How to write scientific papers correctly, clearly, and concisely


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Centre for International Cooperation and Development

We hereby certify that
Sajid Iqbal
Winner of a CICOPS scholarship in 2019
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to foster mutual cooperation between his academic institution and the University of Pavia

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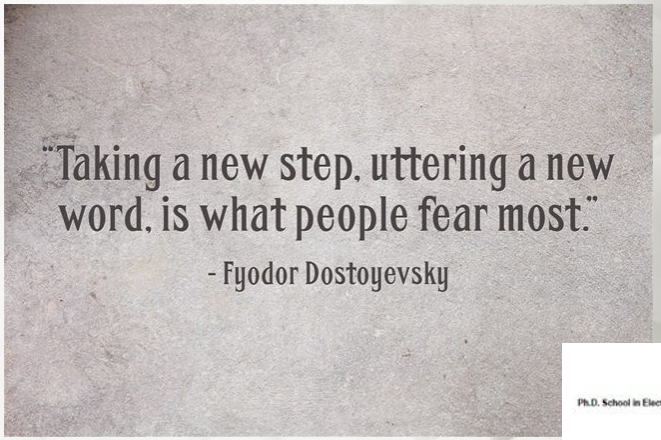
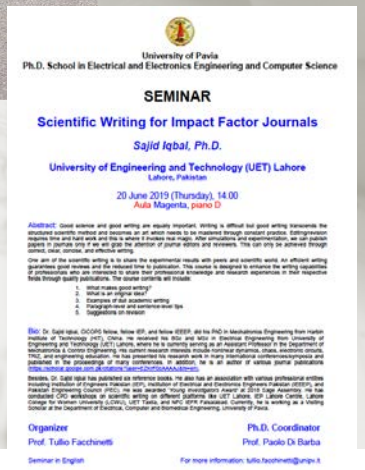

"Taking a new step, uttering a new word, is what people fear most."

- Fyodor Dostoyevsky

Part-I
Writing Correctly


University of Pavia
Ph.D. School in Electrical and Electronics Engineering and Computer Science

SEMINAR

Scientific Writing for Impact Factor Journals

Sajid Iqbal, Ph.D.

University of Engineering and Technology (UET) Lahore
Lahore, Pakistan

20 June 2019 (Thursday), 14.00
Aula Magenta, piano D

Organizer
Prof. Tullio Facchinetti

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Assistant Professor
University of Engineering & Technology (UET) Lahore. Pakistan.
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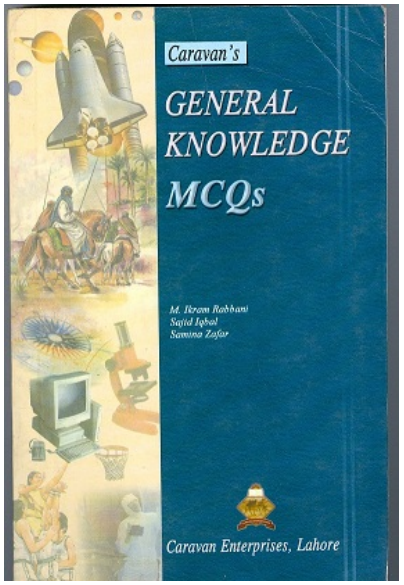
“K2 is the epitome of a mountain,” says author Mick Conefrey.

Unlike Everest, K2 offers climbers almost no flat sections.

https://news.nationalgeographic.com/2015/12/151213-k2-adventure-mountain-climb-china-pakistan-disaster-ngbooktalk/

31 July 1954: An expedition led by Professor Ardio Desio of Milan University is the first to reach the summit of K2.

26 July 2014: A team of six Pakistani and three Italian climbers scaled K2 to commemorate 60 Years of first K2 ascent.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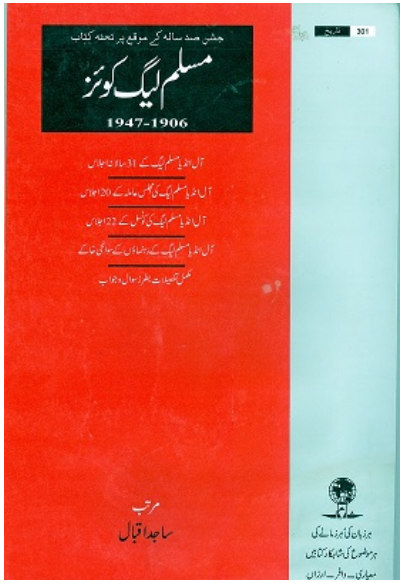
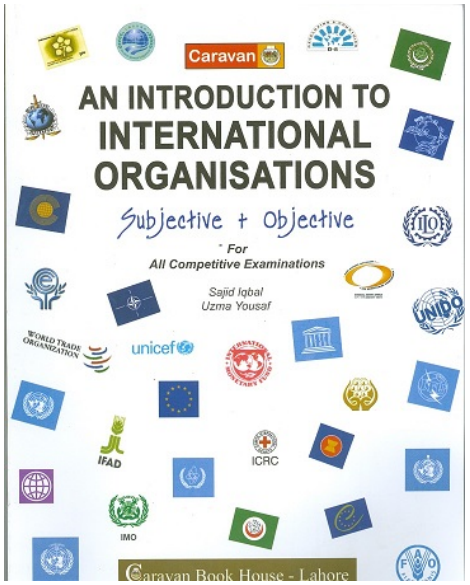

جشن صد سالہ کے موقع پر تحفہ کتاب
مسلم لیگ کوئز
1947-1906
مرتب
ساجد اقبال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For
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Organisation of The Islamic Conference
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منّی
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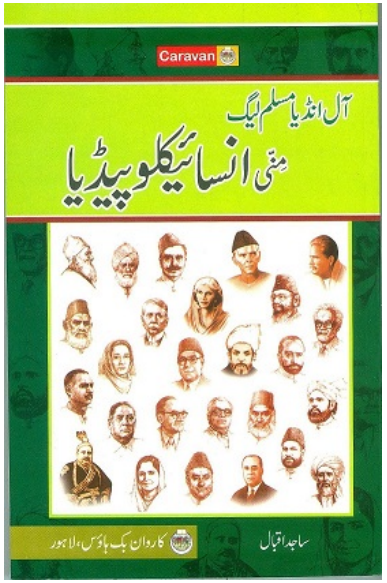
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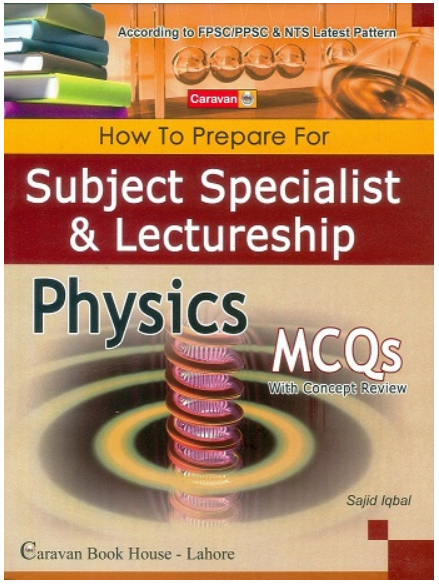
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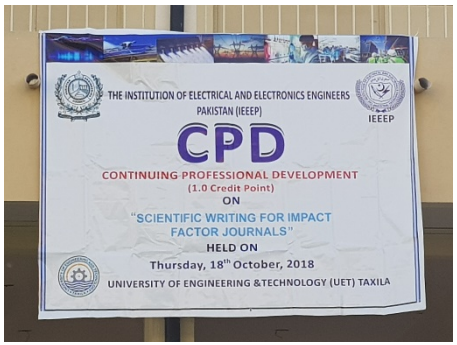
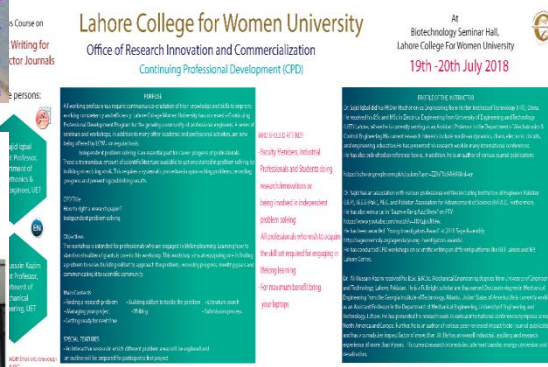


One Day CPD Short Course on "Tools to improve your professional Writing" to be held on 28th January, 2019 at PEC HQ, Islamabad

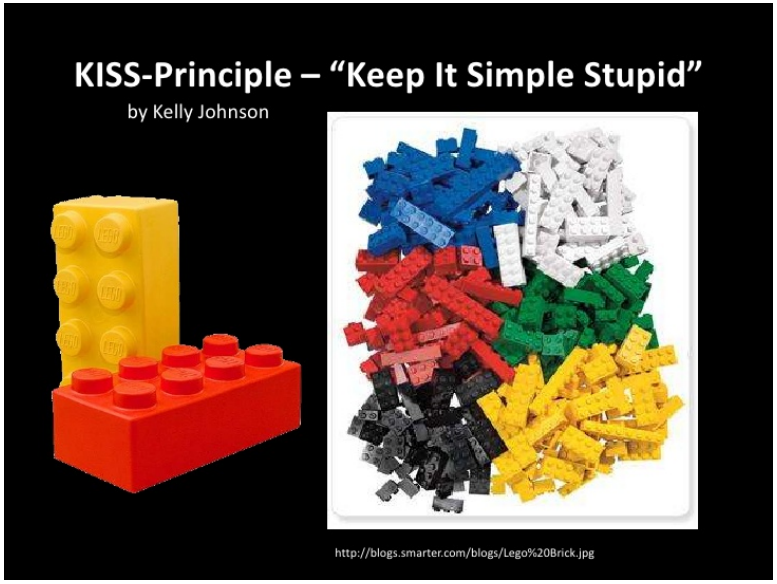


Sections

- Part-I = Writing Correctly
- Part-II = Writing Clearly
- Part-III = Writing Concisely

"La semplicità è la più grande sofisticatezza"

LEONARDO DA VINCI

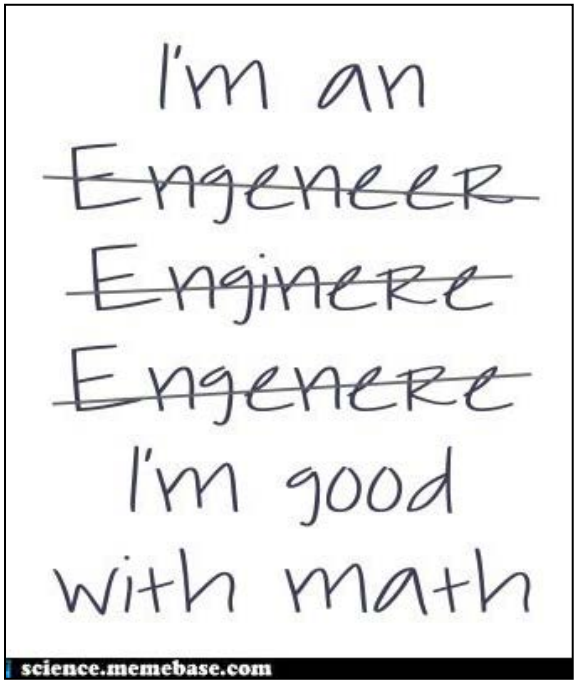


Part-I = Writing Correctly

Main Contents

- Myths of writing
- Clear and correct writing
- Major errors in academic writing
- Original ideas
- Outline
- Free writing
- Use of personal pronouns

Ever feel like writing isn't your cup of tea?



Good writing is a habit that takes time to develop.

"The fundamental purpose of scientific discourse is not the mere presentation of information and thought but rather its actual communication. It does not matter how pleased an author might be to have converted all the right data into sentences and paragraphs; it matters only whether a large majority of the reading audience accurately perceives what the author had in mind."

--George Gopen and Judith Swan

The Science of Scientific Writing, 1990

Myths of Writing

1. Writing should be easy.
2. Writing should be right the first time.
3. Writing should be the same for everyone.
4. Writing should be unambiguous.
5. Writing is a linear process.
6. Writing is for communication.
7. Writing is for the transmission of information.
8. Writing involves transferring thoughts from the mind to paper.

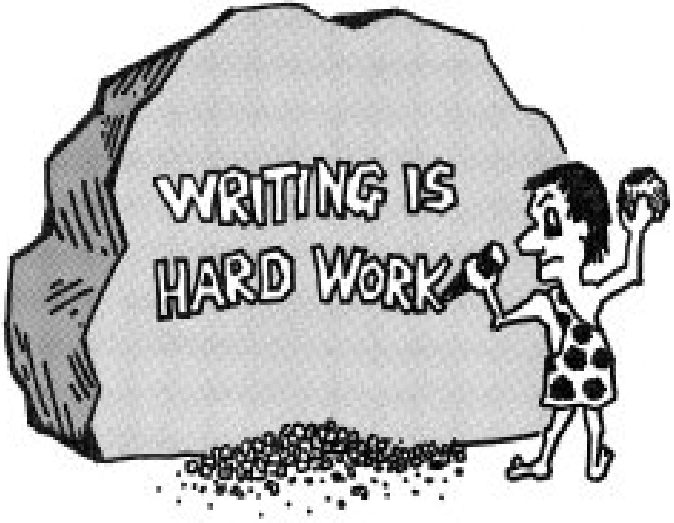
Myths of Writing

Writing should be easy.

Reality: Writing is often hard work—it requires concentration, physical effort, and a tolerance for frustration and disappointment.

There is no royal road to learning no short cut to the acquirement of any art.

- Anthony Trollope



http://www.lupinworks.com/roche/pages/myths.php

“Writing is easy. You just open your veins and bleed.”

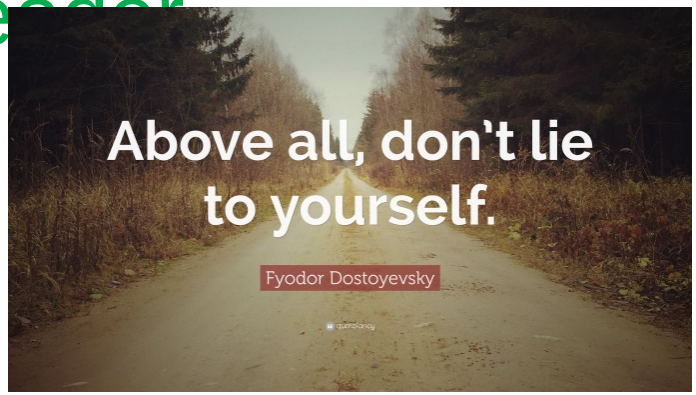
— Red Smith, Sportswriter

Myths of Writing (Cont.)

Writing should be right the first time.

Reality: Writing generally requires many drafts and revisions to get ideas into a form that satisfies the writer.

A separate editorial polishing is required to make any text appropriate for another reader.



http://www.lupinworks.com/roche/pages/myths.php

If the reader is to grasp what the writer means,
the writer must understand what the reader needs.

~George D. Gopen and Judith A. Swan
The Science of Scientific Writing. 1990

Myths of Writing (Cont.)

Writing should be the same for everyone.

Reality: Each of us develops an idiosyncratic set of strategies we're comfortable with and that work for us.

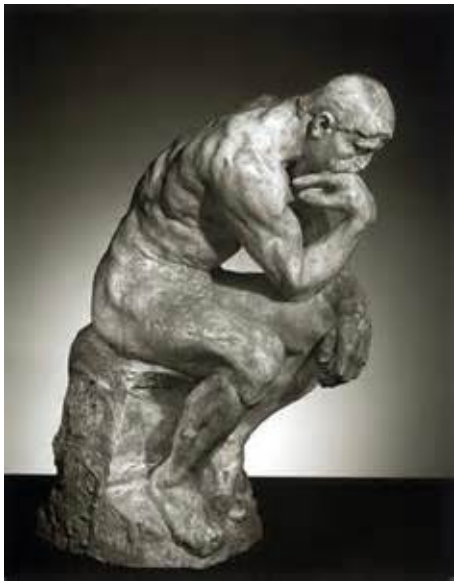
http://www.lupinworks.com/roche/pages/myths.php

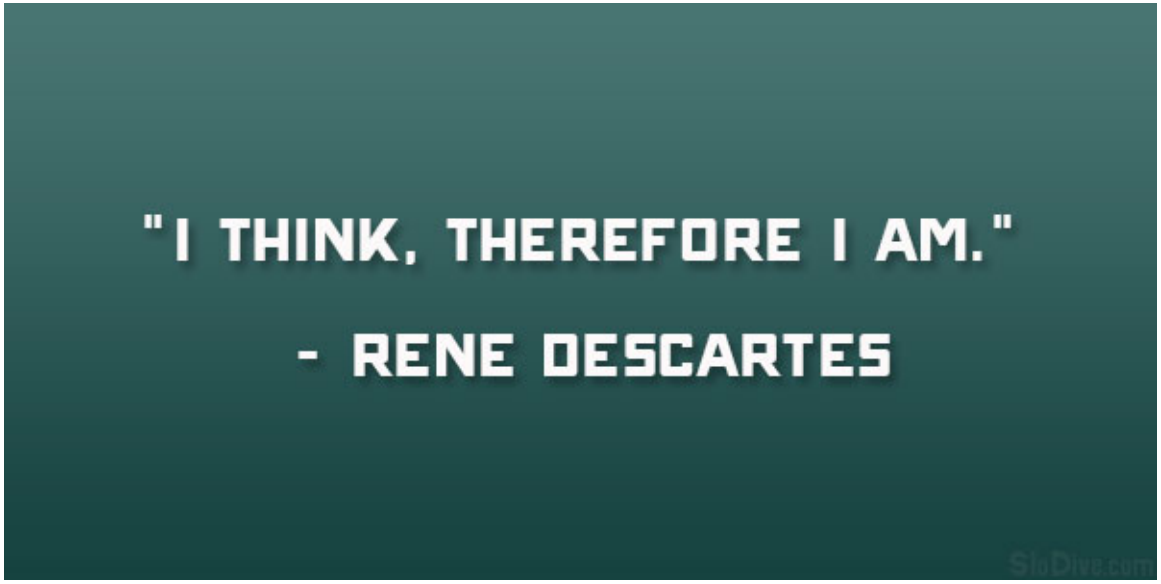
No approach

- No ultimate truth regarding scientific writing.

- Each person should, thus, develop a style that is most effective for him or her.

The fundamental proposition of Western philosophy: the cogito





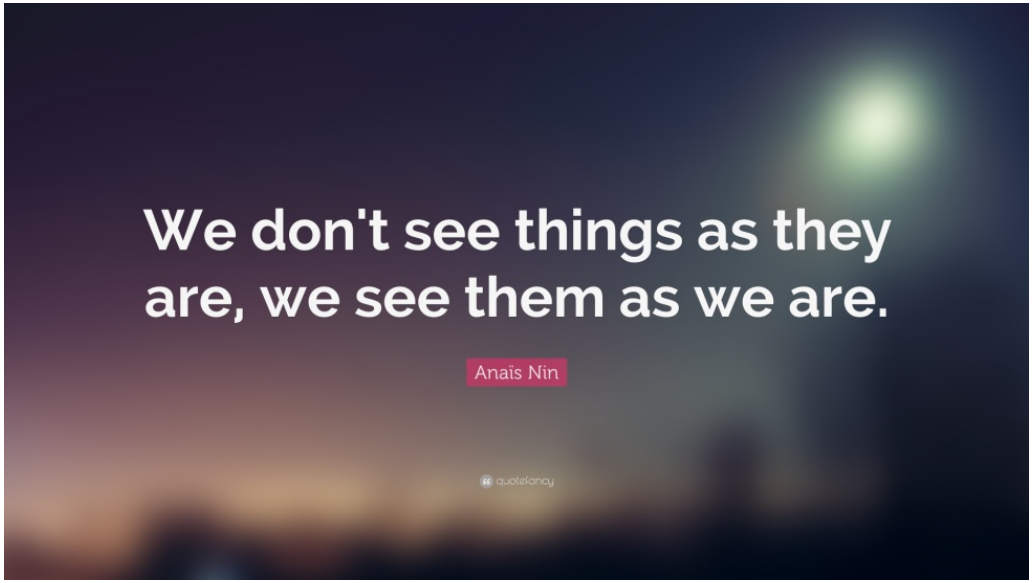
Know thyself!

"As no two authors write in the same way, no one can say which way of writing will suit you best. You will have to find out for yourself. The writing procedure described here is the one I personally have found most useful – by trial and error."

How to Write and Illustrate a Scientific Paper, Bjorn Gustavii

An idea…

[What is Denotation and Connotation]



Myths of Writing (Cont.)

Denotation
Vs.
Connotation

Writing should be unambiguous.

Reality: There is no way writing can be unambiguous. "The" meaning of a text is not embedded in the words on the page but constructed by readers.

The sense a reader constructs depends on what the reader knows and brings to the text. There is no way for any writer to know exactly what any reader brings to a text.

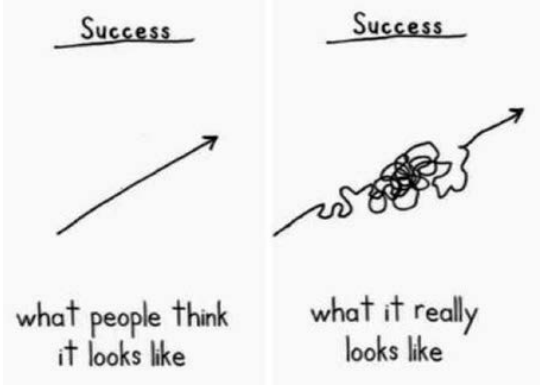
Myths of Writing (Cont.)

Writing is a linear process.

Reality: Writing can be done in several places and directions concurrently and is as easily manipulated in space as it is in time.

Texts can be constructed from writing done on separate pieces of paper; words, sentences, paragraphs, whole sections can be shuffled into different sequences.

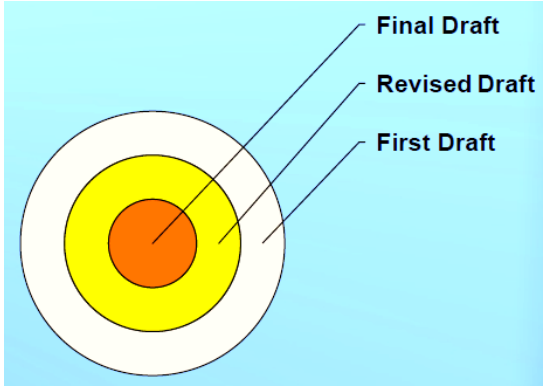
Writing is recursive.



Writing is a process

Good writing does not happen overnight; it requires planning, drafting, rereading, revising, and editing.

Learning and improvement requires self-reflection, peer-review, expert feedback, and practice.



There are no shortcuts; practice makes perfect!

Myths of Writing (Cont.)

Writing involves transferring thoughts from the mind to paper.

Reality: Thoughts are created in the act of writing, which changes the writer and changes the emerging text.

http://www.lupinworks.com/roche/pages/myths.php

Myths of Writing (Cont.)

Writing is permanent.

Reality: Speech, once uttered, can rarely be revised; writing can be reflected upon, altered, and even erased at will.

http://www.lupinworks.com/roche/pages/myths.php

Myths of Writing (Cont.)

Writing is for communication.

Reality: The writer is always the FIRST reader and may often be the only reader.

"A narrow street is only as wide as the person that walks down it."

— Anthony Hincks

Myths of Writing (Cont.)

Writing is for the transmission of information.

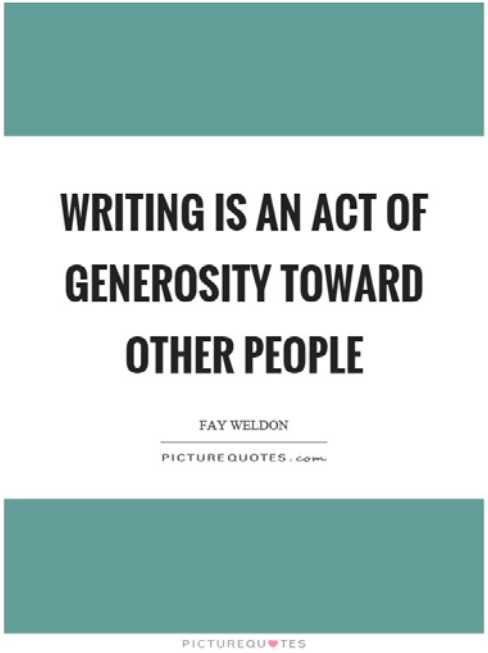
Reality: While in the end the writing may convey in formation, it's major function is to explore ideas. The danger of the information-transmission myth is that it focuses on how texts are presented from the point of view of the reader rather than on what the act of writing can accomplish for the developing thought of the writer. The writer is overlooked.

"…..friend told me that in his academic world, 'publish or perish' is really true. He doesn't care if nobody reads it or understands it as long as it's published."

Anne Ku,"The joys and pains of writing and editing"Le Bon Journal

Why should we publish?

- ❑ To graduate, to get a job, or to advance career.
- ❑ To convey a useful and re-useable idea



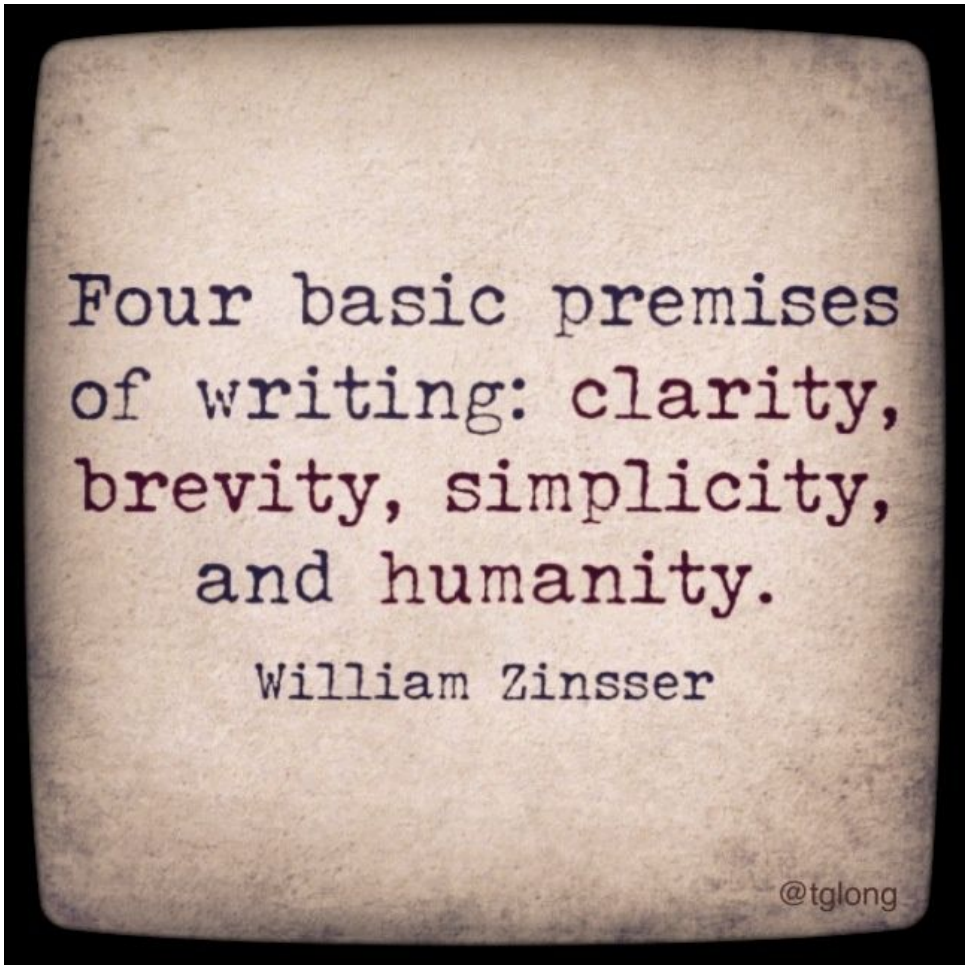
http://academy.springer.com/journal-author-academy

Why should we publish? (Cont.)

Scientists aim:

- To add to the body of human knowledge
- To help themselves and others understand the nature of the universe

Good papers and talks are fundamental part of research excellence.


Four basic premises of writing: clarity, brevity, simplicity, and humanity.
William Zinsser
@tglong

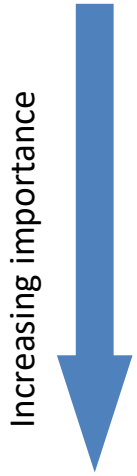
Writing Correctly

It is perfectly okay to write garbage—as long as you edit brilliantly.

—C. J. Cherryh

Writing papers is a skill

- Many papers are badly written.
- Good writing is a skill you can learn.
- It's a skill that is worth learning:



  - You will get more brownie points (more papers accepted etc).
  - Your ideas will have more impact.
  - You will have better ideas.

Why write clearly and correctly?

"There is no form of prose more difficult to understand and more tedious to read than the average scientific paper,"

--Francis Crick

Co-discoverer of the structure of the DNA molecule in 1953

The Astonishing Hypothesis. 1994

Why write clearly and correctly? (Cont.)

"….there is a close relationship between a poorly prepared manuscript and poor science. So make sure your manuscript looks carefully prepared; it may influence editors and referees in your favor."

How to Write and Illustrate a Scientific Paper by Bjorn Gustavii

Why write clearly and correctly? (Cont.)

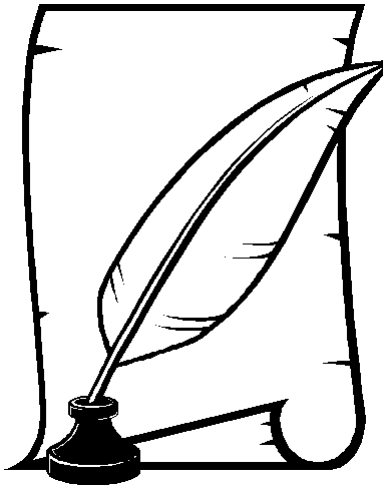
"Good science is what is most important in your article. But if your article is poorly written, then the editor and reviewers may not be able to appreciate the full impact of your work. An article with serious grammar, language, or spelling problems may be returned for editing before it is even thoroughly reviewed. Revise your article, and then revise it again. Do not let your writing detract from the science."

How to Write for Technical Periodicals & Conferences.
www.ieee.org/publications_standards/<wbr>publications/authors/

Why write clearly and correctly? (Cont.)

"About 60% of reviewers criticisms pertain to the quality of the writing or tables and graphs; and about 40% pertain to the quality of the scientific work."

Robert Iles. Guidebook to better medical writing.



The first rule of plain language is: write for your audience.

International Plain Language Day
October 13

Use language your audience knows and feels comfortable with.

Take your audience's current level of knowledge into account.

Don't write for an 8th grade class if your audience is composed of PhD candidates, small business owners, working parents, or immigr

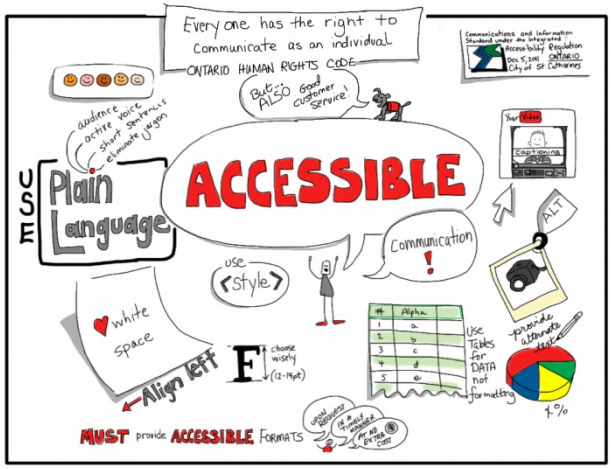
Federal Plain Language Guidelines. March 2011.

Why Use Plain Language?

Our readers are busy. They want to scan, not read.

About 79% of users scan new pages they come across; only 16% read word-by-word.

Plain language saves money, increases efficiency, and reduces the need for clarification.



https://www.census.gov/about/policies/plain_writing/ten_simple_steps.html

Why Reading?

"Read not to contradict and confute; nor to believe and take for granted; nor to find talk and discourse; but to weigh and consider. Some books are to be tasted, others to be swallowed, and some few to be chewed and digested: that is, some books are to be read only in parts, others to be read, but not curiously, and some few to be read wholly, and with diligence and attention."

Father of Empiricism, Francis Bacon

The Essays

“When you read, don't just consider what the author thinks, consider what you think”

Tom Schulman
American screenwriter,
(Dead Poets Society)

Why Reading? (Cont.)

Nine Reading Reasons

Kelly Gallagher, 2003
Reading Reasons: Motivational Mini-Lessons for Middle and High School. p. 17

1. Reading is rewarding.
2. Reading builds a mature vocabulary.
3. Reading makes you a better writer.
4. Reading is hard, and "hard" is necessary.
5. Reading makes you smarter.
6. Reading prepares you for the world of work.
7. Reading well is financially rewarding.
8. Reading opens the door to college and beyond.
9. Reading arms you against oppression.

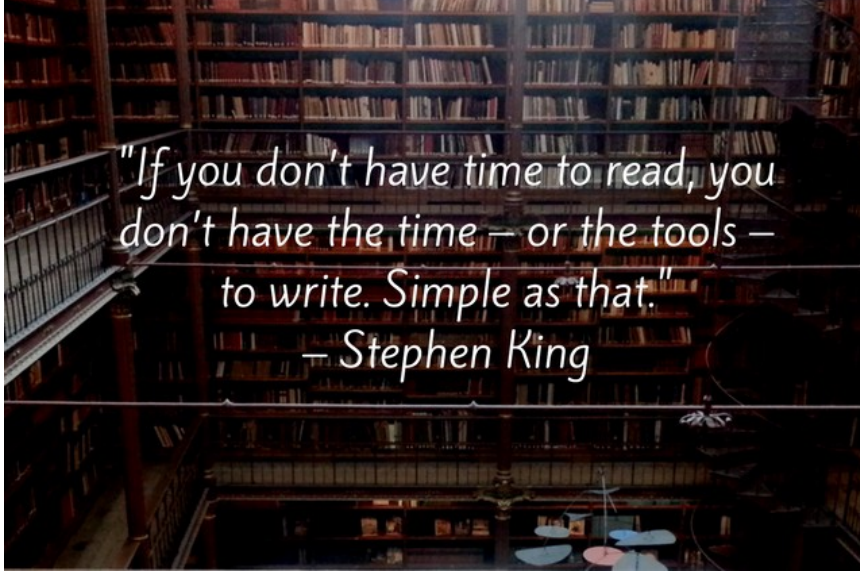
If you steal from one author it‘s plagiarism;
if you steal from many it‘s research.

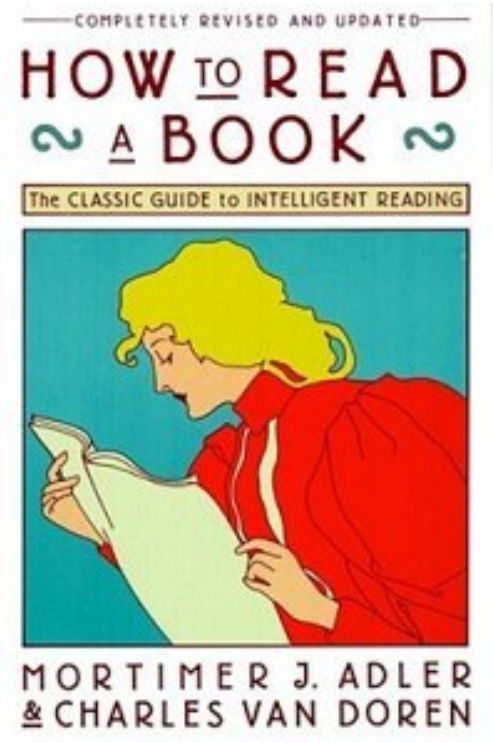
— Wilson Mizner

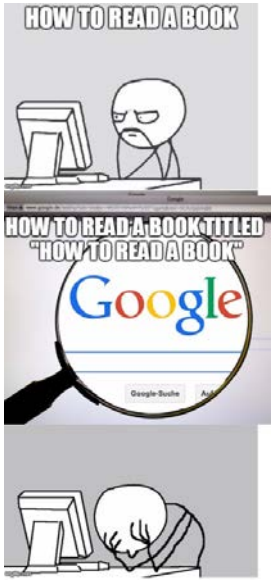
“The greatest part of a writer's time is spent in reading, in order to write: a man will turn over half a library to make one book.”

— Samuel Johnson

Why Reading? (Cont.)







Why Reading? (Cont.)

Table 1. Summary of reading strategies and techniques

Strategies and techniques	*Rationale*
Read the whole thing	Major arguments and evidence matter more than details. Grasping the structure of the whole is more important than reading every word.
Decide how much time you will spend	Real-world time is limited. If you know exactly how long you can actually spend on reading, you can plan how much time to devote to each item.
Have a purpose and a strategy	You'll enjoy reading more, and remember it better, if you know exactly why you're reading.
Read actively	Never rely on the author's structures alone. Move around in the text, following your own goals.
Read it three times	First time for overview and discovery. Second time for detail and understanding. Third time for note-taking in your own words.
Focus on parts with high information content	Tables of contents, pictures, charts, headings, and other elements contain more information than body text.
Use PTML (personal text markup language)	Mark up your reading with your own notes. This helps you learn and also helps you find important passages later.
Know the author(s) and organizations	Authors are people with backgrounds and biases. They work in organizations that give them context and depth.
Know the intellectual context	Most academic writing is part of an ongoing intellectual conversation, with debates, key figures, and paradigmatic concepts.
Use your unconscious mind	Leave time between reading sessions for your mind to process the material.
Rehearse, and use multiple modes	Talking, visualizing, or writing about what you've read helps you remember it.

How to Read a Book, v5.0

University of Michigan School of INFORMATION

Paul N. Edwards
School of Information
University of Michigan
pne.people.si.umich.edu

https://pne.people.si.umich.edu/PDF/howtoread.pdf

“Read, read, read. Read everything -- trash, classics, good and bad, and see how they do it. Just like a carpenter who works as an apprentice and studies the master. Read! You'll absorb it. Then write. If it's good, you'll find out. If it's not, throw it out of the window.”

—William Faulkner,
Nobel Laureaute in Literature

Advice from the great American writer, Kurt Vonnegut

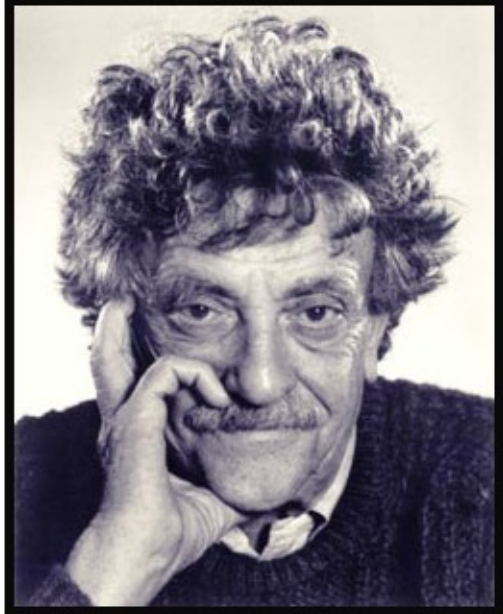
"Pick a subject you care so deeply about that you'd speak on a soapbox about it."

https://songregistration.com/blog/todays-songwriting-tip-advice-from-vonnegut/

Topic selection

- Will the topic get you out of bed on a wet Monday morning?

- It should be doable within available time and resources.



1. Find a subject you care about.
2. Do not ramble, though.
3. Keep it simple.
4. Have the guts to cut.
5. Sound like yourself.
6. Say what you mean to say.
7. Pity the readers.

(Kurt Vonnegut)

izquotes.com

What is an idea?

- If a statement is not ·a fact, it is an idea.
- What you're trying to prove or convince others of in your paper is the idea.
- An idea becomes a fact when most of the people qualified to judge it believe it.

What is an original idea?

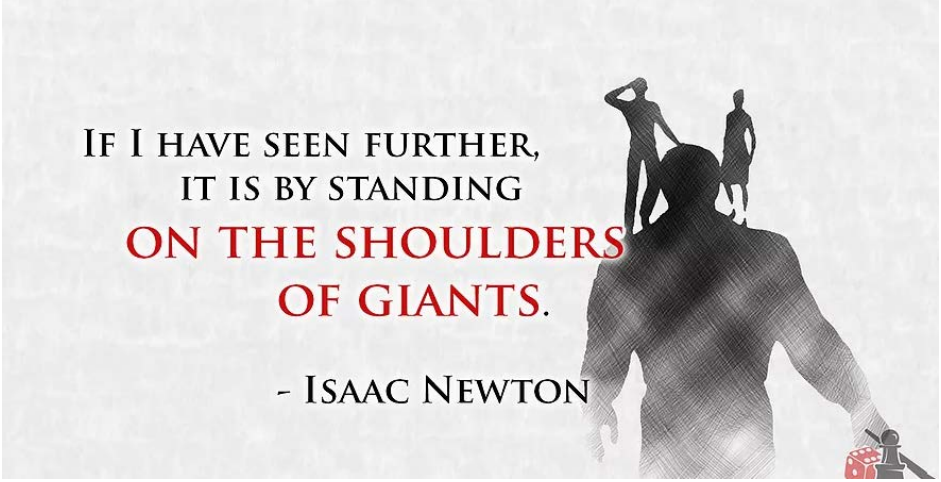
1. An idea, first thought centuries ago can be original-so long as you got the idea independently, without having read or heard about it.

2. The second way to get originality is to take a new approach to an old topic.

3. The third path is to take a novel point of view.

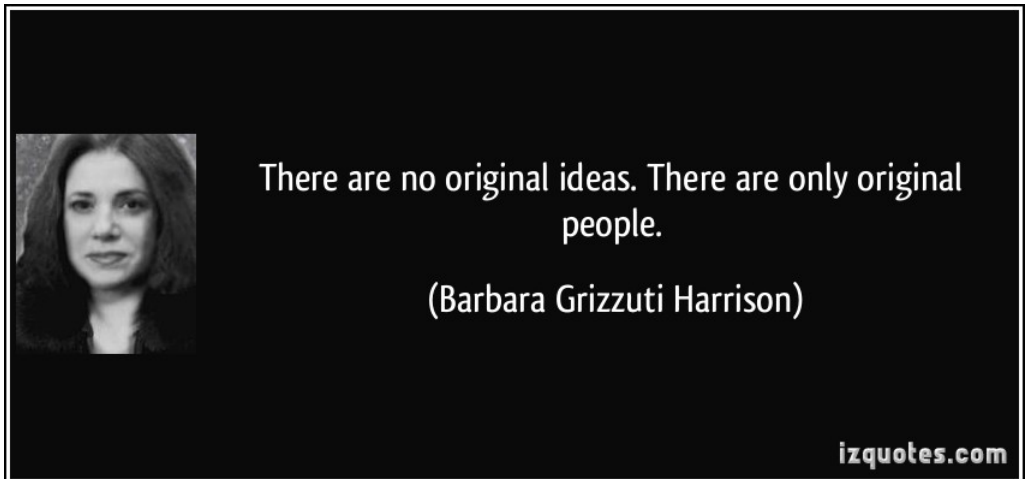
Secrets to Writing Great Papers by
Judi Kesselman-Turkel

….original idea?

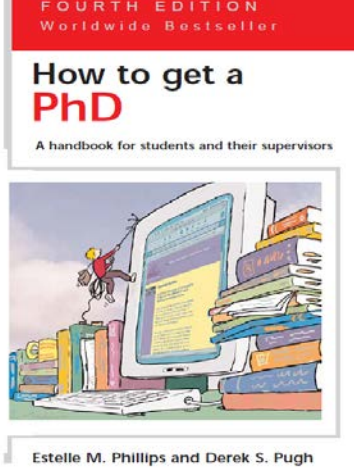


Ideas can pop up anywhere—in bed, in the bath, in the street, on the bus, on the train, in the car.

Secrets to Writing Great Papers by
Judi Kesselman-Turkel



The concept of originality



Some ways in which students may be considered to have shown originality:

- setting down a major piece of new information in writing for the first time;
- continuing a previously original piece of work;
- carrying out original work designed by the supervisor;
- providing a single original technique, observation, or result in an otherwise unoriginal but competent piece of research;
- having many original ideas, methods and interpretations all performed by others under the direction of the postgraduate;

The concept of originality (Contd.)

- showing originality in testing somebody else's idea;
- carrying out empirical work that hasn't been done before;
- making a synthesis that hasn't been made before;
- using already known material but with a new interpretation;
- trying out something in Britain that has previously only been done abroad;

How to Get a PhD by Phillips and Pugh

"It is better to fail in originality than to succeed in imitation."

- Herman Melville

The concept of originality…

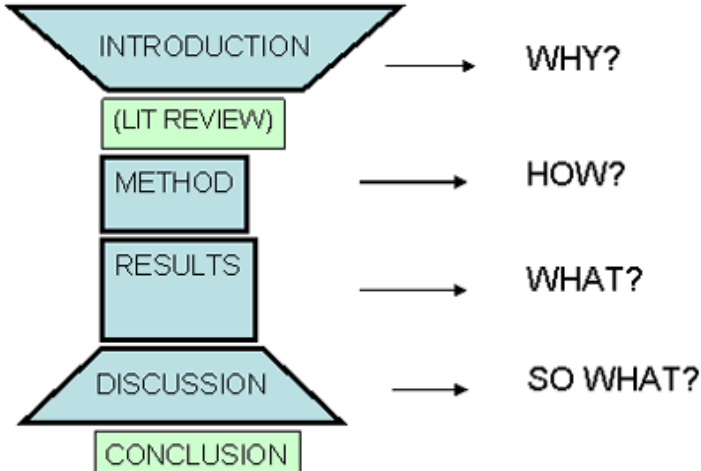
- taking a particular technique and applying it in a new area;
- bringing new evidence to bear on an old issue;
- being cross-disciplinary and using different methodologies;
- looking at areas that people in the discipline haven't looked at before;
- adding to knowledge in a way that hasn't been done before.

How to Get a PhD by
Phillips and Pugh

The parts of a scientific paper

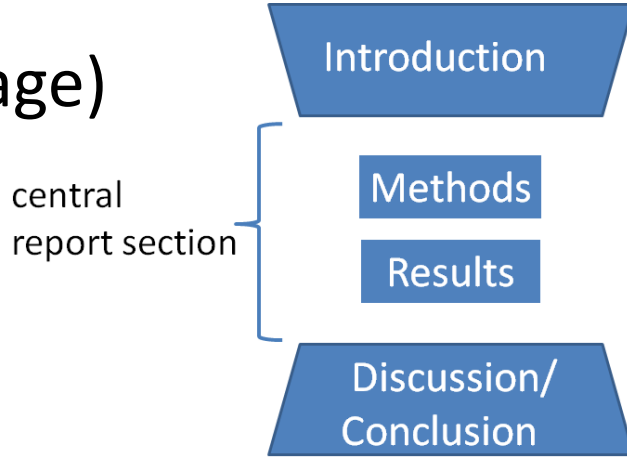
- Title
- Abstract
- Introduction: *What was the question?*
- Methods: *How did the researchers try to answer it?*
- Results: *What did the researchers find?*
- and
- Discussion: *What do the results mean?*
- Conclusion
- References

The IMRaD



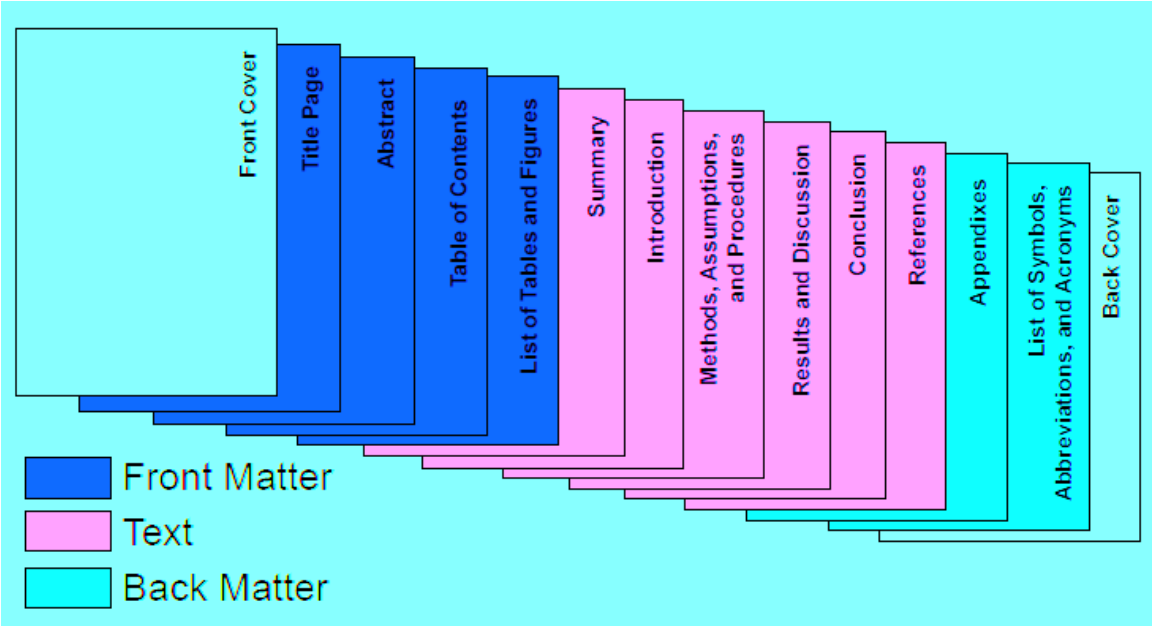
Structure (conference paper)

- Title (1000 readers)
- Abstract (4 sentences, 100 readers)
- Introduction (1 page, 100 readers)
- The problem (1 page, 10 readers)
- My idea (2 page, 10 readers)
- The details (5 page, 3 readers)
- Related work (1-2 page, 10 readers)
- Conclusion and further works (0.5 page)



The Importance of Technical Writing

Engineers write *technical reports* (aka *engineering reports*) to communicate technical information about projects to customers, managers, legal authority figures, and other engineers.

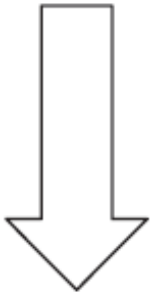


A *technical report* follows a specific *layout* and *format* as specified by the American National Standards Institute (ANSI).

IMRAD (Introduction, Materials and Methods, Results, And Discussion)

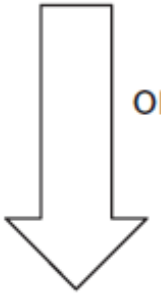
From the known to the unknown

1. *Materials and Methods*
2. *Results*
3. *Discussion*
4. *Conclusion*
5. *Introduction*
6. *Title and Abstract*



order of writing

1. *Title* and *Abstract*
2. *Introduction*
3. *Materials and Methods*
4. *Results*
5. *Discussion*
6. *Conclusion*



order of published paper
IMRAD

What makes good writing?

1. Good writing communicates an idea clearly and effectively.

   It takes something to say and clear thinking.

2. Good writing is elegant and stylish.

   It needs time, revision, and a good editor!

Follow a few simple, rules of style

Take-home message:-

Good writing can be learned!

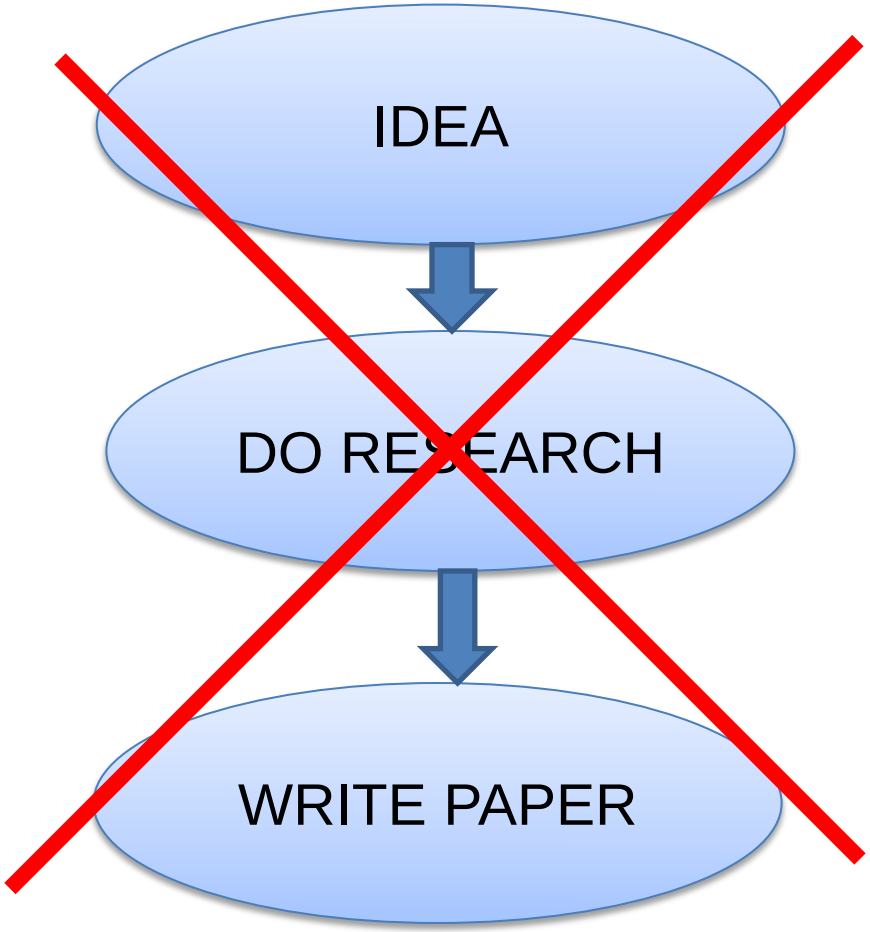
Steps to becoming a better writer

- Write to engage your readers—have empathy for them!
- Accept that writing is hard for everyone.
- Read, pay attention, and imitate.
- Revise—nobody gets it perfect on the first draft.
- Learn how to cut ruthlessly. Never become too attached to your words.
- Find a good editor!

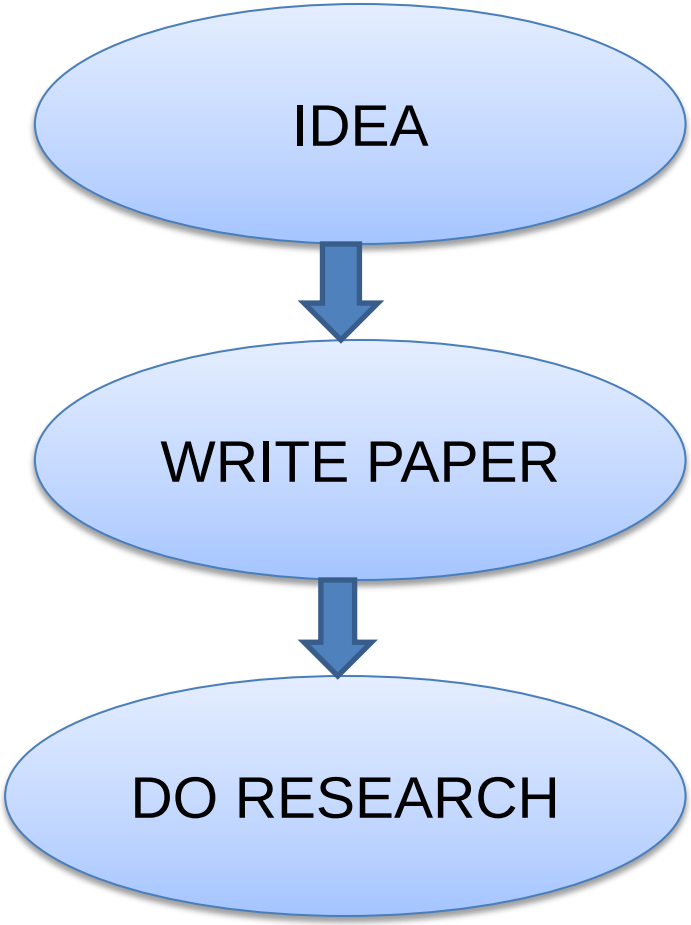
The suggestion

Do not wait: write

Writing paper: old model



Writing paper: new model



Writing paper: new model (Cont.)

- Forces us to be clear.
- Crystallizes what we do not understand.
- Opens the way to dialogues with others: reality check, critiques and collaborations.

Writing paper: new model (Cont.)

Writing is a primary mechanism for doing research
(not just for reporting it)

Do not be anxious

Fallacy

You need to have a fantastic idea before you can write a paper. *(Everyone else seems to!)*

Write a paper and give a talk about
ANY IDEA
No matter how insignificant it seems to you.

Do not be anxious (Cont.)

- Writing a paper is how you develop the idea in first place.
- It usually turns out to be more interesting and challenging that it seems at first.

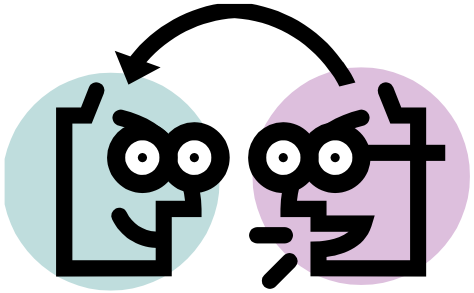
Another suggestion

Identify your key idea

Your goal: to convey a useful and re-usable idea

Another suggestion

- You aim is to infect the mind of readers with your ideas, like a virus.
- Papers are far more durable.



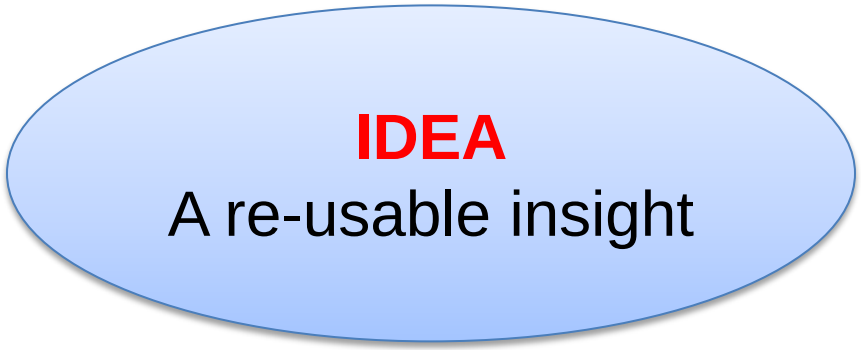
The greatest idea is worthless if you keep them to yourself.

The idea

- Your paper should have just one "ping": one clear and sharp idea.

ONE idea = ONE paper

- You may not exactly know what the idea is when you start writing, but you must know when you finish it.
- If you have lot of ideas, write lot of papers.



Can you hear the “ping”

- Many papers contains good ideas, but do not distill what they are.

- Make certain that the reader is in no doubt what the idea is. Be 100% explicit.
  - ❖“The main idea of the paper is….”
  - ❖“In this section we represent the main contribution of the paper is”

Instance of dull academic writing

"Adoptive cell transfer (ACT) immunotherapy is based on the ex vivo **selection** of tumor-reactive lymphocytes, and their **activation** and numerical **expression** before **reinfusion** to the autologous tumor-bearing host."

The classic hallmark of academic writing:

Spunky verbs become clunky nouns…

Big questions

- Is this sentence easy to understand?
- Is this paragraph enjoyable and interesting to read?
- Is it written to inform or to obscure?
- Where do good ideas come from?
- Why does one piece of writing succeed, and other fail?
- Should sentences and paragraphs be long or short?
- When should be rules of grammar be obeyed, and when should they be stretched?
- How can you look at your own work and judge it fairly?

Scientific literature is different, but…

- Scientific writing should be easy and even enjoyable to read!

- Complex ideas can be explained in simple language.

“What is written without effort is in general read without pleasure.”

— Samuel Johnson,
English writer, lexicographer

Another example!

Dysregulation of physiologic microRNA (miR) activity has been shown to play an important role in tumor initiation and progression, including gliomagenesis. Therefore, molecular species that can regulate miR activity on their target RNAs without affecting the expression of relevant mature miRs may play equally relevant roles in cancer.

Major errors in academic writing

1. Use of nouns instead of verbs *(Nominalization).*
2. Use of unnecessary jargon and acronyms.
3. Use of passive voice.
4. Use of vague words.
5. Use of buried/remote verb.

"A buried verb isn't really a verb at all. It's a noun created by a verb—the verb has been buried in the longer noun."

Example (Cont.)

Note the use of nouns instead of verbs.

Dysregulation of physiologic microRNA (miR) activity has been shown to play an important role in tumor **initiation** and **progression**, including gliomagenesis. Therefore, molecular species that can regulate miR activity on their target RNAs without affecting the **expression** of relevant mature miRs may play equally relevant roles in cancer.

Example (Cont.)

Notice the use of unnecessary jargon and acronyms.

Dysregulation of physiologic microRNA **(miR)** activity has been shown to play an important role in tumor initiation and progression, including **gliomagenesis**. Therefore, molecular species that can regulate **miR** activity on their target RNAs without affecting the expression of relevant mature **miRs** may play equally relevant roles in cancer.

Example (Cont.)

Observe the passive voice.

Dysregulation of physiologic microRNA (miR) activity **has been shown** to play an important role in tumor initiation and progression, including gliomagenesis. Therefore, molecular species that can regulate miR activity on their target RNAs without affecting the expression of relevant mature miRs may play equally relevant roles in cancer.

Example (Cont.)

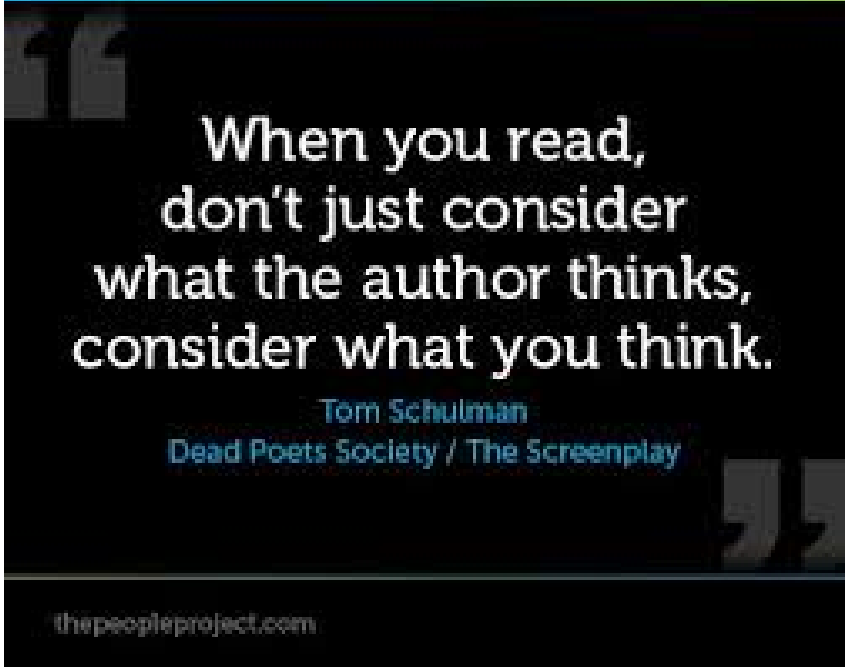
Note the distance between the subject and the main verb of this sentence.

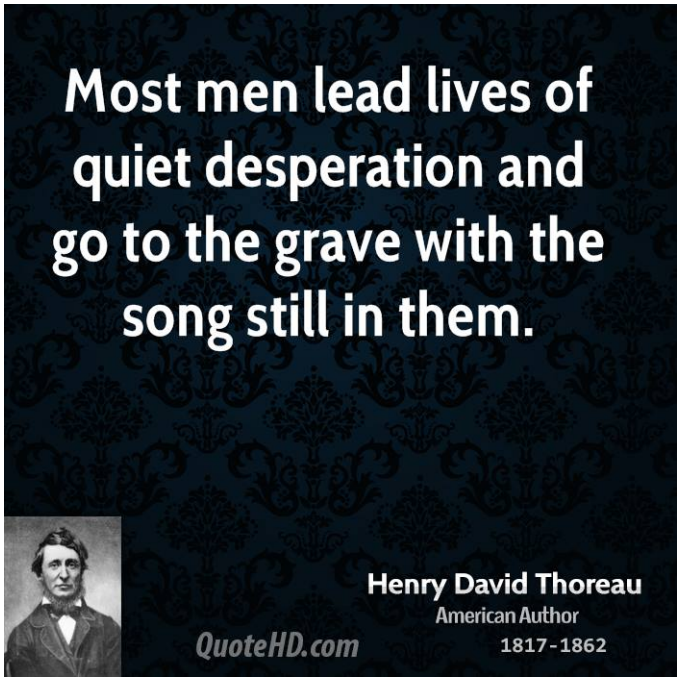
Dysregulation of physiologic microRNA (miR) activity has been shown to play an important role in tumor initiation and progression, including gliomagenesis. Therefore, **molecular species** that can regulate miR activity on their target RNAs without affecting the expression of relevant mature miRs **may play** equally relevant roles in cancer.

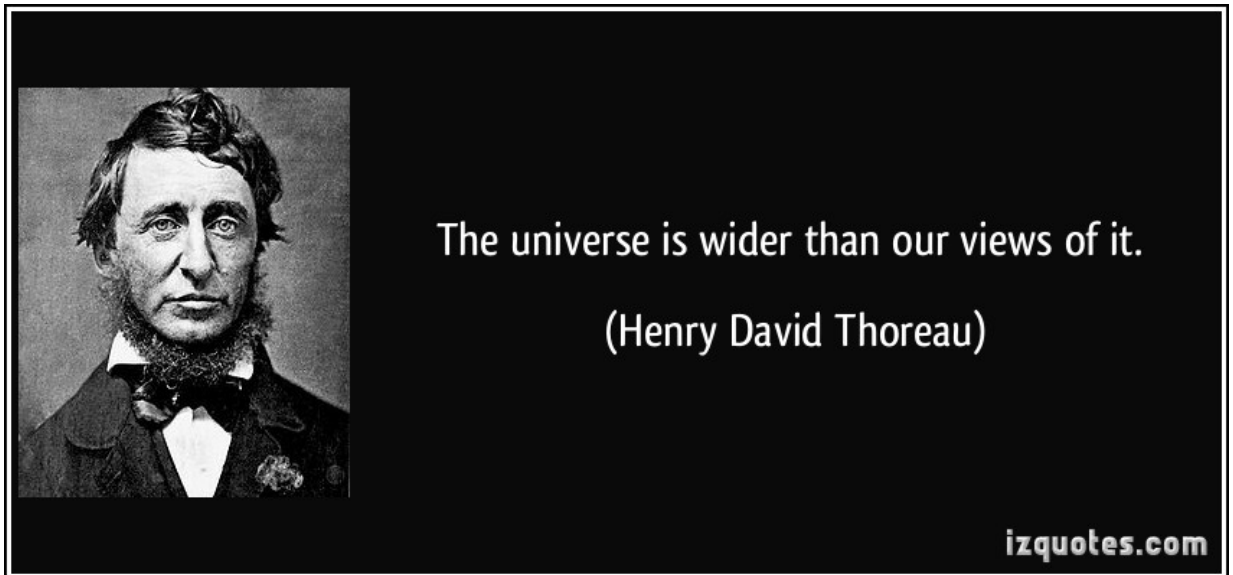
Example (Cont.)

Note the use of vague words.

Dysregulation of **physiologic** microRNA (miR) activity has been shown to play an important role in tumor initiation and progression, including gliomagenesis. Therefore, **molecular species** that can regulate miR activity on their target RNAs without affecting the expression of relevant mature miRs may play equally relevant roles in cancer.

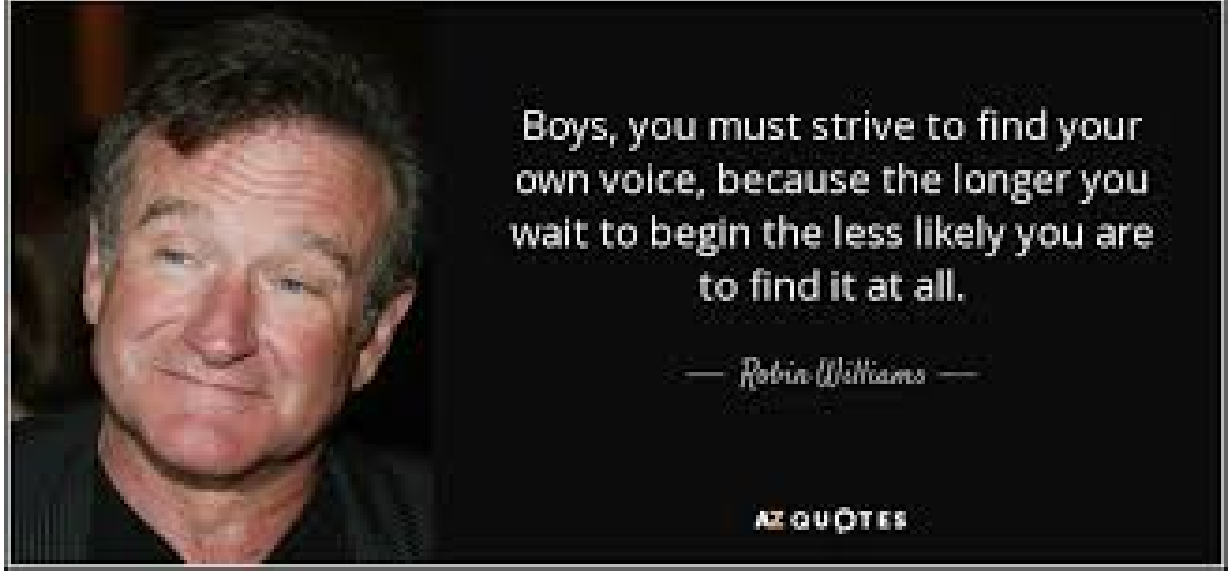

When you read,
don't just consider
what the author thinks,
consider what you think.
Tom Schulman
Dead Poets Society / The Screenplay
thepeopleproject.com


Most men lead lives of
quiet desperation and
go to the grave with the
song still in them.
Henry David Thoreau
American Author
1817-1862
QuoteHD.com


The universe is wider than our views of it.
(Henry David Thoreau)
izquotes.com

Another recommendation…

Why Do I Stand Up Here - Lessons From Dead Poets Society (1989)


Boys, you must strive to find your own voice, because the longer you wait to begin the less likely you are to find it at all.
— Robin Williams —
AZ QUOTES


LOOK AT THINGS
IN A DIFFERENT WAY


IF YOU CHANGE
THE WAY
YOU LOOK AT THINGS,
THE THINGS
YOU LOOK AT
CHANGE.

Outlining

◆ An outline is like a map or detailed instructions to show the way *"reaching the destination."*

◆ The key to generating ideas is to make an outline.

◆ Most writers agree that it is useful to begin with a detailed outline.

Outlining (Cont.)

◆ An outline is a tool used to organize your written ideas about a topic into a logical order.

◆ It is meant to help you establish a structure for a paper you are going to write.

◆ It is a way for you to demonstrate the main argument *(thesis),* main points *(topic sentences),* and main pieces of evidence you are going to present in a paper before actually writing the paper.

https://writingcenter.ashford.edu/outlining

Free Writing

◆ The biggest impediments to writing efficiently and effectively is untimely self-criticism.

◆ By writing freely—we mean the uninhibited recording of a logical thought process.

"It is not the writing part that's hard. What is hard is sitting down to write."

-- Steven Pressfield, *The War of Art*

“The consequence [of writing] is that you must start by writing the wrong meanings in the wrong words; but keep writing until you get to the right meanings in the right words. Only in the end will you know what you are saying.”

— Peter Elbow

“Don’t think; just write!” — Ray Bradbury

Note taking

◆ A central part of this writing scheme is to collect ideas while the experiment is in progress.

◆ Note taking

Bjorn Gustavii, How to Write and Illustrate a Scientific Paper

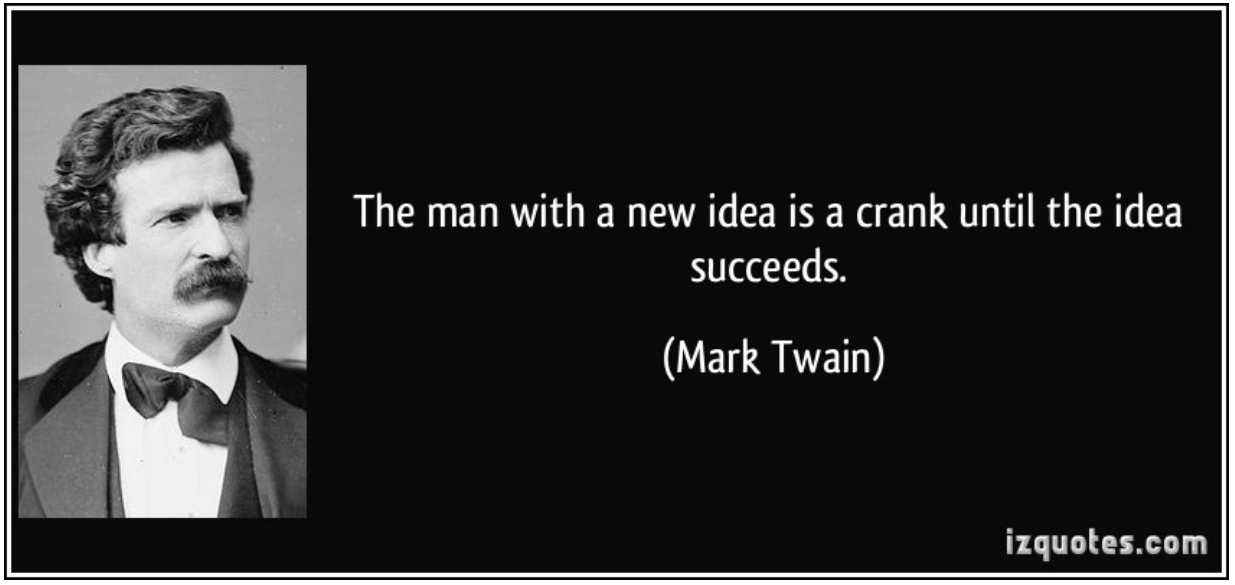
Brainstorming

- Make a list (or lists) of every idea you can think of about your subject;
- Don't write in complete sentences, just words and phrases, and don't worry about grammar or even spelling;
- Again, do NOT judge or skip any idea, no matter how silly or crazy it may initially seem; you can decide later which ones are useful and which are not, but if you judge now, you may miss a great idea or connection;
- Do this for 15, 20, or (if you're on a roll) even 30 minutes--basically until you think you have enough material to start organizing or, if needed, doing research.

https://writingprocess.mit.edu/process/step-1-generate-ideas/instructions/brainstorming

"It is better to have enough ideas for some of them to be wrong, than to always be right by having no ideas at all."

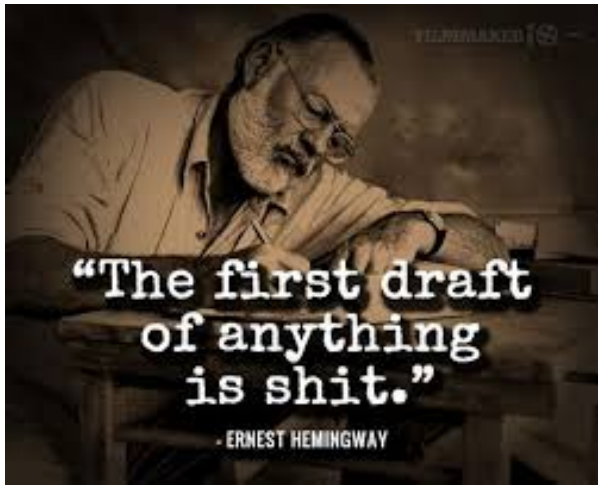
— Edward de Bono
Inventor of Lateral Thinking



First Draft

◆ Initially do not worry about style, voice, variety in word choice, conciseness, elegance etc.

◆ You can polish your prose when you do your editing and rewriting.



In 1958, Ernest Hemingway made an admission that has inspired novelists ever since: The final words of *"A Farewell to Arms,"* his wartime masterpiece, were rewritten *"39 times before I was satisfied."*

Why scientific writing became so impersonal?

- There has been a move away from the verbose, patronizing prose, and self-aggrandizement.

- But science and engineering are personal — they are advanced by people, usually for the good of people so it is more honest, direct, and effective to write in first person.

Style and Ethics of Communication in Science and Engineering - Jeffrey Holmes

Is it really OK to use “I” and “We”?

◆ It is a myth that avoiding first-person pronouns lends objectivity to the paper.

- ✓ You (or your team) ran the experiments and interpreted the data.

◆ The active voice is livelier and easier to read.

◆ By agreeing to be an author on the paper, you are taking responsibility for its content.

IEEE recommends this practice!

- Write in the first person ("I," "we") to make it clear who has done the work and the writing.

- It is particularly helpful when you are comparing your work to someone else's work.

How to Write for Technical Periodicals & Conferences.
www.ieee.org/publications_standards/<wbr>publications/authors/

…. use of “I” and “We”

When “I” or “We” is used, be careful not to give the impression that it serves an arrogant end.

Present tense vs. Past tense

- The **Abstract** and the **Methods** section will be written in the past tense, because they describe work that you have already done.

- The **Introduction** and **Discussion** section are usually written in the present tense, because they describe knowledge that currently exists.

How to Write for Technical Periodicals & Conferences.
www.ieee.org/publications_standards/<wbr>publications/authors/

Style: how to write

❖ Scientific writing does not leave a lot of room for creativity, but good writing style is inherently more understandable and enjoyable to read.

❖ Good writing varies by organization and from class to class and instructor to instructor.

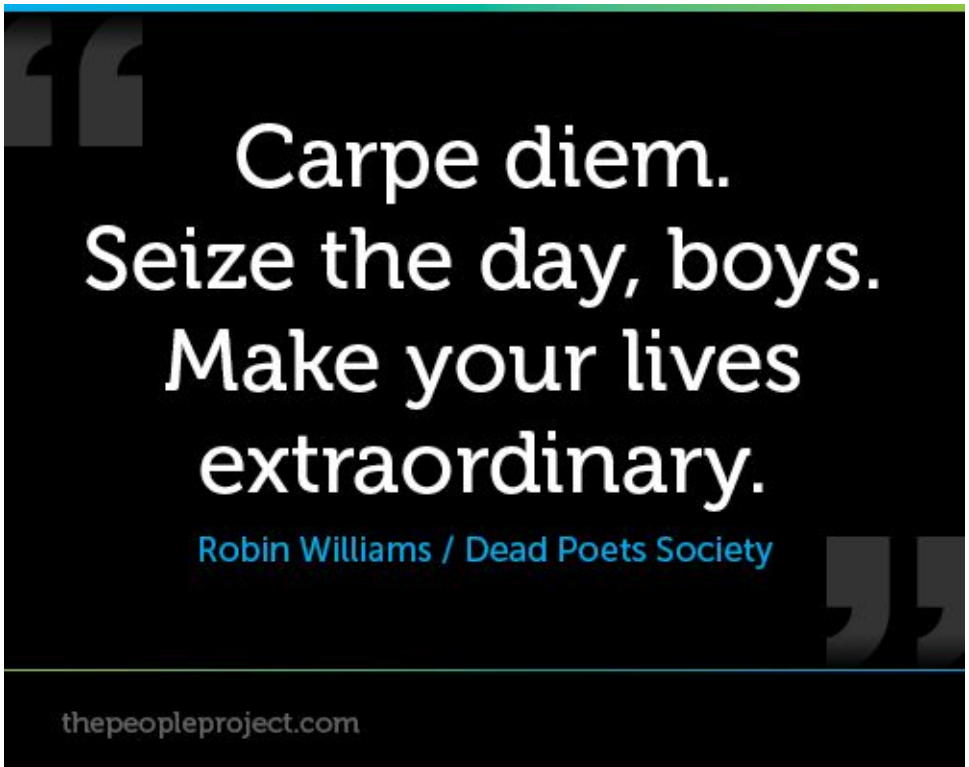
❖ Use the style your audience prefers.

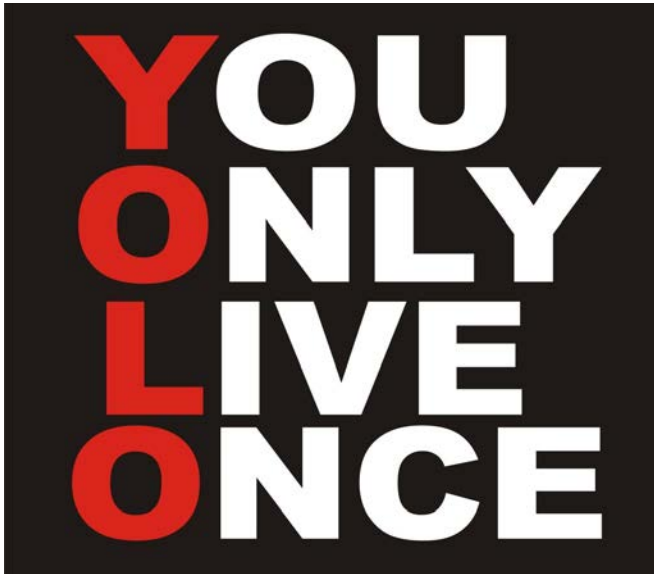
❖ Readers respond well when sentences have a varied length and when paragraphs have a consistent span.

Another recommendation…

John Keating explains the dangers of Conformity in Dead Poets Society (1989)


TAKE RISKS


Carpe diem.
Seize the day, boys.
Make your lives
extraordinary.
Robin Williams / Dead Poets Society
thepeopleproject.com


YOU
ONLY
LIVE
ONCE

Another recommendation…

Do not trust the grammar-checking programs.