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The Essence of Research



What is Research?

- The quest for knowledge and truth, characterized by careful investigation and a commitment to understanding the world around us.

أصل الكلمة

A breakdown of its etymology:

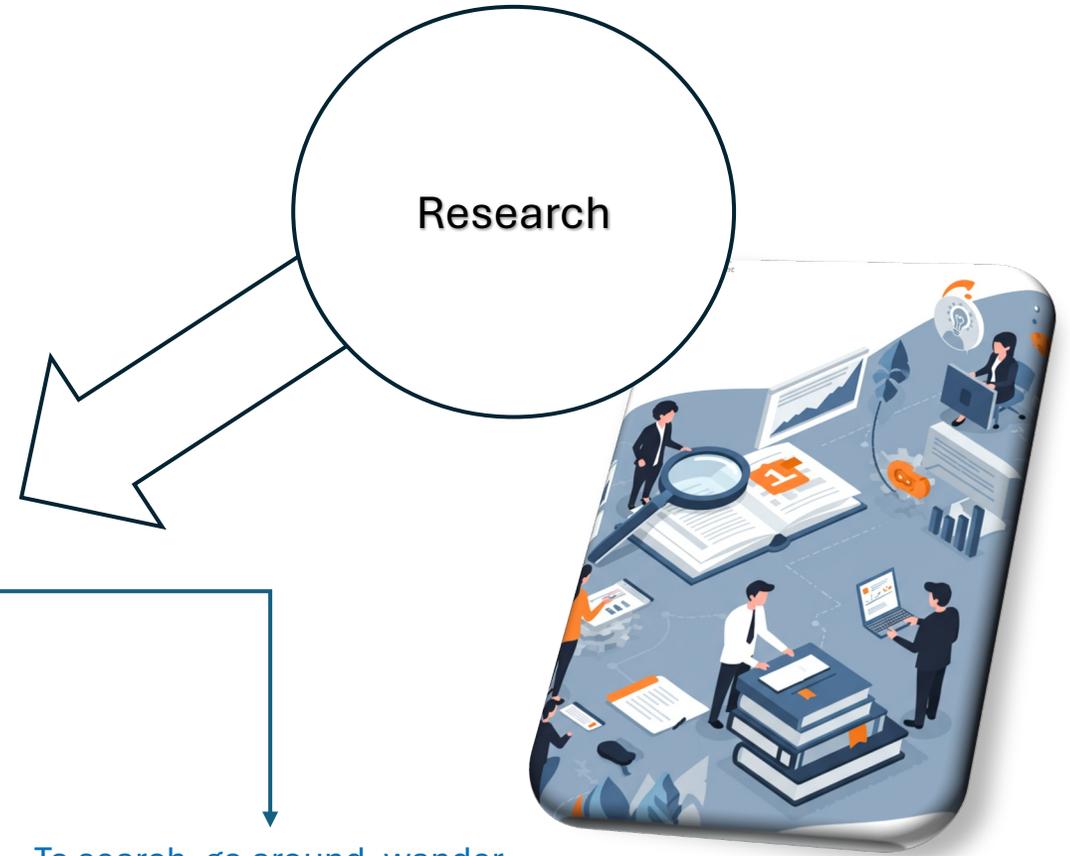
Rece^rcher^{ier},

Old French prefix meaning
"again" or "intensively."

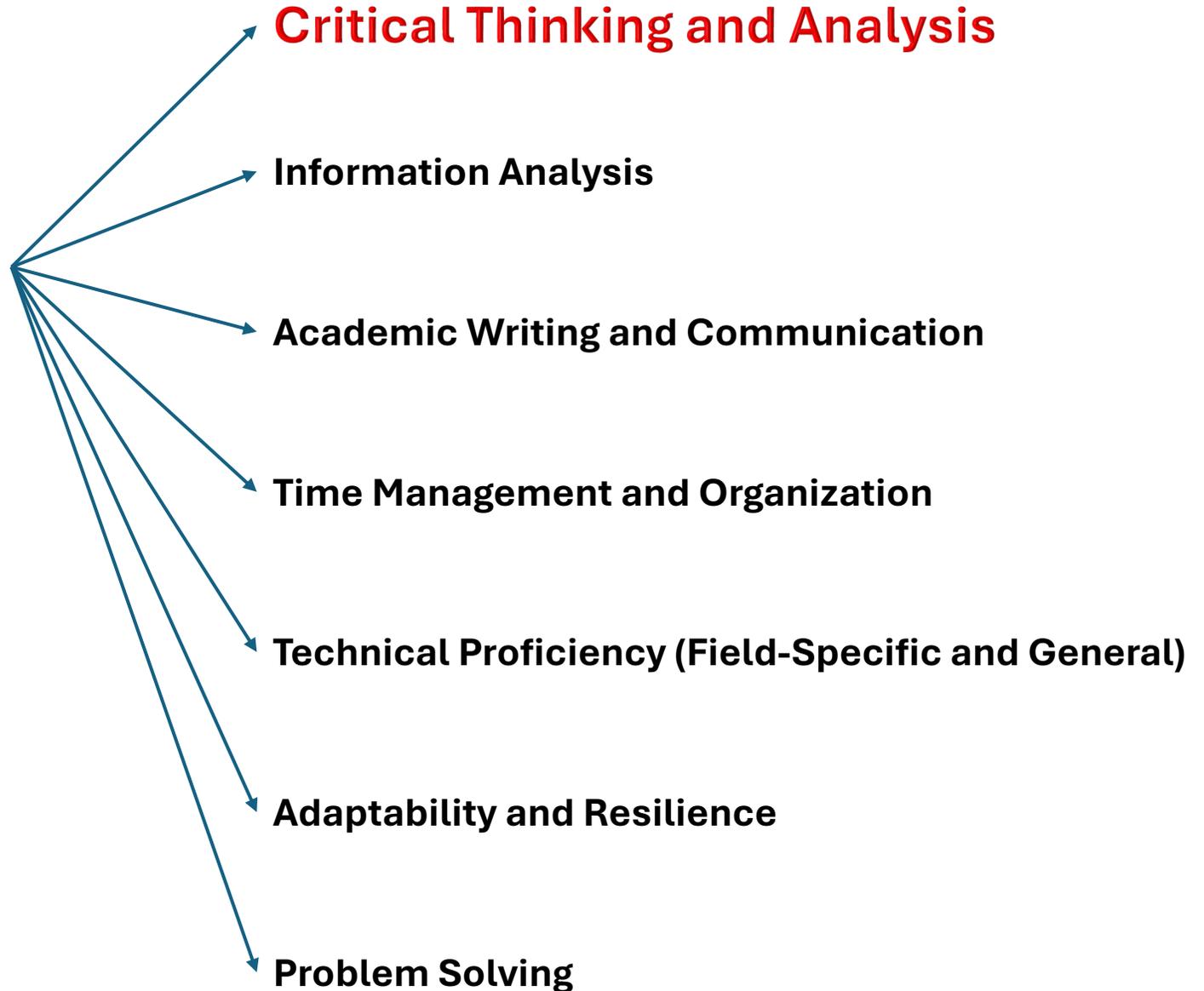
To search, go around, wander

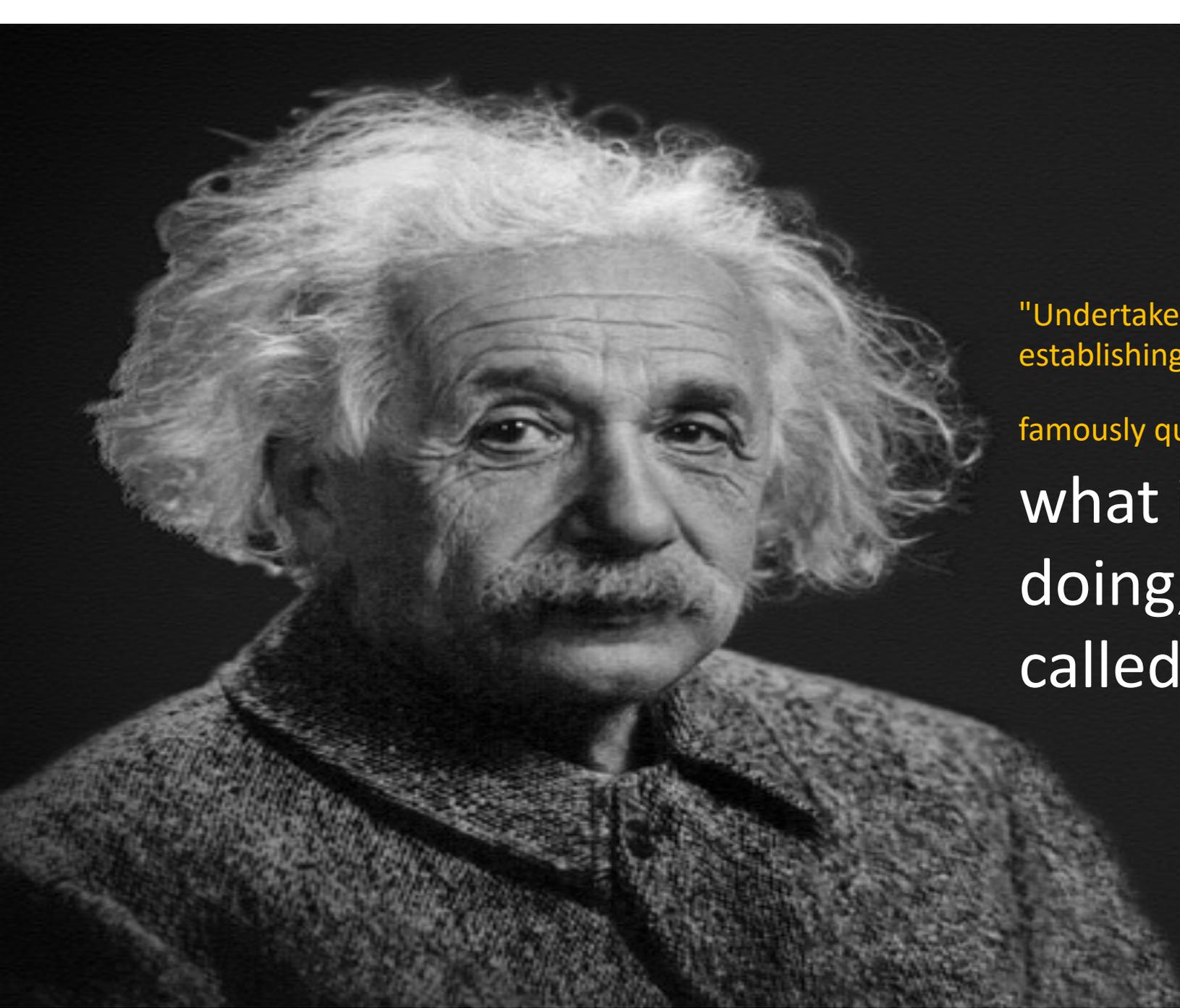
So, fundamentally, "research" implies a deep and repeated exploration or investigation into a subject.

- Research is a **systematic** and **rigorous** process of inquiry that involves collecting, organizing, analyzing, and interpreting information to increase our understanding of a topic or issue.
- It aims to generate new knowledge, validate existing theories, or revise accepted ideas in light of new facts.



Required Skills for Research

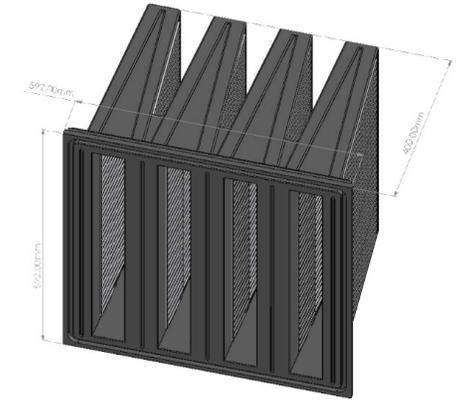
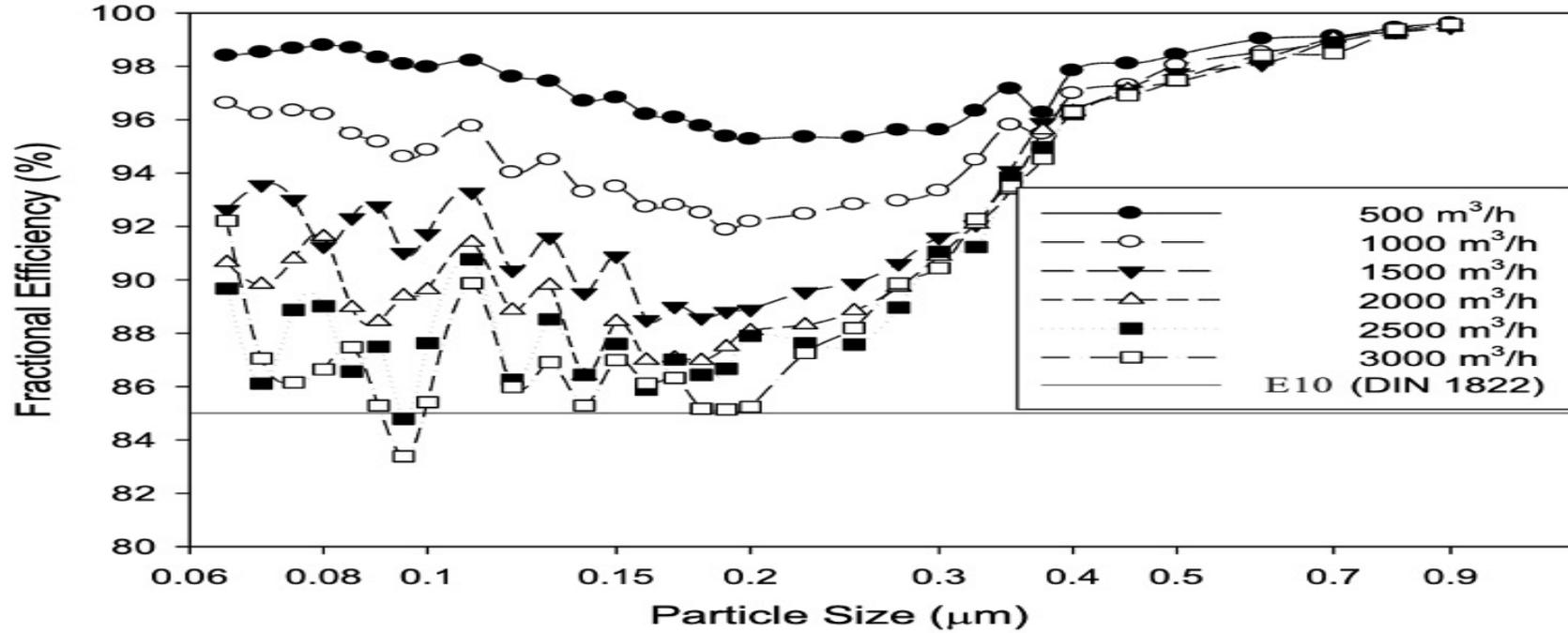




"Undertaken for the purpose of discovering or establishing facts or principles." As Albert Einstein famously quipped, "If we knew what it was we were doing, it would not be called research, would it?"

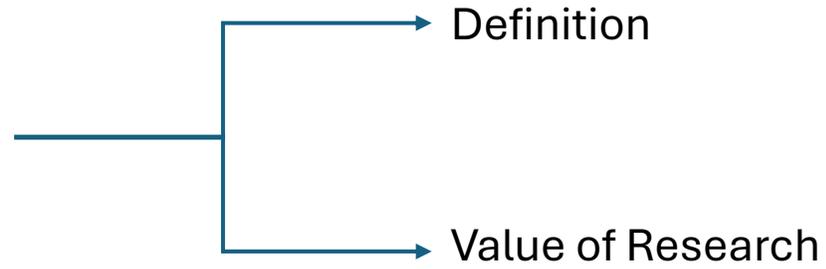
Operational Conditions

Impact of V_f On Filter Performance



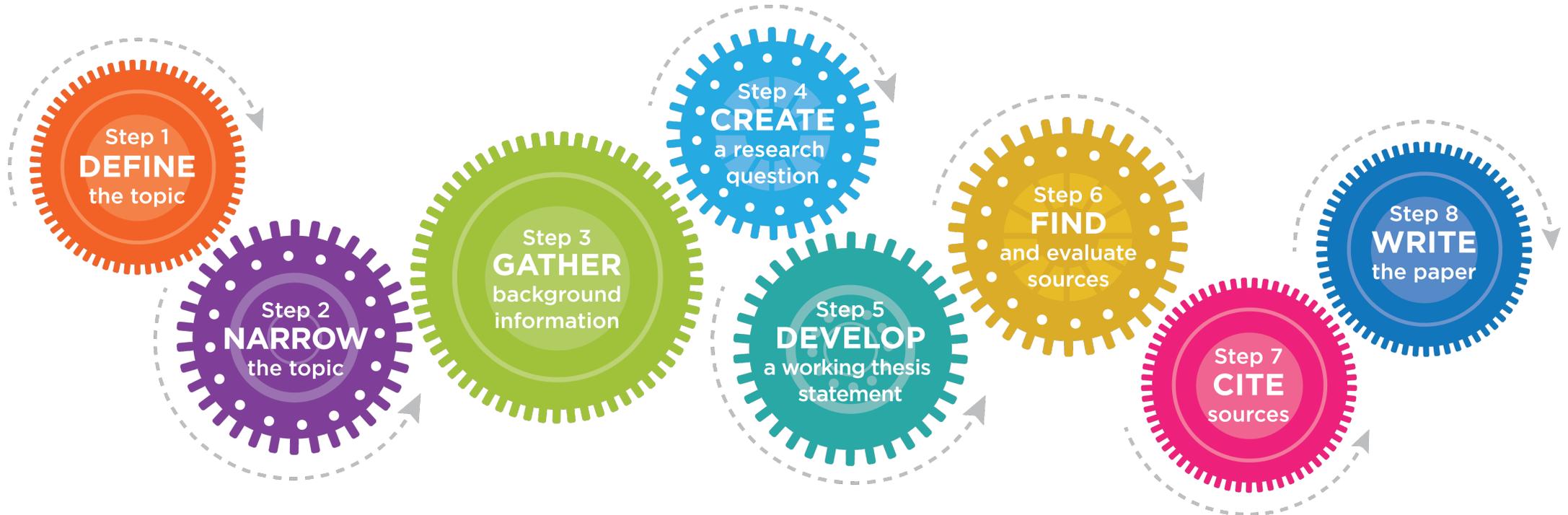
Initial Efficiencies for Various Q

Research is a process



- Gather information
- Answer question
- Solve problem

THE RESEARCH PROCESS



What is learning?



- Construction
- Messy?
- Tired?
- Not solid



Give yourself sufficient time

Enjoy the learning journey

Constructing a building

- Allow your new information to settle in
- Sleep on it
- Attend conferences
- Listen to multiple lectures about your topic
- Read various books about the topic by different authors
- Gain perspective
- Build your library





Before we start: Have a commonplace book

Document

Everything

Good morning Jack Smith

City University

June 1st 2025

Scope of the meeting/discussion:





Be a critical reader

Read everything, who wrote it, who is the author, who is his/her mentor?



Assumptions and Ideologies:

- Critical readers must identify "taken-for-granted beliefs" (assumptions) and "systems of beliefs whether true or false" (ideologies).
- The **validity** of assumptions should be questioned, and the underlying values of ideologies examined.
- The **notion of ideology** can be neutral or critical, implying a "false or distorted set of beliefs".
- **Who funded** the researched.



Be "Inquisitive"

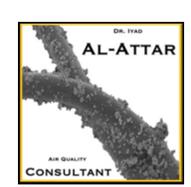


محب للإستطلاع

محب للتحقيق



باحث



John declined the job offer from his previous employer on July 5th, 2025, which was dated June 5th, 2025.

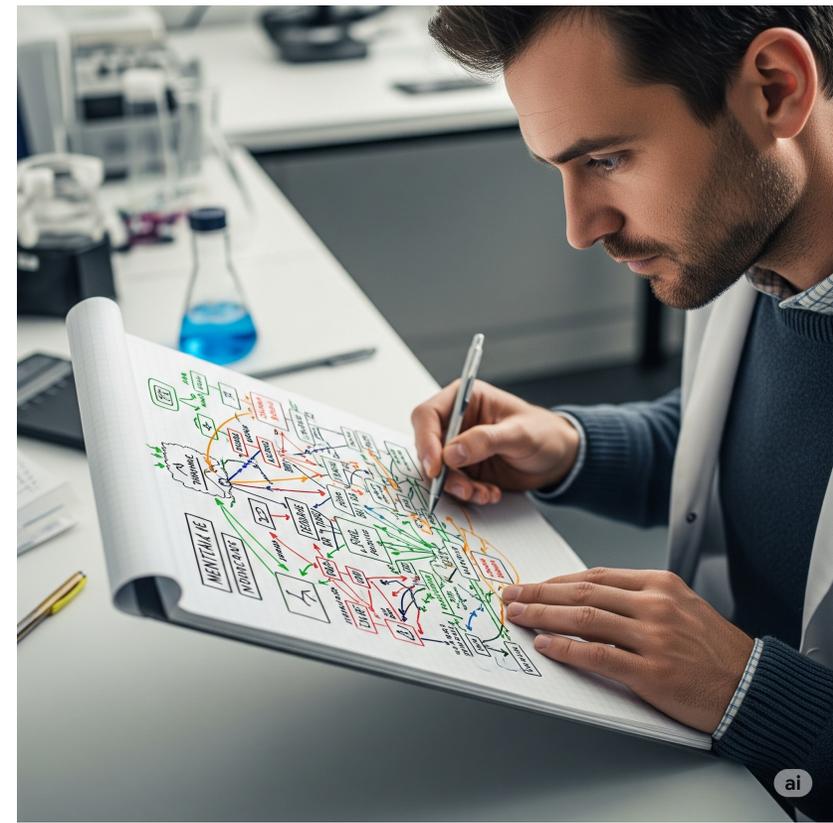


- On **what date** did John refuse the job offer from her previous employer?
July 5th, 2025, not much to argue about.
- **Why** did John refuse the job offer from his previous employer?
Reasons!
- **How** did John refuse the job offer from his previous employer?
Email, letter, phone call?
- **Why** did it take John a month to refuse the job offer from his previous employer?
?
- **Why** did John leave his previous employer?
?
- **Is** John currently employed?
?
- **Was** he employed when he got the offer?
- **What** was the validity of the job offer?

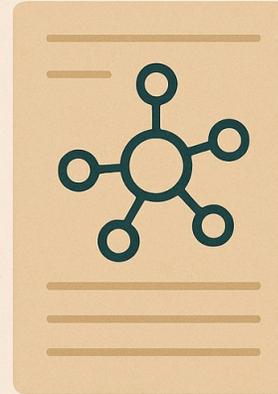
• **Is John hesitant?**



Before we start: draw your mental map



USE A
**ONE-PAGE
MENTAL
MODEL**



TO STRUCTURE
YOUR THINKING
METHODOLOGY AND APPRO-
ACH TO RESEARCH



Generate your research question



Start Broad, Then Narrow Down



Read and Identify **“Knowledge Gaps”** in the Literature:



Consider Your Resources and Feasibility

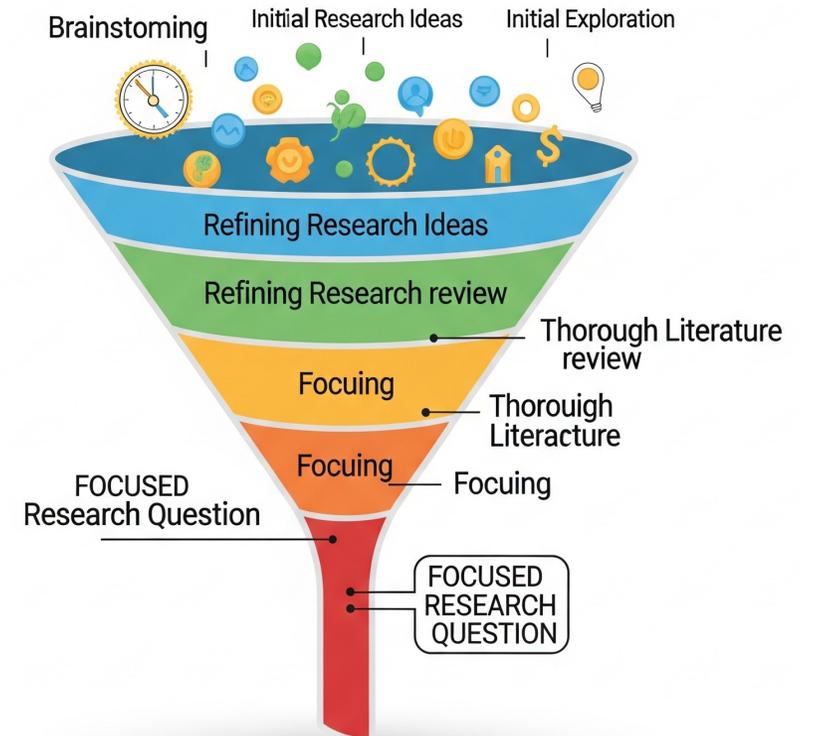


Brainstorm with Others and Seek Feedback



Ensure it's Specific, Measurable, Achievable, & Relevant

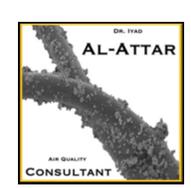
FUNNEL VISION SELECTIC A RESEARCH QUESTION



I. Planning & Mindset

- Define a clear research question.
- Understand your field's major debates and “**Knowledge**” gaps.
- Set realistic goals and timelines.
- Select a topic you are **passionate about. (Stamina)**
- Read foundational and current literature.
- Clarify the scope: be focused, not too broad.
- Understand ethical research practices.
- Create a research proposal or concept note.
- Familiarize yourself with your institution's academic policies.





Be **Attentive**

مدرك

Perceptive: Hear, understand and gain insight.

بصير

Discerning: The ability to grasp subtle details and make good judgments from what is heard.

متقبل

Receptive: Openness to what is being communicated.

ملاحظ

Observant: Keen awareness of what is said.

منتبه

Heedful: Paying careful attention to advice or warnings.

- Speaking skills



Listening Skills



2

They are not equally important

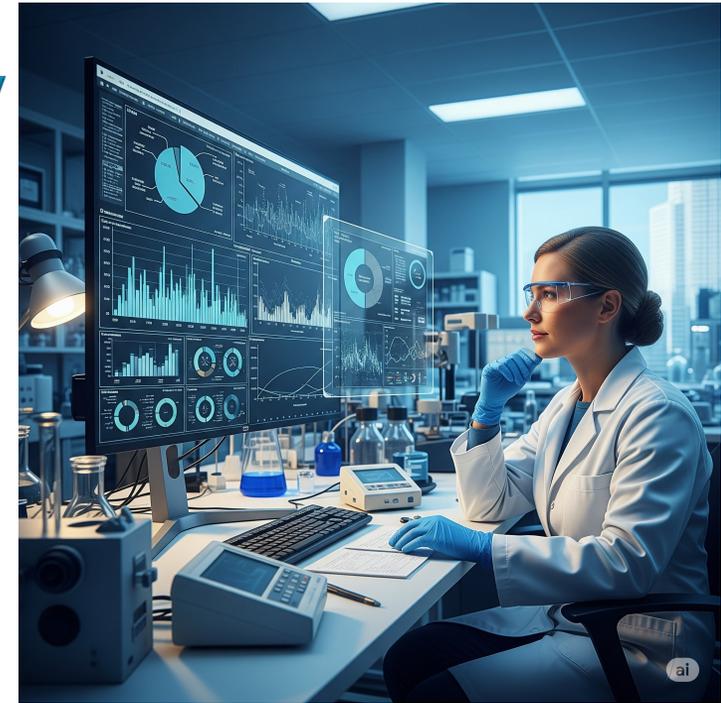
Engineers quantify

General Statements

- It is hot
- It is cold
- It is busy
- The line up is long at the counter
- I am old
- It is thin
- It is thick



- It is 30 C
- It is 18.5 C
- All 20 seats were occupied
- There were 33 people lining up at the counter.
- I am 50 years old
- It is 1 mm
- It is 100 m



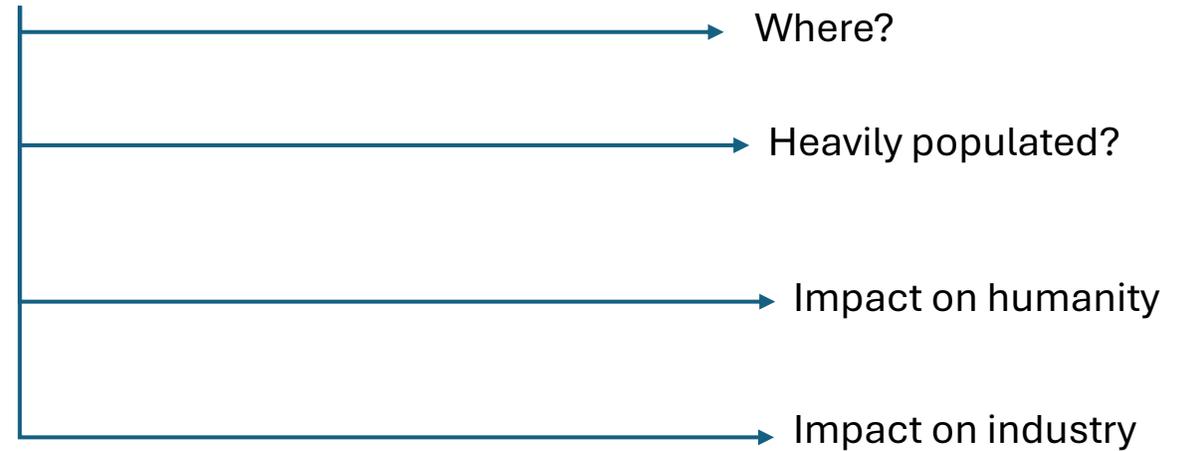


How to communicate.....

- The rate of urbanization is increasing rapidly compared to that of the 1800s.
- In the early 1800s, urbanized population represented 5% of the total population compared today 54%. It is expected to be 68% by year 2050.

In the early 1800s, the urban population represented approximately 5% of the total global population of one billion. Currently, this figure has increased to 54%, with projections indicating it may reach 68% by 2050. Adding 2.5 billion people to the current urban environment.

Still one info is missing?



II. Literature Review & Sources

1. Use academic databases.
2. Master Boolean search techniques.
3. Keep an annotated bibliography from day one.
4. Use a reference manager (Zotero, Mendeley, EndNote).
5. Track citations to find influential work.
6. Read critically: identify methods, biases, limitations.
7. Follow citation trails to discover older foundational works.
8. Stay current by reading recent journal issues and conference proceedings.
9. Organize your sources thematically, not just chronologically.
10. Summarize and synthesize, **DO NOT** just list studies.

Build your library

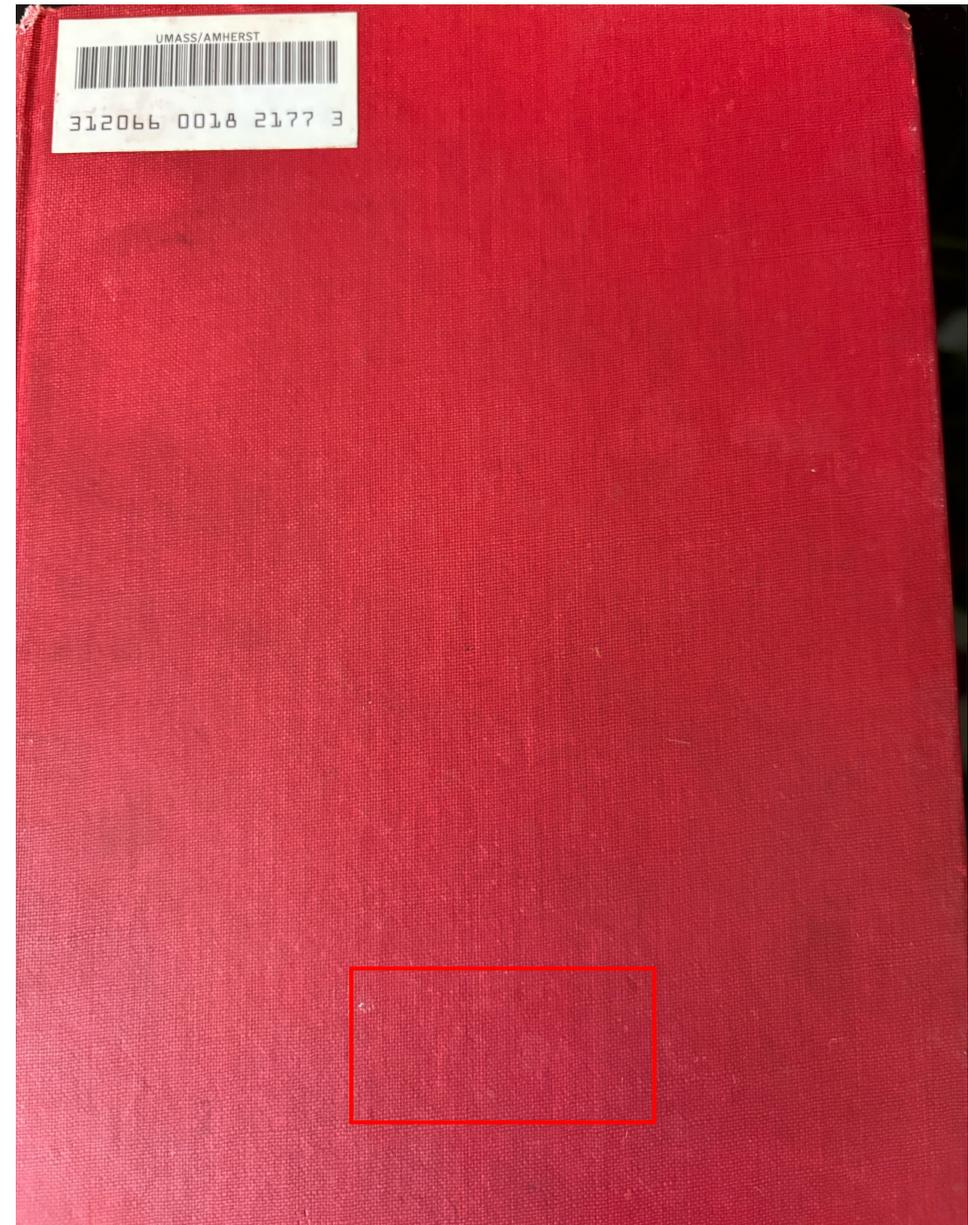
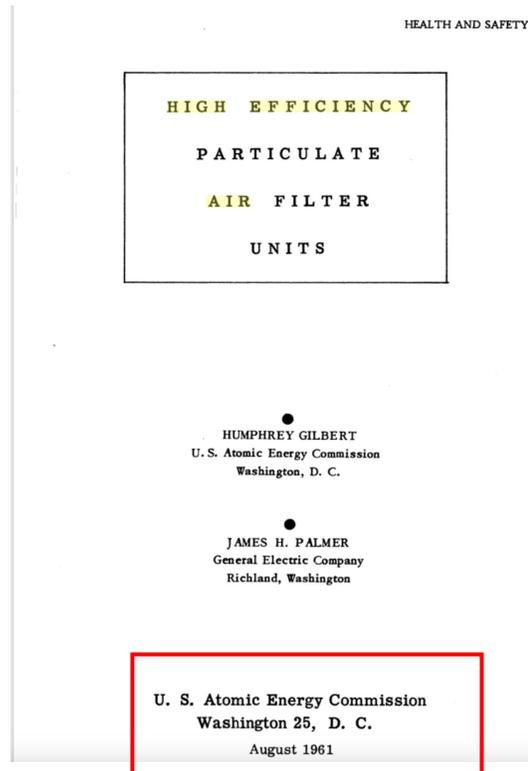
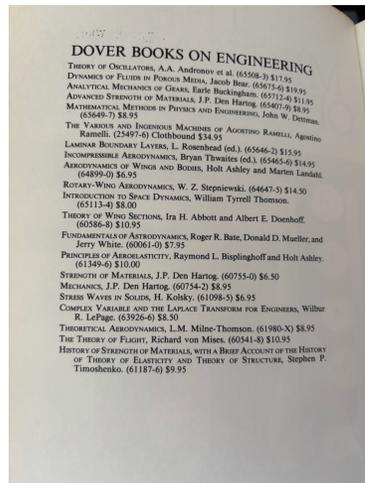
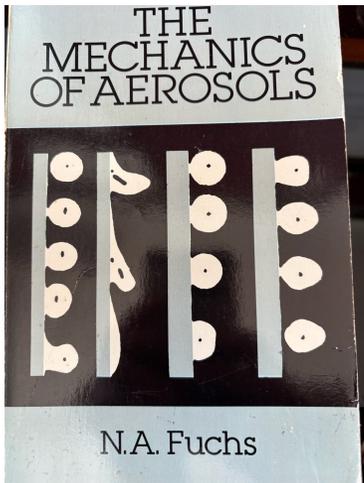




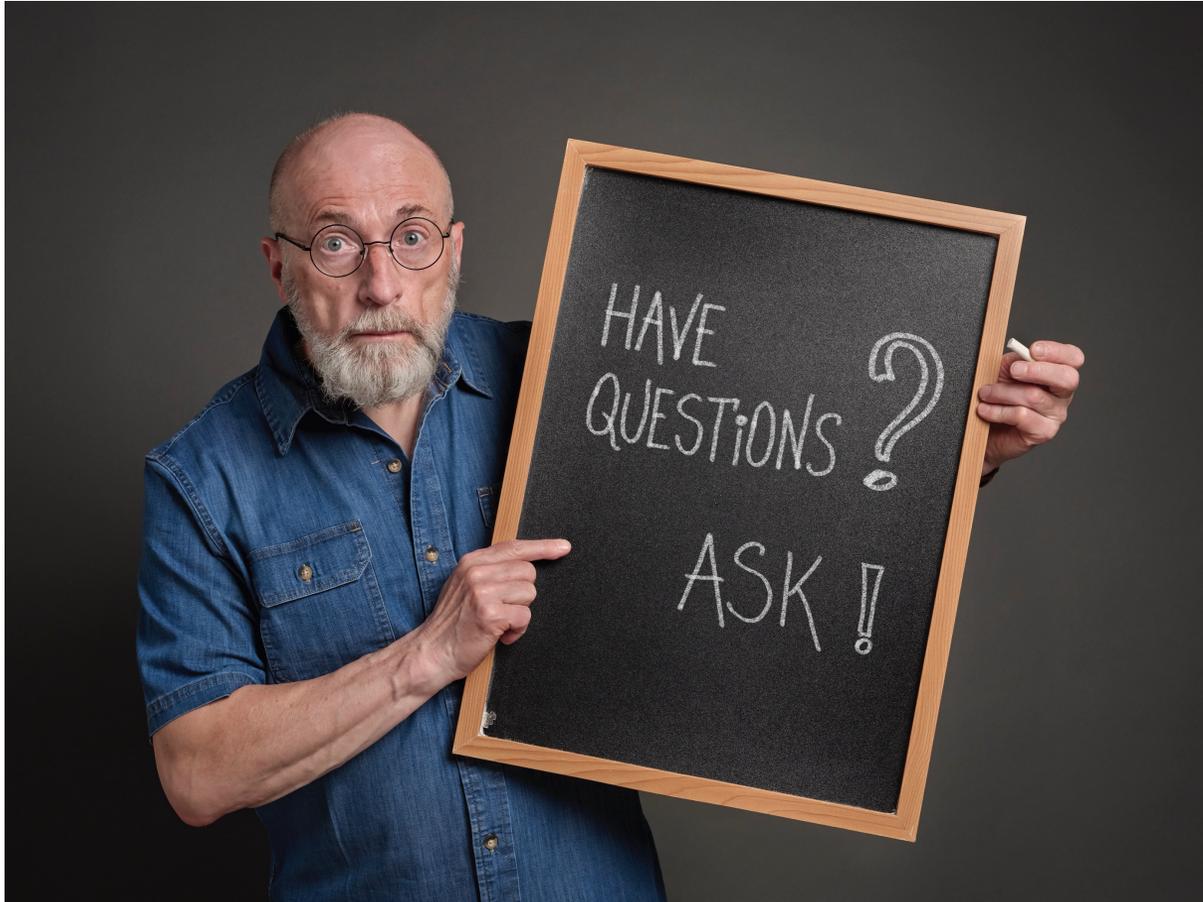
References

Have you actually?

- Read it?
- Access it?
- How recent?
- Relevant to the topics
- How the author used the references

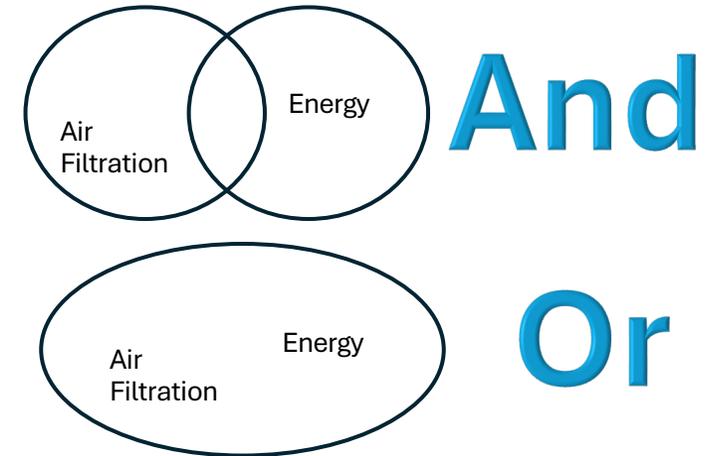


II. Literature Review & Sources



Boolean Searching

Boolean searching allows you to combine your keywords and related terms with operators such as **AND**, **OR**, and **NOT** to find the most relevant results possible from your search.



Librarian



Examples



[PDF] **Filtration and indoor air quality: a practical approach**

CO Muller, WG England - Ashrae Journal, 1995 - cfpub.epa.gov

... editorial material, or advertisement in this publication does **not** constitute endorsement, ... does **not** warrant that the information in this publication is free of errors, and ASHRAE does **not** ...

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- Check the latest standards!
- Use and reference the most recent ones
- Ensure you do not use abolished ones

Google Scholar

Articles About 26,700 results (0.17 sec)

Any time
 Since 2025
 Since 2024
 Since 2021
 Custom range...

Sort by relevance
 Sort by date

Any type
 Review articles

include patents
 include citations

Create alert

The impact of particle filtration on indoor air quality in a classroom near a highway
 SC van der Zee, M Strak, MBA Dijkema... - Indoor ..., 2017 - Wiley Online Library
 ... the weeks with **filter** were compared with those measured without **filter** to evaluate the ability of the F8 **filter** to improve **indoor air quality**. During teaching hours, the **filter** reduced BC ...
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[PDF] **Achieving your indoor air quality goals: Which filtration system works best?**
 CO Muller, WG England - Ashrae Journal, 1995 - Citeseer
 ... -media approach has been demonstrated for **IAQ** applications, it is not always feasible to incorporate a gas-phase air **filtration** system with two or more **filter** beds. Retrofit applications in ...
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IAQ and energy implications of high efficiency filters in residential buildings: a review (RP-1649)
 M Alavy, JA Siegel - Science and Technology for the Built ..., 2019 - Taylor & Francis
 ... very little difference in the efficiency of a MERV 1 **filter** and a MERV 8 **filter**. For example, the PM 2.5 efficiency of a MERV 1 **filter** compared to a MERV 8 **filter** is less than 30% (Azimi et al...
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Any time
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 Review articles

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Create alert

IAQ and energy implications of high efficiency filters in residential buildings: a review (RP-1649)
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IV. Analysis & Interpretation

- Don't manipulate data to fit expectations.
- Understand basic statistics
- Explore patterns and contradictions, not just confirmation.
- Validate qualitative findings through triangulation or member-checking.
- Acknowledge uncertainties and anomalies.
- **Always link findings back to the literature and research question.**
- As Steve et al have indicated, the increase of face velocity filter efficiency from particle size



Build your narrative



Write a paragraph or two daily

- Narrative
- Weave your writing to deliver your story
- Remain focused.

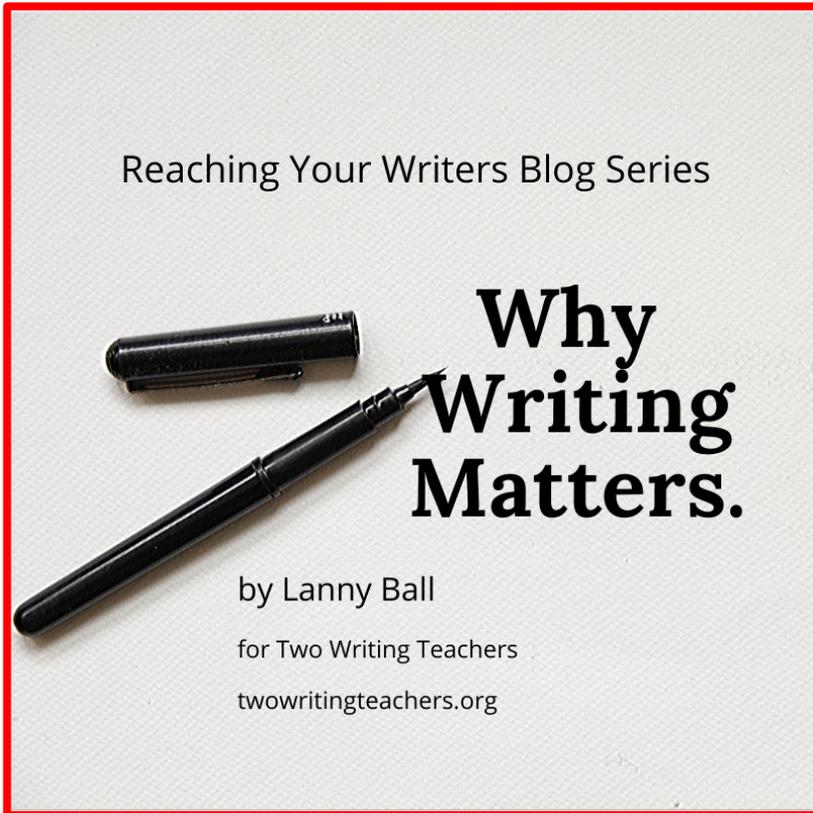
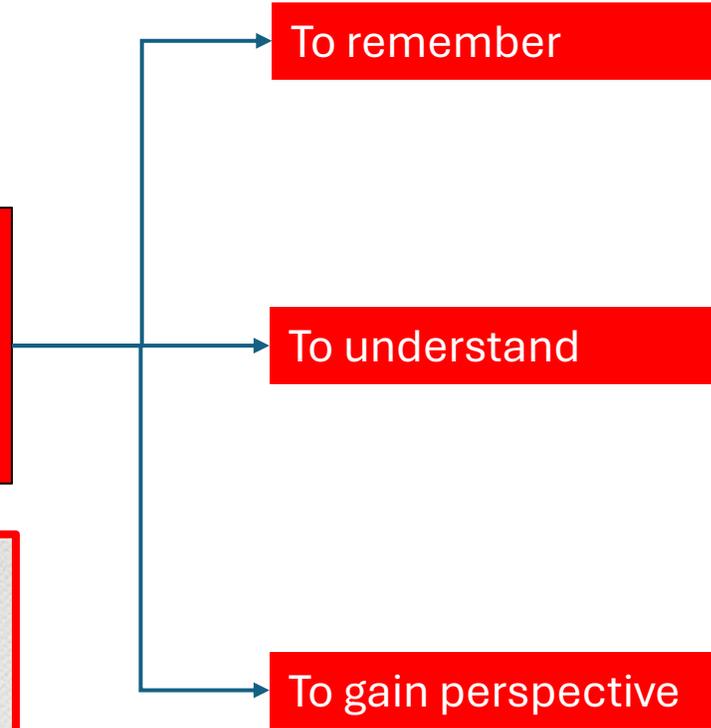
Your Paragraph Should Include:

P	E	E	L
Point	Evidence	Explanation	Link
Make your point	Back it up: Support your point with evidence & examples	Explain how the evidence supports your point	Link this point to the next point in the following paragraph Or back to main point



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Why write up?



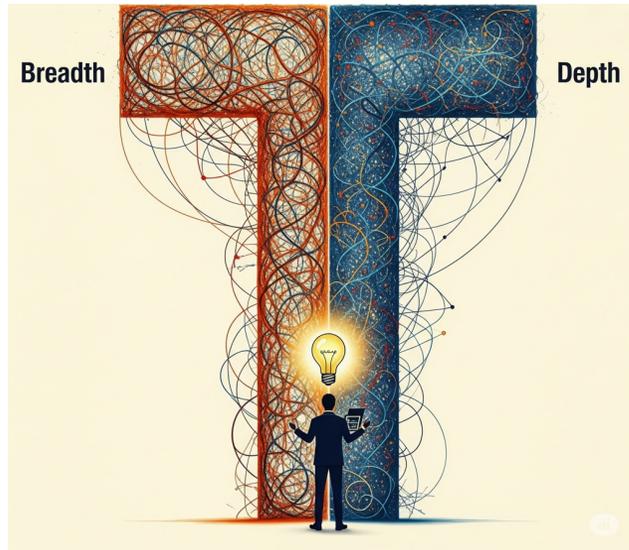
- 
- Understand material
 - Evaluate readings
 - Experience knowledge creation
 - Crucial for advanced work
 - Pay off after school (Age of Information)
 - Pleasure in solving puzzle
 - Contribute to human knowledge
 - Improve lives

Both versatile problem-solving and highly specialized contributions.

You will be tested for: the **Breadth** & **Depth** of your knowledge

Breadth of Knowledge

(Horizontal Knowledge)



refers to the **range or scope** of your understanding across a **wide variety of topics or subjects**.

- Make connections between ideas.
- Identify new opportunities or problems.
- Communicate effectively across different disciplines.
- Adapt to change and learn new things quickly.
- See the "**big picture**."

refers to the **intensity or profundity** of your understanding within a **specific, narrow field or subject**.

Depth of Knowledge

(Vertical Knowledge)

- Become a recognized **expert** in a field.
- Solve complex, specialized problems.
- Innovate and push the boundaries of knowledge.
- Contribute significantly to a specific domain.

V. Writing & Communication

- Start writing early; refine as you go.

One paragraph/daily

Weave your paragraph into a narrative

(1 paragraph/day) x 365 days =
Your Thesis



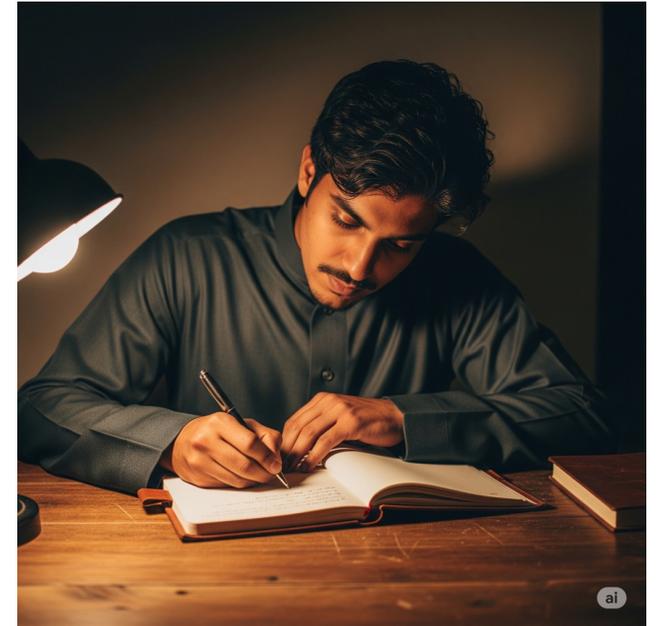
- Use clear structure: intro, methods, results, discussion.
- Edit in layers: content → flow → language → grammar.
- Get feedback from advisors and peers regularly.
- Prepare visuals (tables, graphs) to enhance clarity.



What is good academic writing?

Students often report they would like to develop their writing in areas such as:

- *Writing clearly and concisely in a manner appropriate to their discipline* إنشاء نصوص منظمة ومتناسكة ومتراابطة إظهار التقويم والموقف والصوت
- *Creating organized, cohesive and coherent texts* دمج المصادر الأكاديمية بشكل فعال في كتابتك
- *Criticality: showing evaluation, stance and voice*
- *Incorporating academic sources effectively in your writing*





The use of “I” & Adverb position

1. As indicated earlier, single authors in some fields use the first-person pronoun *I* (note that in some Engineering and hard science fields, single authors may choose *we*, given the collaborative nature of research in these areas). *We*, of course, is common in co-authored papers, which are increasingly the norm in publications. Research indicates that *I* or *we* can be used in academic writing, but many new authors are very reluctant to use *I*.

In this paper I argue that small incentives can lead to greater participation in surveys.

This paper argues that small incentives can lead to greater participation in surveys.

Academic

7. Adverb placement might be important. Often in academic writing adverbs are placed in mid-position rather than in the initial or final positions of sentences. In other contexts, English adverbs often occur at the beginning or end of sentences.

This model was developed by the International Monetary Fund (IMF) originally and was adapted by Lalonde and Muir (2007) later.

This model was *originally* developed by the International Monetary Fund (IMF) and was later adapted by Lalonde and Muir (2007).

This model was developed by Krugman (1979) originally.

→

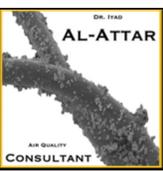
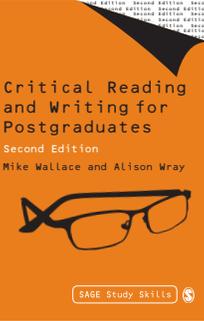
This model was originally developed by Krugman (1979).



VI. Presentation & Publishing

- Attend and present at conferences.
- Submit work to peer-reviewed journals.
- Practice elevator pitches for your research.
- Prepare a lay summary for non-specialist audiences.
- Build your academic network.
- Reflect on feedback and revise rigorously.





Structuring a Dissertation and Engaging with Examiners

- **The Overall Argument Logic:**

A dissertation moves from a broad central question, through specific aims and review questions (informing Critical Literature Reviews), to research questions, findings, discussion, and finally, a conclusion that contributes to answering the central question

- **Aims of the Investigation:**

The investigation should be driven by three specific aims:

- **Substantive aim:** الهدف الموضوعي
What you intend to find out about the topic.
- **Theoretical aim:** الهدف النظري
What concepts/theories will frame the research.
- **Methodological aim:** الهدف المنهجي
How you will gather and analyze data.

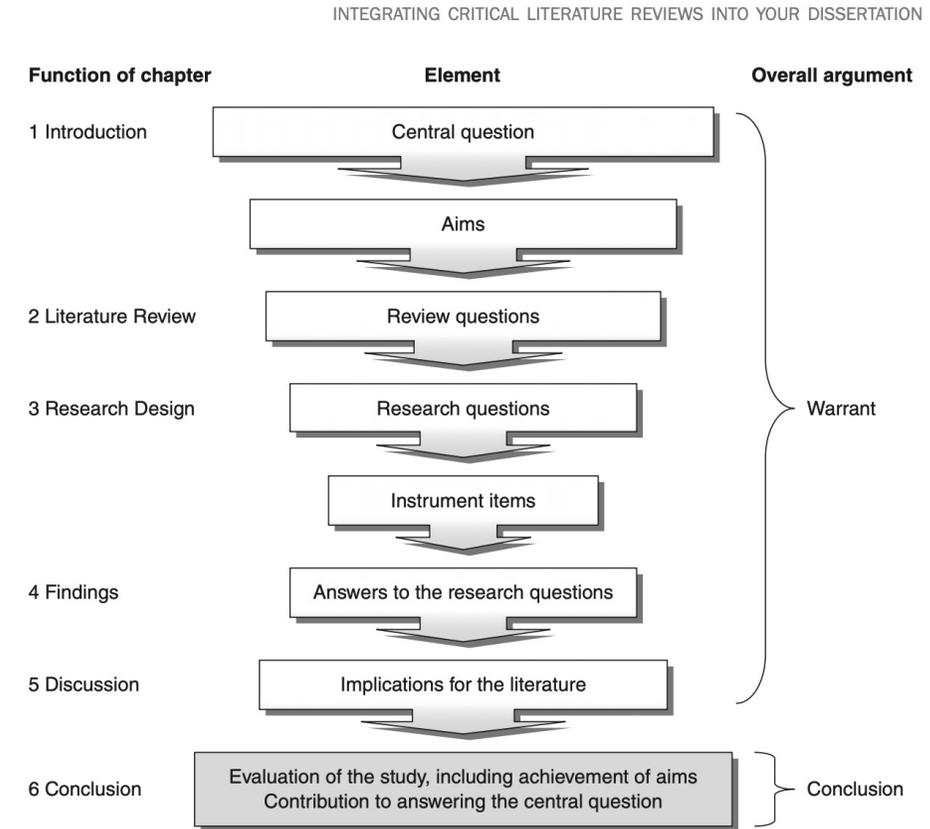


Figure 13.1 The logic of the overall argument in a dissertation

Ask questions

- Get skilled in verifying the arugement of the papers you are reading
- Extract the core arugement:
 - **New?**
 - **Interesting?**
 - **Does it work?**
- How can I improve, extend, challenge or develop it.



General Academic Writing Tips

- **Vocabulary Development:** Identify and incorporate "chunks of language" (2-4 words) that are common academic phrases.
- **Self-Correction/Revision:** The provided examples of student drafts with instructor comments highlight the iterative nature of academic writing, emphasizing the need for revision to improve clarity, argument, and authorial positioning.
- **Conciseness:** Reduce wordiness where possible, as seen in the reduction of relative clauses in definitions.

10 new words/day



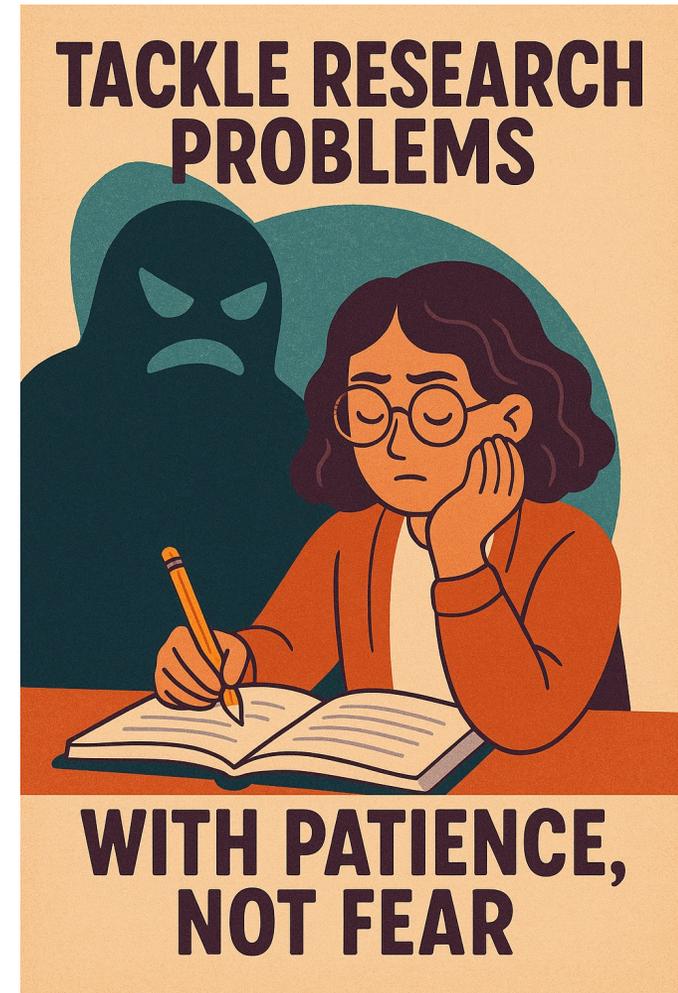


50 verbs widely used in research

1. **Analyze:** To examine in detail the structure of something, typically for purposes of explanation and interpretation.
2. **Assess:** To evaluate or estimate the nature, ability, or quality of.
3. **Calculate:** To determine (the amount or number of something) mathematically.
4. **Characterize:** To describe the distinctive nature or features of.
5. **Compare:** To estimate, measure, or note the similarity or dissimilarity between.
6. **Conduct:** To organize and carry out.
7. **Define:** To state or describe exactly the nature, scope, or meaning of.
8. **Demonstrate:** To clearly show the existence or truth of (something) by giving proof or evidence.
9. **Describe:** To give a detailed account in words of (someone or something), including all the relevant characteristics, qualities, or events.
10. **Determine:** To establish exactly or ascertain precisely.
11. **Develop:** To grow or cause to grow and become more mature, advanced, or elaborate.
12. **Discuss:** To talk about (something) with another person or people.
13. **Employ:** To make use of.
14. **Examine:** To inspect (someone or something) in detail to determine their nature or condition.
15. **Explore:** To inquire into or discuss (a subject) in detail.
16. **Formulate:** To create or devise methodically (a strategy or a proposal).
17. **Generate:** To produce or create.
18. **Identify:** To establish or indicate who or what (someone or something) is.
19. **Implement:** To put (a decision, plan, or agreement) into effect.
20. **Investigate:** To carry out a systematic or formal inquiry to discover and examine the facts of (an incident, allegation, etc.) so as to establish the truth.
21. **Measure:** To ascertain the size, amount, or degree of (something) by using an instrument or by comparison with an accepted standard.
22. **Observe:** To notice or perceive (something) and register it as being significant.
23. **Perform:** To carry out, accomplish, or fulfill (an action, task, or function).
24. **Provide:** To make available for use; supply.
25. **Quantify:** To express or measure the quantity of.
26. **Record:** To set down (something) in writing or other permanent form for future reference.
27. **Refine:** To improve (something) by making small changes, in particular make it more precise or subtle.
28. **Select:** To carefully choose as being the best or most suitable.
29. **Specify:** To identify clearly and precisely.
30. **Utilize:** To make practical and effective use of.
31. **Verbs for Presenting & Interpreting Findings:**
32. **Argue:** To give reasons or cite evidence in support of an idea, action, or theory, typically with the aim of persuading others to share one's view.
33. **Conclude:** To bring (something) to an end.
34. **Confirm:** To establish the truth or correctness of (something previously believed, suspected, or stated).
35. **Correlate:** To have a mutual relationship or connection, in which one thing affects or depends on another.
36. **Deduce:** To arrive at (a fact or a conclusion) by reasoning; draw as a logical conclusion.
37. **Derive:** To obtain something from (a specified source).
38. **Elaborate:** To develop or present (a theory, policy, or system) in detail.
39. **Explain:** To make (an idea or situation) clear to someone by describing it in more detail or revealing relevant facts or ideas.
40. **Hypothesize:** To put forward (an idea) as a hypothesis.
41. **Infer:** To deduce or conclude (information) from evidence and reasoning rather than from explicit statements.
42. **Interpret:** To explain the meaning of (information, words, or actions).
43. **Indicate:** To point out or show.
44. **Justify:** To show or prove to be right or reasonable.
45. **Predict:** To say or estimate that (a specified thing) will happen in the future or will be a consequence of something.
46. **Propose:** To put forward (an idea or plan) for consideration or discussion by others.
47. **Recommend:** To put forward (someone or something) with approval as being suitable for a particular purpose or role.
48. **Report:** To give a spoken or written account of something that one has observed, heard, done, or investigated.
49. **Represent:** To be a symbol or embodiment of.
50. **Support:** To bear all or part of the weight of; hold up.
51. **Validate:** To check or prove the validity or accuracy of (something).

Ask: Is similar to something that I have seen or solved?

- Address the problem
- Propose solutions
- Get skilled in verifying the arugement of the papers you are reading
- Tackle it with patience, not fear





Focus your research on **solutions**, not on the **tools**



Don't be a hammer looking for a nail

Dimensions of Knowledge Claims and Types of Knowledge

- **Dimensions of Knowledge Claims (The Argument Component):**

Claims vary along two dimensions (Figure 7.1, p. 86):

- **Degree of Certainty:**

From "tentative about whether a claim is true" to "confident that a claim is true."

- **Degree of Generalization:**

From "applies to a specific context at a low level of abstraction" to "applies to all contexts at a high level of abstraction."

- **Vulnerability to Rejection:**

Claims with low certainty and low generalization have "low vulnerability to being rejected because of inadequate warranting." (p. 87). Conversely, highly generalized claims require "more warranting" (p. 85).

Three Kinds of Knowledge:

Knowledge-for-understanding:

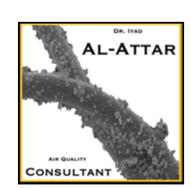
Seeks to understand phenomena impartially.

Knowledge-for-critical evaluation:

Aims to demonstrate flaws and suggest improvements.

Knowledge-for-action (including instrumentalism and reflexive action):

Seeks to justify and improve practices (p. 99-101, Table 8.2). Postgraduate students commonly engage with the first three.



Novelty

- Here is the knowledge gap.



Here is how my study will bridge it

How to extract your novelty

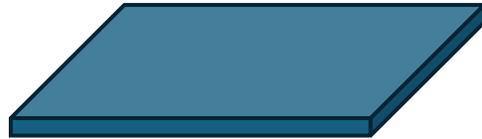
- Although previous studies have shown have considered air filter performance for in air conditioning units (References), the range of velocities used was.....
- Or: previous have used higher velocities, but for flat sheet filter media. Steven et al. (2020) used similar face velocities used in HVAC applications, but the study was limited to flat pleated panel and not a full scale cartridge which is the focus of this research.

Example: Impact of flow rates on filter efficiency

- Author A: increasing Q , lowers filter efficiency

Pleated Filter
Cartridge Filter

- Flat sheet filter media

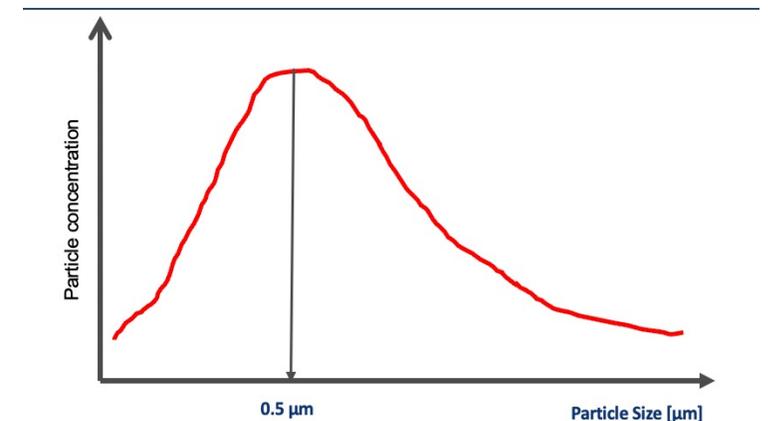


- What is the range of the flow rates used?

Q

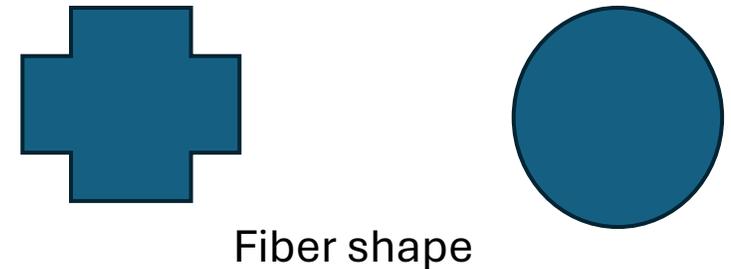
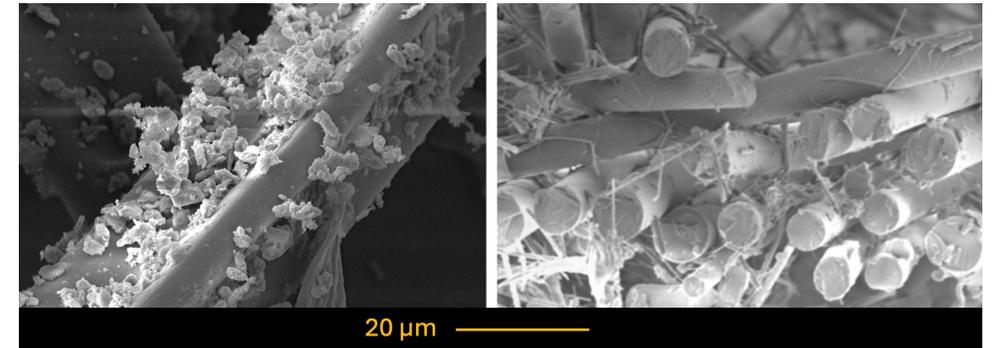
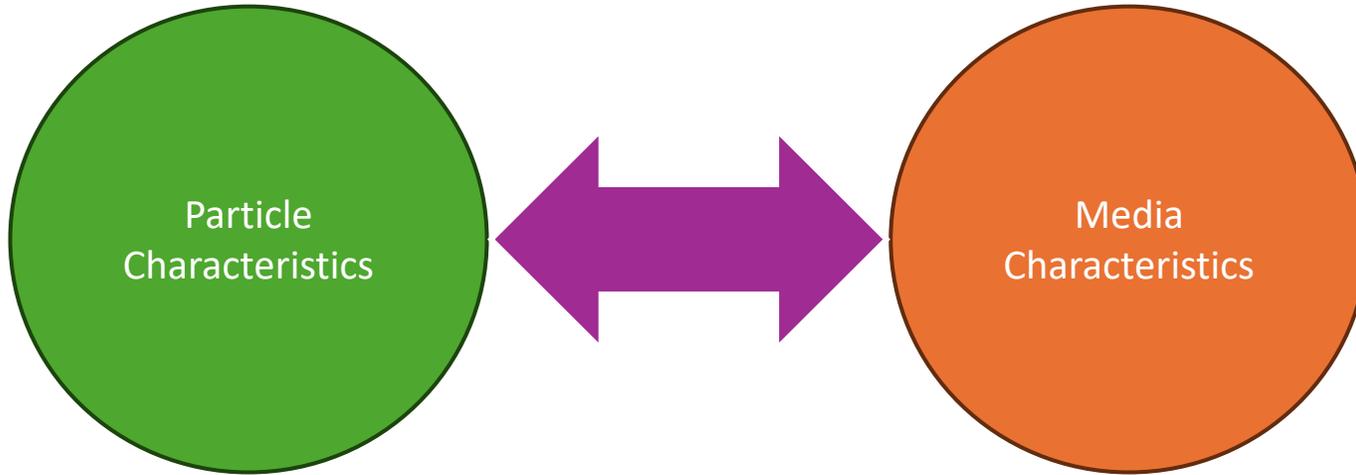
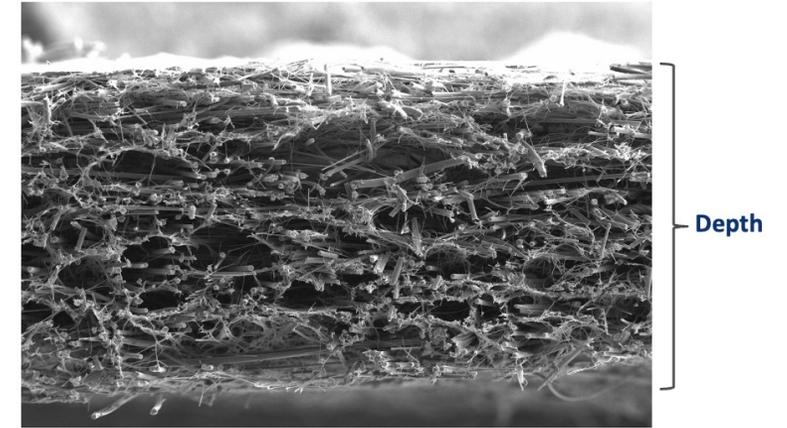
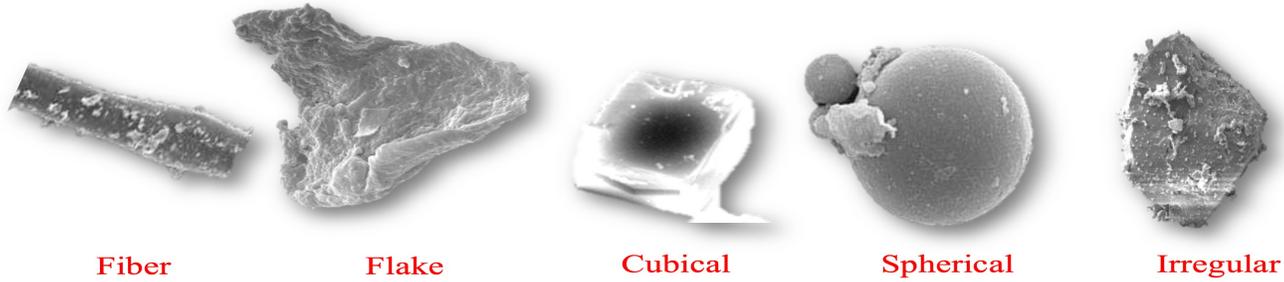


- No mention of particle size distribution (does it impact it?)

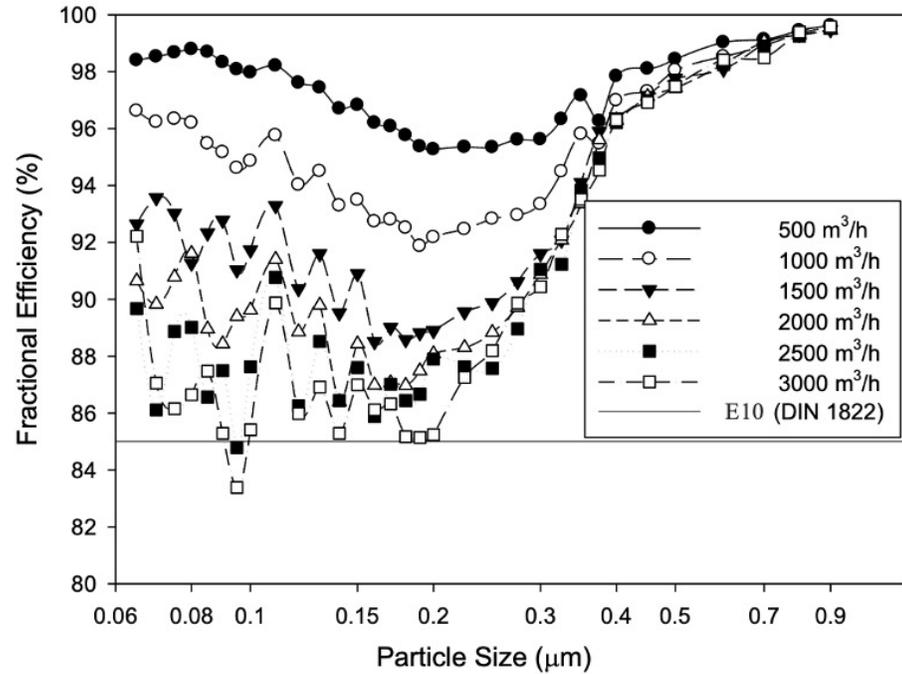


Filter Media Characteristics

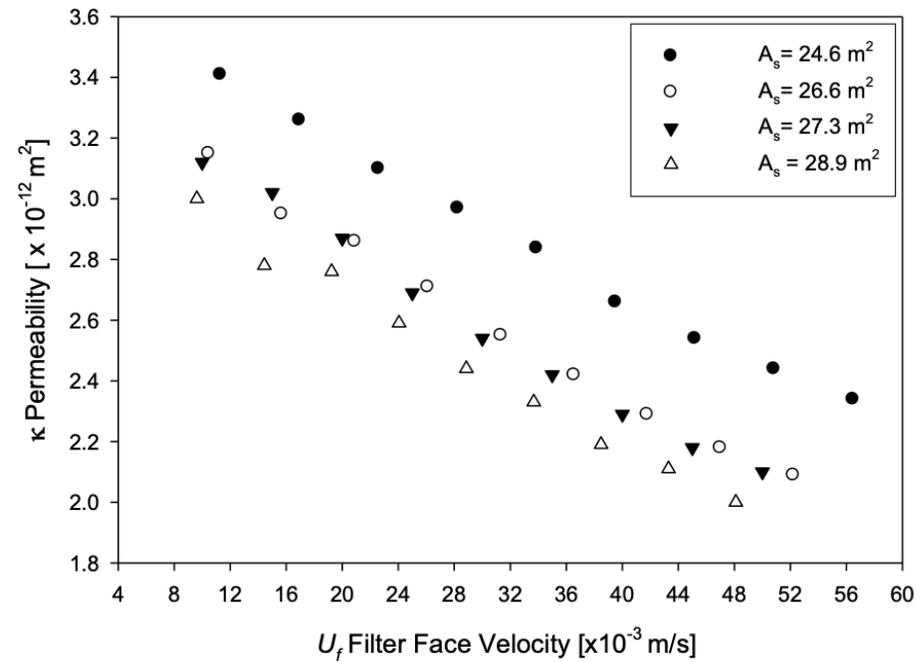
Understanding the correlation



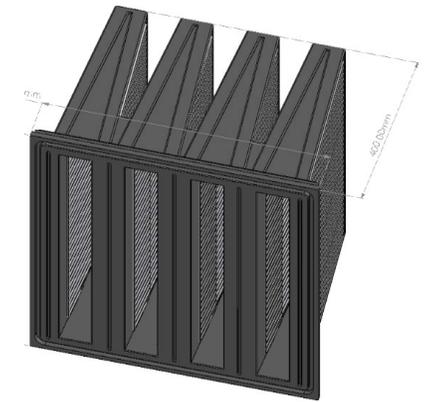
Operational Conditions



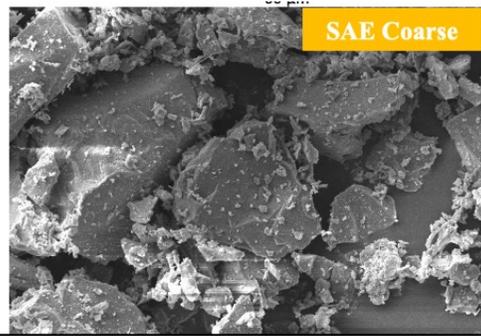
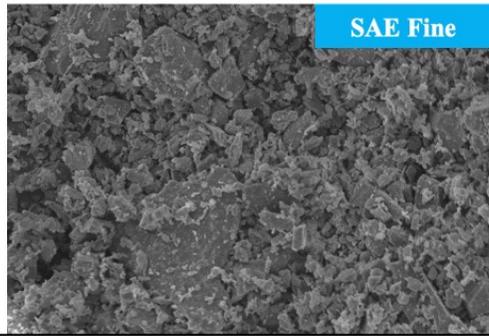
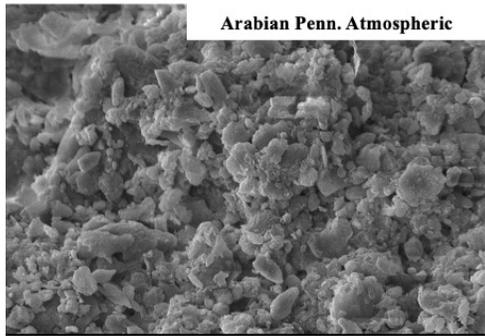
Initial Efficiencies for Various Q



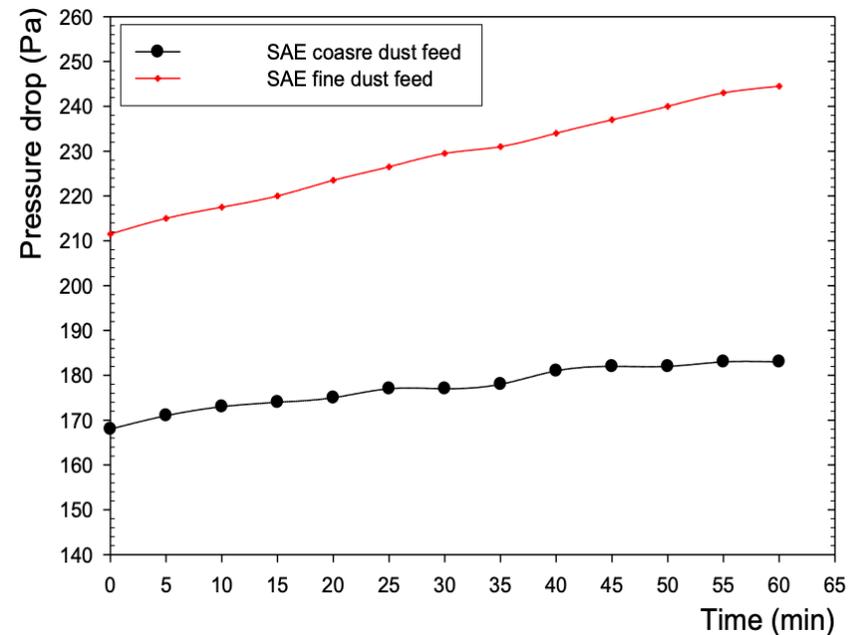
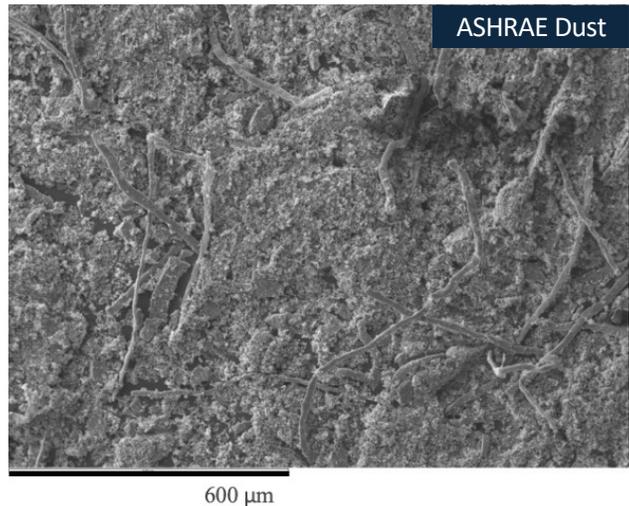
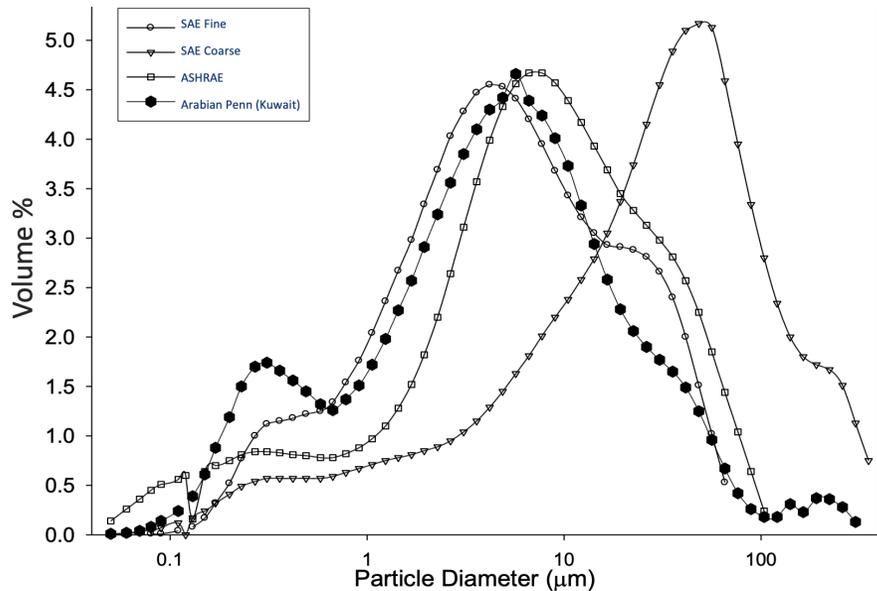
Permeability versus face velocities for (Four opening filter Cartridges) of various surface areas



Physical Characterization Comparison



60 μm



Performance Deviation

Particle Size distribution comparison between Atmospheric Dust (Arabian Penn/Kuwait) and commercially available dusts.

Scanning electron microscopic images are copy right of Dr. Iyad Al-Attar
 Reference: Al-Attar I.S., 2011. "The effect of pleating density and dust type on performance of absolute fibrous filters", doctoral diss., Loughborough University Institutional Repository.

Cohesive Response and Resilience

Power Generation



Pandemics



Indoor Pollution



Sandstorms



Wildfires



Volcanoes

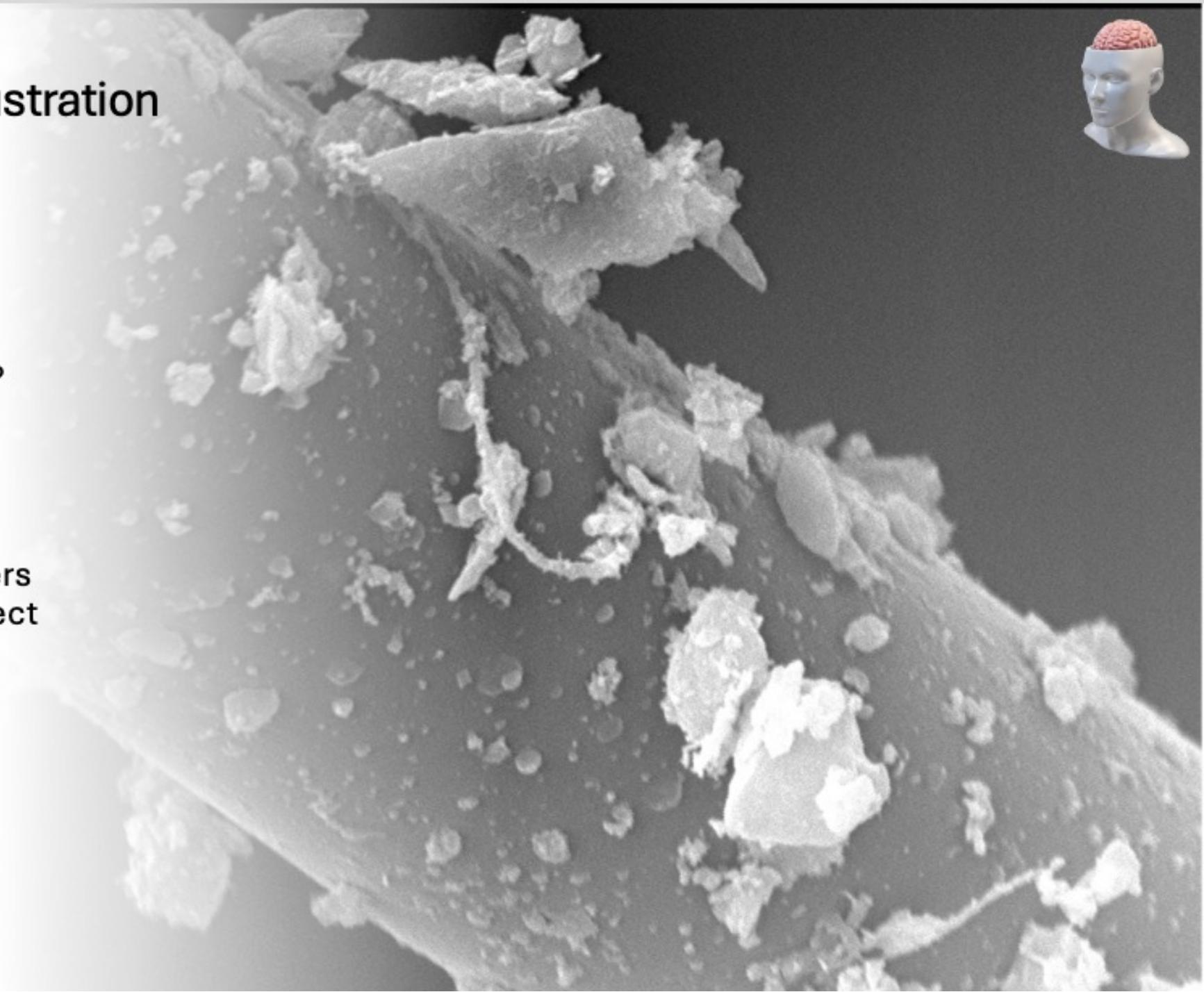


To Environmental Challenges

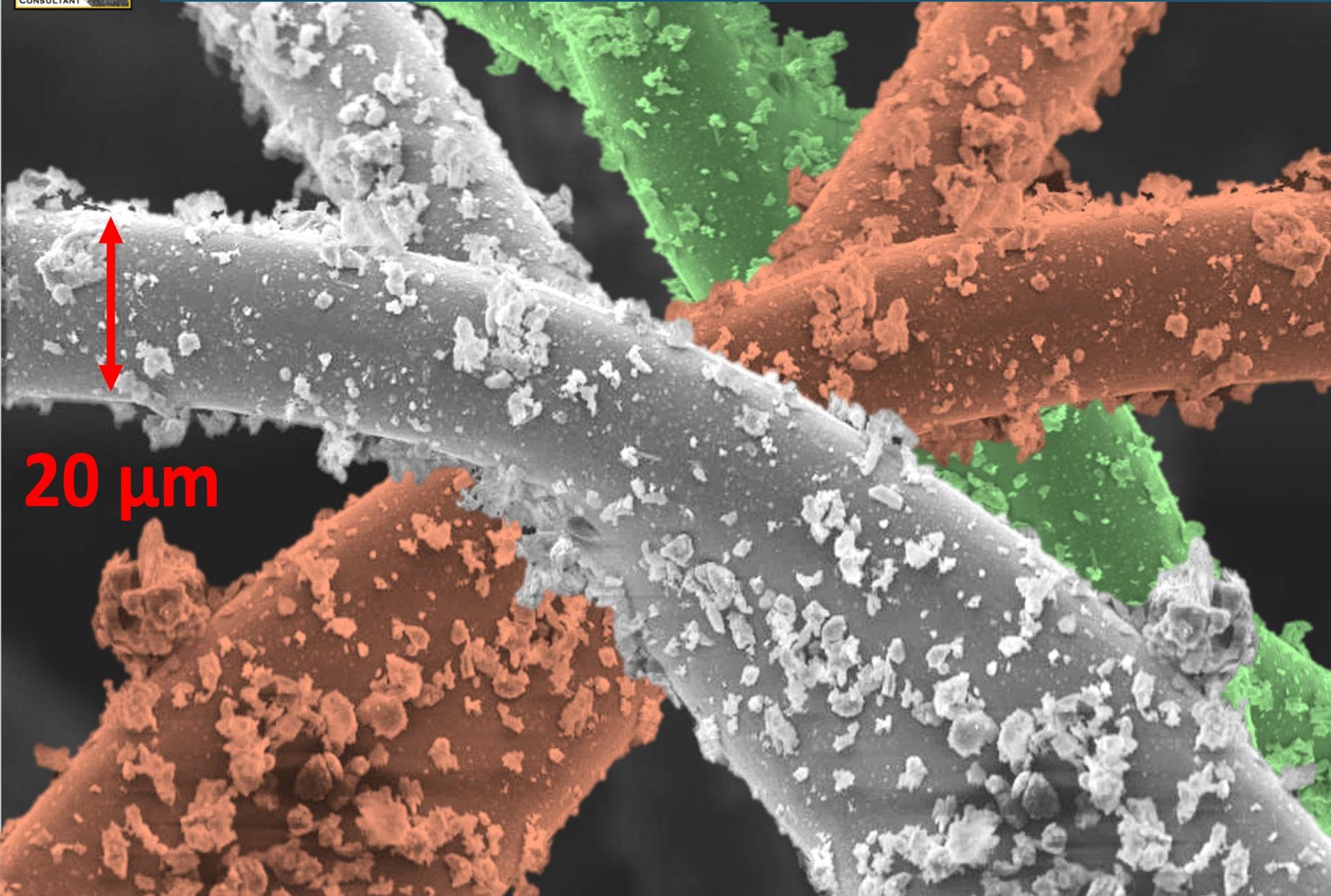


Using images for illustration

- What are you illustrating?
- Refer to the image.
- Ensure that figure numbers are sequentials and correct

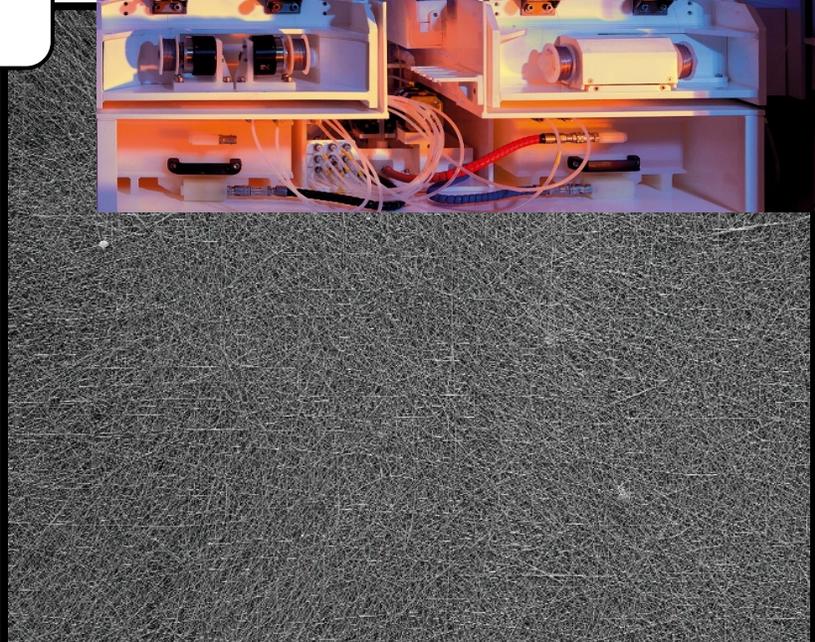
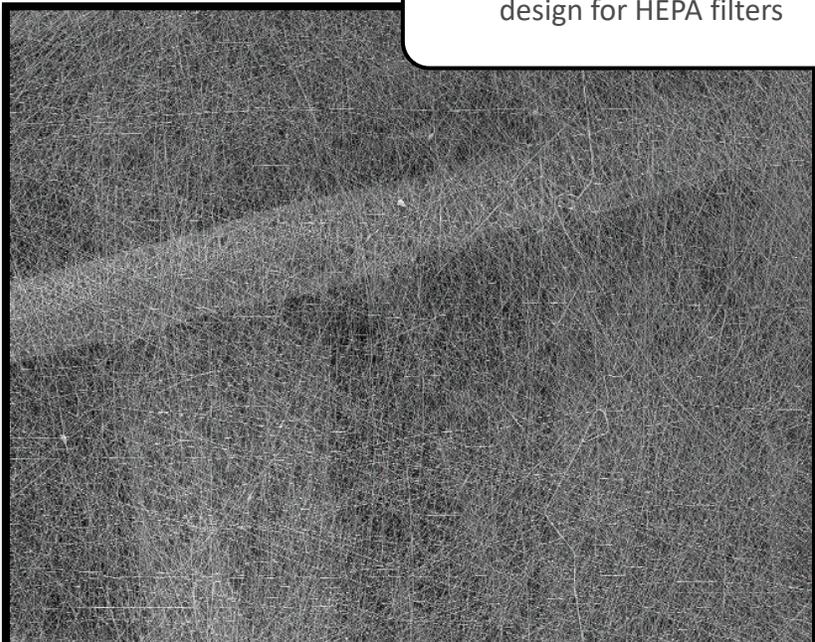
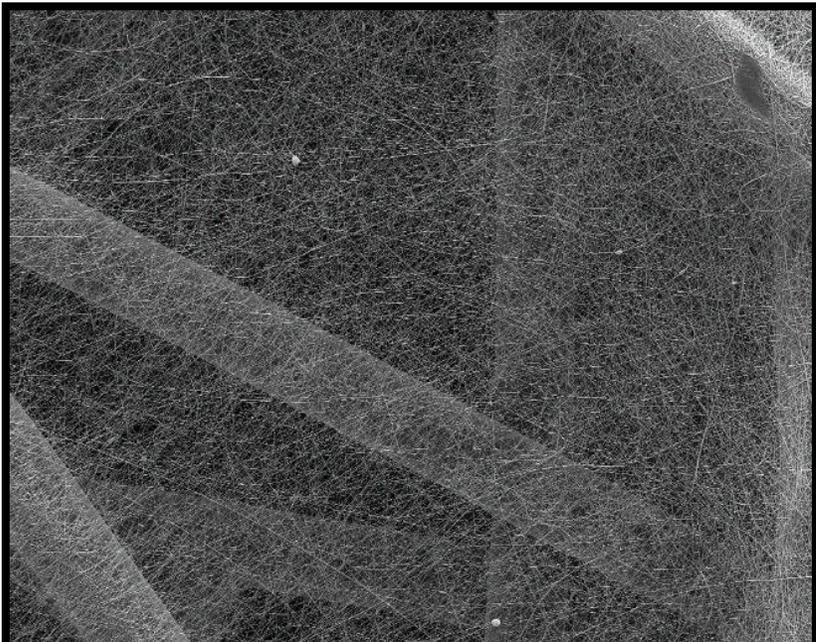
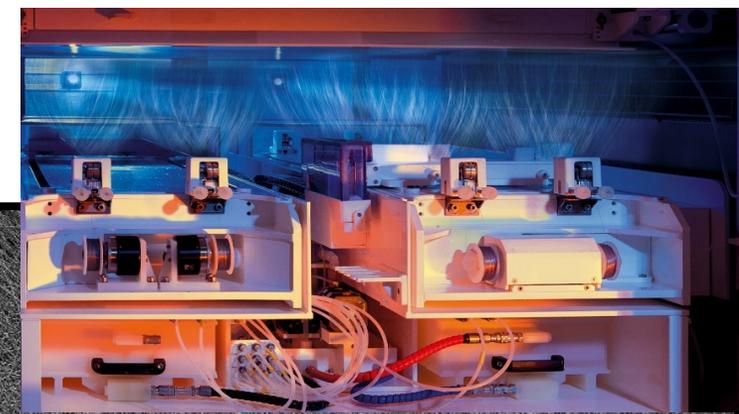


The Impact of adjacent Fiber



Composite Media Design

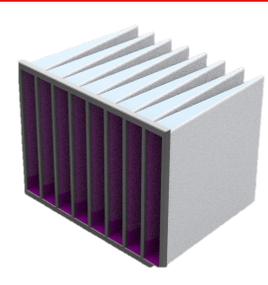
Multilayered composite media design for HEPA filters



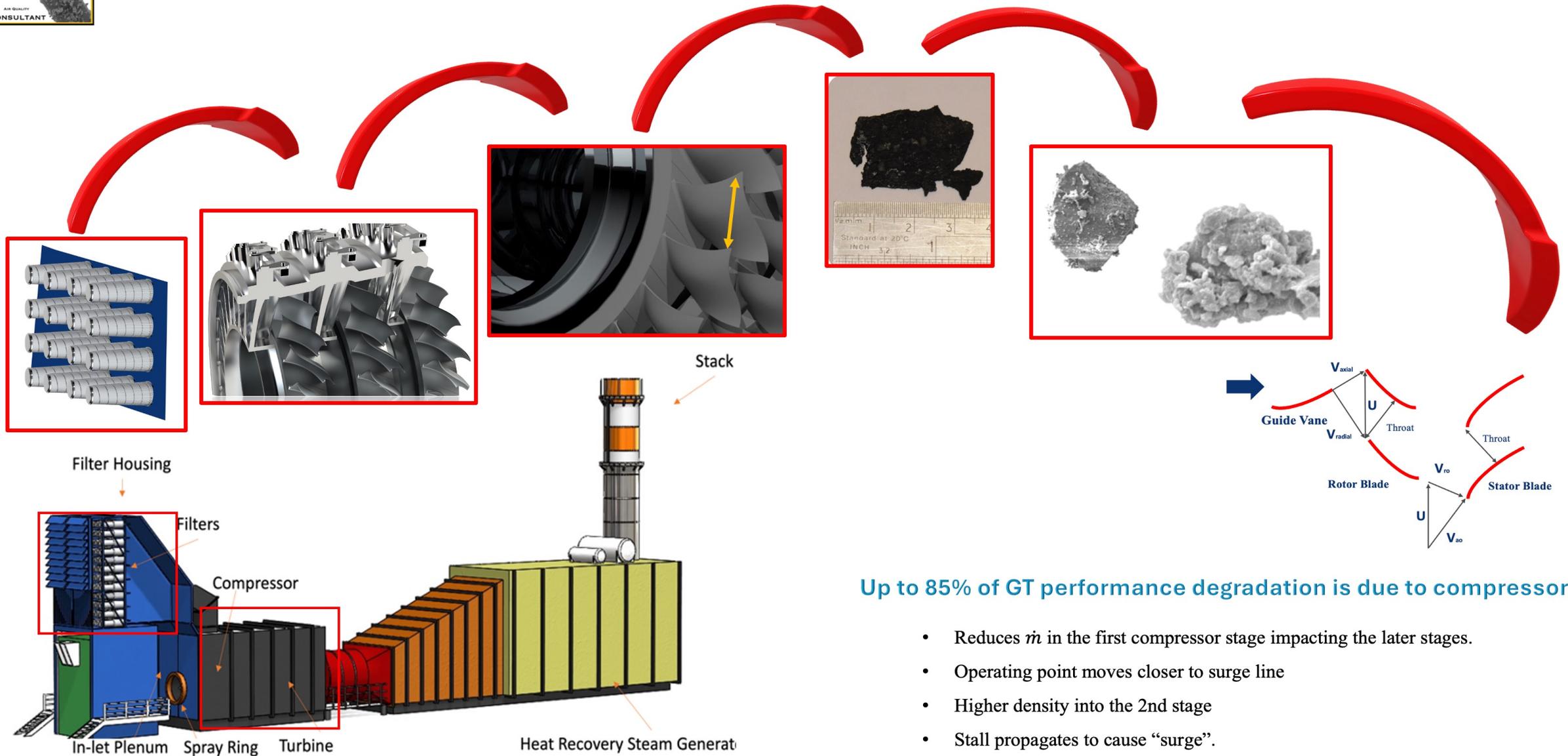
0.5gsm
11/26/2012 10:21:32 AM | WD 4.9 mm | mag 600 x | HV 15.0 kV | spot 4.5 | 100 μm | Nova NanoSEM

1.0gsm
11/26/2012 10:25:22 AM | WD 5.1 mm | mag 600 x | HV 15.0 kV | spot 4.5 | 100 μm | Nova NanoSEM

1.5gsm
11/26/2012 10:31:57 AM | WD 5.0 mm | mag 600 x | HV 15.0 kV | spot 4.5 | 100 μm | Nova NanoSEM



Impact of filter performance on land-based gas turbine performance for power generation



Up to 85% of GT performance degradation is due to compressor fouling

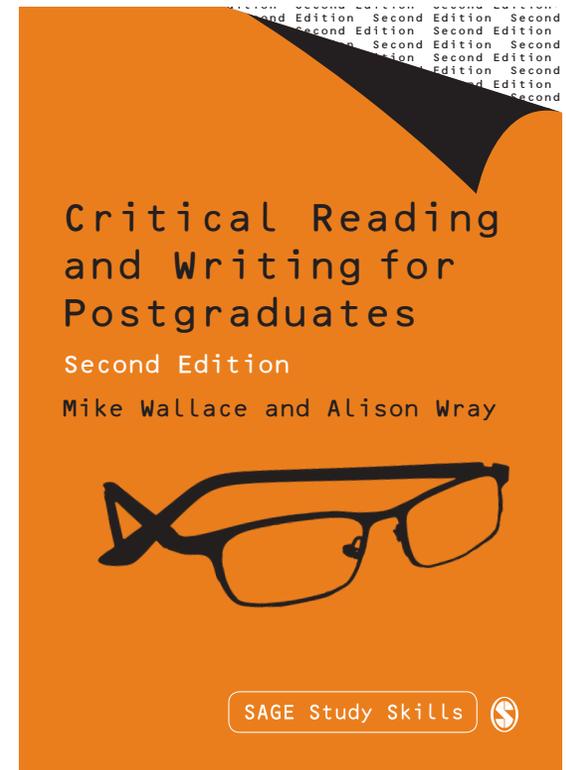
- Reduces \dot{m} in the first compressor stage impacting the later stages.
- Operating point moves closer to surge line
- Higher density into the 2nd stage
- Stall propagates to cause “surge”.
- Reduced PR
- Bring surge line closer to operational one.



The Core of Argumentation:

Conclusion and **Warranting**

- **A fundamental aspect of critical reading involves identifying and evaluating arguments within a text.**
- An argument is defined as "a conclusion (comprising one or more claims that something is, or should be, the case) and its warranting (the justification for why the claim or claims in the conclusion should be accepted)." (p. 31).



Recommended Reading

Generalization: how widely does a claim apply?



The Risk of Unwarranted Claims:

When introducing an argument, making claims without warranting carries a "credibility problem" if readers question them.

Critical Reading
and Writing for
Postgraduates

Second Edition

Mike Wallace and Alison Wray



SAGE Study Skills



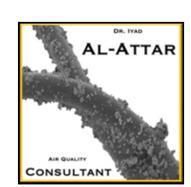


Your Voice

- Train your voice
- Rehrase
- Maintain a good flow
- Avoid using a monotone presentation
- Check your body language
- Master Your Opening and Closing
- Test Your Tech
- Prepare for Questions
- Be the “examiner”



Conduct



Fluent & Fluid



possess a deep and effortless **understanding** and **ability** to **communicate** about it.

Fluent about your research topic:

- **Effortless Communication:** التواصل بدون جهد
You can discuss your research topic without hesitation, stumbling, or excessive "ums" and "ahs."
The words come easily and naturally.
- **Clarity and Precision:** الوضوح والدقة:
You can articulate complex ideas clearly and accurately, using appropriate terminology without being overly jargonistic. Your explanations are easy for others to follow, even if they're not experts in your field.
- **Comprehensive Knowledge:** المعرفة الشاملة:
You have a thorough grasp of the core concepts, theories, methodologies, and key findings within your research area. You can recall information readily and accurately.
- **Confidence:** ثقة:
You speak with authority and self-assurance, demonstrating that you are well-versed in the subject matter.
- **Ability to Answer Questions:** القدرة على الإجابة على الأسئلة:
You can respond to questions, even unexpected ones, thoughtfully and comprehensively, drawing upon your extensive knowledge.



Fluid about your research topic:

القدرة على التكيف والمرونة

• **Adaptability and Flexibility:**

You can adjust your explanation or approach based on your audience's background and level of understanding.

You can simplify complex ideas for a lay audience or delve into intricate details for specialists.

ربط المفاهيم

- **Connecting Concepts:** You can seamlessly **link** different aspects of your research, showing how various ideas, theories, or findings relate to each other. You see the "big picture" and how your work fits within a broader context.

حل المشكلات والتفكير النقدي

- **Problem-Solving and Critical Thinking:** You can think on your feet, analyze new information, and engage in critical discussions about your research. If presented with a challenge or new perspective, you can integrate it into your understanding or offer a reasoned counter-argument.

الفروق الدقيقة والعمق

- **Nuance and Depth:** You understand the complexities of your topic, including its limitations, ongoing debates, and areas for future research.
You can discuss the "why" and "how" beyond just the "what."

الالتزام والشغف

- **Engagement and Passion:** Your passion for the subject comes through, making your explanations engaging and compelling. You can inspire interest in your research.



ربط المفاهيم Connecting Concepts

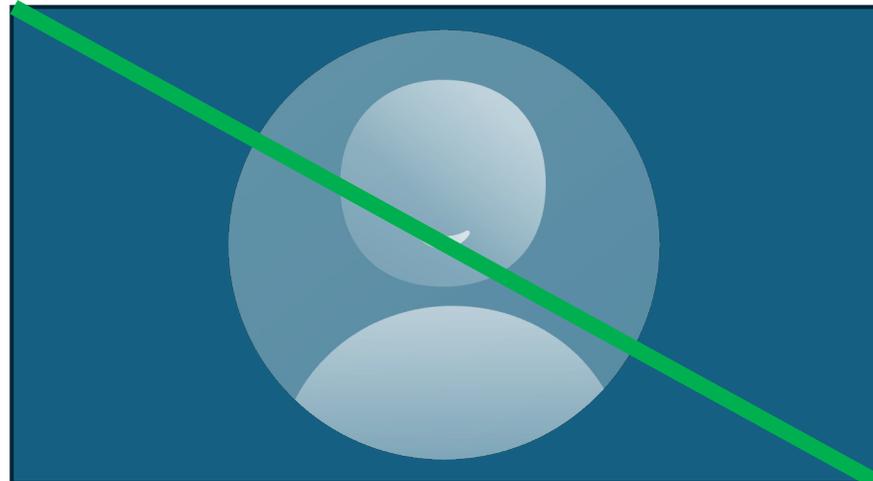
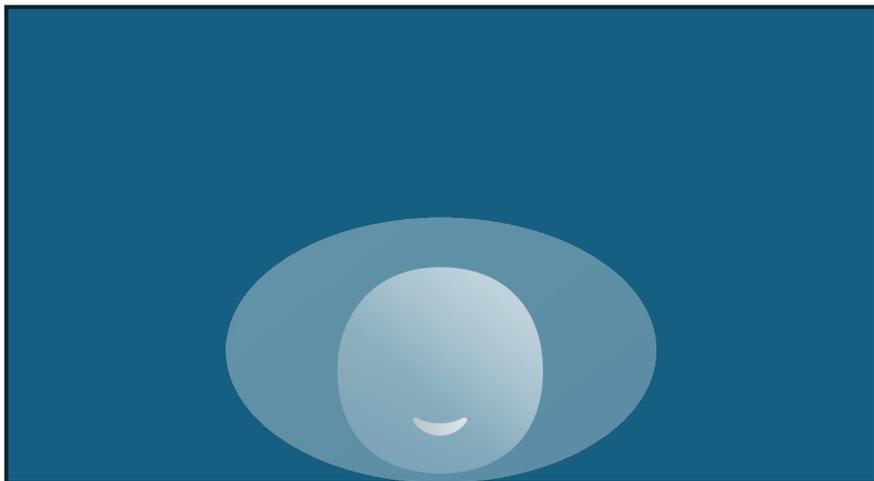
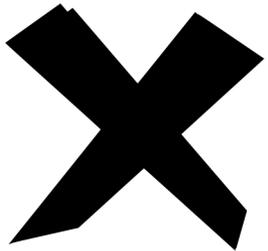
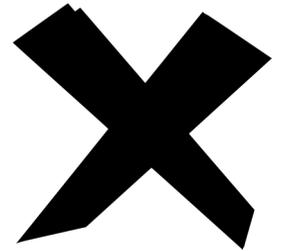
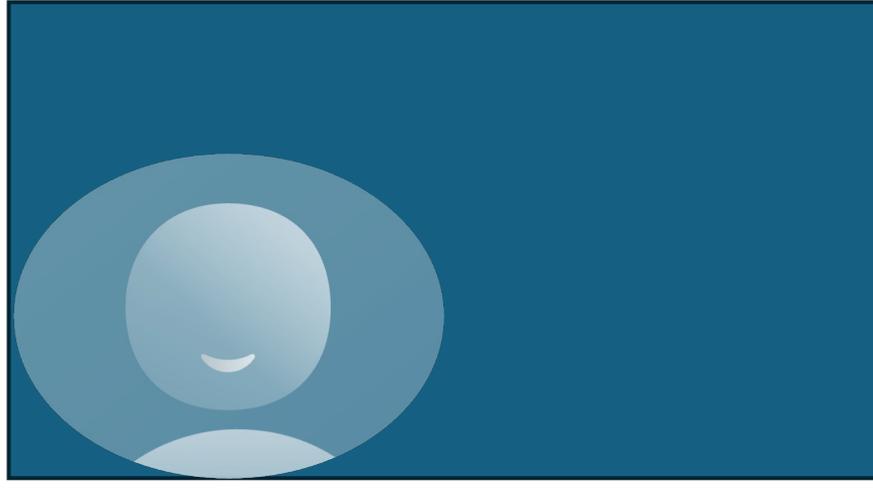
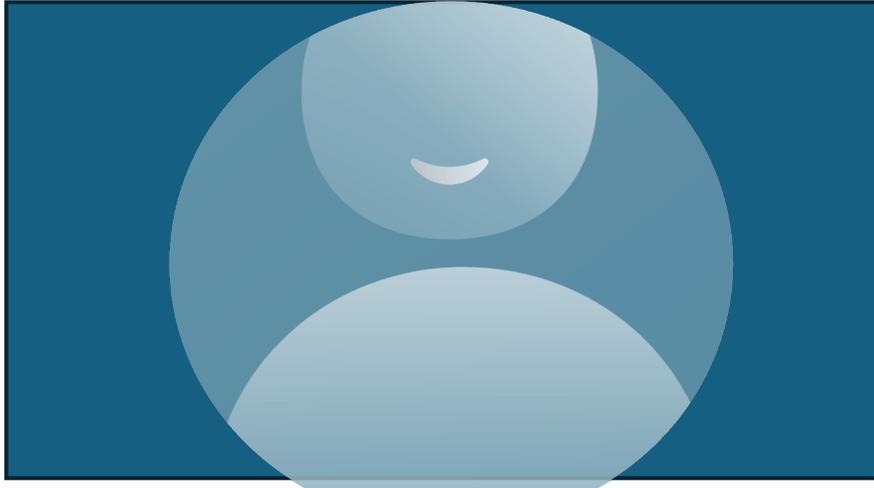


Present to inform, Not to impress





Presenting online!





Ethics in research

- Research Integrity:
- Honesty and Transparency:
- Objectivity
- Accountability
- Intellectual Property

- Respect for Persons / Autonomy
- Conflict of Interest:
Avoid careless errors and negligence
- Don't plagiarize — always credit sources.
- Data privacy

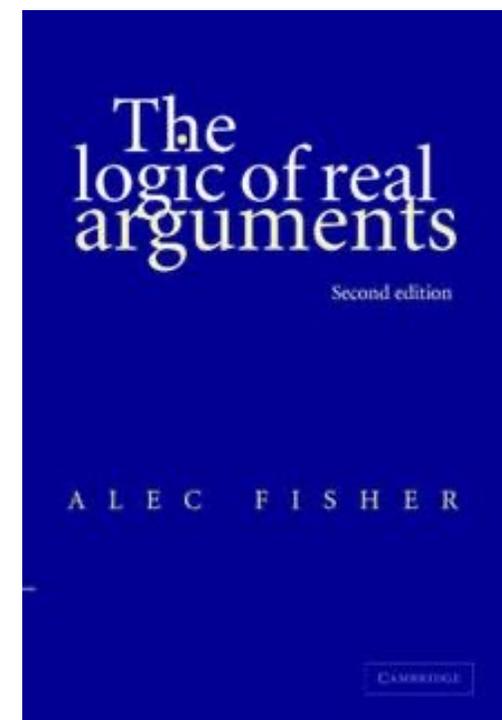
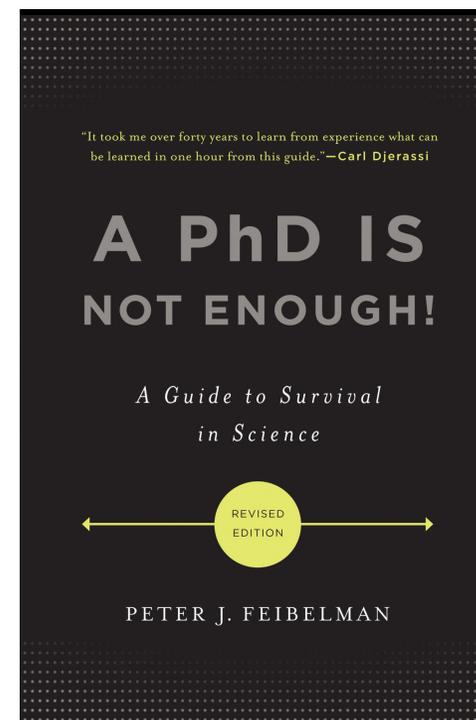
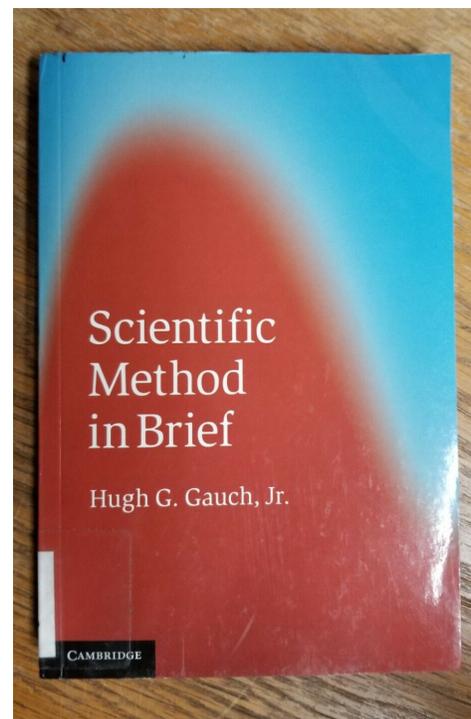
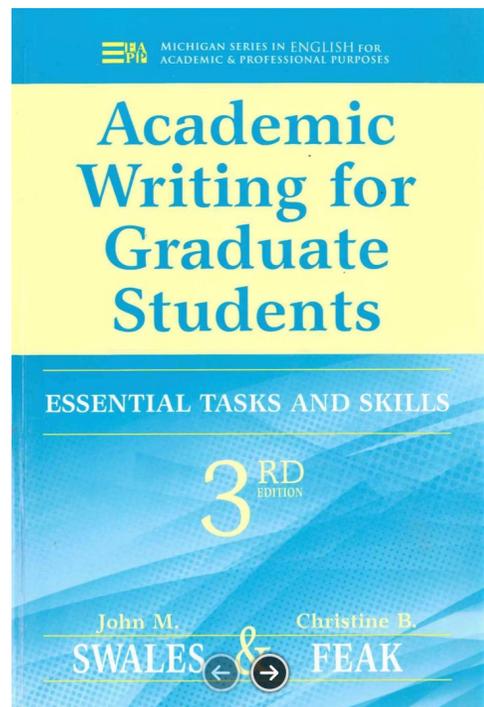
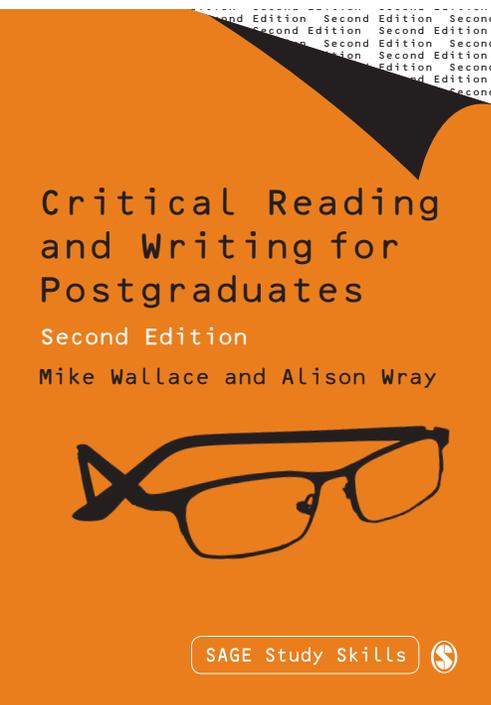
Accepting criticism

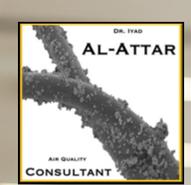
تَقْبِلُ النِّقْدَ





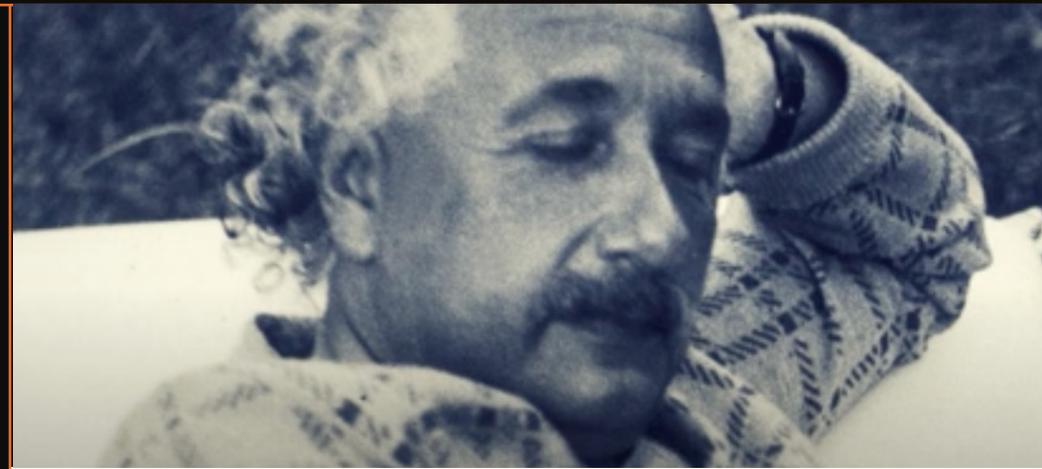
Recommended readings





Know when to stop and rest!

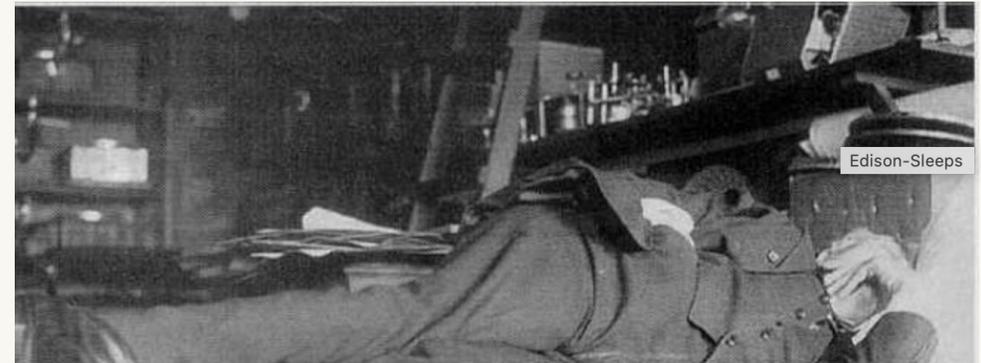
Who slept well?



John F. Kennedy



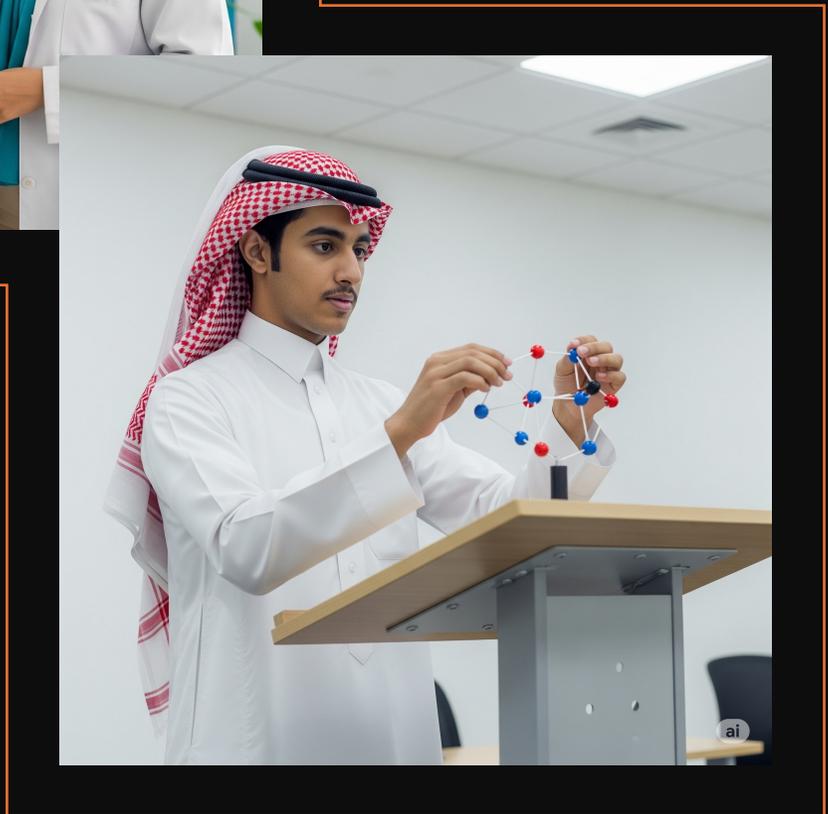
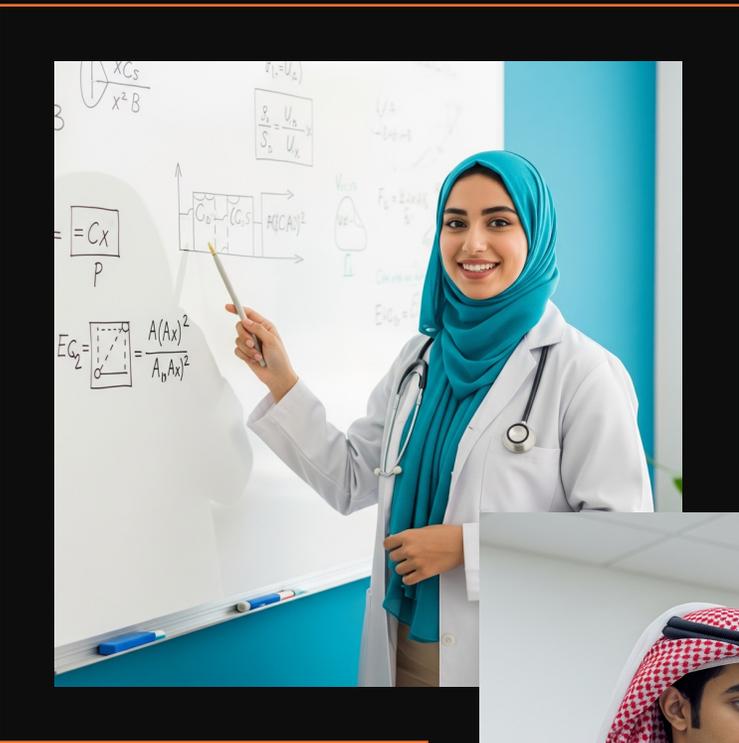
Thomas Edison



Edison-Sleeps

Can you engage with
your professors at
their level?

Mastery

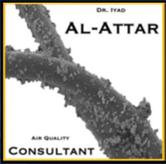




Believe in yourself!

The future is bright, be part of it.

Innovation



Innovation is not about the size of the research fund or the breadth of development; innovation lies in our imagination, dreaming of a sustainable world where our hearts and minds are liberated to dream of a bright future worth fighting for.

Dr. Iyad Al-Attar



Introducing *IFN*'s New Featured Writers!



Dr. Iyad Al-Attar

Global Correspondent, Technology and Innovation

We live in an era defined by rapid technological advancement and a growing awareness of the intricate relationship between our environment and well-being. We are privileged to introduce Dr. Iyad Al-Attar, a distinguished mechanical engineer, air quality consultant, and academic luminary, who will focus specifically on the critical intersection of filtration technologies and their impact on public health and diverse industrial applications.

Dr. Al-Attar's credentials speak volumes about his expertise and dedication to the field. He holds a Ph.D. from Loughborough University, preceded by Master's and Bachelor's degrees from Kuwait University and the

University of Toronto respectively, with an academic foundation in engineering. His pursuit of knowledge extends beyond traditional engineering boundaries, encompassing executive education from MIT and Harvard Business School, specializing in sustainability, business, and strategy. This unique blend of technical acumen and strategic insight positions him as a visionary leader capable of navigating the complex landscape of global technological innovation.



Currently, Dr. Al-Attar serves as a Visiting Academic Fellow at Cranfield University, focusing on air quality and filter performance relevant to land-based gas turbines. This specialized expertise underscores his deep understanding of the intricacies of filtration in demanding industrial settings. His role as the first associated air filtration consultant for Eurovent Middle East and, more recently, as the Indoor Air Quality (IAQ) patron for EUROVENT, the voice of the European HVACR industry with global reach, further solidifies his position as a leading authority in air quality and filtration.

As an *IFN* correspondent, Dr. Al-Attar will leverage his extensive experience and profound knowledge to explore and disseminate cutting-edge advancements in filtration technologies. His focus will be multifaceted, addressing the importance of appropriate filtration in promoting public health and well-being while simultaneously highlighting its role in advancing diverse applications such as filter media manufacturing and performance, in vitro fertilization (IVF), power generation, urban planning, and city design, among other forward-thinking filtration topics, as a catalyst for positive change, bridging the gap between cutting-edge research and real-world applications.



DR. IYAD

Al-Attar

Air Quality & Filtration Consultant
 Academic Staff – Cranfield University – United Kingdom
 Global Correspondent for Tech. & Innovations - International Filtration News Magazine.
 Associated Filtration Consultant – Eurovent Middle East
 IAQMatters Patron – Eurovent, Europe.
 Strategic Director - World Filtration Institute
 Editorial Member – Filtration Society, UK.
 Web.: www.driyadalattar.com



The Essence of Research

