Research Skills ~ Getting Started



Literature reviews are part of research projects, proposals, and published works.

Your purpose in conducting a review of the scholarly literature is to show you have looked at what other researchers have written and have evaluated and interpreted it; and to state how your research will add to the existing knowledge and progress it further.

Here are a few helpful resources to get you started:

The literature review: a few tips on conducting it Written by Dena Taylor, Health Sciences Writing Centre Writing Advice, University of Toronto https://advice.writing.utoronto.ca/types-of-writing/literature-review/

Academic writing: What is a literature review? SFU Library https://www.lib.sfu.ca/about/branches-depts/slc/writing/assignments/lit-review

How to write a literature review Concordia University Library https://library.concordia.ca/help/writing/literature-review.php

Write a literature review McLaughlin Library, University of Guelph https://guides.lib.uoguelph.ca/LiteratureReview

Introduction to literature reviews UBC Library https://guides.library.ubc.ca/litreviews





Formulating a Search Strategy

Spend some time thinking about the topic before going near a computer

Part A: Break up your research idea into distinct concepts.

Consider using one of the following frameworks. See examples.*

PICO (most commonly used to answer clinical questions)

Р	Patient / Population / Problem
Ι	Intervention
C	Comparison
0	Outcome

PICOT / PICOTT / PICOTS (broader than the basic PICO)

Р	Patient / Population / Problem
I	Intervention
С	Comparison
0	Outcome
T	Time frame
Т	Type of question (diagnosis, etiology, therapy,
	prognosis, prevention, etc.)
TS	Type of Study design most likely to answer my
	question or the research method I want to use

PICo / PS (good options for qualitative research)

/		
Р	Population / Problem	
I	Interest (relating to a defined event, activity,	
	experience of process)	
Co	Context	
S	Situation	

SPICE (like PICO, but splits the population component into setting and perspective. Outcome is replaced by evaluation to allow for alternate or broader evaluation options)

S	Setting	
Р	Perspective	
I	Intervention	
С	Comparison	
E	Evaluation	

SPIDER (good for qualitative / mixed study methods)

S	Sample or sample size			
PI	Phenomenon of Interest			
D	Design of the study			
E	Evaluation			
R	Research type			

^{*} Examples from Murdoch University, University of Manitoba, North Arizona University, University of Notre Dame, McMaster University

Formulating a Search Strategy cont...

Part B: Based on what I wrote in Part A, identify 2-3 main concepts you want to search. Describe each concept using a variety of *keywords and subject terms*.

Concept #1	also known as (OR)	also known as (OR)
(AND)		
Concept #2	also known as (OR)	also known as (OR)
(AND)		
Concept #3	_also known as (OR)	also known as (OR)

<u>Part C</u>: Do I want to limit my search to any of the following? Circle all that apply.

- Age: infant / child / adolescent / adult / aged
- Gender: male / female
- Language: English
- Publication dates: Articles written in the last 5 years / last 10 years / yr____ to yr____
- Publication types: Review article / guideline / full-text available / patient handout / other
- Journal subsets: Core journals / peer reviewed / written in Canada or the USA / other

<u>**Part D:</u>** Which database would best suit this topic? Which others might I also want to search?</u>

□Medline	Cinahl	EBM Reviews (Includes Cochrane database)
□Other		

- 1. Consider your spelling and use WILDCARDS: There are many ways to spell the same thing, especially when considering differences between US and British or Canadian spelling.
 - Use the ? wildcard by replacing each unknown character with a ?. For example, t?re will find all citations containing tyre, tire, tore.
 - Use the **#** wildcard by adding the **#** in places where an alternate spelling may contain an extra character. For example, **colo#r** will find all citations containing **colour** or **color**.
- 2. Drug names: use generic and trade names in your search, combining them using OR (see also Boolean logic below).
 - ex. Ritalin OR methylphenidate
- 3. Use TRUNCATION to catch variations in word endings: For most databases, the truncation symbol is *. When you use the search term nurs*, what results will come back?
 - Records with the words nurse, nurses, nursed, nursing
 - Essentially, you are expanding your search.
- 4. Use Quotation Marks "" for Phrase Searches: A phrase search simply means putting quotation marks around two or more words. Words within the quotation marks will be searched together as one. Phrase searches are particularly effective if you're searching for:
 - Proper names: ex. "Leonardo da Vinci"
 - Lyrics: ex. "You could be mine"
 - Phrases: "best practice protocols"
- 5. PROXIMITY operators (N and W) can also be added to improve precision of keyword searches.
 - Near Operator (N) N5 finds the words if they are within five words of one another regardless of the
 order in which they appear. For example, type tax N5 reform to find results that would match tax
 reform as well as reform of income tax.
 - Within Operator (W) In the following example, W8 finds the words if they are within eight words of one another and in the order in which you entered them. For example, type tax W8 reform to find results that would match tax reform but would not match reform of income tax.
- 6. Select certain FIELDS to search within: In EBSCOhost use drop down boxes to specify if you want words to be in the title, or if you are looking for a specific author.
- 7. Use BOOLEAN searching: Boolean logic is used to construct your searches and is very useful in specifying exactly what information you want retrieved...and what you don't.



Using **AND**, results that are retrieved will contain *BOTH* blue and yellow information (in green, above). What will not be retrieved are items that contain only blue information or yellow information. Using **AND** helps you *narrow* your search.

OR OR Blue OR Yellow

You will expand your search using **OR** (more records found). Retrieved results will contain either the blue, yellow, or green information. You will not be able to restrict your results to either the yellow or blue records. The **OR** search is useful when there are several common synonyms for a concept.



We exclude unwanted terms using **NOT**, only searching for results that contain only blue. The term yellow will be completely excluded from this search, and thus so will any of the green. Basically anything that has the term yellow in it will not be searched.

EBSCO Searching using Subject Headings and Keywords

One of the most useful features in CINAHL, MEDLINE and PsycINFO is the use of **controlled vocabulary**. These are formal subject headings or descriptors that are assigned to each record. In PsycINFO these are found in the **Thesaurus**, in CINAHL they are called **CINAHL Headings**, in MEDLINE they are referred to as **MeSH**.

CINAHL Headings and MEDLINE MeSH - Step 1

	Sign In I 🚟 Folder Preferences Languages 🧅 New Features! Ask-A-Librarian Help
Database: CII/AHL with Full Text @ Basic Search Advanced Search Visual Search	Coastal Health
CINAHL Headings 🖼 <u>View Tutorials</u>	
Results For: eating disorders	Search Database
- Check box to Click linked term view subheadings. Click linked term	Explode Moor (+) Concept Scope Search Term C-) Concept
Eating Disorders	
Feeding and Eating Disorders of Childhood	Check a box to select a subject heading to begin building your search
Eating Disorders Management (Iowa NIC)	E E E
Childhood Eating and Feeding Disorders Use: Feeding and	Eating Disorders of Childhood
Eating and Feeding Disorders in Children Use: Feeding an	d Eating Disorders of Childhood
Bulmia Nervosa	
1 Bulmia Nervosa 1 Dussonnias	

CINAHL Headings and MEDLINE MeSH - Step 2

w Search Publications CINAF pre –	L Headings Cited	i Reference	S Sign In 📇 Folder Preferen Ask-A-Librarian Help	nces Languages 🧅 New Features!
Database: CINAHL with Basic Search Advanced Si CINAHL Headings " View	h Full Text @ arch Vsual Search Tutorials			Vancouver Coastal Health Provid
Back to Tree View For: Bulin	nia Nervosa		Subheadings for: Bulimia	Search Database
Check box to Click linked term Explode Major (+) Concept 🔗		Include All Subheadings Or colort one or more subhardings to	Search Term (+) Concept	
Behavioral and Mental Disorders <u>Cinahi</u>	(Non-		restrict your search	Bulimia 🗖 🖾 🖾
Behavioral Symptoms			Bulmia, Include All Subheadings	
Eating Disorders			Cerebrospinal Fluid/CF	
Anorexia			Chemically Induced/CI (=) Cassification/CI (=) Complications/CO (=) Complications/CO (=)	
Anorexia Nervosa	П			
🗸 🧧 Bulimia	Π	5		
🗖 👘 🔲 Bulimia Nervosa	Π		Diet Therapy/DH	
E Female Athlete Tria	d E	-	F a a a a	

PsycINFO Thesaurus



In CINAHL, go to the CINAHL Headings either by clicking on the "suggest subject terms" check box before entering your search terms or clicking directly on the CINAHL Headings link in the blue bar at the top of the screen. The same procedures can be used with MEDLINE to find MeSH terms.

The database presents you with a list of subject headings that relate to the initial word you typed in. Read the **scope notes** to learn how each subject term is defined.

Click on the subject heading link to view how the subjects are organized (the hierarchical **tree** structure) and information about broader or narrower search terms that are also available.

To automatically include narrower terms check the **Explode** box; to limit to the major point of the article check the **Major Concept** box. At this point you can check off the terms relevant to your topic, click on Add and then click on Search.

Your selection is posted in the search box builder on the right. To add more terms, click on "Back to term list". When finished, click on the "Search Database" button.

PsycINFO: click on Thesaurus in the blue bar In at the top and enter a term – in our example, Anorexia. This will bring you to an alphabetical list of subject headings with Anorexia Nervosa at the top. You can check scope notes, explode, or choose major subject as in CINAHL/Medline searching. Your selections will be added to the search field at the top of the screen.

EBSCO Searching using Keywords

ew Search	Publications CINAHL Headings Cited References More 🗸	Sign Help
EBSCO EDST	Searching: CINAHL with Full Text Choose Databases » Suggest Subject Terms Fexia OR by lemia OR "eating disorders" in TI Title AND Prevention OR treatment in Select a Field (optional) AND AND AND AND Advanced Search Visual Search Search History	×

Enter your search words, or terms, in the search boxes. Related or synonymous terms can be connected in one box using the word **OR** [anorexia or bulimia or eating disorders]. Terms for an additional concept can be entered in another box [treatment or prevention] and the two ideas combined with **AND**.

TIPS:

Use * to search variable endings for words. Enclose phrases in quotation marks. Use the "Select a Field" drop down box to select individual fields or parts of an article's citation you wish to search, e.g. author, title word, abstract or journal title.

Building your Search Strategy using the Search History

		1 or S2 or S3) and (S4 and S5) in Select a Reld (optional)	Search Clear	
	A	D M in Select a Field (optional)	×	
	A	D M Select a Field (eptonal)	Add Row	
	6.9	ic Search Advanced Search Visual Search (Search History)		
		\sim		
Sea	ch History	/Alerts		
Print	Search His	tory Retrieve Searches Retrieve Alerts Save Searches / Al	ierts	
Print	Search His elect / desi	tory <u>Retrieve Searches</u> Retrieve Alerts Save Searches / Al liect al Search with AND Search with OR Delete	Searches	Refresh Searc
Print	Search His slect / desi Search ID#	tory <u>Retrieve Searches</u> Retrieve Alerts Save Searches / Al liect al <u>Search with AND</u> Search with OR Delete Search Terms	Searches Search Options	Refresh Gearc
Print	Search His search (desi Search ID# S6	tory <u>Retifieve Searchs</u> Retinew Alerts Save Searchs / Al text al	Search Options Search modes - Booleur)Phrase	Refresh Searc
Print S	Search His elect / desi Search ID# S6 S5	Tory Exteriors Searchs Retrieve Alerts Save Searchs / Alerts Act al Search with AND Search with OR Deleter Search terms Search terms Search	Search Options Search Options Search Rodes - BodenyPirase Search modes - BodenyPirase Search modes - BodenyPirase	Actions Actions © Verw Results (44) ② Verw Details ③ Edit © Verw Results (4637) ③ Verw Details ③ Edit
	Search His elect / desi Search ID# S6 S5 S5	tory <u>Efficience Searches</u> Retenues Alerts Save Searches Al Kect al <u>Search with AND</u> <u>Search with DR</u> <u>Deleter</u> Search Terms D (to 1 or 50 or 50) and (54 and 55) d (51 or 52 or 50) D (44 "Search Searches")	Search updates Search Options Search Options Search modes - Socian/Prase Search modes - Socian/Prase Search modes - Socian/Prase	Robrob Dears Actions Billione Results (40) (2) How Details (2) Edit Billione Results (4007) (2) How Details (2) Edit Billione Results (1003) (2) How Details (2) Edit
Print	Search His search 10# S6 S5 S5 S4 S3	tory Ethiotoc Searches Retineve Alerts Save Searches Al lect al Search with AND Search with DR. Deleter Search Terms (51 or 52 or 53) and (54 and 55) 51 or 52 or 53 (64 * "Bee (Envloys" /) (64 * "Bee (Envloys" /)	Issanches Search Options Search Options Search modes - Boolam/Prase Search modes - Boolam/Prase Search modes - Boolam/Prase Search modes - Boolam/Prase	Refresh Sear Actors SchwarReads (44) ① thew Detah ② Edit SchwarReads (45) ② thew Detah ③ Edit SchwarReads (1005) ③ Wenr Detah ③ Edit SchwarReads (25) ④ thew Detah ③ Edit

You can develop your search strategy by using the search history. Search each concept one at a time using either thesaurus terms or keywords and then combine the search result sets using **Boolean logic**.

Use **OR** to group similar ideas together (anorexia nervosa OR bulimia OR eating disorders). This will make the results set larger. **AND** is used to combine sets representing different aspects of your search (Eating disorders AND Sleep disorders). Both ideas need to be included in the search so the result set will be smaller.

Refine your Results: Search Options and Limits



When viewing your search results you can use the **Refine Results** feature that is found on the left side of the page to narrow your search results. It is possible to limit your search in many different ways including publication date, population group, age group and publication type. Go to **Show more** for the full selection of limits that are available for the database you are searching. Use the **Ctrl** key to choose more than one limit within a category.

You can also apply limits when before you enter your search terms.

Managing your Search Results – using the Folder



When viewing your search results you can flag the articles you like by adding them to a **folder**. Select each item individually or click on "alert/save/share" to add citations in batches.

Once you have added all of the items you are interested in you can view the contents of your folder then print, email, or save the citations. You can also export the citations to a bibliographic management program such as Refworks, Mendeley, or Zotero.

Use the email feature to request items from the VCH Library. Remember to include your name and contact information!

Creating a Personal EBSCOhost Account



Searches and search results can be saved in your folder for use at a later date if you create a personal EBSCOhost account or log in with a google account. Click on **Sign in** at the top of the screen and then click **Create a new Account** or log in.

To save a search sign into your account and perform your search then click on Save Searches/Alerts in the Search History box. An auto alert can be created from the search strategy. Alternatively, you can create an alert from the results display by clicking on "alert/save/share" and setting up an email alert or RSS feed.

If you already have set up a personal EBSCOhost account, be sure to sign into the account before you start searching so that you can add to or retrieve items from your personal folder each time.

Obtaining Full Text

Many journal articles are available full text from within the research databases. Just click on either the html full text or pdf links, or on the words "**Full Text Finder**" that appear under the article citation.

If there is no full text available, or if you are requesting a book loan, contact vchlibraryservices@vch.ca.

Additional Tips and Tricks while using EBSCO Databases

- 1. **Refine the Results** of your search using the options on the left side of the screen. To view ALL available limits click on "**Show More**" under the publication date slide.
- 2. Change the **Page Options** on the right side of the screen from Brief (default) to **Detailed** in order to see all of the abstracts of the articles in the results list.
- 3. Share an entire search with your research colleagues by copying and pasting the **permalink** under the **Share** dropdown list on the right side of the search results.
- 4. Share a **single article** with your colleague by clicking on an article's title to view the reference in detail, then use either the **email** tool or copy/paste the **Permalink**.
- 5. Click on **Search History** to display all of the searches you have done during your current research session. See results of previous searches (click on View Results). You can also edit the search terms and then refresh the search results.
- 6. Print your Search History, take a screenshot or copy/paste the search terms into a word document to **keep track** of what you have already looked at.
- 7. Change the databases you are searching in, or search multiple databases simultaneously by clicking on **Choose Databases** above the search boxes and placing a check beside the source(s) you want to search.

Getting Ready to Create your Reference List?



- If you are using a bibliographic management program, such as Mendeley, Zotero or RefWorks use the **export** feature within the **folder** to save multiple references in a format that can be imported into whichever program you are using. RIS is the most common.
- 2. Export **individual articles** for use in a bibliographic management program by clicking on an article's title then using the **Export** tool on the right side of the page.
- 3. See how an individual journal article should be cited in **various styles** (like APA) by clicking on an article's title then click on the **Cite** tool on the right side of the page
- Email or print out a reference list in various styles (like APA) directly from your folder. Click on email or print and choose from the options available under the Citation Format dropdown list.

Levels of Evidence & Critical Appraisal

Many different **Evidence Pyramids** have been created to denote the hierarchy of strength of evidence. Here are three to consider.



Types of studies: What is a...

...Primary Source? Primary sources are the creative works or original materials and information created at the time of an event, or very soon after something has happened. They are the sources from which other research is based. Primary sources can be rare or one-of-a-kind. Some primary sources can also exist in many copies, if they were popular and widely available at the time that they were created.

Examples of primary sources include:

- First person accounts (including newspaper accounts)
- Photos
- Lab and technical reports
- Government publications (such as tabulated health statistics and raw data sets, not interpreted)
- Journals or periodicals the main type of publication where scientific research is reported
- Observations and field notes
- Case studies and clinical trials
- Patents provides research information on new processes and products.
- Surveys

• Theses

...Secondary Source? A secondary source interprets, reviews, analyzes, compares, contrasts, summarizes, or repackages the information found from the primary source. The secondary source is one or more steps removed from the event – they are often created **after** primary sources and they often use or talk about primary sources. Secondary sources may have pictures, quotes or graphics of primary sources in them.

Examples of secondary sources:

- Textbooks
- Review journals
- Article reviews
- Commentaries

- Data compilations
- Research analysis
- Article indexes and databases (abstracting or citation)

	Quantitative study?	Qualitative study?
Objective / Purpose	 Research that attempts to identify, define, and measure factors that contribute to a disorder or disease and examines relationships among factors 	 Research that examines the experiences, beliefs, and feelings related to a phenomena or problem, and typically focuses on words and meanings ("how" or "why" questions).
Sample	 Usually a large number of cases (when possible, randomized) representing the population of interest. 	 Usually a small number of non-representative cases with respondents selected to fulfill a given quota
Data Collection	- Involves the collection of data to measure relationships, and questions are formulated around the PICO components (usually concerning effectiveness or causation inquiries).	 It can take many forms including interviews (indepth or semi-structured), observation, and focus groups, with analysis attempting to identify underlying themes. Examines a patient or population (P) and situation (S), and usually does not seek whether an outcome is caused by a particular exposure. Usually small numbers of people used in interviews and/or focus groups.
Data Analysis	 Objective measurements with statistically valid, hard data. Generally, researchers want sample sizes that yield findings within the 95% confidence interval. 	 Subjective, non-statistical, with results often open-ended.
Outcome	 Used to determine whether something is caused by something else and evaluates the cost-effectiveness of an intervention. 	 Often exploratory and/or investigative to develop an understanding and sound base for further decision making

¹ Retrieved December 18, 2014, from <u>http://www.casp-uk.net/#!casp-tools-</u> <u>checklists/c18f8</u>

....Systematic Review?

Often you will find that there are many studies that address a particular health question. A systematic review collects these studies, analyzes, and provides a thorough summary of all the evidence relevant to a focused question, basing conclusions on the cumulated results. Systematic reviews usually take months, or years to do and consist of a team of subject experts and reviewers to reduce bias. The most obvious sign that a review is systematic is the presence of a methods section. Explicit search strategies (described in the paper, including the search terms used) and the characteristics, methodological quality of each study found is documented and measured, and alternatives compared for a critical, weighted summary.

• Example Question: What infection control strategies are most effective in preventing the spread of UTIs among the elderly in a long-term care setting?

A **meta-analysis** is when the results from all trials done on a subject is collected and analyzed to produce an overall summary statistic that represents the effect of the intervention across different studies (a quantitative, systematic review). It is the statistical process of combining the results from several studies (which increases the overall sample size and produces a more precise estimate of the intervention effects) that is often part of a systematic review. Meta analyses are useful when there have been lots of trials on a topic, but each being too small to give a conclusive answer.

²Consider some of these questions when critically reviewing systematic reviews:

1. Are the results valid?

- Did the review explicitly address a focused question?
- Was the search for relevant studies detailed and exhaustive?
- Were the primary studies of high methodological quality?
- Were the assessments of studies reproducible?
- Were the results consistent from study to study?
- Is the SR of randomized trials?

2. What are the results?

- Were the results similar from study to study?
- What were the overall results of the study? How large was the treatment effect?
- How precise were the results?

3. How can I apply the results?

- How can I best interpret the results to apply them to my client/patient/community?
- Were all patient-important outcomes considered?
- Are the benefits worth the costs and potential risks?
- Is the treatment feasible in your setting?

...Randomised Controlled Trial (RCT)?

An RCT is considered the most rigorous study design to best answer questions about treatment *effectiveness or prevention*. It is a type of interventional or experimental study design whose primary goal is to test whether an intervention or treatment works by comparing it to 1. a control condition, 2. No intervention, or 3. An alternative intervention. Participants (individuals or groups) are randomly allocated (reducing bias) to receive either the new intervention being tested or a control treatment (usually the standard treatment or a placebo). Each arm of the study is then followed up and the amount or severity of the disease measured in the intervention group and compared with the control group. Procedures are controlled to ensure that all participants in all study groups are treated the same except for the factor that is unique to their group – the unique factor is the type of intervention received. In this way, RCT's have the greatest ability to control for confounders or bias.

• Example Question: What is the effect of a new type of short-wave UVA blocking sunscreen on skin in comparison to the regular, long wave blocking sunscreen?

...Cohort study?

A cohort study is another observational study design that best answer questions about harm, prognosis, or the effectiveness of a prevention or treatment intervention. In this study, a group of patients are assembled and followed over time. Populations who do not have the health outcome or disease of interest are first divided into those who are exposed to a risk factor and those who are not. Alternatively exposed and unexposed populations may be chosen separately. At the end of the period of observation the incidence of disease or frequency of health outcome in the exposed group is compared to that in the unexposed group. The study is generally prospective as it looks forward from potential cause to consequence.

• Example Question: What is the effectiveness of the influenza vaccine in community dwelling elderly?

Unlike in RCTs, participants are **NOT** assigned to groups through random allocation and so bias is not minimized. Researchers may have less certainty about the true effect of an intervention than if an RCT was performed. (Cohort studies are also known as a non-random controlled trial, a non-experimental study, a quasi-experimental study, two- group before-and-after study, a controlled before/after study, a follow-up study, a longitudinal study, or an observational study.)

... Case-Control study?

A case-control study is an observational epidemiological study of people designed to help determine if an exposure is associated with an outcome (disease or other outcome variable) and a suitable control (comparison, or reference), at the same point of time from a sample of the population. It begins by choosing individuals – the cases - who have a health outcome or disease whose cause you want to investigate. Controls without the health outcome are then chosen (ex. a group known to be free of the outcome). The outcome of interest is measured prior to and after exposure to the intervention. The study is generally retrospective because it looks backwards in time to the earlier exposures of individuals. Casecontrol studies are more practical in instances where the outcome takes years/decades to be observed, and/or when large samples are needed in order for enough people to experience the outcome of interest. However, as CC studies ask participants to comment on behaviours that may have happened a long time ago, recall bias can be introduced.

• Example Question: How does tobacco use by Canadian mothers increase infant mortality?

... Practice Guideline?

A practice guideline is considered an evidence-based resource, developed by a panel of experts (usually from professional association, government agencies, and/or public or private organizations) for health care professionals and patients making clinical decisions. Guidelines are created after extensive review of the literature and appraise and summarize the best evidence regarding prevention, diagnosis, prognosis, therapy, harm, and cost-effectiveness.

²Cliska D, Cullum N, Marks S. Evaluation of systematic reviews of treatment or prevention interventions. *Evidence-Based Nursing* [online serial]. October 2001:4(4):100-104. Accessed February 19, 2015 from http://ebn.bmj.com/content/4/4/100.full.

Learn to critically appraise information...

Focus on the quality of, and level of evidence in your resources. Do not assume that the information resources that you find will always be completely true and factual – especially on the internet. If you have your suspicions, or if you want to learn more about a topic, it is good practice to look through many sources to verify your facts and

information. Apply the "CRAAP Test and ask the following questions:



CURRENCY: How timely is the information?

- When the information was written?
- How often (or when) is the information revised or updated?
- Does your research require current information or will older sources suffice as well?

RELEVANCE: How important is the information for your needs?

- Does the information relate to your topic or answer your question?
- Who is the intended audience?
- Is the information presented in an appropriate level? (ex. popular vs. scholarly sources)
- Would you be comfortable citing this source in a research paper?

AUTHORITY: Who or what is the source of your information? If unsure about who runs the site, information can often be found in an "About Us" link or tab.

- Who is the publisher/author/source/sponsor, and what are their credentials, educational/professional backgrounds, or organizational affiliations?
- Is the author qualified to write about the topic?
- Is there contact information (ex. email address)
- Does the URL reveal the source? (ex. .com .edu .gov .org .net)

CCURACY: Is the content reliable, truthful, and correct?

- Where is the information from? Is it from a reputable source?
- Where arguments are given, are they based on strong evidence and good logic?
- Can you verify the information in other sources and is it supported by evidence?
 - If the information contains any statistics or research claims, does the data/claims come from reliable sources that can be easily found? Are there links, citations, or bibliographies to other sources? The site or resources should identify the evidence from which the material is based.
- Has the information been reviewed or refereed? Look for "editorial process" or evidence that the content has been reviewed by experts before it was posted or published.
- Who is paying for/sponsoring the site or source?
- Is the information factual or opinion? Does the language or tone seem unbiased and free of emotion?
 - Is there evidence of *cherry-picking* whereby studies in favour of the author's views are quoted, and those that do not are disregarded?
 - Does there seem to be publication bias towards positive evidence only?
- What do other people have to say about the information?
- Are there spelling, grammar, or typographical errors?

PURPOSE: Why does the information exist?

- What is the purpose of the information? Is it to inform, teach, sell, or entertain or persuade?
- Do the authors/sponsors make their intentions or purposes clear?
- Is the information fact, opinion, or propaganda and do the points of view appear objective and impartial? Are alternative points of view presented?

³ Adapted from Meriam Library – California State University, Chico: Evaluating Information – Applying the CRAAP Test https://library.csuchico.edu/sites/default/files/craap-test.pdf



Web Maps

Images News



CHEAT SHEET: Here's a quick list of some of our most popular tools to help refine and improve your search. For additional help with Google Web Search or any other Google product, you can visit their <u>Search Help Center</u> page. Remember, you can filter your results by resource type; and by time, place, and much more using *Search Tools*, located at the top of each search.

Videos

OPERATOR EXAMPLE	FINDS PAGES CONTAINING	
marathon <mark>OR</mark> race	Find pages that might use one of several words.	
+Chrome or AB+	Search for Google+ pages or blood types	
"To each his own"	When you put a word or phrase in quotes, the results will only include pages with the same words in the same order as the ones inside the quotes. Only use this if you're looking for an exact word or phrase, otherwise you'll exclude many helpful results by mistake.	
Jaguar speed –car	Use the minus sign/dash to eliminate results containing certain words . This is useful for words with multiple meanings, like Jaguar the car brand and jaguar the animal.	
~auto loan	Loan info for both the word auto and its synonyms: truck , car , etc.	
define: computer	Definitions of the word computer from around the Web.	
"* is thicker than water"	Use an asterisk as a placeholder for any unknown or wildcard terms.	
#thankgoditsfriday	Find popular hashtags for trending topics	
Camera \$50\$100	Search within a range of numbers. Separate numbers by two periods without spaces to see results that contain numbers in a range.	

CALCULATOR OPERATORS	MEANING	TYPE INTO SEARCH BOX
+	addition	45 + 39
-	subtraction	45 – 39
*	multiplication	45 * 39
/	division	45 / 39
% of	percentage of	45% of 39
۸	raise to a power	2^5 (2 to the 5th power)

ADVANCED OPERATORS	MEANING	WHAT TO TYPE INTO SEARCH BOX (& DESCRIPTION OF RESULTS)
Site:	Search within a	iraq site:nytimes.com or site:edu
	specific site	Precede your query with site: Get results from certain sites or domains. Will return pages about Iraq but only from nytimes.com
link:	linked pages	link:www.stanford.edu
		Find pages that link to a certain page. In this case, the
		Stanford University website.
info:	Info about a page	info:www.stanford.edu
		Find information about the Stanford University website.
related:	Related pages	related:www.stanford.edu
		Find sites or pages that have similar content to web address you already know. In this case, the Stanford University website.