

HOW TO READ A RESEARCH PAPER

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There will come a time in our lives when we must take up the gruelling task of reading scientific journals. Sifting through pages after pages and losing sanity over the jargon is a given. Reading these papers is a highly active job requiring multiple rounds of re-reads, cogent interpretation and extensive note-taking. Unlike other literary texts, reading it front to back, top to bottom is a rookie mistake. It is a skill rarely taught. To master, one requires a lot of patience.

There are several forms of scientific literature mainly categorised under primary (e.g. original research) and secondary literature (e.g. review articles). Review articles can be further classed into literature, systematic, and meta-analyses review. These articles do not present any new data but are based on primary literature. The authors provide critical, constructive analysis through comparison and such. They act as a bridge between future and past research and are recommended for absolute beginners.

Journals do not publish papers from all fields. Each field has designated journals with their own "impact factor". The greater the impact factor, the higher the journal rank. Examples of renowned journals are Acta Mathematica, Genetica, IEEE Journal of Quantum Electronics, Nature, Physical Review Letters.

A typical scientific paper is structured in the IMRD form preceded by an abstract. The abstract describes the paper in a nutshell – the purpose of study, the methods used, the results achieved, and the inferences made. Abstracts can be too dense to deal for many newbies as they succinctly summarise the paper and can be read later. Introductions serve to pull in a reader, shed light on to the knowns

and unknowns in the area of work, and gradually shifts to focus on the aim of the paper. Methodology revolves round the nitty-gritty of how the experiments were carried out. Results describe the findings both literally and graphically. Discussion puts the results in a broader perspective and it is here where the conclusion is drawn- whether the data is supportive or not.

To make things easier, divide this formidable task into two phases. Completion of the first phase will determine whether you need to progress on to the next. Because many a times, a paper is not related to your interest and wading though it is a waste of time. At first, begin with reading the title, abstract and introduction of the paper in hand. See when it was published; recent research is of vital importance. Note any headings and key terms.

And skip to the conclusions.

Skim through the references as well to get an idea on other related works. This phase is all about getting the essence of the concepts the author/s have worked on. It is likely to take 10-15 minutes at maximum. By the end, you should know if this is the right paper for

you and if you want to dive into the details.

Next, it is time to read with greater discretion, paying attention to the diagrams, figures and such. Move on to the methods and results. To know more about the background of the paper, go over unread references. This helps to discover what has or has not previously worked. Take notes of special points. Add comments. Expect to encounter new mechanisms and peculiar terminology. You can always pass severely detailed work and return later. This step can take as long as you need and will drain the most out of you. So, at this stage it is wise to take a break. After completion, you'll be able to summarise the paper more or less. Many even consider ditching the paper at this point and moving on to another. But before you do so, revisit the material one last time with a fresh mind. There might be a major portion of the paper still out of your grasp, especially the methodology section. And the frustration simply mounts on.

Never hesitate to look these

up on the Internet.

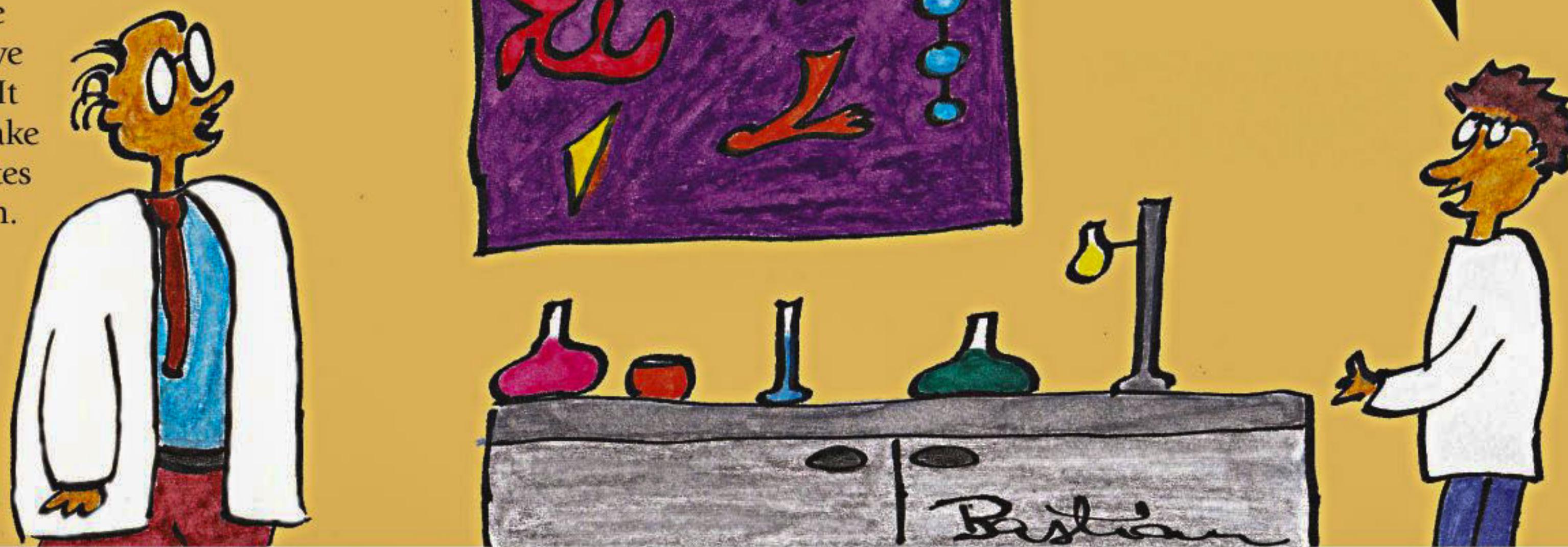
Once you are done, now ponder upon the work. Deeply. Look over the notes you took. Can the study be repeated? What has it been trying to find? Were the findings well-supported by evidence? How big was the sample size? Are there any factors in play? What are the limitations of the experiments? And so on.

It could take one, five or ten papers until you find what you were looking for. But bear in mind, all of this adds up to experience and better navigation when reading and of course, an improved sense of searching.

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