Doing Research

Doing Research

A Student's Guide to Finding and Using the Best Sources

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Introduction

Welcome to **Doing Research**, KPU Library's guide to helping you get started on your research assignment. Whether that assignment is a paper or blog post, multimedia project or poster, you will likely be expected to do some amount of research as part of completing the work. This can be daunting at first, especially if you are new to doing research at the university level, or if you are taking a class in a different discipline or field where the expectations and conventions may be unfamiliar to you.

If you feel you are already an experienced researcher, consider this guide to be a refresher.

Technical requirements: The modules work best in the most recent versions of Chrome or Firefox; Internet Explorer is not supported at this time. If you experience difficulties, check your browser version and update.

A note to faculty: This guide is informed by the Association of College and Research Library's Framework for Information Literacy for Higher Education, a new approach to teaching and learning research skills through a set of integrated core concepts and knowledge practices that emphasize the reflective nature of information discovery, the understanding of how information is produced and valued, and the ethical use of information in creating new knowledge.

Each module has been developed around one of these core concepts (*Key Takeaways*) and utilizes one or two of the knowledge practices (*Learning Objectives*) associated with it.

For more information about how the Framework is being implemented at KPU, please visit the Library's Information Literacy page.

Source

Association of College and Research Libraries. (2016). *Framework for Information Literacy for Higher Education.* http://www.ala.org/acrl/standards/ilframework

How to Use This Tutorial

There Are Four Modules in This Tutorial:

1. Get Started on your Research
2. Recognize Types of Information
3. Develop your Search Strategy
4. Evaluate your Sources

The modules are ordered, more or less, as though you are conducting a research project, starting with developing research questions and ending with using sources in your writing. In between, you will learn how to figure out what kind of sources to look for, where to find them, and how to evaluate them.

Some instructors may assign one module or all of them, depending on the requirements of your class.

Each Module Consists of:

- Written text
- Activities to try out your skills and test your understanding
- Short quizzes (linked through your course Moodle site) that will be graded

The modules should take roughly 20 minutes each to complete. You will be able to revisit the text and activity portions as many times as you like; however, you will only have one opportunity to do each quiz.

How to Move Around the Tutorial:

Use the arrows at the bottom of each page to move forward and backward through the modules. Or, use the Contents menu in the top left hand corner to go to a particular section.

Any Questions?

Please contact librarian Celia Brinkerhoff at celia.brinkerhoff@kpu.ca.

Acknowledgements

Source

Teaching and Learning, University Libraries. (n.d.). *Choosing and Using Sources: A Guide to Academic Research*. Ohio State University Libraries. https://ohiostate.pressbooks.pub/choosingsources/

PART 1. GET STARTED ON YOUR RESEARCH

Key Takeaway

Research is a process of *strategic exploration*, one that begins with learning how to ask the right question.

Learning Objectives

By the end of this module, you should be able to:

- Understand the difference between a search topic and a research question
- Identify the features of a reference article that can aid in further research

Navigation: How to move around this tutorial

This module should take roughly 15 minutes to complete.

Use the arrows at the bottom of each page to move forward and backward through the modules. Or, use the Contents menu in the top left hand corner to go to a particular section.

It's useful to think about this early stage of your research project as a process of exploration, one that will help you develop a research question that is going to be searchable. If a topic is completely new to you, you will likely want to find some background information in order to understand the context of your topic and how it relates to a larger picture. This exploratory process will also help you with any specialized terms associated with your topic that you might use in developing a search strategy. And sometimes, this initial exploration will also lead you to realize that your question might not be searchable, or that you are going to have to modify it a little. That's ok. A little work up front will save you time later.

Even if you already have some familiarity with a topic, some additional background work can help to bring a fresh perspective to your understanding of it.

Figure 1.1 Research as strategic exploration. Image by pixelcreatures.

Tip: Review your assignment

Before you get started on your research, make sure you understand the requirements of your assignment. Pay attention to the kinds of information sources you need and how you will be expected to incorporate them into your own work.

This page on analyzing your assignment from the KPU

Learning Centres can help you figure out what you need to do for your assignment

Source

Image:" Compass Map" by Pixelcreatures.

1. Narrowing a Topic

Defining your research question is a process of working from the outside in: you start with the world of all possible topics (or your assigned topic) and narrow down until you have focused your interest enough to be able to state precisely what you want to find out, instead of only what you want to "write about."

Going through this process can be the hardest part of doing research, but once you have a question that is realistically scoped (not too broad, not too narrow) it will guide the rest of your work.

The Process of Narrowing a Topic
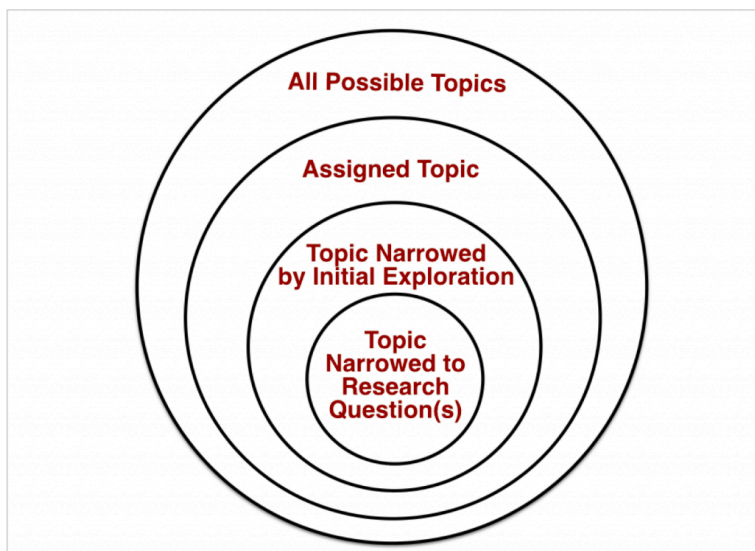
Figure. 1.2 Moving from broad topic to specific research question. Image by Ohio State University Libraries.

ACTIVITY: Which Topic is Narrower?

Now it's your turn. Practice thinking about narrower topics with these 3 examples. Click the arrow to show the next question.

> 🖼️ *An interactive H5P element has been excluded from this version of the text. You can view it online here:*
> *https://kpu.pressbooks.pub/doingresearch/?p=29#h5p-1*

TIP: Use Some of the 5 W's to Help Narrow Your Topic to a Searchable Question

Your assignment is to write on the topic of higher education. You decide you want to write about the high cost of tuition, but that is still too broad.

Start by asking some or all of the following questions.

Question	More Specific Focus
Who?	First year students, mature students, part-time students
What?	Graduation rates, degree completion, attrition, dropout
When?	Last 10 years
Why or how?	Financial burden, employment, student debt

From asking these questions, you might come up with a research question like this:

"How does the high cost of tuition impact the degree completion of mature college students?"

Source

Image: "Rq-narrow" by Teaching and Learning, University Libraries is licensed under CC BY-4.0.

2. But Avoid Getting too Narrow

Be careful about getting too specific with your research question. Not every question that you come up with will be searchable.

For the above question about college tuition, the important questions to ask would be who? and what? Trying to find information on the impact of rising tuition in a particular city or province will be too restrictive, and the location may, in fact, be irrelevant to the search. A large-scale study across Canada or North America would likely yield relevant information that could be useful to your question.

The bottom line is, you will be working toward a **balanced research question** that is specific enough to guide you in your research, but not too restrictive.

ACTIVITY: Find the balanced topic

Now it's your turn. Practice thinking about balanced topics with these 3 examples. Click the arrow to show the next question.

An interactive H5P element has been excluded from this version of the text. You can view it online here: https://kpu.pressbooks.pub/doingresearch/?p=470#h5p-2

3. Background Reading

As you are exploring your topic and figuring out ways to narrow it down to a searchable question, it is a good idea to do some initial reading. For one thing, you might not know much about your topic yet. For another, such reading will help you learn the terms used by professionals and scholars who have studied your narrower topic. Those terms might become your keywords or search terms later on, so keep them in mind.

Getting Your Words Right

It's important to understand that the search terms you use will have a direct correlation with the kinds of sources you find. And spending some time early on in your research learning relevant terms will save you time later on.

For instance, if you were going to do research about the risk of bird flu to humans, initial background reading would teach you that professionals and scholars usually use the term **avian influenza** instead of **bird flu** when they write about it. (Often, they also use H1N1 or H1N9 to identify the strain.) If you didn't learn that, you would miss the kinds of sources you will eventually need for your assignment.

Take a look at the Google search results using the terms "bird flu" and human risk vs. "avian influenza" and human risk. Compare the kinds of sources listed.

(Click on the thumbnail image for a larger view. Use your browser's back-button to return to the page.)
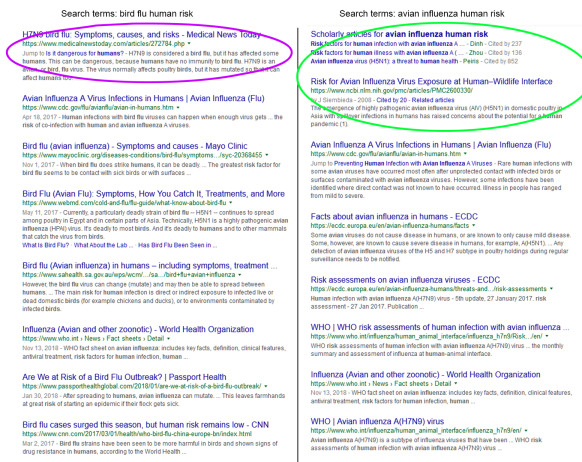
Figure 1.3 Comparing Google search terms

If you were to follow the linked results, you would see that the sources on the right come from government agencies and scientific journals, whereas the sources on the left come from news outlets or consumer health websites.

4. A Note about Wikipedia

Wikipedia is a popular place to start your research and will likely be one of the top results in a Google search of your topic. A well-developed Wikipedia article, with its content boxes and overviews, will provide a "road-map" of your subject and help you to focus on related and narrower sub-topics. Most introductory paragraphs will offer definitions, related terms, and key historical dates where relevant. Every article provides links to external references and further reading that can be useful sources for you to follow up with. In fact, no Wikipedia article can be published unless it is backed with a list of credible sources. See Wikipedia's own policy on Verifiability and its discussion of what can be considered a reliable source.

However, while it is not quite true that anyone can edit a Wikipedia article, there are concerns about the potential for inaccuracies and misinformation. This is especially true for controversial topics; a quick look at the "Talk" page of any article will reveal how editors are actively involved to ensure that information presented is free from bias and maintains neutrality. Unlike more traditional scholarly sources of information, content on Wikipedia is continually changing. For these reasons, your instructors may caution you against using it in your research, and will probably discourage you from citing it.

What you can do with a Wikipedia article is look at the external links, the supporting references, and the suggestions for further reading. As someone new to a topic, these sources can be a goldmine; try locating them in the library's collection or on the internet.

Activity: Watch, think and learn

The following short video from Civic Online Reasoning at Stanford University demonstrates how Wikipedia can be used effectively in early stages of your research.

📺 *One or more interactive elements has been excluded from this version of the text. You can view them online here: https://kpu.pressbooks.pub/ doingresearch/?p=732#oembed-1*

Source

Image: "Old version of Wikipedia logo" by Wikimedia Commons is licensed under a CC BY-SA 3.0.

Verifiability from Wikipedia the Free Encyclopedia is licensed under CC BY-SA.

Video: "How to Use Wikipedia Wisely" by Civic Online Reasoning is licensed under CC BY-NC-NC 4.0.

5. Use a Library Encyclopedia or Dictionary

Although you will likely start your background reading with a quick Google search, you should visit the library and its collection of reference materials early in your research. The library has access to many encyclopedias, dictionaries, and handbooks, both in print and online.

Encyclopedias and **handbooks** will provide:

Figure 1.4 The reference collection. Image by geralt.

- A broad overview of your topic
- Sub-topics and related issues
- Controversies and criticism
- Key thinkers or researchers in the area
- References, recommended articles, and links to further reading

Dictionaries will offer a definition of your term and related terms that will be important as you develop your search strategy.

From the Research Help guide linked on the library's homepage, you can find several of the library's reference collections listed on the Find Background Information page. Many subject-specific reference books can also be found on the various subject guides.

You can also access all of the library's reference books from your Summon search by focussing your results using the "reference" filter. Recall that Summon is the default search box on the library's homepage.

ACTIVITY: Watch, think and learn

The following short video from KPU Library demonstrates how to locate a source for background information using the library's Summon search.

📰 *An interactive H5P element has been excluded from this version of the text. You can view it online here:*
https://kpu.pressbooks.pub/doingresearch/?p=473#h5p-37

ACTIVITY: Use an encyclopedia article

The article below is from the Encyclopaedic Dictionary of Psychology and was found using the library's Summon search tool.

Click on the purple question marks to explore how an encylopedia can be useful at this stage of your research.

(Use Fullscreen to maximize the image, and your Esc button when finished.)

📰 *An interactive H5P element has been excluded from this version of the text. You can view it online here:*
https://kpu.pressbooks.pub/doingresearch/?p=473#h5p-3

After this background work, you are now ready to start developing the research question you will try to answer for your assignment.

Sources

Image: "Library" by geralt.

Video: "Finding Background Information" by KPU Library is licensed under CC0.

Waller, G. (2006). Eating disorders. In G. Davey (Ed.), *Encyclopaedic Dictionary of Psychology*. Routledge. https://search-credoreference-com.ezproxy.kpu.ca:2443/content/entry/hodderdpsyc/eating_disorders/0

6. Developing Your Research Question

By now, it should be clear that finding a research question is a process of exploration and refining: exploring a topic will lead to developing a question, and further refinement will help you to focus that question to something that is not too broad and not too narrow.

ACTIVITY: Watch, Think, and Learn

Take a minute to watch this short video on how to develop a research topic. Think about the steps the student takes starting from a wide open topic, to something too narrow, and finally, to finding a balanced topic that is searchable.

> *One or more interactive elements has been excluded from this version of the text. You can view them online here: https://kpu.pressbooks.pub/ doingresearch/?p=34#oembed-1*

Steps for Developing a Research Question

The steps for developing a research question, listed below, can help you organize your thoughts.

Step 1: Pick a topic (or consider the one assigned to you).

Step 2: Write a narrower topic that is related to the first.

Step 4: Do some background reading, using the Library's reference books. Do some initial research in a library database.

Step 5: Readjust your topic if you get too few, or too many, search results.

Step 6: List some potential questions that could logically be asked in relation to the narrow topic.

ACTIVITY: Summing up Module 1

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https://kpu.pressbooks.pub/doingresearch/?p=34#h5p-4

An interactive H5P element has been excluded from this version of the text. You can view it online here:
https://kpu.pressbooks.pub/doingresearch/?p=34#h5p-5

Key Takeaway

> Research is a process of *strategic exploration*, one that begins with learning how to ask the right question.

Well done! You have completed the text and activity portion of Part 1 Getting Started on your Research. You are welcome to review any part of this module at any time.

Source

Video: "Picking your Topic is Research" by North Carolina State University Libraries is licensed under CC BY-SA 3.0.

PART 2. RECOGNIZE TYPES OF INFORMATION

Key Takeaway

Information creation is a process that results in a variety of formats and delivery modes, each having a different value in a given context.

Learning Objectives

By the end of this module, you should be able to:

- Identify the various information types in order to match a research need with an appropriate source
- Describe the process of peer review in order to select quality sources for your research

Navigation: How to move around this tutorial

This module should take roughly 15 minutes to complete.

Use the arrows at the bottom of each page to move forward and backward through the modules. Or, use the Contents menu in the top left hand corner to go to a particular section.

Once you have your research question, you will need to locate the information sources appropriate to your question and the requirements of your assignment. Taking a minute to understand how information is created and delivered through a variety of formats will help you in selecting the best sources.

With so many sources available, the question is usually not whether sources exist for your project, but which ones will best meet your information needs.

Figure 2.1 Information overload. Image by Pexels.

Source

Image: "pile of covered books" by Pexels.

7. Types of Information Sources

Consider a topic such as the **safety of genetically modified food.** Wading into this large and controversial area, you will quickly discover that information about it comes from a wide range of sources:

- Blogs and opinion pieces
- Natural medicine and consumer health sites
- Scientific research articles
- Government and NGO sites
- Books, newspapers, and magazine articles

Each of these types of sources has different content, written by people with varying levels of expertise, and written for different audiences. And each of these types of sources will have a different value for you, depending on the context and requirements of your research need. Some assignments will require that you use scholarly, academic sources that have to undergo a lengthy editorial process and therefore take longer to appear. Other assignments may allow you to use less formal, popular sources of information that may be more timely.

Social media		real-time,
Website		possible c
Newspapers, news sites		up-to-dat general au
Magazines		current ev
Government/NGO		reports, st

Scholarly article   new resea

Scholarly book   in-depth of
audience

Encyclopedia, Wikipedia   overview,

Fig. 2.2 Types of information sources.

Sources

All images above are from The Noun Project and are licensed under CC BY 3.0 US.

- "Social Media" by Petai Jantrapoon
- "world wide web" by Wilson Joseph
- "Newspaper" by Kick
- "Magazine" by nareerat jaikaew
- "Government" by lathiif studio
- "Research" by Tanuj Abraham
- "Book" by Bertama Graphic
- "Encyclopedia" by Komkrit Noenpoempisut

8. What Kind of Information Do You Need?

Click the arrows below to learn about which types of information sources best meet various research needs.

> 🖥 *An interactive H5P element has been excluded from this version of the text. You can view it online here:*
> *https://kpu.pressbooks.pub/doingresearch/?p=45#h5p-6*

ACTIVITY: Match the resource with the research need

Think about which kind of resource would be best suited for each question.

> 🖥 *An interactive H5P element has been excluded from this version of the text. You can view it online here:*
> *https://kpu.pressbooks.pub/doingresearch/?p=45#h5p-7*

9. Popular and Scholarly Articles

For some of your research assignments, you will be expected to use "scholarly" articles. These may be called "academic" or "journal" articles, or more specifically, "peer reviewed" articles. In a later tutorial we will learn how to focus your searches in order to find these.

For now, it is useful to learn to recognize the difference between these types of publications so that whether you are searching in a library resource or on Google, you will be able to make some judgment about the kind of information source you are looking at and whether it will be appropriate for your assignment.

	Popular Articles	Scholarly Articles
Author	Journalists Professional writers	Scholars Faculty members Researchers Professionals in the field
Audience	General public	Other scholars or professionals
Visual Appearance	Often include color, photos, advertisements	Mostly text, but may include a few graphs or charts
Length	Tend to be short	Tend to be lengthy
Language	Can be understood by the average reader	Use professional jargon and academic language
Content	Gives a broad overview of issues of interest to the general public	Covers narrow topics related to specific fields
	Rarely gives full citations for sources	Includes full citations for many credible sources
Recommended For:	Enjoyable reading material	Sources for academic work
	Finding topic ideas	Professional development
	Learning basics or different perspectives for your topic	Learning about new research being conducted

Fig. 2.3 Some key differences between popular and scholarly articles. Image by adstarkel.

Source

10. Trade and Professional Sources

Depending on your area of study, you may also be asked to consider a third type of publication that is written for professionals and people within a particular field of work. These articles target a specialized audience, may report on primary research but from an applied or summary perspective, and may have advertisements of interest to people in that profession.

In Summon and some of the library's article databases, these publications will be called "trade publication" or "magazines".

Activity: Examine the following sources to find out what a trade publication is.

(Use + to maximize each image.)

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> https://kpu.pressbooks.pub/doingresearch/?p=485#h5p-27

11. Producing Information

The process of information creation follows a timeline. As soon as an event occurs, social media and online news sources are the first to provide coverage. Magazines and newspapers will follow shortly after, and journal articles and books take even longer to get published.

Knowing this will be important in your research: if you choose a very recent event to write about, you will likely not find information about it in a book or scholarly article. You may, however, need to expand your topic to look for a similar or related event, or broader treatment of the subject, to find sources that you can still use to support your writing.
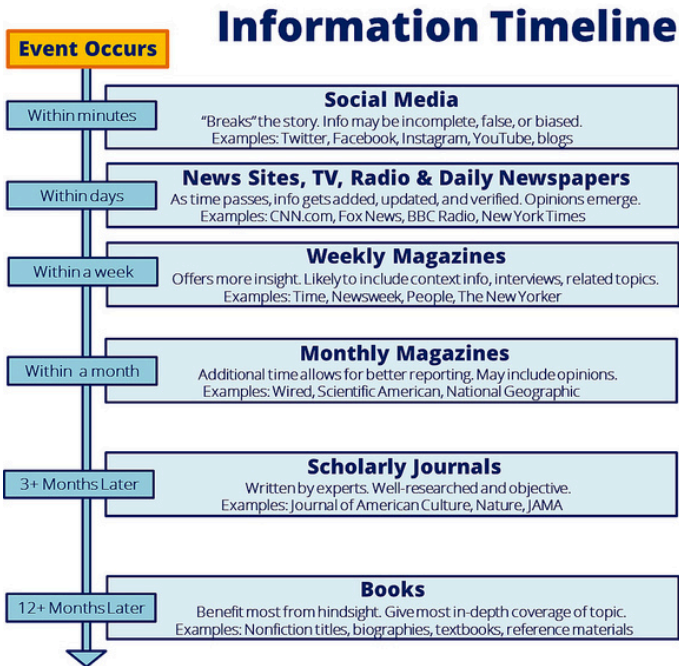
Information Timeline

Event Occurs

Within minutes — **Social Media**
"Breaks" the story. Info may be incomplete, false, or biased.
Examples: Twitter, Facebook, Instagram, YouTube, blogs

Within days — **News Sites, TV, Radio & Daily Newspapers**
As time passes, info gets added, updated, and verified. Opinions emerge.
Examples: CNN.com, Fox News, BBC Radio, New York Times

Within a week — **Weekly Magazines**
Offers more insight. Likely to include context info, interviews, related topics.
Examples: Time, Newsweek, People, The New Yorker

Within a month — **Monthly Magazines**
Additional time allows for better reporting. May include opinions.
Examples: Wired, Scientific American, National Geographic

3+ Months Later — **Scholarly Journals**
Written by experts. Well-researched and objective.
Examples: Journal of American Culture, Nature, JAMA

12+ Months Later — **Books**
Benefit most from hindsight. Give most in-depth coverage of topic.
Examples: Nonfiction titles, biographies, textbooks, reference materials

Fig. 2.4 Timeline of information creation. Image by adstarkel.

ACTIVITY: Explore the timeline

The following timeline details how the media covered an important news event in 2012. (Maximize the screen for best viewing and use Esc button when finished.)

> 🖳 *An interactive H5P element has been excluded from this version of the text. You can view it online here:*
> *https://kpu.pressbooks.pub/doingresearch/?p=49#h5p-8*

Sources

Images

"Information timeline" by adstarkel is licensed under CC BY-NC-SA 4.0.

"Police at Sandy Hook" by Voice of America, is in the Public Domain.

12. Understanding Peer Review

Your assignment may require that you include information from "peer reviewed" articles. These articles are published in scholarly or academic journals after they have gone through a lengthy editorial process which usually involves the author making many revisions. The reviewers themselves are experts in the same field, and judge the strength of the article on the originality of the research, the methods used, and the validity of findings. The highest standard of peer review is "double-blind," meaning that both the identity of the authors as well as the reviewers are kept anonymous in order to ensure that bias and subjectivity do not influence the process.

But be careful! Not all of the content in an academic journal is subject to peer review. There may be other content such as letters, opinion pieces, and book reviews that have been edited, but not necessarily gone through a formal peer review process.

ACTIVITY: Watch, Listen, and Learn

The following KPU Library video describes the process of peer review.

> *One or more interactive elements has been excluded from this version of the text. You can view them online here: https://kpu.pressbooks.pub/doingresearch/?p=50*

ACTIVITY: Summarize The Peer Review Process

An interactive H5P element has been excluded from this version of the text. You can view it online here:
https://kpu.pressbooks.pub/doingresearch/?p=50#h5p-9

But how can you, the researcher, recognize a peer reviewed article?

Fortunately, the library's Summon search and most of our databases have a filter or limit which will help you find the right type of information. Various databases will use different terms: look for "academic" or "scholarly" or "peer reviewed."

There are other clues you can look for.

ACTIVITY: Summing Up Module 2

Pick the correct statement.

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> https://kpu.pressbooks.pub/doingresearch/?p=50#h5p-10

> An interactive H5P element has been excluded from this version of the text. You can view it online here:
> https://kpu.pressbooks.pub/doingresearch/?p=50#h5p-11

Key Takeaway

Information creation is a process that results in a variety of formats and delivery modes, each having a different value in a given context.

Well done! You have completed the text and activity portion of Part 2 Recognizing Types of Information. You are welcome to review any part of this module at any time.

Source:

Video: "Recognize Types of Information" by KPU Library is licensed under CC0.

PART 3. DEVELOP YOUR SEARCH STRATEGY

Key Takeaway

Research is a *circular process* that involves asking questions whose answers will lead to revised questions or new lines of inquiry.

Learning Objectives

By the end of this module, you should be able to:

- Develop a search strategy in order to use research tools more efficiently
- Implement key features of library search tools to improve search results

Navigation: How to move around this tutorial

This module should take roughly 15 minutes to complete.

Use the arrows at the bottom of each page to move forward and backward through the modules. Or, use the Contents menu in the top left hand corner to go to a particular section.

You've developed a research question and identified main concepts to use as keywords. You have an idea of what kinds of sources you need and what is required by your assignment. Now it's time to consider how you will build a search strategy that will allow you to use the library's resources most efficiently.

It is useful to understand that the research process is *iterative*, which means the results of initial searches will help shape and improve your subsequent searches. As we learned in the video in Part 1, it is seldom a linear process that starts and ends with a single question.

You will likely perform a sequence of searches several times and use various tools, including Google and library resources, before getting a set of results that will meet your needs.

A Good Search Strategy Should Consist of the Following:

1. Keyword searching
2. Examining the results of initial searches and adjusting keywords if necessary
3. Using filters or limits
4. Citation tracking

Figure 3.1 Expert searching. Image by quimono.

Source

Image: "Question mark important sign" by quimono.

13. Strategy #1: Start with Just the Keywords

The first strategy in effective research is to start with a basic keyword search of your topic. Keep the focus on just the main concepts, or keywords, of your question. Typing a complete sentence or question into a search box, whether you are in Google or one of the library's research tools, will not give you as comprehensive or relevant results as just entering the two or three keywords that best reflect your question.

See what happens when you enter your search question, in natural language, directly into the library's Summon search:

The question is **"Should vaccinations be mandatory for school-aged children?"**

(Click on the thumbnail for a larger view. Use the back button in your browser to return to the page.)
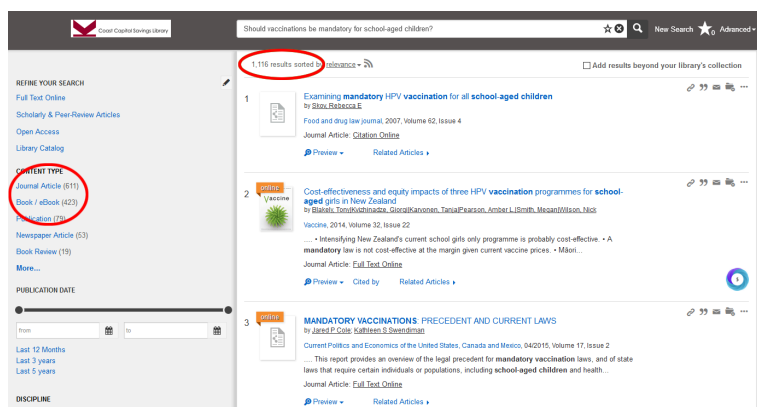

Figure 3.2 Search results from natural language query

Only a little over 1,000 results come back, which is not as many as you might expect considering that Summon searches everything the library has in its collection. Furthermore, the results are rather evenly split between journal articles and books.

Now, repeat the search again, but with just the keywords that are central to the question you are researching. Removing the non-essential words in the question would leave you with something like this:

"~~Should~~ vaccinations ~~be~~ mandatory ~~for school-aged~~ children?"

The search below was done using **mandatory vaccinations children**.

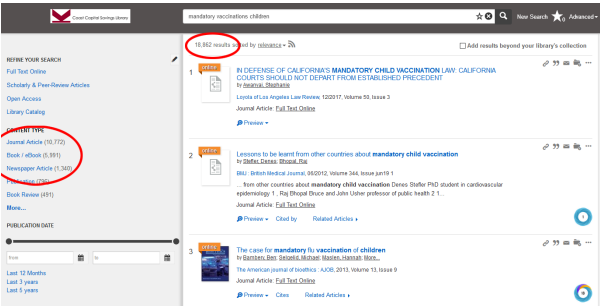(Click on the thumbnail for a larger view. Use the back button in your browser to return to the page.)

Figure 3.3 Search results using just the keywords

This search results in over 15,000 items, with many more journal

articles. That's because in the first search, Summon is looking for items in which ALL of the words of the search query are present. In the second search, only those three terms need to occur in the results. Furthermore, the words left out of the question are not essential to the overall strategy of the query.

Note that other keywords, such as **immunization**, are also used in the results.

Activity: Find the Keywords

An interactive H5P element has been excluded from this version of the text. You can view it online here:
https://kpu.pressbooks.pub/doingresearch/?p=55#h5p-12

14. Check your Bias

When thinking about researching your topic, be aware of confirmation bias, the tendency that most of us have to look for information that supports what we already believe to be true. This bias can lead us to ignore evidence or information that contradicts our own assumptions and to perhaps even make inferences about causal relationships where there may not be any. Confirmation bias is especially significant in highly-contested, hot-button issues that we feel strongly about. It may also be amplified by the sources we choose to get our news from.

When turning to Google or a library database for information, it is important to frame your questions objectively and without bias so that your search results are not merely confirming what you already believe to be true. Avoid any search words which may lead to a bias in the results; **negative**, **positive**, **benefits**, **harms**, and so on, could skew results in favour of one side or perspective.

And even the words themselves you choose can be inherently biased. Consider the difference between **anti-vax** and **vaccine hesitant**, similar terms that correspond to two very different groups of people. Searching with one or the other will bring you different results.

Remember, you are searching for a balanced treatment of the topic.

Activity: Examine the first few search results

Click the purple question marks in the following screenshot to examine the first few search results from the question: "**Why the minimum wage should not be raised**."

(Expand to fullscreen if you need to; use the ESC to exit.)

A better search would be **minimum wage AND unemployment** or any other concept you wish to investigate in relation to minimum wage, for example, **poverty** or **families**. You should see a mixed set of results coming from mainstream media and organizations from across the political spectrum.

Source

Confirmation bias by Wikipedia, The Free Encyclopedia is licensed under CC BY-SA 3.0.

15. Searching the Library's Collection using Summon

Most library's now employ what is called a discovery layer. You might think of this as a search engine for the library's entire collection. At KPU Library, our discovery layer is called Summon, and you have probably already used it if you've done any research at all.

   Summon is a great place to start your research. Using a few well-chosen keywords will bring back thousands of results, and then you will need to use various tools to narrow your search to more precise and relevant results.

   The following short video demonstrates the Summon search interface.

ACTIVITY: Watch, Listen, and Learn

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https://kpu.pressbooks.pub/doingresearch/?p=578#h5p-32

REVIEW: What are some key features of Summon?

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https://kpu.pressbooks.pub/doingresearch/?p=578#h5p-34

16. Strategy #2: Examine your Results

In the previous section we looked at search results using the library's Summon search tool and found a range of items coming from scholarly journal articles, books and ebooks, newspapers, and more.

If you were to examine just a few of the top results, you would quickly see related and more specific terms that might help in subsequent searches. For example, **vaccine exemption** and **vaccine hesitancy** provide slightly different perspectives on the topic and correspond to different disciplinary approaches. Articles about vaccine exemption would examine the issue from a legal perspective (an individual's right vs. population health). Articles about vaccine hesitancy might examine the issue from a philosophical or psychological perspective (opinions, trust in government, or misinformation). Similarly, you might find additional synonyms or alternate terms (**immunization**, **herd immunity**) that will help make your searches more complete.

As a researcher, asking yourself how these narrower and alternate terms relate to what you want to find out will be an important part of your search strategy.

Tip: Results Ranked by Relevance

Summon and most of the library's databases will return search results ranked in order of relevance. After

---

performing a search, always examine closely the top few items for more precise search terms, synonyms, or other related pieces that you might add to the next search.
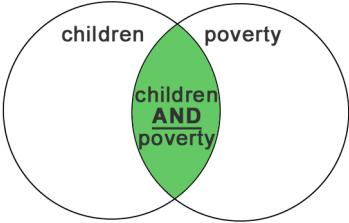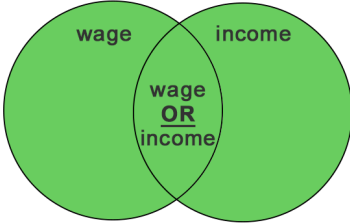
17. Creating a Search Statement

Once you have identified the important key words and any related or similar terms that describe your research question, it is useful to understand a bit about how to combine them in order to get a relevant and focussed set of results. Both Summon and most library databases allow for a set of operators, or specific words and symbols, that indicate how you want your search to be run. This is sometimes known as a search statement.

Employing even just one or two of these operators will vastly improve you results beyond just merely throwing in one or two keywords.

Boolean operators

AND	OR
Using **AND** will **narrow** your search results by combining all the keywords and phrases in your search statement. The more words you combine with **AND**, the **fewer results** you will find.	Using **OR** will **broaden** your search results by retrieving sources that contain at least one term. This operator is useful when there are alternative or related terms you need to use in your search. The more words you combine with **OR**, the **larger** the number of results you will find.

example: children **AND** poverty	example: wage **OR** income
All results must contain both the words children and poverty.	Results will contain either or both of the terms.

Phrase searching

To find an exact phrase use quotation marks to exclude results that do not contain the exact phrase. For example, using quotation marks around **"social media"** will find results containing the exact phrase (the words social and media next to each other). Without quotation marks, the database finds the word social and the word media separately, and you will get search results about social relationships portrayed in media, and other unrelated topics.

This is also useful when searching for an author's name (e.g. "George Orwell"), and article, book or film titles, (e.g. "Brave New World").

Parentheses and nesting

Use parentheses or brackets to group keywords joined by OR, in order to include synonyms or related terms. The database will search for what is grouped inside the parentheses first.

Example: **(young adults OR adolescents) AND gaming**

By using parentheses, you can ask a search engine to perform several Boolean searches at the same time. It will first perform

the search enclosed in parentheses before moving on to the other search terms. This is called nesting.

Example: **(obesity OR overweight) AND (young adults OR adolescents) AND women**

Truncation and wildcards

Broaden your search results by using a truncation symbol that allows you to search for alternate word endings. The **asterisk *** is the most common symbol, but check the help option in a database to see which symbol to use.

Example: searching for **statistic*** will return results with the following words: **statistic, statistics, statistical**

Wildcards also increase your search results by including words with different spellings. Wildcard symbols vary by database so check the help option to see which one to use.

Example: searching for **wom?n** will return results for **woman or women**. Searching for **labo?r** will return results for both **labor or labour**

18. Move to a Database

Move to an Article Database

Moving your research over to one of the library's databases will bring a more focussed set of results.

Our earlier keyword search showed us that vaccine hesitancy might be a useful concept for finding information about what motivates some people to refuse vaccinations for their children. Doing a search with the term "**vaccine hesitancy**" in Academic Search Complete, the library's largest multi-disciplinary database, yields the following results.

(Click on the thumbnail for a larger view. Use your browser back button when finished.)

Figure 3.4 Database search results

The majority of articles using the term "**vaccine hesitancy"** come from academic journals, indicating that it is a concept or term used by researchers or scholars in a variety of fields, but not so much in the popular or mainstream press. A close look at the subject terms also provides an indication of how the results are focussed: some will concentrate on public health, others on parental attitudes, and others on immunization more generally. This kind of strategy tells you how the issue is approached by different perspectives, and what might be most relevant for your own research.

See this page for a list of article databases the library subscribes to.

19. Using Academic Search Complete

The Library subscribes to more than 200 databases. Some of these are subject specific, and some are multi-disciplinary. Over time you will learn to use those databases most relevant to your field of study, but a good place to explore how you can search with more precision for academic and peer reviewed articles, is with a large database such as Academic Search Complete. You will be searching the contents of over 6,000 journal titles, and using the powerful tools within the database to refine your results.

New to database searching? Watch this short video on how to build a search, and the tools that will help you manage your results.

ACTIVITY: Watch, Listen, and Learn

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https://kpu.pressbooks.pub/doingresearch/?p=592#h5p-33

SUMMARIZE: Review the key features of Academic Search Complete database

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https://kpu.pressbooks.pub/doingresearch/?p=592#h5p-35

20. Use the Library Catalogue

Try the Library Catalogue

A search of the library catalogue will yield books/ebooks, as well as videos in the collection. Again, results are ranked by relevance. Examining the first few items in the list will give you further ideas for searching. You may find books whose entire contents will be useful to your search, or you may find edited works, with a single chapter relevant for your research.

ACTIVITY: Watch, Listen, and Learn

The following brief video from KPU Library introduces you to searching the library catalogue, including using subject terms and filters.

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://kpu.pressbooks.pub/doingresearch/?p=352

You can access the library catalogue directly by selecting it from the library's homepage, above the Summon search box.

ACTIVITY: Analyze the Details of a Book

The image below was taken from the catalogue record for a book on vaccines and children.

Click on the purple question marks to see what kind of information about an item is available in the catalogue. Use this to further inform your search.

(Use Fullscreen for an expanded view and your keyboard's ESC button when finished.)

> 🖥 *An interactive H5P element has been excluded from this version of the text. You can view it online here:*
> *https://kpu.pressbooks.pub/doingresearch/?p=352#h5p-13*

Source

Video: "Catalogue Search Strategies" by KPU Library is licensed under CC0.

21. Strategy #3: Add Some Filters

An effective search strategy makes use of the specialized features within the library's search tools to focus on the kinds of resources you need. Summon, library databases, and the catalogue have features called **filters** or **limits** that allow you to further refine your results list in a few ways.

Recall in the second module you were introduced to the idea that information comes in a variety of sources; part of your strategy should be to ensure you are getting the content you need. Does your assignment require that you use only certain kinds of sources? Is there a date restriction? Can you use a video?

> ### Tip: Use a filter or limit
>
> After an initial search, look for these tools to further refine your search

What do you need?	Filter/Limit
Scholarly journal? book/ e-book? newspaper article? video?	Content type or source
Recent? last 10 years?	Publication date
Focussed on a specific subject	Subject headings, discipline, or topic

ACTIVITY: Selecting the Best Limits

Click on the arrows to answer the 4 questions below.

An interactive H5P element has been excluded from this version of the text. You can view it online here: https://kpu.pressbooks.pub/doingresearch/?p=58#h5p-14

22. Strategy #4: Citation Tracking

A final strategy for finding more sources to support your writing is to examine the works cited by the authors of the sources you find.

Figure 3.5 Scholarship as a conversation. Original image by 905513.

Consider that scholarship is a conversation among researchers on a particular subject, with everyone offering evidence, theories, and criticism to advance what is known and what *may not* be known about a topic. Your task is to understand what connections are being made between these viewpoints, how you will integrate them in your own work, and what conclusions or advances you might be able to add.

In practical terms, as a researcher, this means paying attention to the reference lists or bibliographies of the works you find in your initial searching. This is known as **citation tracking** and is an important strategy to use to find additional resources.

There are a couple of ways to do this:

1. Follow the authors and works mentioned in the introduction or literature review section of your first article

2. Use the links that Summon, library databases, and sometimes Google Scholar provide to locate any articles that cite your article, as well as other recommended or related works. Look for: **Cited By**, **Recommended**, or **Related** articles

ACTIVITY: Click on the Hotspots

The image below is taken from the introduction of an article on populism, found in one of the library's databases. Click on the purple question marks to view details from the article record.

(Use Fullscreen to expand and your keyboard's Esc button when finished.)

📠 *An interactive H5P element has been excluded from this version of the text. You can view it online here:*
https://kpu.pressbooks.pub/doingresearch/?p=60#h5p-15

Sources

Image: "Citation circle" adapted by author from original 905513.

Article: Moffitt, B., & Tormey, S. (2014). Rethinking populism: politics, mediatisation and political style. *Political Studies*, 62(2), 381–397. https://doi.org/10.1111/1467-9248.12032

23. Library Research Tools and When to Use Them

Throughout this module, we have referred to various library research tools, but we have not discussed when to use them. Learning which tools to use at the various stages of your research is also another strategy for finding the sources best suited to your assignment, and will decrease the amount of time you spend looking.

(Click the tools below for an image of their search interfaces.)

Tool	What's in it?	When should I use it?
Summon	Everything the library has in its collection: • books/ebooks • journal/magazine/ newspaper articles • government documents • reference books • videos	Start here when you are new to your topic or assignment. Summon is great for seeing the breadth of what is available on your subject.
Catalogue	Almost everything the library has in its collection, except articles • books/ebooks, • government documents • videos	Use this when you know you are looking for a book or ebook, or when you are looking for a specific title. You will NOT find journal articles here. The catalogue does not have the full-text of items, but many books will have a table of contents.
Article Database	Specialized or multi-disciplinary • peer reviewed journal articles • some trade/ professional publications • some newspapers	Use a database when you know you need peer reviewed journal content. Learn which databases are focussed on particular subjects.
Google Scholar	• scholarly journals articles • conference proceedings • research/ government publications	While not technically a library tool, Google Scholar with its Library Links feature will bring you results from beyond the library's collection as well as subscribed content. Ask us how to enable this feature. NEVER pay for articles!

ACTIVITY: Which Research Tool is Best?

Pick which tool would best serve the research need. Click the arrow to answer the next question.

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https://kpu.pressbooks.pub/doingresearch/?p=61#h5p-16

24. Put all your strategies to work

ACTIVITY: Summing up Module 3

Pick the correct statements.

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> *https://kpu.pressbooks.pub/doingresearch/?p=336#h5p-17*

> 🔖 *An interactive H5P element has been excluded from this version of the text. You can view it online here:*
> *https://kpu.pressbooks.pub/doingresearch/?p=336#h5p-18*

Key Takeaway

Research is a *circular process* that involves asking questions whose answers will lead to revised questions or new lines of inquiry.

Well done! You have completed the text and activity portion of Part 3 Developing your Search Strategy. You are welcome to review any part of this module at any time.

PART 4. EVALUATE YOUR SOURCES

Key Takeaway

Evaluating a source of information involves *asking critical questions* about its suitability for your research project.

Learning Objectives

After this module, you should be able to:

- Identify indicators of authority to determine the credibility of information sources
- Evaluate the relevance of a source for a particular research need, based on considerations of currency, accuracy, and purpose

Navigation: How to move around this tutorial

This module should take roughly 15 minutes to complete.

Use the arrows at the bottom of each page to move forward and backward through the modules. Or, use the Contents menu in the top left hand corner to go to a particular section.

At this point in your research, you've likely found several sources of information that might work for your assignment. Now it's time to take a closer look at these sources and make sure they are the best ones for your research purposes. This is true of information you find in a general Google search as well as the library resources. Whether you are considering a blog post or a journal article, you will need to pay attention to several factors, including not just the expertise of the author, but also the purpose, quality, and relevance of the information before deciding whether or not to use it in your assignment.

The bottom line is that most experienced searchers view the information they find with a *degree of skepticism* as well as an *open mind*.

Figure 4.1 Being an effective researcher. Image by GotCredit.

Source

Image: "Expert key" by GotCredit is licensed under CC BY 2.0.

25. Checklists

There are many checklists available to help guide you through this critical process of evaluating your sources; you may have heard of the CRA(A)P test, RADAR, Rate my Source, or something similar. All of these lists are really just devices to help novice researchers remember the criteria by which they should evaluate the information they find.

Beyond checking that your source satisfies some of the criteria suggested below, your search should also involve digging a little deeper. What can you learn from a Google search about the site, author, or publisher?

The following list is meant to be a starting point for you to develop your own internalized set of questions.

Click the arrows below.

An interactive H5P element has been excluded from this version of the text. You can view it online here:
https://kpu.pressbooks.pub/doingresearch/?p=250#h5p-22

26. Question Authority

In terms of evaluating a source of information, the expertise or credibility of its author is extremely important. This is the case not only for your university assignments, but also your personal information needs; in general, we want to know that our sources are reliable and our information sound.

But this idea of authority can be complicated. Within the academic publishing world, determining someone's expertise is somewhat straightforward in that advanced degrees, a publishing record, and an affiliation with an institution of higher learning or research are the conventional indicators of authority.

Outside of the scholarly community, there are other indicators of an author's credibility; other communities may recognize authority or expertise by means of specific credentials or practical experience. For example, we generally rely on articles in the mainstream press because professional journalists are supposed to abide by a code of ethics and have a lengthy publishing record.

When it comes to verifying an author's credibility within the scholarly literature, library research tools can help us to make a quick determination of authority. Recall that in the last module we looked at using the scholarly or peer reviewed limits in Summon and library databases to find results that are published in academic journals.

But looking a little more closely at the author and the journal, and perhaps doing some quick Google searching, can help us to make a better decision about the author's expertise in a particular area. Having an advanced degree in theoretical physics does not necessarily make someone an expert in evolutionary biology.

27. Who is the author?

ACTIVITY: Check the Authors

Take a look at the following record for an article from the library's Academic Search Complete database. Click on the purple question marks to see how an article record can provide you with clues as to the authors' credibility.

(Use Fullscreen to expand and your keyboard's Esc button when finished.)

> 🖳 *An interactive H5P element has been excluded from this version of the text. You can view it online here:*
> *https://kpu.pressbooks.pub/doingresearch/?p=265#h5p-19*

Tip: Go one step further

Going a step further to search for your author on **Google Scholar** will lead to their publication record. What else have they written?

You might also do a quick Google search for the

---

journal's homepage. Look for author submission
guidelines where a peer review process should be
described, as well as the scope and aim of the journal.

28. Consider Currency

To evaluate the currency of your information source, you will first need to know the requirements of your assignment. You may be able to use older sources, or you may need to look for current information. Currency is also somewhat discipline or topic dependent; research in history or literature may involve using sources older than 10 years but in the sciences and technology, up-to-date information can be extremely important.

And sometimes, our research may involve examining a change in thinking or perspective over time, in which case you may need a variety of sources spanning a certain period.

Learn to ask the following kinds of questions:

- What is the publication or copyright date?
- Is it a reprint of a previous work? a new edition or revision?
- Is there newer information available on the topic?
- How might ideas and perspectives have changed since the work was published?

ACTIVITY: Decide Whether the Following Sources are Current Enough for the Topic

Chose the correct answer. Click the arrow to answer all 3 questions. (Maximize the image by clicking the plus +.)

An interactive H5P element has been excluded from this version of the text. You can view it online here:
https://kpu.pressbooks.pub/doingresearch/?p=65#h5p-20

29. Check for Purpose and Accuracy

Making some judgment as to the purpose of your source will also help you determine whether the information it contains is accurate. Asking why something has been published, what overall purpose its author had in creating and sharing it, is part of the critical assessment you will need to do in order to decide whether you should use it for your research.

For peer reviewed journal articles, books published by scholarly or professional publishers, government reports, and stories from mainstream news outlets, you can be fairly confident that the purpose behind such publications is to provide unbiased information or to contribute to knowledge about a certain topic. A large part of a formal review process includes careful fact-checking by the reviewers.

But evaluating sources from your Google search requires close scrutiny. Ask why a website exists. Are the authors or creators likely to be using unbiased information? Might they be motivated to spread inaccuracies or misinformation? What evidence do they use to support their claims?

ACTIVITY: Watch, Think, and Learn

Take a few minutes to watch this short video from KPU Library on how to evaluate sources. Think about the techniques used to determine the underlying purpose and potential bias of a website.

One or more interactive elements has been excluded from this version of the text. You can view them online here: https://kpu.pressbooks.pub/doingresearch/?p=67

Source

Video: "Evaluating Sources" by KPU Library is licensed under CC0.

30. Beyond Checklists: The SIFT Method

So far we've looked at ways to evaluate sources of information according to some fairly simple criteria. Now it's time to dig a little deeper and learn to ask questions about a source that can quickly help you decide whether to trust it or move on to find something better.

What follows is an adaptation of the SIFT (The Four Moves) method, a strategy for making a quick assessment as to whether or not a source of information is reliable and worthy of your attention. This method was developed to teach college students a shorter version of what experienced fact-checkers regularly do when confronted with news sources that are unfamiliar.

Move #1: STOP

The first thing to do when looking at a source of information is to **STOP**. Take a brief pause and ask yourself what you already know about the author, publication or website. Are they familiar to you? Do you already know them to be a reliable source?

Activity: Do you know these sites?

You are researching the topic of whether municipalities should add **fluoride** to public **drinking water**. The screenshot below shows a snip of some of the top results for this search. Most of the sites, or at least their domains, should be easily recognizable: Harvard School of Public Health (**.edu**) and the Centres for Disease Control (**.gov).**

Even if you do not recognize HealthLinkBC, a simple click on the link would indicate that it is part of the BC Ministry of Health (**.gov.bc.ca**).

(Click on the image to enlarge it. Use your browser's back button to return to this page.)
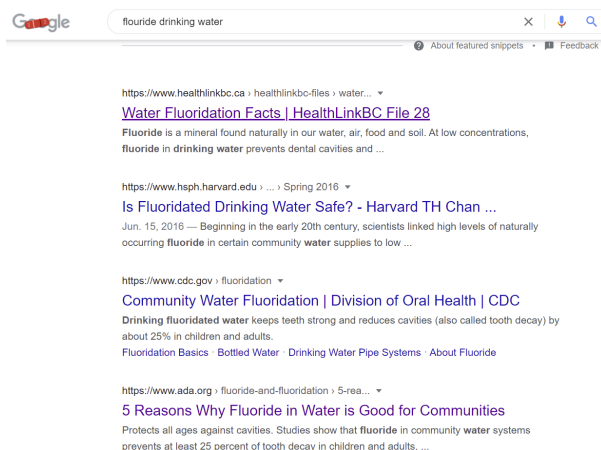

Figure 4.2 Top search results for fluoride and drinking water

If you are confident that your sources are known to be reliable, you don't need to go any further. But if you are not familiar with an author or site, consider using the next 3 moves.

Move #2: INVESTIGATE THE SOURCE

Exploring the source means finding out whatever you can about its author, publisher, sponsoring organizations and partners, and so on, **before** you spend much time on reading it. Knowing the context of a source will help you to be aware of any potential biases, hidden agendas or purposes, and even misinformation.

A key part of this move is to use something that digital literacy experts call "lateral reading". Making a habit of reading through various external sources **about** your source will help you assess its credibility and appropriateness for your research. This involves getting off the page, opening up a new tab (or three!) and **investigating** the source itself. In their initial stages of information gathering, fact-checkers frequently use this strategy, investing more time in reading about the site up front before turning their attention to the content.

Activity: What can you determine about this site?

The previous search on **fluoride** and public **drinking water** also led to this result, a story on the website Natural News. (Link opens in a new tab. Keep it open to answer some questions about the site.)

Never heard of Natural News? Now is the time to investigate this source!

Open a new tab or window and do a quick Google search for the website or the owner's name. (You can find his name on the About page of the website.) Scan the first few results. How is the website or its owner regarded by other sources, namely the mainstream press and Wikipedia?

Open another tab and do a quick search for the topic fluoride and drinking water. Notice that the Water Fluoridation page on Wikipedia includes a link to controversy surrounding this topic. Go one step further and open the Talk page for this article. What do the comments from Wikipedia editors indicate?

Head back to the Natural News story. What might the heavy presence of advertisements for various alternative and natural health products suggest about the purpose of this site?

Move #3 *FIND BETTER COVERAGE*

Investing a bit of time up front in order to determine the quality of a site will pay off. Look around for better coverage of your topic, whether this means re-wording your initial search or following the references of other sites. What you are aiming for is an understanding of the context of a topic and who the credible authors and organizations are that can provide consensus and agreement.

Remember, you are not obligated to stay with any specific source. Keep looking, and you will find something better.

Activity: Can you find a better source?

It is beyond the scope of this section to provide all the tips for better searching in Google, but there is one strategy you might consider using for our water fluoridation topic: the site or domain limit in Advanced Google search. For this subject, it might be appropriate to consider searching educational sites or perhaps Canadian governmental sites, which would include information from scientists and public health professionals.

Going back to Google and trying a new search for water fluoridation, see what happens when you limit the search to the domain **.edu** or **.ca.**

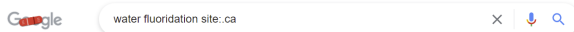Click the images below to see the results list. Where are the majority of sites coming from?

Move #4 *TRACE CLAIMS QUOTES AND MEDIA TO THE ORIGINAL CONTEXT*

Much of what we find online comes to us out of context and sometimes could be a misrepresentation of original stories, reports or findings, either intentional or by mistake. If the source you are considering claims justification through citing research or referring to an earlier source, go one step further and trace back to the original. Did the source get it right? Have they distorted findings or only partially considered what was reported?

Activity: Find the original source

Our earlier Natural News story included a reference to an article published in the journal *Environmental Health.* However, rather than linking out to the scientific article, the author of the story instead points to other Natural News pieces on the topic, making it difficult for the reader to assess the accuracy of the claim and ultimately casting doubt about the trustworthiness of this site.

Checking for the original article using the library's Summon search, you can see for yourself that the authors conclude that any association between levels of fluoridation and ADHD *warrants further study.* A Google search of the article shows several leading scientific journals point out methodological flaws of the study and caution against making causal connections.

Sources

Text adapted from SIFT (The Four Moves) by Mike Caulfield is licensed under CC BY 4.0.

Text adapted from Teaching Lateral Reading by Stanford History Education Group is licensed under CC BY-NC-ND 4.0.

"Water Fluoridation Found to Increase Hypthyroidism Risk by 30%" (2018) from Natural News.

"Water Fluoridation" by Wikipedia is licensed under CC BY-SA 3.0.

Article: Malin, A. J., & Till, C. (2015). Exposure to fluoridated water and attention deficit hyperactivity disorder prevalence among children and adolescents in the United States: an ecological association. *Environmental Health: A Global Access Science Source*, 14, 17 https://ehjournal.biomedcentral.com/articles/10.1186/s12940-015-0003-1.

31. Putting it all together

The following graphic illustrates the process of determining the credibility of sources you find on the internet. It is can also serve as a useful reminder of the critical questions you should be asking of all the sources you find in your research, including those you find in the library.

Figure 4.4 How to spot fake news. Image from IFLA.

Source

Infographic: "How to spot fake news" by IFLA is licensed under CC BY 4.0.

32. Summing up Part 4

ACTIVITY: Summing up Module 4

Your research question is: **What are the potential harms and benefits of e-cigarettes?**

Decide which of the two sources is better. Use the arrow on the right to move to the next question.

📔 *An interactive H5P element has been excluded from this version of the text. You can view it online here: https://kpu.pressbooks.pub/doingresearch/?p=290#h5p-21*

> ### Key Takeaway
>
> Evaluating a source of information involves *asking critical questions* about its suitability within the context of the research need.

Well done! You have completed the text and activity portion of Part

4 Evaluate your Sources. You are welcome to review any part of this module at any time.

33. Completion

Congratulations! This marks the end of KPU Library's tutorial, *Doing Research: A Student's Guide to Finding and Using the Best Sources.*

Throughout these modules we have tried to demonstrate one way for you to approach your research, starting with developing a searchable question and ending with critically examining the sources you will use in your writing. Along the way, we have emphasized that research is not a linear, straightforward process but one that involves both exploration and reflection and requires you to continually ask questions.

If you have questions about your specific research needs, or what library resources can best help you, don't hesitate to ask a KPU Librarian.