بسم الله الرحمن الرحيم

Technical Article Writing and Presentation

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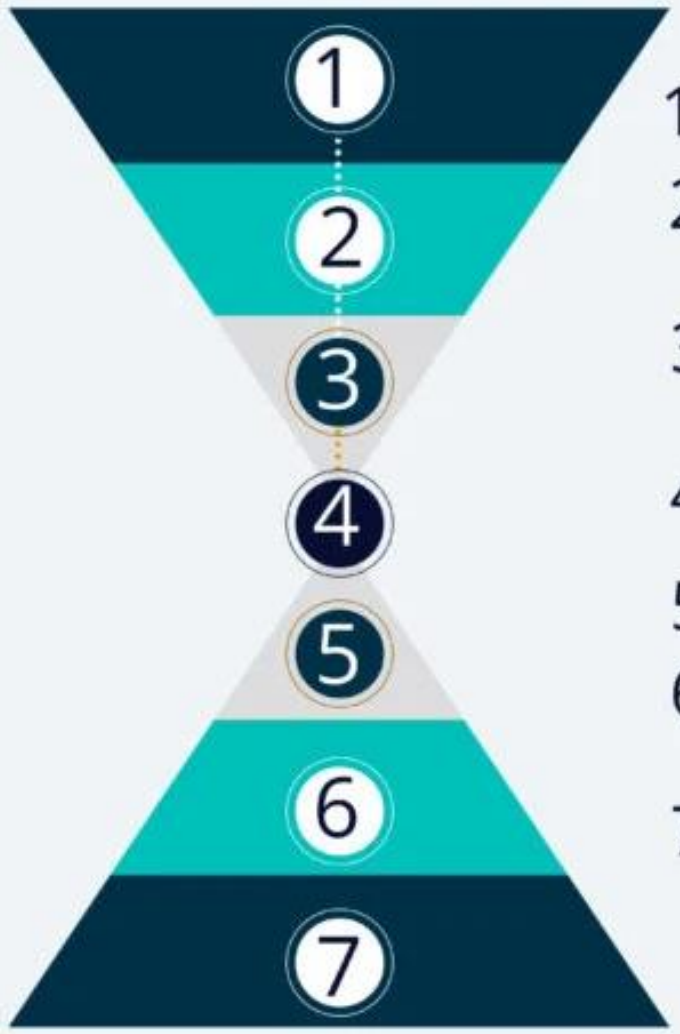
Presentation Outline

- ***What is a Technical Article?***
- ***Why Technical Article?***
- ***Components of a Technical Article.***
  - ***Abstract***
  - ***Introduction***
  - ***Problem Statement***
  - ***Objective***
  - ***Methodology***
  - ***Result and Analysis***
  - ***Conclusion***

The Anatomy of a Scientific Paper



1. Introduction (What is known?)
2. The knowledge gap to be filled (What is unknown?)
3. Rationale/hypothesis (How and why should we fill the gap?)
4. Methodologies (What did you do?)
5. Results (What results did you get?)
6. Discussion (How do the results bridge the gap?)
7. Conclusion (What does this mean for us going forward?)

What is a Technical Article?

- **Technical Articles:**

  A technical article is an editorial for a magazine or an internet benefit that's about a specialized point, and regularly the article drills down into a few low-level of detail.
- May be computers, maybe material science or chemistry or any other science.

Why Technical Article?

4 Key Benefits of Writing Technical Articles

1. **Enhances Your Writing Skills**
   - Clarity, Conciseness, Accuracy, Readability, Usability, Correctness
2. **Improves Communication Skills**
3. **Critical Thinking**
4. **Money**

Why do you carryout Research?

- Research solve a particular problem.
- Research helps with problem-solving
- Research reveals new ideas and facts
- Research expands your knowledge base
- Research helps to achieve your goal
- Research raises awareness and encourages curiosity
- Research disprove lies and support truths
- Research builds credibility
- Research helps you reach people
- Research promotes a love of and confidence in reading, writing, analyzing, and sharing valuable information.

Research Papers Vs. Technical Articles

- **Research Papers:** Research Papers are write-ups which record the result/report examinations tired specific zone. For the most part, they take an up to this point obscure issue in a given field, propose an arrangement for it and assess the status of the arrangement in comparison with other modern solutions. In this way, in a sense, they move the wilderness of information within the field. Based on the nature and reason of the movement carried out, and the way the write-up is composed.
- **Technical Articles:** A technical article is an editorial for a magazine or an internet benefit that's about a specialized point, and regularly the article drills down into a few low-level of detail. May be computers, maybe material science or chemistry or any other science. It can be around math. It can be approximately pharmaceutical or wellbeing or diet. It can be around the material science of cooking. There are truly thousands of potential points of specialized articles.

Research Papers Vs. Technical Articles

Research Papers	Technical Articles
Research paper carries more weight on the basic issues	Technical article puts more accentuation on the technique angle, not necessary discoveries.
A research paper gets done beneath the assessment of a instructor or educators.	A technical article does not need a instructor.
Research papers are composed customarily by an understudy at a university or college, and the work is ordinarily alloted.	A technical article is a piece, of around a subject that has as of late investigated or surveyed and composed by an master in that field.
A research paper may offer a thesis, but it's not very as in-depth.	A technicle article surveys a conceivable or current thought and composes almost the impacts.
A research paper isn't authored to show unique investigate, but or maybe to appear observational information,	A technicle article will clarify to the reader of its unique discoveries.
Research paper is utilized more as a way to teach a understudy on how to type in clearly and successfully approximately a subject	Technicle article is composed to teach the peruser on a subject or thought.

Problem Statement

- Clarify the Vision. Before you can decide how to solve a problem, you must first know what you are trying to accomplish.
- Define the Problem.
- Determine the Context.
- Identify the Impact.
- Make a Business Case.
- Identify the Gap.
- Explain the Causes.
- Select a Problem Solving Method.

Research Aim

- Your aim should be made up of three parts that answer the below questions:
  - Why is this research required?
  - What is this research about?
  - How are you going to do it?

The easiest way to achieve this would be to address each question in its own sentence, although it does not matter whether you combine them or write multiple sentences for each, the key is to address each one.

- The first question, why, provides context to your research project, the second question, what, describes the aim of your research, and the last question, how, acts as an introduction to your objectives which will immediately follow.

Object Statement

- Here are three simple steps that you can follow to identify and write your research objectives:
  - Pinpoint the major focus of your research. ...
  - Break down your research focus into research objectives.
  - Write your research objectives in the SMART format.
  - Keep your number of objectives limited.
  - Use action verbs.

Verbs to Use in Aims and Objectives

- Table of Research Verbs to Use in Aims and Objectives

Table showing common research verbs which should ideally be used at the start of a research aim or objective.

Understanding (Understanding and organising information)	**Applying** (Solving problems using information)	**Analysing** (reaching conclusion from evidence)	**Synthesising** (Breaking down into components)	**Evaluating** (Judging merit)
Review	Interpret	Analyse	Propose	Appraise
Identify	Apply	Compare	Design	Evaluate
Explore	Demonstrate	Inspect	Formulate	Compare
Discover	Establish	Examine	Collect	Assess
Discuss	Determine	Verify	Construct	Recommend
Summarise	Estimate	Select	Prepare	Conclude
Describe	Calculate	Test	Undertake	Select
	Relate	Arrange	Assemble	

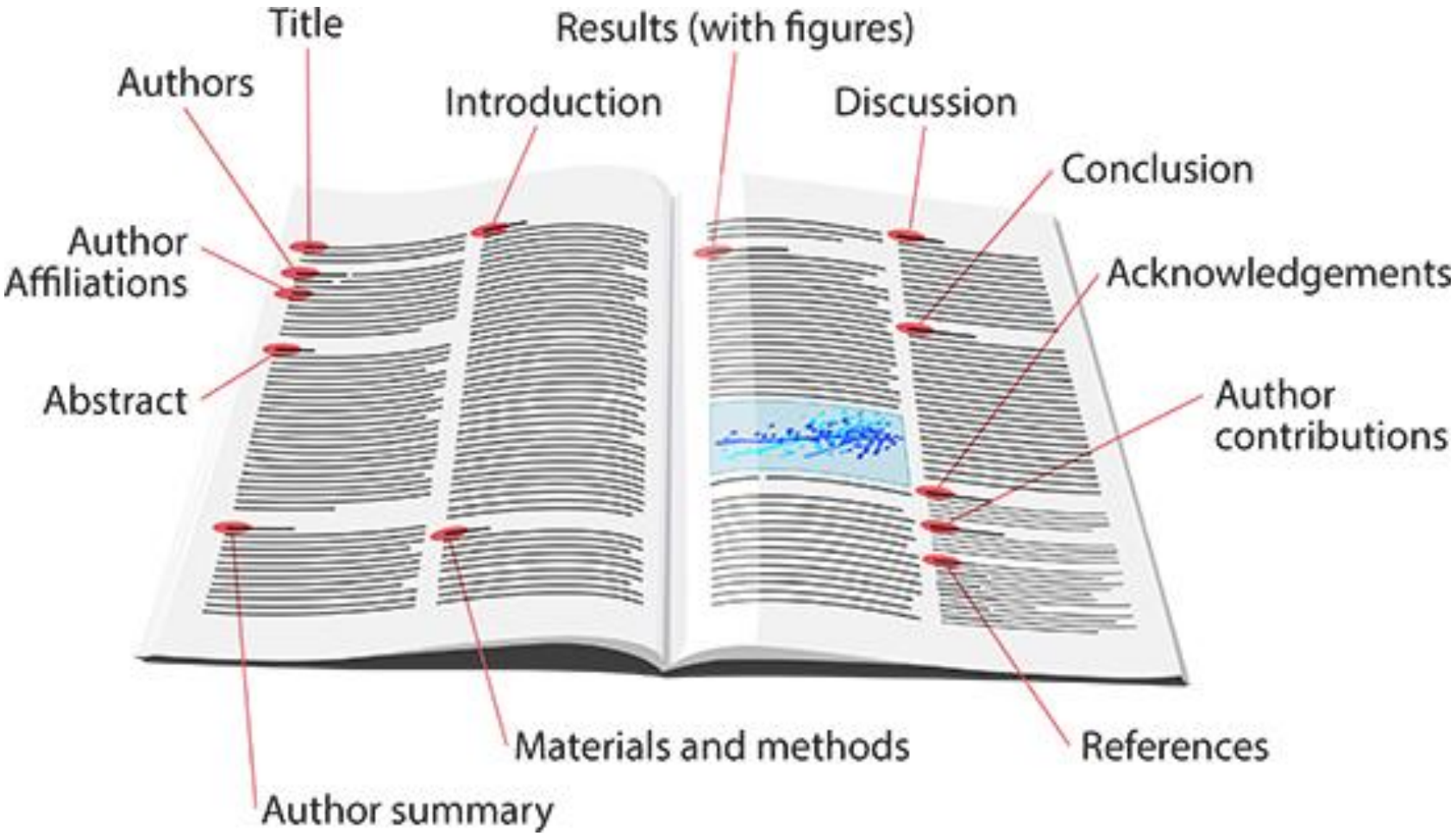
Components of a Technical Article

- Major components of research paper are selection of abstract, Introduction, review of literature, research methods, findings and analysis, discussion, limitations, future scope and references.

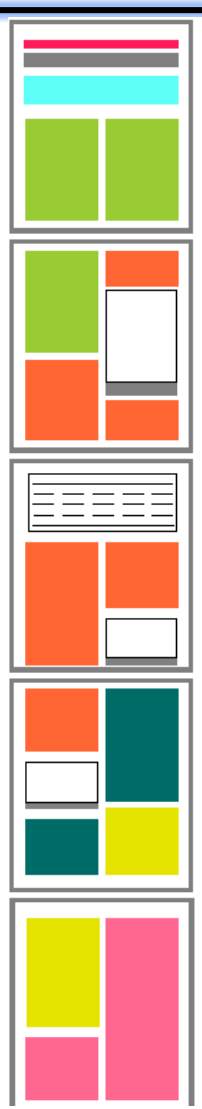
Essential parts of scientific paper

- Title: Describe concisely the core contents of the paper
- Abstract: Summarize the major elements of the paper
- Introduction: provide context and rationale for the study
- Materials: Describe the experimental design so it is reproducible
- Methods: Describe the experimental procedures
- Results: Summarize the findings without interpretation
- Discussion: Interpret the findings of the study
- Summary: Summarize the findings
- Acknowledgement: Give credit to those who helped you
- References: List all scientific papers, books and websites that you cited

Anatomy and physiology of a scientific paper



Anatomy and physiology of a scientific paper



TITLE

AUTHOR INFORMATION

ABSTRACT: A summary of the study and findings, written by the author.

INTRODUCTION: A statement of what is currently known about the study subject that articulates the questions being investigated. It cites other scholarly works, lays the foundations for the study, and sometimes states a hypothesis to be tested.

RESULTS: A description of the research conducted and the results obtained.

Results are presented as tables, large datasets, and figures, which can include graphs, videos, diagrams, and photographs.

Some papers include additional supporting data as a supplement.

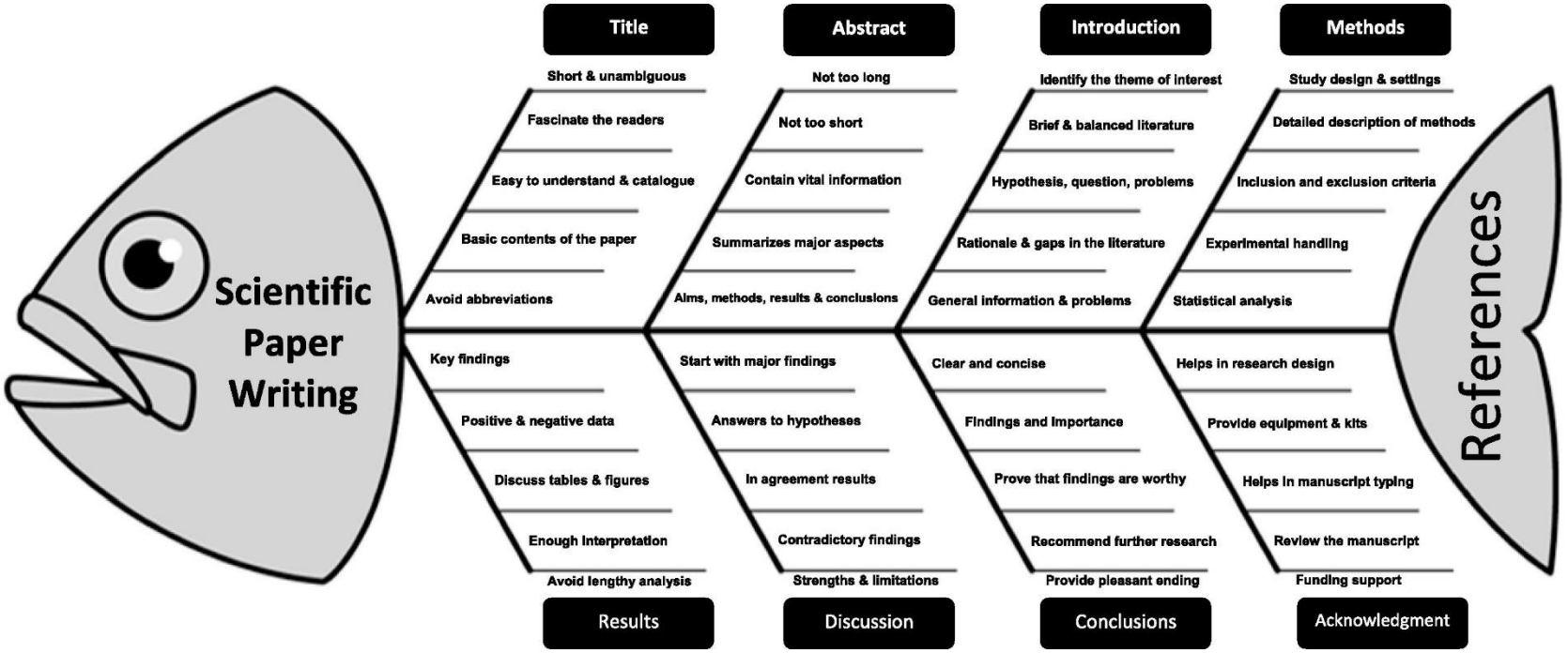
Figure legend

DISCUSSION: An analysis and interpretation of the data presented that integrates the new information with prior findings, states the implications of the work, and sometimes generates new hypotheses tobe tested.

METHODS: A description of how the studies were conducted, with sufficient detail so that others can repeat them exactly.

REFERENCES: The list of the articles cited in the paper that provide information on the research topic and the methods used.

Anatomy and physiology of a scientific paper



Title of a Technical Article

- Short and unambiguous
- Good taste to fascinate the readers
- Easy to understand and catalogue
- Contains key words describing the work
- Describes the entire contents of the paper
- Adequate description of the entire work
- Avoid abbreviations and passive voice
- Should not present a biased picture

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Abstract

- Not too long
- Not too short
- Contain about 200–250 words
- Contain important information
- Summarizes major aspects of the paper
- Briefly sate purpose, methods, results and conclusions
- Written last since it summarize the entire paper

Abstract

1. State your topic*

Your topic is the main idea of your paper. It is usually a phrase or a few words that summarize the subject of your paper.

e.g. - benefits of swimming vs other types of sport

2. State the main idea about this topic*

Explicitly state what the main point of your thesis will be early in your paper.

e.g. – swimming is the best sport for healthy body

3. Add evidence that supports your main idea*

What evidence could you use to drive home your thesis' point? What facts or reasons support your argument?

e.g. – swimming increases muscle strengths and helps improve hearts work

4. Give another evidence that supports your main point

e.g. – swimming is a peaceful activity that makes you relaxed

5. Include a counterargument if possible

Every topic has alternative schools of thought. Think of someone who would disagree with your arguments and/or evidence. What would they say? The more you understand the counterargument, the better you can defend your thesis and its arguments with evidence.

e.g. – swimming is contraindicated for some people because of hypothermia

Abstract

What to include in an abstract

The format of your abstract will depend on the discipline in which you are working. However, all abstracts generally cover the following five sections:

1. Reason for writing:

What is the importance of the research? Why would a reader be interested in the larger work?

2. Problem:

What problem does this work attempt to solve? What is the scope of the project? What is the main argument, thesis or claim?

3. Methodology:

An abstract of a scientific work may include specific models or approaches used in the larger study. Other abstracts may describe the types of evidence used in the research.

4. Results:

An abstract of a scientific work may include specific data that indicates the results of the project. Other abstracts may discuss the findings in a more general way.

5. Implications:

How does this work add to the body of knowledge on the topic? Are there any practical or theoretical applications from your findings or implications for future research?

Laryngoscopy is a medical procedure that provides a secure airway by passing a breathing tube through the mouth and into the lungs of a patient. The ability to successfully perform laryngoscopy is highly dependent on operator skill; experienced physicians have failure rates of 0.1% or less, while less experienced paramedics may have failure rates of 10-33%, which can lead to death or brain injury. Accordingly, there is a need for improved training methods, and virtual reality technology holds promise for this application. The immediate objective of this research project is to measure the mechanics of laryngoscopy, so that an advanced training mannequin can be developed. This summer an instrumented laryngoscope has been developed which uses a 6-axis force/torque sensor and a magnetic position/orientation sensor to quantify the interactions between the laryngoscope and the patient. Experienced physicians as well as residents in training have used this device on an existing mannequin, and the force and motion trajectories have been visualized in 3D. One objective is to use comparisons between expert and novice users to identify the critical skill components necessary for patients, to identify the mechanical properties of the human anatomy that effect laryngoscopy, and thus enable the development of a realistic training simulator. In the future an advanced training mannequin will be developed whose physical properties will be based on our sensor measurements, and where virtual reality tools will be used to provide training feedback for novice users.

Introduction o

- Start by identifying the subject area of interest
- Develop the settings by brief, balanced and relevant literature
- Summarize the existing understanding of the problems
- Discuss the study in the form of a hypothesis, question or problems
- Briefly explain the rationale and gaps in the literature
- Top of the introduction; represent general information
- Bottom of the introduction; focus on the specific problems, purpose and rationale
- Cite from the good research journals with original work rather than depending on reference books

Introduction o

- background,
- *motivation,*
- *challenges,*
- *current research gaps,*
- objectives and
- contribution of this work, etc.

Methods

- *Research methodology is the specific procedures or techniques used to identify, select, process, and analyze information about a topic. In a research paper, the methodology section allows the reader to critically evaluate a study's overall validity and reliability*
- Discuss study design, settings and how study was carried out
- Biological features of control, exposed or treatment groups and variables measured
- Age, height, weight, gender, ethnicity, educational and socioeconomically status
- Study protocol, inclusion and exclusion criteria
- Sample size and grouping, data collection and replication
- Pre-experiment, experimental handling, measurements and procedures detail
- Summarize data in Means, percent, *SD, **SEM, 95% CI, etc.

Results

- Provide key findings in a logical progression
- Report both positive and negative results
- Organize results around the tables and figures
- Provide nature of differences, relationship and magnitude of the findings
- Provide enough interpretation
- Provide appropriate measurement units
- Use the word “significant” and “Non significant” accordingly
- Avoid lengthy analysis and duplication of information

Discussion

- Start discussion about your major findings
- Provide answers to testable hypotheses relevance to existing knowledge
- Discuss results with the findings of other researchers
- Reference the findings of others in order to support your interpretations
- Discuss contradictory findings with an alternative explanation
- Never discuss prior work without reference
- Point out where further gaps in knowledge could usefully be filled
- Discuss study strengths and limitations

Conclusions

- State conclusions clearly and concisely
- Start with clear statement of principal findings
- Summarize the findings and generalize their importance
- Prove that findings are worthy
- Develop accuracy and originality in conclusion
- Discuss ambiguous data and recommend further research
- Conclude that testing supports or disproves the hypothesis
- Provide pleasant ending with reader's utmost satisfaction

Acknowledgments

- acknowledgments to
- Who provide helps in designing and carrying out the research work
- Who provide equipment, materials or reagents
- Who provide assistance in your study
- Who provide helps in manuscript typing
- Who revised the manuscript
- Who provide funding support
- Support from department or institution, etc.

Reference

- Why reference?

You need to tell your readers where your evidence comes from so they can check for themselves and see if that evidence is valid and reliable for the point you are making. You also need to reference to make it quite clear which are your own ideas and which are borrowed from others.

Ethical Principles of Research

Plagiarism

- Plagiarism is the unethical practice of using words or ideas (either planned or accidental) of another author/researcher or your own previous works without proper acknowledgment. Or
- Plagiarism is presenting someone else's work or ideas as your own, with or without their consent, by incorporating it into your work without full .
- You can use the following tool to guard against Plagiarism

https://turnitin.com

Turnitin: Empower Students to Do Their Best, Original Work

Turnitin solutions promote academic integrity, streamline grading and feedback, deter **plagiarism**, and improve student outcomes.

Research Tools

- **Turnitin : Plagiarism Checker**
  - *https://turnitin.com*
- **QuillBot : Paraphrasing Tool**
  - *https://quillbot.com/*
- **Grammarly: Grammer checker & Writing Assistant**
  - *https://www.grammarly.com/*
- **Mendeley - Reference Management Software**
  - *https://www.mendeley.com/*
- **LaTex, Overleaf, Online LaTeX Editor**
  - *https://www.overleaf.com/*
- **Others Tools -**

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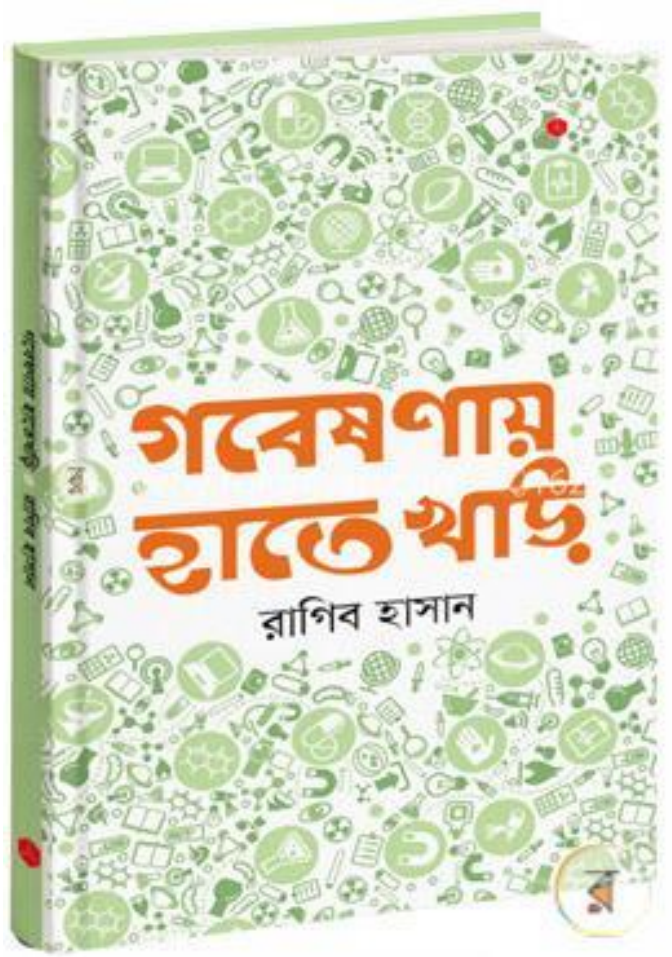
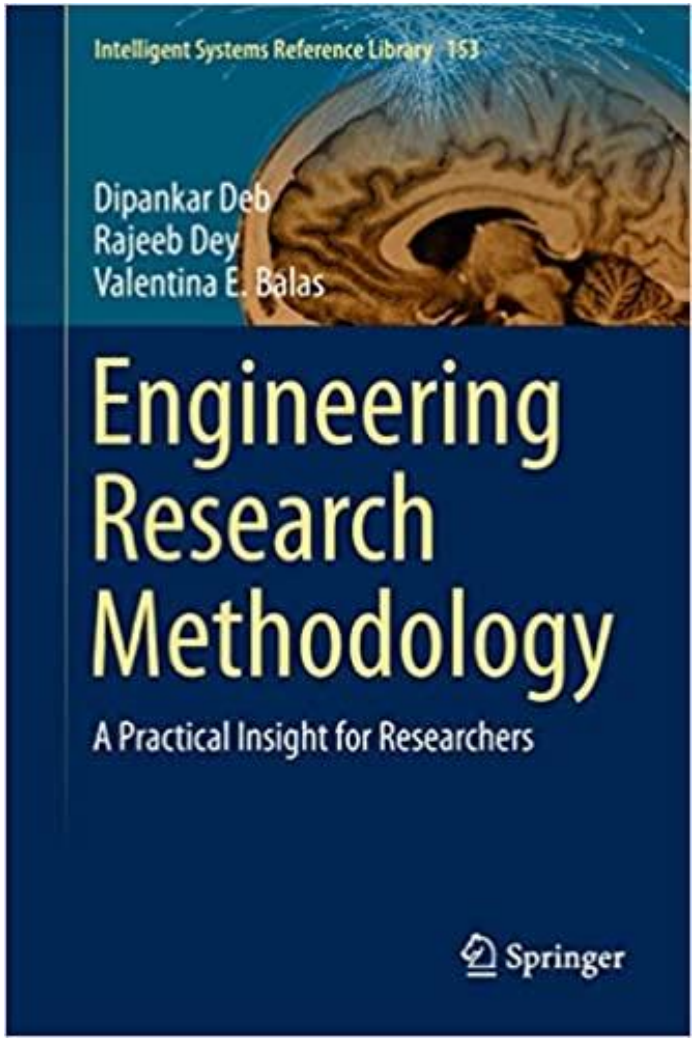
Book Reference






Thank You!
For your patience hearing!