, background and interests of the target readers.



# Types of Research Report II

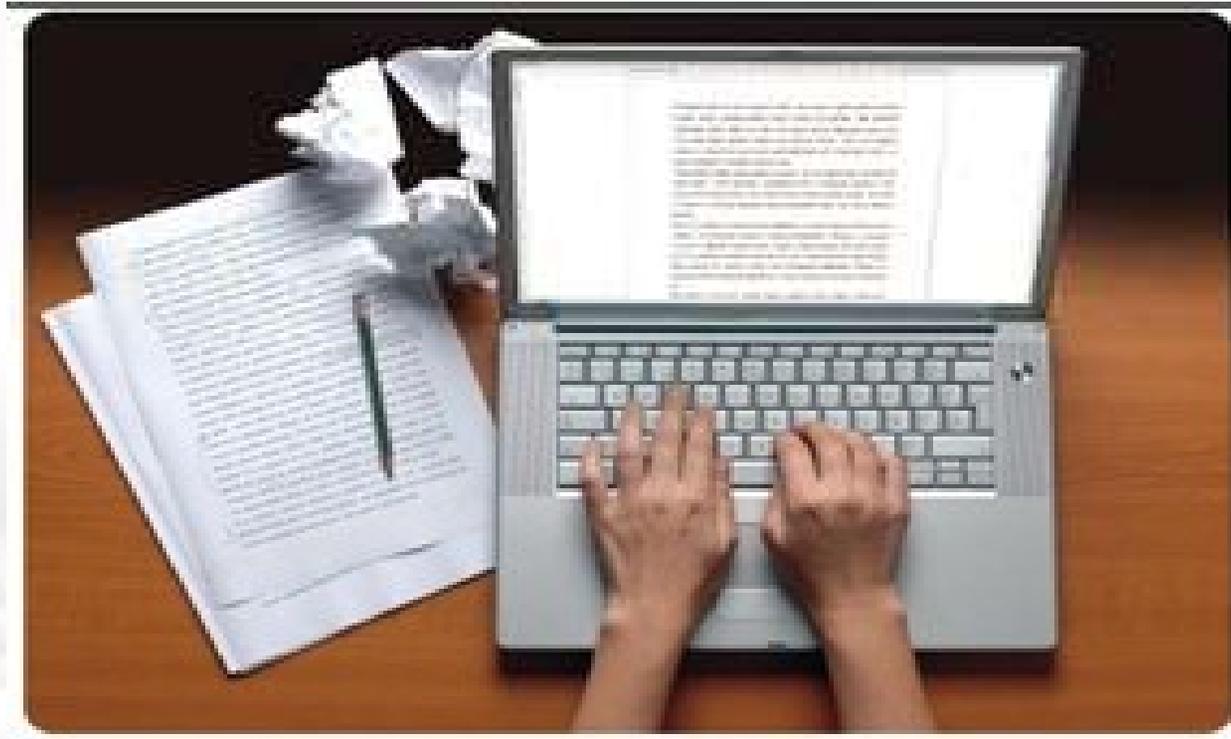
- Types of Research Report II
- Two types of reports:-
  - Technical Report: suitable for a target audience of :- “researchers, research managers or other people familiar with and interested in the technicalities such as research design, sampling methods, statistical details etc., “



- Popular Report: suitable for:  
“a more general audience, interested mainly in the research findings as it is non-technical in nature.”
- The writing style is designed to facilitate easy and rapid reading and understanding of the research findings and recommendations.

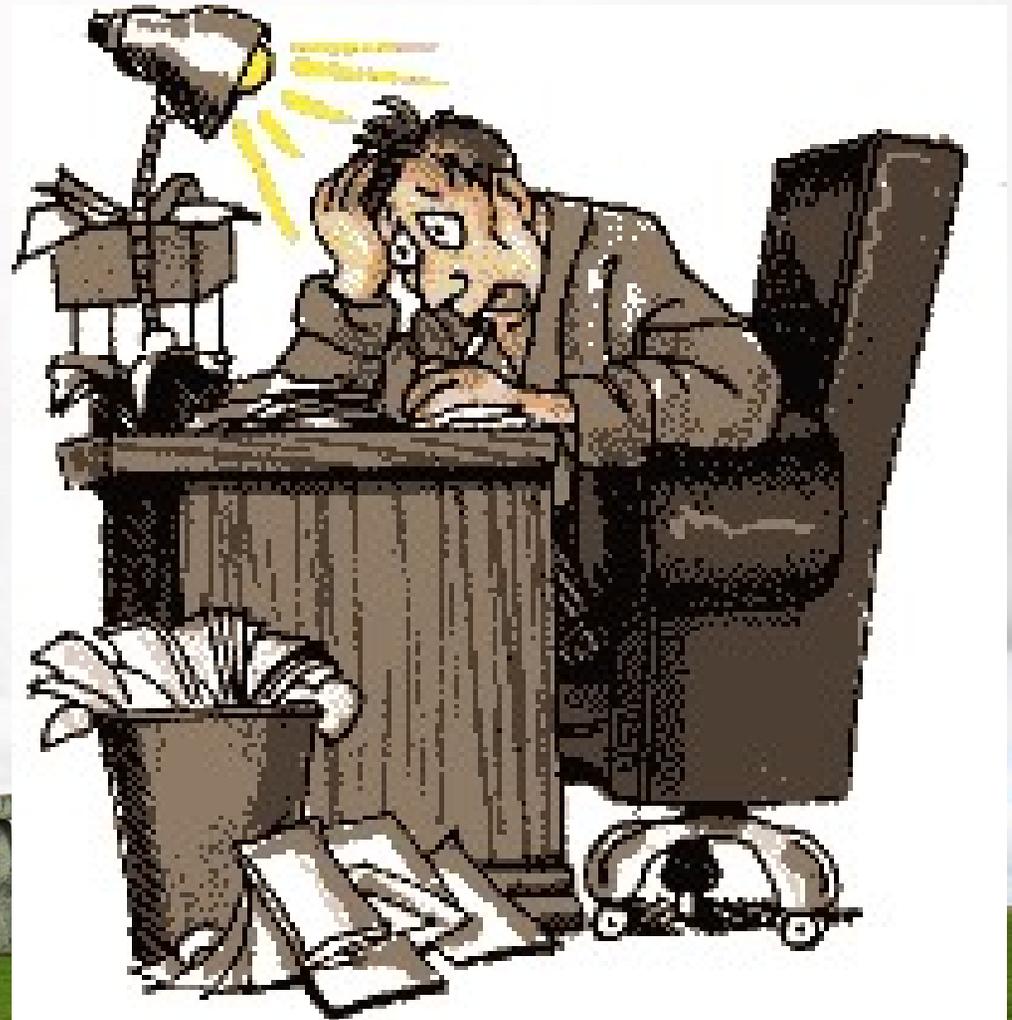


# A research report is not an essay



# How to write a Report or scientific publication?

Just sit down and start writing?



# MISSION REPORT

WITP21014 KELOK1



# Thesis Headings'

**Chapter -1 – Introduction & Background**

**Chapter -2 – Review of Literature**

**Chapter -3 - Methodology**

**Chapter -4 - Result**

**Chapter-5-Discussion, Summary & Conclusion**

**Bibliography**



# What is a strong manuscript?

- ✓ Novel
- ✓ Clear
- ✓ Useful
- ✓ Exciting
- ✓ Well presented
- ✓ Readable easily



# Abstract

- *The abstract should summarize the content of the paper and should present the aim of the study, material and methods, results and conclusions, not more than 300 words.*
- (Limited to 300 words)
- Keywords: Keyword<sub>1</sub>, Keyword<sub>2</sub>, Keyword<sub>3</sub>,



# Introduction & Background

- The introduction of the paper should explain the nature of the problem, previous work, purpose, and the contribution of the paper. The contents of each section may be provided to understand easily about the paper. Mention the references as per Vancouver style<sup>12</sup>
- Problem Statement & Objectives
- Conceptual Framework



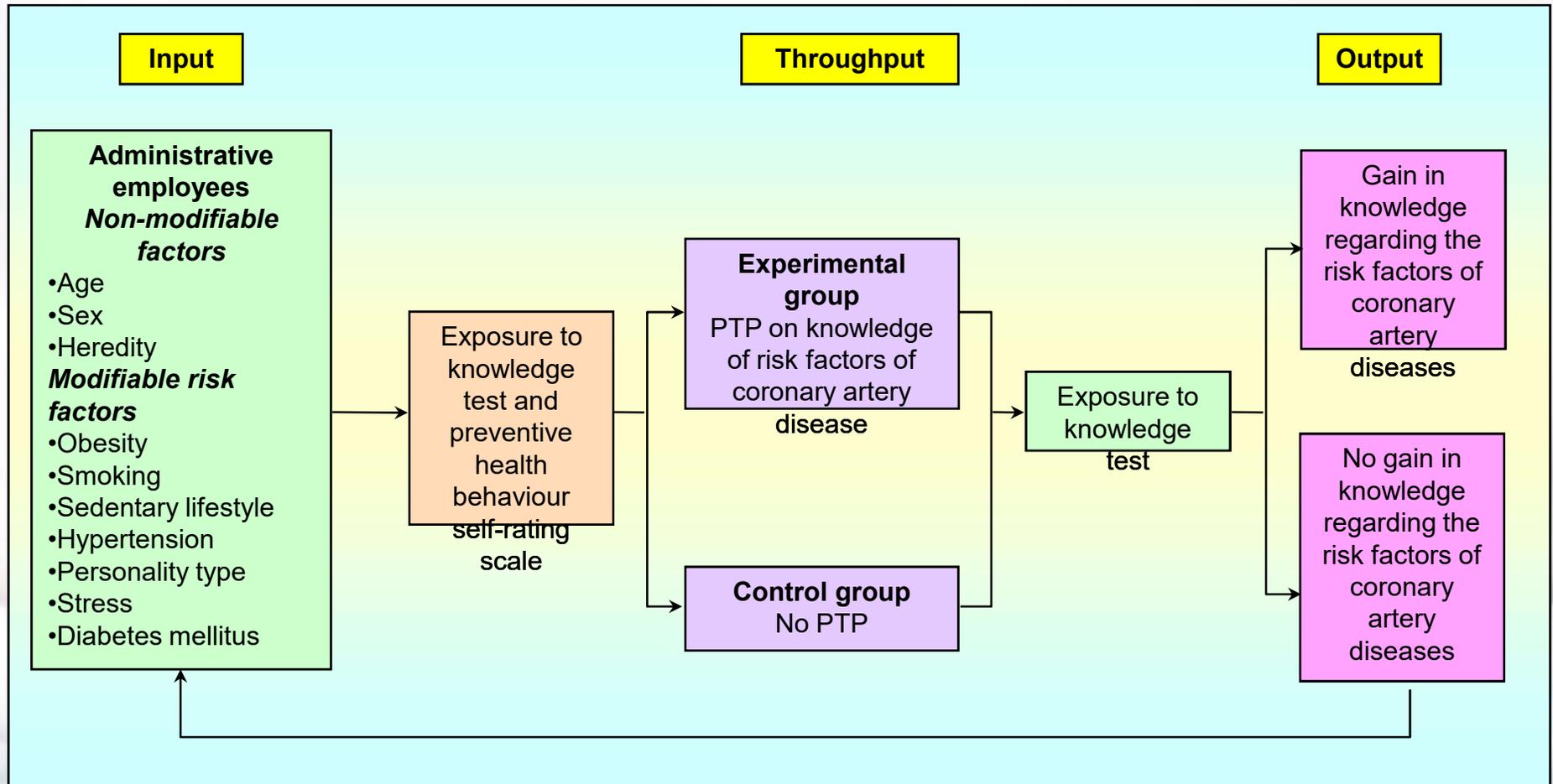
# Conceptual Framework

- **Conceptual frameworks** (theoretical frameworks) are a type of intermediate theory that attempt to connect to all aspects of inquiry (e.g., problem definition, purpose, literature review, methodology, data collection and analysis).
- **Conceptual frameworks** can act like maps that give coherence to empirical inquiry. Because conceptual frameworks are potentially so close to empirical inquiry, they take different forms depending upon the research question or problem.\*

\* [[http://en.wikipedia.org/wiki/Conceptual\\_framework](http://en.wikipedia.org/wiki/Conceptual_framework)]



# Figure 1: Theoretical framework based on the General System Theory for knowledge of risk factors of coronary artery disease among administrative employees



# Material & Method

- Research approach & Design
- Research Setting
- Sample & Sampling process
- Instruments
- Reliability



# Result

- All results presented in tabular or graphical form shall be described in this section. All Tables and figures must have a title and a legend to make them self-explanatory and they should be given numbers. Each table or figure should be on main body of the text.



# Discussion:

- It should contain a critical review of the results of the study with the support of relevant literature. Unsupported hypothesis should be avoided



# Conclusions:

- This must summarize the main paper. Ensure that extrapolations are reasonable and that conclusions are justified by the data presented, and indicate if the study design can be generalized to a broader study population.

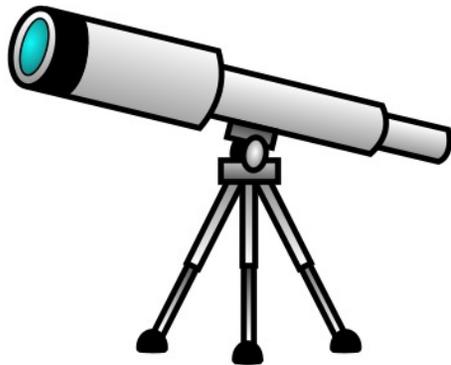


# Paper Writing

**Paper**



**Reviewer**



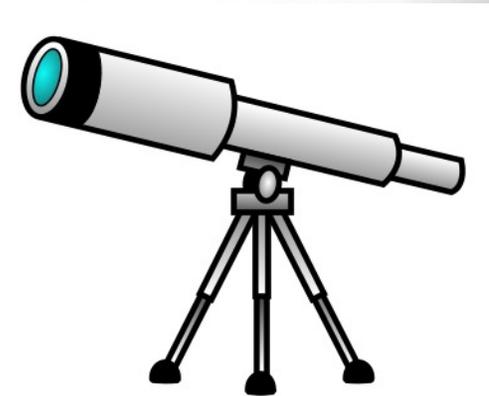
**Reader**



# What editors want?

## Good quality science!

- Follow "Guide for Authors"
- Original interesting research in active area of research
- Clear study design and methodology
- Well presented results and data
- Clear and concise English



Editor Is Busy !



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Nu

**Please submit paper in following format as far as applicable**

1. Title
2. Names of authors
3. Your Affiliation (designations with college address)
4. Corresponding author- name, designations, address/li>
5. Abstract with key words
6. Introduction or back ground
7. Material and Methods
8. Findings



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5. Abstract with key words
6. Introduction or back ground
7. Material and Methods
8. Findings
9. Conclusion
10. Conflict of interest – see below
11. Source of Funding- self or other source
12. Ethical clearance – see below

# Structure of a Paper

- **Abstract:** Summary of the report
- **Introduction:** What did you do? Why did you do it?
- **Material & Methods:** How did you do it?
- **Results:** What did you find?
- **Discussion:** What does it all mean?
- **Conclusions:** What did we learn?



**FROM WRITING TO PUBLISH:**  
**THE ROAD**

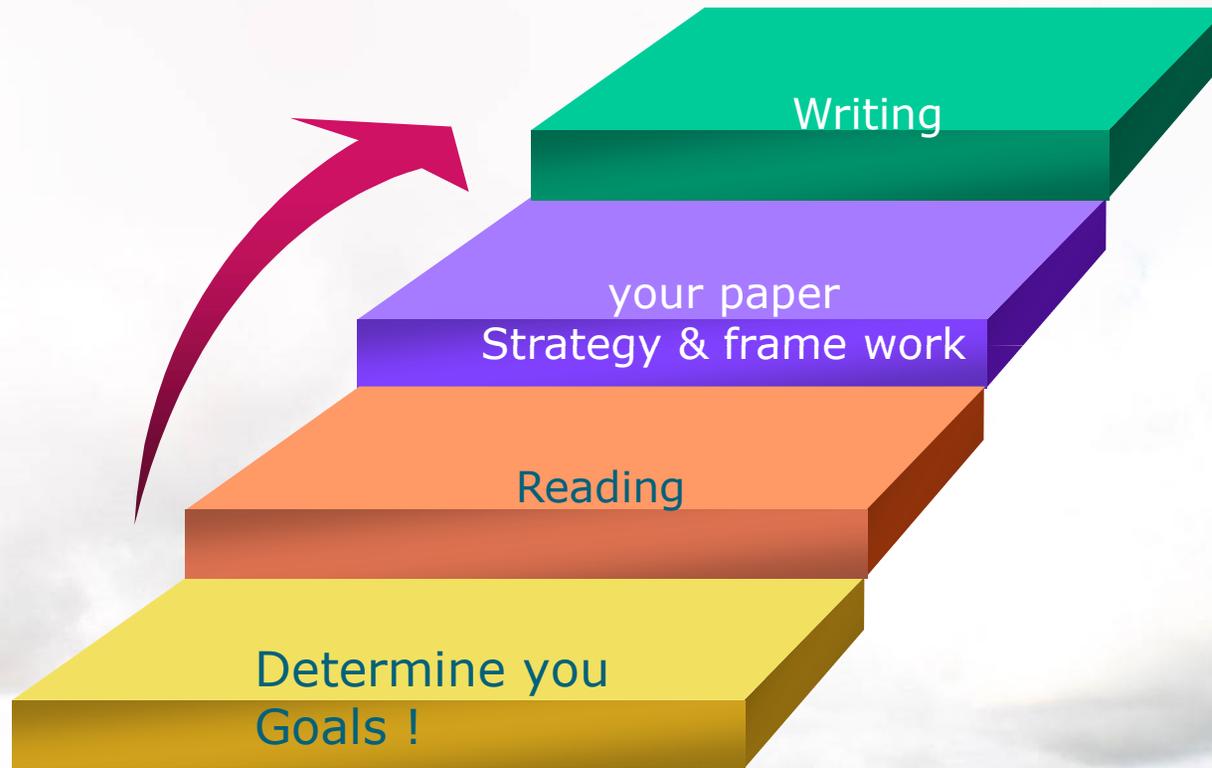


ATTENTION!

**The Next is not solid  
science,  
it is our experience**



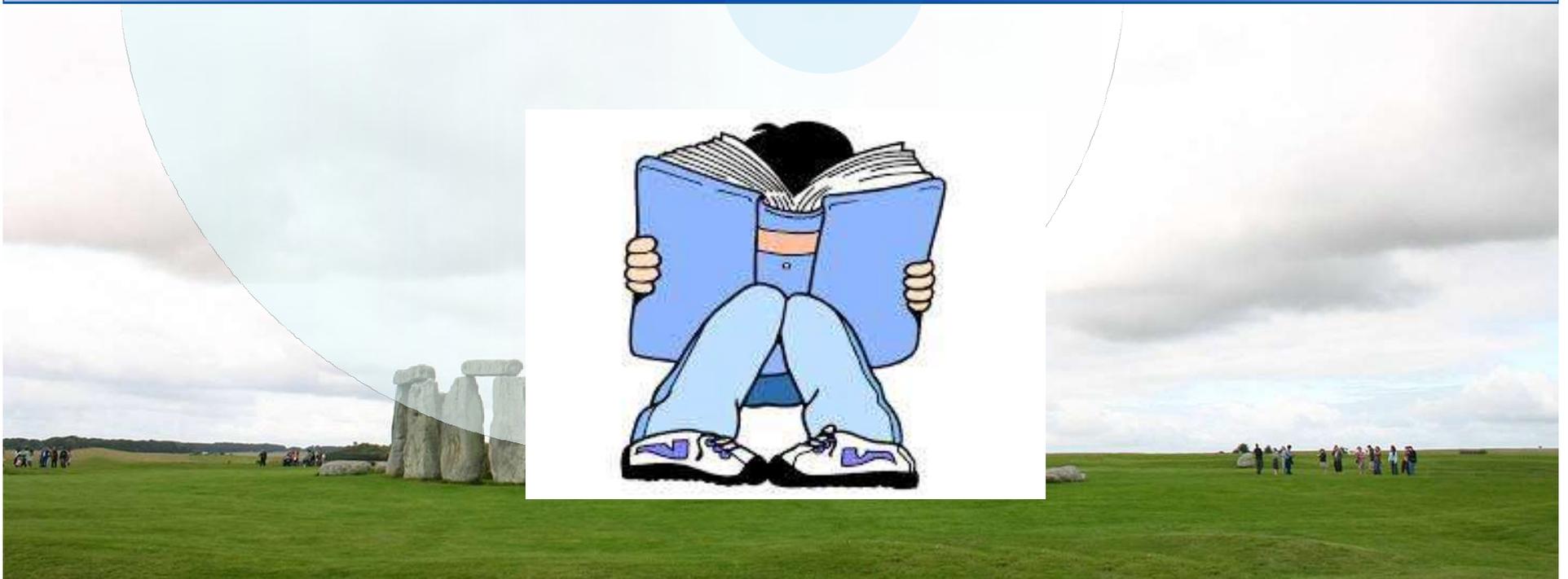
# Planning ...





# 1

# Reading



# Reading...



# Read to Know

## How ?!

- Read as possible as you can
- Read Title and Abstract first
- Read Discussion for interpretation
- Refer to Introduction and Methods only if necessary

## Importance?

- ✓ your article situation!
- ✓ current state of understanding?
- ✓ gaps in the knowledge
- ✓ **KEY** paper in this field
- ✓ New ideas



# Read to Criticize

## How ?!

- Read at least 5 direct paper with same goals
- Read with deep analyzing thinking (compare)

## Importance?

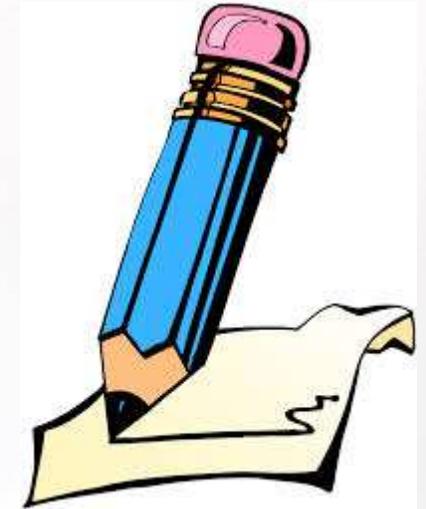
- ✓ Research questions
- ✓ Appropriate methods
- ✓ Context
- ✓ Target journals



# Read to Write

## How ?!

- Choose framework
- Take the idea you like ( with its reference )
- Merge ideas

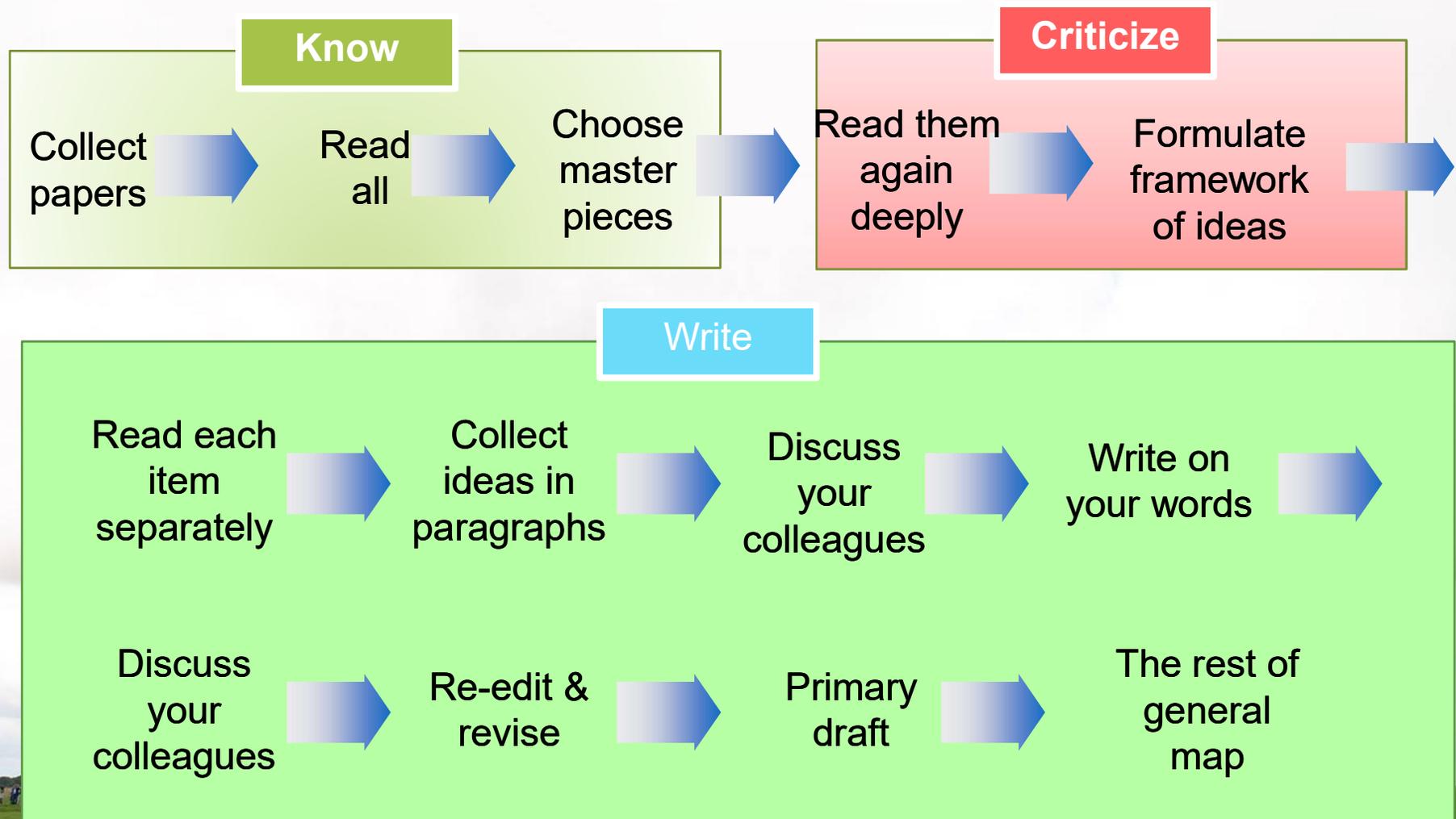


## Importance?

- ✓ Give you the **framework** for ideas
- ✓ give you **vocabulary bank**
- ✓ Provide the most common methodology and results with its analysis



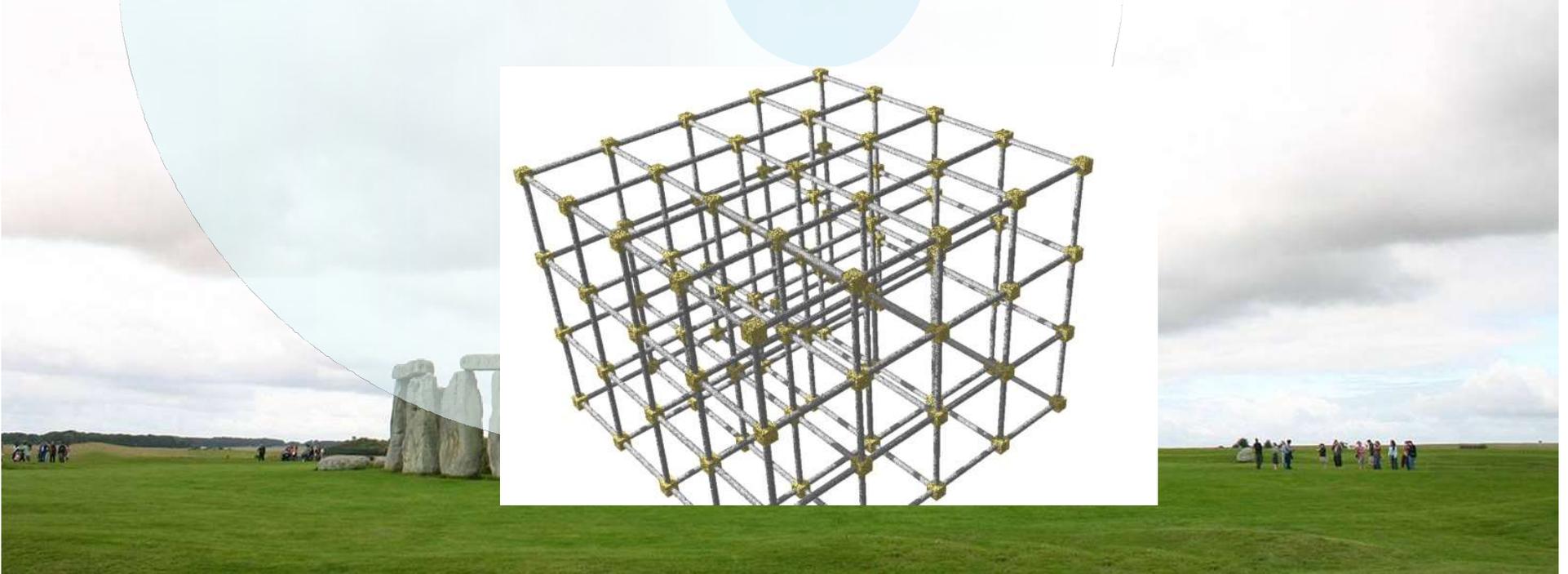
# Road Map





# 2

# Framework



# Frame of the ideas

## **Do you have an organizational system?**

If you don't, create one that suits you!

Spend more time organizing and less time writing. It's just plain less painful!

## **Develop a road-map**

Arrange key facts and citations from the literature into a crude road map/outline BEFORE writing the first draft.

Think in paragraphs and sections...



# Very Very Important : Documentation

➤ Highlight



➤ Make other word documentation

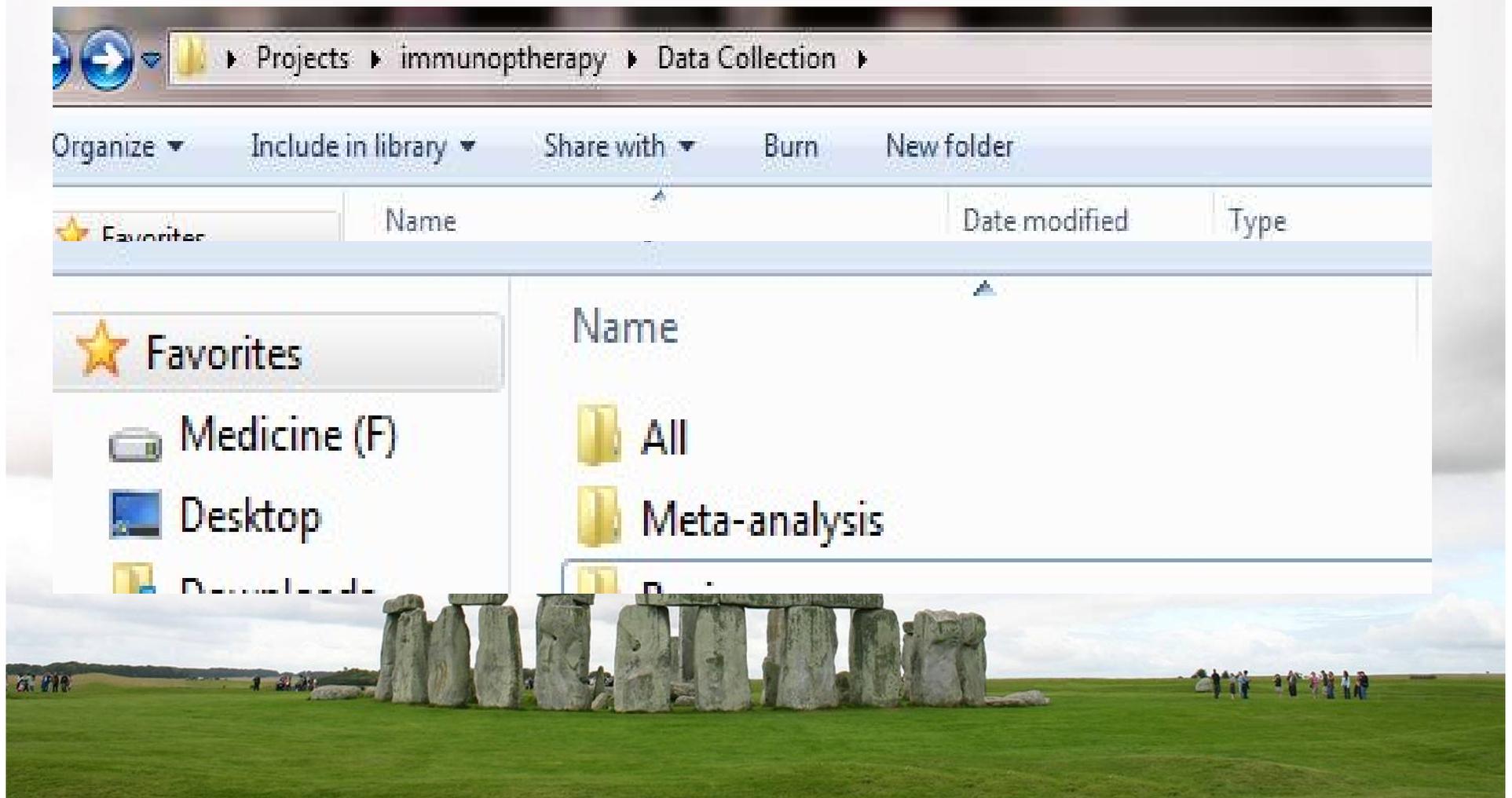
( sentence + reference + date)



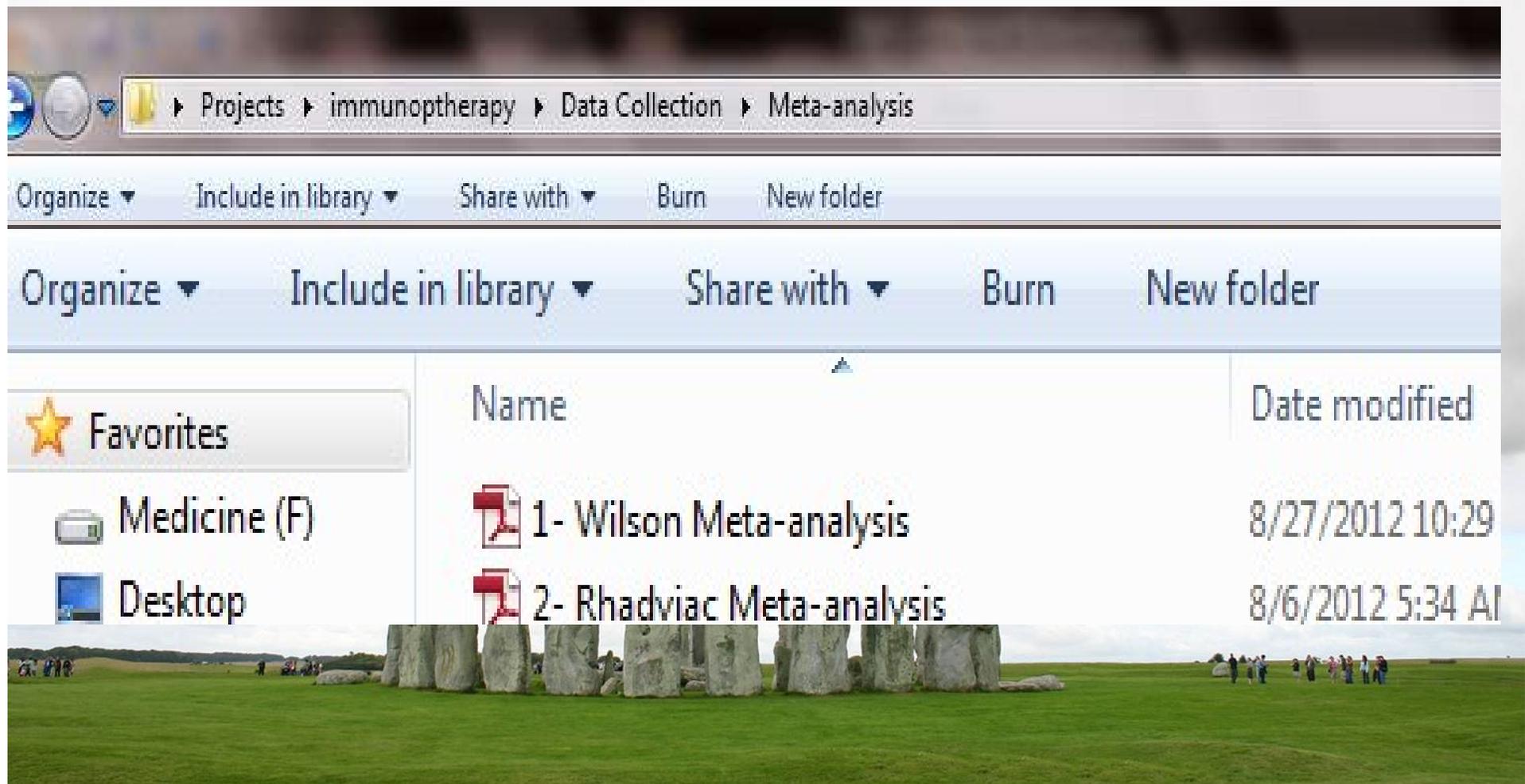
➤ Revise



# Files Arrangement



# Paper Numbering



# Highlight & Make Notes

HOME

5/14/2013 10:58:37 AM

WHO statement on efficacy

WHO statement on efficacy

rised by sneezing, watery  
ching. It is an increasingly  
e Western world where it  
lation. Allergic rhinitis is  
y fever) which is triggered

subjects with severe symptoms that are

# Record in Word

Meta-analysis Paper 1: (Introduction) :

5/3/2012

Meta-analysis Paper 1: (Introduction) :

5/3/2012





# 3

## Writing 1<sup>st</sup> draft



# Notes

- ✓ Don't be a perfectionist!
- ✓ The goal of the first draft is to get the ideas down in complete sentences in order.
- ✓ Focus on logical organization more than sentence-level details.
- ✓ Writing the first draft is the hardest step for most people.  
Minimize the pain by writing the first draft quickly and efficiently



# PARAGRAPH TIPS

PARAGRAPH TIPS



# Sentence

“only 4% of readers understand a 27-word sentence first time”

## Reader objectives

- Only need to read once
- Do not have to read slowly
- Can understand author logic immediately

## Do:

- ✓ Easy to read articles had an *average sentence* length of around 15-20 words
- ✓ Not more than four 30-word sentences in the whole manuscript
- ✓ Think about ‘reader expectation’ and match the expectation with the contents



# Paragraph

- ✓ 1 paragraph = 1 idea
- ✓ Give away the punch line early
- ✓ logical flow of ideas
- ✓ Sequential in time
- ✓ General then specific (take-home message first!)
- ✓ Logical arguments (if a then b; a; therefore b)
- ✓ Transition words used
- ✓ Emphasis at the end!



Your reader remembers the first sentence and the last sentence best. Make the last sentence memorable. Emphasis at the end!





# 3

## Collect & Merge



# Merge

- ✓ Collect all paragraph in each item of designed framework according to journal style
- ✓ Re-arrange in logic and easy manner
- ✓ Revise and revise



# The First Draft

✓ Your first draft



# Aspect of writing scientific:

- Know your audience and write for that specific audience
- Your supervisor/professor is not here to teach you basic grammar and spelling.
- Do Not Turn in a First Draft!
- Get and use stylebooks
- Do not use more words where fewer will do.
- Use an outline to organize your ideas and writing
- Think about the structure of paragraphs
- Pay attention to tenses



# Aspect of writing scientific:

- The first step in the process involves
- the interpretation of the results of data analysis in light of:
  - the marketing research problem investigated,
  - and the research design and methodology followed.
- The research report is a means of communication that can be understood, believed, trusted by everyone who are likely to be affected by the research, and acted upon by the decision maker.



# Aspect of writing scientific.....

- Captions should not merely name a table or figure; they should explain how to read it.
- When citing a reference, focus on the ideas, not the authors.
- Show us don't tell us.
- Write about your results, not your tables, figures, and statistics.
- Develop a strategy for your Discussion.
- Introductions and conclusions are the hardest parts.
- Break up large projects into small pieces and work on them.
- Make your writing flow and resonate
- Take editorial comments seriously.

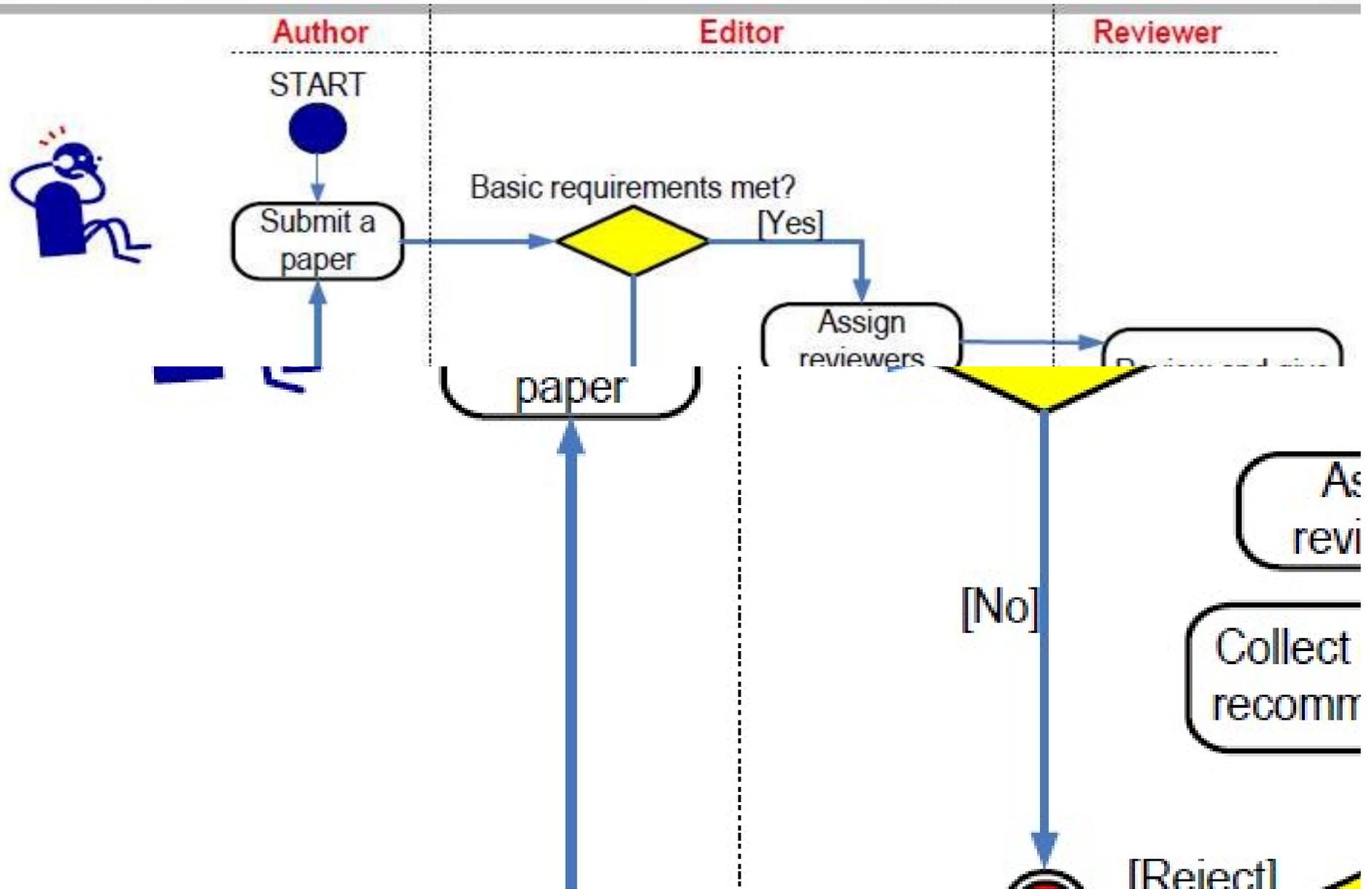


- However, the style in which many research journal articles are written especially reports of quantitative studies which makes it difficult for beginning research consumers to become interested in the story.
- Scientific writing can be according to Journals

Eg. Medknow Journals, Ovid, etc



# Peer Review Process



# Peer Review Process

- Very few papers are immediately accepted without need for any revisions



without need for any  
revisions

Complete r

# What are some styles of Scientific writing

- Review of literature
- Organization of a theoretical position
  - Also called a “position paper”
- Development of a research plan
- A full research study or Research paper or scientific paper
- Meta-analysis of previous research outcomes
- Writing a grant proposal



# Common Deficits in Articles

- Poorly planned study!
- Poorly conducted study!
- Poorly presented study!



# Characteristics of scientific writing

- The style of writing should be concise, straightforward.
- Highly technical terms and complex sentences are not best way to convey ideas



# Content of Scientific research article

- Title of scientific papers can be indicative, informative, question type or main-subtitle (series) type format.
- Quantitative reports follow a conventional format referred as the IMRAD format (Introduction, Method, Result and Discussion).



# Anatomy of a Research Paper

Title  
Authors  
Abstract  
Keywords

Need to be accurate and informative for effective indexing and searching

Main text (IMRaD)

Abstract  
Keywords

Need to be accurate and informative for effective indexing and searching

Main text (IMRaD)

Introduction  
Methods



- An academic paper typically belongs to some particular category such as:
- Research paper or scientific paper
- Case report or Case series
- Position paper
- Review article or Survey paper



# Overview of IMRaD structure

- Although the sections of the journal manuscript are published in the order: Title, Abstract, Introduction, Materials and Methods, Results, Discussion, and Conclusion, this is not the best order for writing the sections of a manuscript. One recommended strategy is to write your manuscript in the following order:

- 1. Materials and Methods**

- 2. Results**

These can be written first, as you are doing your experiments and collecting the results.



- **3. Introduction**

- 4. Discussion**

- 5. Conclusion**

Write these sections next, once you have had a chance to analyse your results, have a sense of their impact and have decided on the journal you think best suits the work

- 6. Title**

- 7. Abstract**

Write your Title and Abstract last as these are based on all the other sections.

Following this order will help you write a logical and consistent manuscript.



# Case reports

An unexpected association between diseases, diagnosis, rare features of disease and therapeutic approaches

- *Journal of Medical Case Reports,*
- *Oncology Reports,*
- *Oncology Letters and Cases Journal*



# What to write while writing case report

- Title,
- Key words,
- Abstract
- Introduction,
- Patient information,
- Clinical findings,
- Timeline,
- Diagnostic assessment,
- Therapeutic interventions,
- Follow-up and
- Outcomes,
- Discussion
- patient perspective, and
- informed consent



# Position paper

- A **position paper** is an essay that presents an opinion about an issue, typically that of the author or another specified entity
- Position papers range from the simplest format of a letter to the editor
- Position papers in Academia enable discussion on emerging topics without the experimentation and original research



# Review articles

- **Review articles** are an attempt to summarize the current state of understanding on a topic.
- They analyze or discuss research previously published by others
- TWO TYPES-
  1. systematic reviews and
  2. literature reviews



**TABLE 5.3** Examples of Stylistic Difficulties for Research Reviews\*

**INAPPROPRIATE STYLE OR WORDING**

**RECOMMENDED CHANGE**

1. It is known that unmet expectations engender anxiety.

Several experts (Greenberg, 2001; Cameron, 2000) have asserted that unmet expectations engender anxiety.

2. The woman who does not participate in childbirth preparation classes tends to manifest a high degree of stress during labor.

Previous studies have indicated that women who participate in preparation for childbirth classes manifest less stress during labor than those who do not (Klotz, 2002; Mirling, 2000; McTygue, 2001).

3. Studies have proved that doctors and nurses in childbirth preparation classes tends to manifest a high degree of stress during labor.

The studies by Sacks (2000) and Carter (2001) indicate that those who participate in preparation for childbirth classes manifest less stress during labor than those who do not (Klotz, 2002; Mirling, 2000).

3. Studies have proved that doctors and nurses do not fully understand the psychobiologic dynamics of recovery from a myocardial infarction.

The studies by Sacks (2000) and Carter (2001) suggest that doctors and nurses do not fully understand the psychobiologic dynamics of recovery from a myocardial infarction.

# Styles of writing...

- With regards to references and other part of the manuscript, various styles have been developed.
- These all styles are often imposed by journal editors and university regulations. Some are as follow.....
  - University of Chicago Press (1993),
  - The American Psychological Association (2001), and
  - The American Medical Association (1997) are widely used for reference style.
  - Vancouver style of ICMJE, 1978(International Committee of Medical Journal Editors)



# Example of APA & Vancouver style of citation

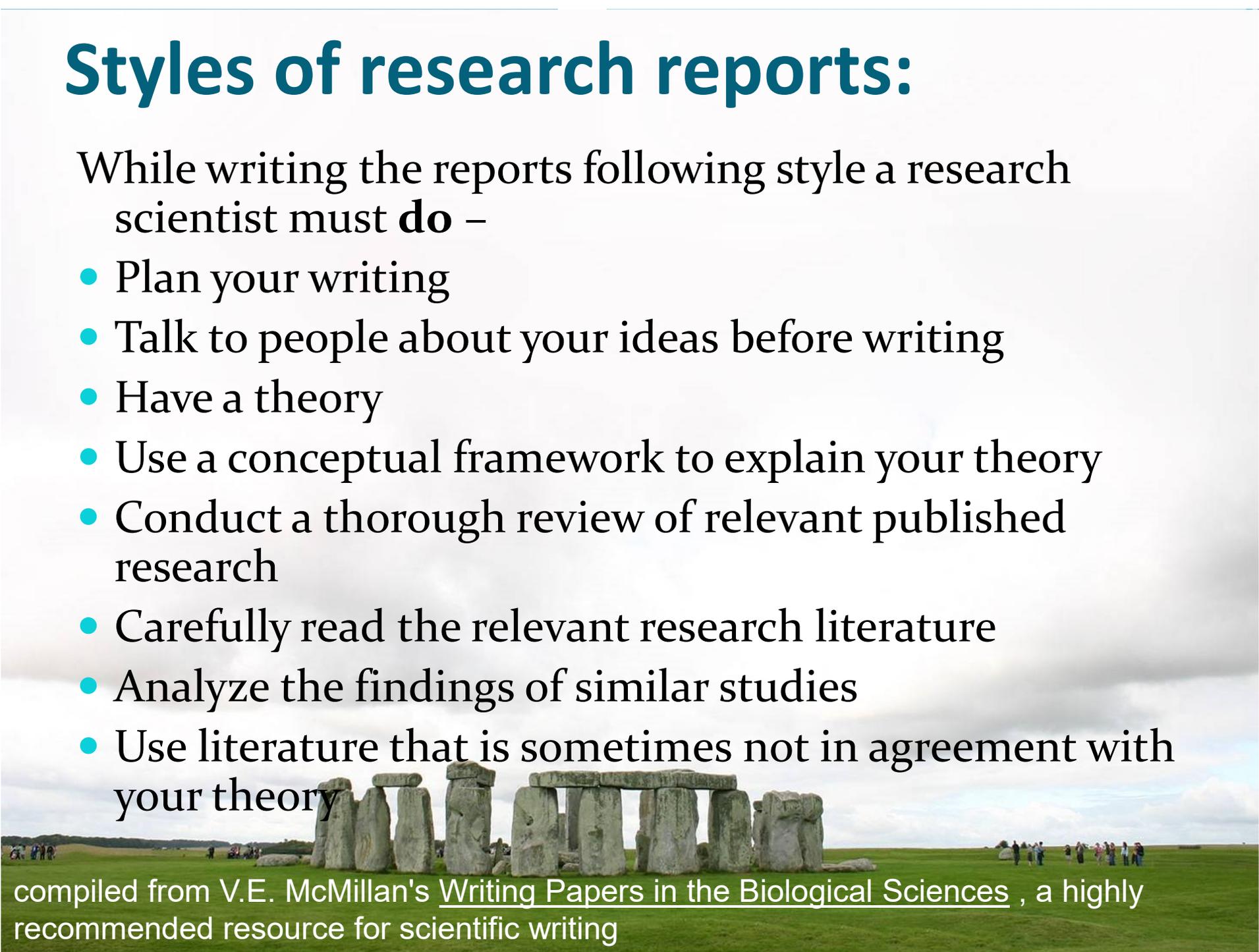
- Disney AP(1998). Some trends in chronic renal replacement therapy in Australia and New Zealand. *Nephrol Dial Transplant* , 13: 854–859.
- Disney AP. Some trends in chronic renal replacement therapy in Australia and New Zealand. *Nephrol Dial Transplant*. 1998 June; 13: 854–859.



# Styles of research reports:

While writing the reports following style a research scientist must **do** –

- Plan your writing
- Talk to people about your ideas before writing
- Have a theory
- Use a conceptual framework to explain your theory
- Conduct a thorough review of relevant published research
- Carefully read the relevant research literature
- Analyze the findings of similar studies
- Use literature that is sometimes not in agreement with your theory



compiled from V.E. McMillan's [Writing Papers in the Biological Sciences](#) , a highly recommended resource for scientific writing

- Organize your paper: outline your ideas
- Use headings and subheadings
- Use many shorter paragraphs
- Use precise language
- Review your spelling carefully: there is not their; it's vs its; whose vs who's are all silly mistakes that cause grades to be lowered
- Pay attention to tense
- Use the Academic Medicine, or the APA style for footnotes, endnotes, and reference bibliography.



- Paraphrase long quotes as often as possible, making certain to appropriately cite the source.
- **Proofread, proofread, proofread**
- Look at grammar & spelling
- Have others read it: does it make sense to them?
- Does the conclusion stem from the argument first laid out in the introduction?
- Is the argument throughout cohesive?
- Did I cite all references, paraphrases and quotes?



# Summary

The format and structure which we have discussed here are general one; the various scientific journals, and oftentimes specific disciplines, utilize slightly different formats and/or writing styles.

It is intended that information will provide a valuable contribution to you all specially new nurse researchers to develop their research findings or other scholarly ideas into a better scientific report or manuscript writing which to be submitted for publication



# References

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<http://online.stanford.edu/courses>.
3. Erren TC, Bourne PE (2007) Ten simple rules for a good poster presentation. PLoS Comput Biol 3(5): e102.  
doi:10.1371/journal.pcbi.0030102
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Thank You

