Welcome to the NJIT Library Lesson Using Web Search Engines.

- After watching this lesson, you will be able to
  - Identify differences between search engines, meta search engines, and subject directories
  - Use Boolean Commands AND OR and NOT
  - Identify the proper use of Wikipedia in the research process.
  - Describe information available on the free vs. invisible web.

Do you know Google works? Google returns results in order of popularity.

The results seem relevant but a popular website on a topic is one with the most clicks and links leading to it. Popularity does not work well for academic research.

Each search engine has their own algorithm for determining their results list, so it’s important to know how to search more than just Google. It’s good to learn what Google stores in their huge collection of websites and how they organize their results.

A lot of student say that Google through Searches EVERYTHING.

That isn’t quite true. Google can only reach what is on the surface or the visible web.

Deep down on the invisible web are specialized databases with dedicated search engines, paid information, dynamic web pages, and restricted access information.
Do you know about subject directories or meta search engines?

Subject directories are the web organized by topic. This is done by humans.

Meta Search engines will search many search engines for you and display the results on one page. Robots collect search engine results.

Before there was Google, people realized the web was not organized and tried to create a way to find things—they tagged (indexed) to selected websites/DMOZ and ILP2 are examples of subject directories. These are non-commercial and can be searched but have a finite pool of resources—selected by people—not crawled by a bot.

Dmoz is open source and the majority of the work is done by volunteers. Their goal is to organize content on the internet, not make money. Google actually uses this to fuel their similar pages. Here you can see the different Open Directory categories and different open directory sites for Robots. Note how Robots are placed both in Computers and Games.
Ixquick is a metasearch engine - it display results from many search engines at once. The search engines it searches are at the top. Ixquick lists stars next to each result to indicate how many times it appears in a search engine’s top 10. This is significant because search engines choose results in different ways, and each approach works well in some cases and poorly in others. A result with many stars was chosen for many different reasons, and is a consensus choice of many search engines. Also, while irrelevant Web pages can be "optimized" to fool a single search engine's algorithm, it is much harder for a page to fool all the search engines.”

(Narrator reads slide)

Databases use Boolean Commands. Most search engines use Boolean commands for searching and place an "and" between your search terms.
- And will combine terms and return results that contain both terms
- OR will return results that contain either term
- Not will exclude a term.

The following slides show examples in Google for better search results. You may have never used these terms before as Google returned the most popular results to you. Now that you are doing academic research, your searches need to be precise not popular.
Here we searched for humanoid robots. Google searched each of the words we entered separately with an “AND” in between. We got 867000 results. Looking through even a fraction of these is time consuming and frustrating!

Here we placed “humanoid robots” in quotes to find websites that used this phrase. We added “OR androids” There are fewer results and they might be more on target.
Using Web search engines storyboard

Now I went to the advanced search page and limited to .edu websites. You can also just type site:.edu (site colon dot edu)

Now I have more precise results I can use for academic research.

Finally we have Wikipedia. These pages come up often in a Google search. There are pros and cons of Wikipedia

Professors tell you not to use Wikipedia mostly because anyone can change it. That’s true, though sometimes it’s hard to keep false information on there as people monitor it. Other encyclopedias hire experts, but since Wikipedia is written by volunteers, there might be essential information missing.

Are you aware that you are expected to do much more research than just searching an encyclopedia? You need to find information written by the experts and they publish in scholarly journals and books more often.
But you should use Wikipedia to find background information, get a list of words to search.

Another pro – if you look lower on the page, you can find references to articles, books, websites (next slide).

Another tutorial will show you how to interpret citations so that you can find these references easier. The ones that you might need the most are not links, but citations to items in the library, that might still be accessible online through the NJIT library portal.

If you need help, you can Ask a librarian. Click on the ask a librarian link in the upper right hand side under Our Top Three Most Requested Services.
Librarians are available to help you, you may reach us by chat, email, phone, or stop by. Our typical hours are listed here. Thank you for watching this library lesson.