Description

The Importance of Preparation

The quotation, "Give me six hours to chop down a tree and I will spend four sharpening my axe," has been attributed to Abraham Lincoln. Whether or not that attribution is valid, the message of the quotation definitely applies to the development of a comprehensive literature review. With over half a billion active websites, and academic databases with hundreds of millions of entries available for search, adequate preparation for your review is critical to not only ensure that you capture accurate and relevant data, but also that you avoid wasting your most precious resource in academic research—your time!

There's More to This than Google

The fact that the name of the search engine company has now been adopted in the global vernacular as a verb, gives some indication of the extent to which the ease of searching for anyone and anything has influenced our lives. However, the search skills you may have developed on Google will not, in themselves, automatically make you a proficient academic researcher. The databases you will be searching will probably have their data coded and sorted differently than the rankings attributed to individual websites by Google's ever-changing search algorithms.

The World of Boolean Search

Named after the British mathematician George Boole, the creator of Boolean logic, Boolean search involves the extension of the search keywords with "operators," (and, or, not, and near) in order to refine the logical relationships between the search terms. In the *PubMed* database, for example, those Boolean operators "must be entered in uppercase letters."

Putting quotation marks around your search term ("Boolean logic") will limit the search to that pairing, even in general search engines such as Google. The operators will allow you to start with broader keyword pairings and then to narrow the results with each iterative search request. This enables you to track or pursue a keyword pairing that you may not have originally considered in your initial list of keywords.

Moving from Quantity to Quality

When a simple search for "Boolean logic" in Google delivers 462,000 results in 0.29 seconds, you quickly realize the challenge that is facing you. You will never be short of results (unless you pick the most obscure terms imaginable), and the success of your literature review will rest on how well you plan and refine your scientific keyword search. Remember that a literature review is a process.

While your end goal will be sufficient knowledge to establish your expertise and to validate your research question, in the early stages of the process you must come to terms with not knowing what

academy@enago.com

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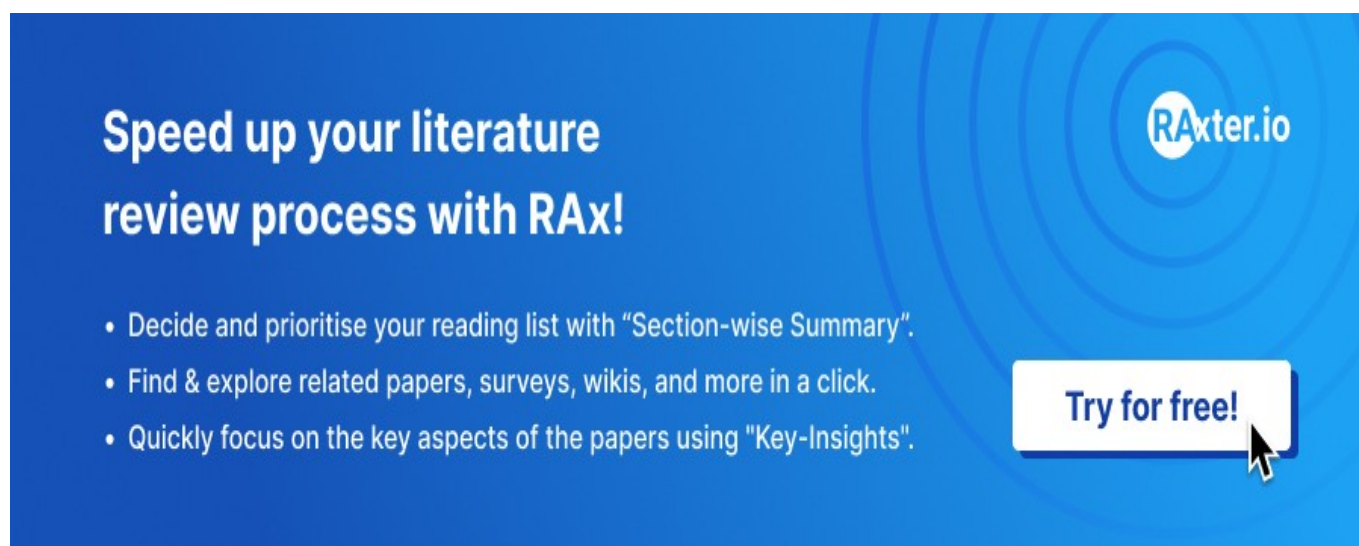
you do not know about the subject.

On that basis, every relevant search result should be assessed before proceeding. Just as goals should be *SMART* (specific, measurable, attainable, realistic, and time-based), your search results can be measured using the *CARS* checklist:

- **C –** Is this a credible resource? Anyone can put up a website and claim expertise in any field. Look for evidence of credentials.
- **A –** How do you know the information is accurate? In this era of predatory and fabricated academic journals, "trust but verify," should be applied at all times.
- **R –** Are the research assumptions reasonable? Academic publishing favors the new and counterintuitive, but that should serve as a warning for cautious interpretation of any new results that relate to your topic.
- **S –** Is this information supported by other sources? Citations from other journals and by other authors are one thing, but has this work ever been verified by a replication study?

Reach Out to the Experts

You can develop a fairly long list of keywords by reviewing some of the leading or classic research in the topics you are considering.

However, "long" does not automatically equate to comprehensive, especially if you are in search of a gap in the research around which you plan to build your study. By all means gather what you can on your own, but then reach out for help to an experienced academic librarian, preferably through a research consultation request, and let him or her help you to refine that list (using Boolean search operators) into a truly focused search plan.

Category

1. Manuscripts & Grants
2. Reporting Research

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