Workshop Objectives:

1. Learn how to conduct effective searches on the World Wide Web.
   a. Learn how to guess URLs.
   b. Learn about phrase searching
   c. Learn about using Boolean logic to focus your search
   d. Learn about directories.
   e. Learn about META search engines
   f. Learn about field searching
   g. Learn about search engines and search engine resources.
   h. Learn about the “invisible web”

Software to be used:

1. Microsoft Internet Explorer

End product of the workshop:

1. Knowledge about conducting basic web searches.
2. A folder of “favorites” with links to search engines, search engine resources, educational search engines, and sites that you locate.
3. Knowledge about conducting advanced searches using Boolean logic and field searches.

Teacher Licensure courses where workshop material would be useful:

1. All
**Terms to Know: (In my own words.)**

1. **Search Engines:** A service that helps people locate individual web pages on the WWW. Search engines use special computer programs to create and index their database of web pages. *Examples: Google or AltaVista*
2. **Boolean:** A way to refine your search, on some search services, using AND, OR, NOT, and AND NOT with your search terms. *Example: Saturn NOT car*
3. **+ - System:** Another way to refine your search, on some search services, by using + and – directly in front of your search terms. *Example: Saturn -car*
4. **Directories:** A search service that usually uses humans to sort web pages into categories. Looking for Saturn in Yahoo’s science directory will not return results about Saturn the car. *Example: Yahoo*
5. **Field Searching:** Some search services allow you to tell them where to look for the terms in your search. For example, you can specify to look for the terms in the title or URL of the web page.
6. **META:** A service that searches the databases of multiple search engines and returns results from multiple search engine. *Example: metacrawler.com*
8. **Limit searching:** Some search services allow you to refine your search by specifying what results you would like to see. For example, you can specify to see only results from .edu or .gov sites, or you can limit your search by language (English, German, Spanish, etc.).
9. **Truncation:** Some search services allow an asterisk at the end of an abbreviated word to find all forms of that word. For example, off* will find office, offices, officer, officers, official, officials, etc..
10. **Phrase searching:** Most search services allow you to place names, phrases, and words that are found together inside of quotation marks to force the search service to find the words exactly as they appear. For example, searching for Colorado State University without quotation marks will return results with any of the words Colorado, State, and University in any order.
11. **Query:** The exact words you enter into a search service. For example: science “lesson plans”
12. **Results:** The display of web page abstracts that the search service found for your query.
13. **The Invisible Web:** Web pages that standard search engines are unable to locate. These may be web pages that are created dynamically or web pages within a database that the search engine is unable to index.
14. **Subject Guide/Gateway:** A collection of web site links on a specific topic put together by an expert in the field.
15. **Database (Web):** A site, such as a library catalog, that stores large amounts of data related to their organization. Most standard search engines are unable to index these databases. You must locate the homepage of the particular organization, such as ERIC, to search within their database. These specialized databases often include useful information that cannot be located by performing a search with a popular search engine.
16. **Dynamic Web Page:** A web page created “on the fly” by the user. For example, a web page created by salary.com is dynamic. You tell salary.com the parameters of the career and it creates a “dynamic” web page about the job. A search engine cannot index this type of dynamic page.

**Integration Concepts:**

1. Effective web searching can be integrated into any class. There are many unique and compelling resources that can only be found on the World Wide Web. Among these resources are collaborative and real-time projects. Knowing how to find these sites is important for any teacher who wants to integrate the Internet into their classroom.
2. Teach students how to search the web effectively. Then provide students a topic to research using the WWW.
3. Have students search the web to find images, animation, and sound to supplement their projects.
4. Have students search the web to find on-line tools to help them with their projects and homework.
5. Have students search the web to find “ask-an-expert” web sites.
6. Have students search the web to complete WWW scavenger hunts and webquests.
7. Have students search the web to create a folder of favorites for your subject area.
8. Have students search for and evaluate content on the web.
A note about what can and cannot be found on the web:

You have probably heard people say that you can find anything on the World Wide Web. While there is a lot of information on the web you cannot find “everything” on the web. Conducting a search through a university library database will yield numerous documents that are not available on the web. For example, currently my master’s thesis cannot be found on-line. However, a search in Colorado State University’s SAGE database will locate this paper. When conducting a literature review it is still imperative to utilize sources such as your local library’s catalog database or other databases such as ERIC. They can locate documents that search engines are unable to locate. There are other resources that are difficult to locate on the World Wide Web using popular search engines. Finding these resources may require using a specialized search engine or being referred to them by an expert in the field. Common search engines cannot index web pages that are created “dynamically” by the user. These dynamically created web pages and web pages located within databases that cannot be indexed by search engines are called “the invisible web”. Locating these invisible web pages requires more than the use of a popular search engine. Individuals seeking these “invisible web sites” must be directed to the home page or organization where they are originated. Examples of dynamically created pages include those pages created by the US Census Bureau. You actually create the page that you will view “on the fly” by selecting the state, county, and type of statistics you are looking for. Search engines cannot index this type of dynamic web page. To utilize this information you must be aware of the US Census Bureau’s home page. For example, typing “demographics about Saguache County, Colorado” into a search engine will not link you to a dynamically created homepage by the US Census Bureau. In addition to dynamically created web pages there are also web pages that are located within databases that cannot be indexed by most search engines. For example, the database ERIC contains thousands of education abstracts that search engines are unable to index. These specialized databases exist for every subject. To take advantage of these databases you must be aware of the organizations homepage. Often, the best way to become familiar with these databases is to visit the home page of respected associations and organizations. These organizations will usually provide links to useful databases related to their subject. You may also locate the root level homepage for these databases by typing the subject followed by the word database in a search engine, for example, “medical database”. Hopefully this discussion will make you aware that there are valuable resources that cannot be found on the World Wide Web and some information on the World Wide Web is difficult to locate. Talking to an expert librarian at your local university is beneficial as you try to locate all the information related to your subject. Also, visiting the web sites of respected organizations in your field should also provide links to web databases related to your subject. There are also specialty search engines available for locating images, sound files, portable document files, maps, phone numbers, and much more. Good luck as you begin your search for one of the billions of pages available on the World Wide Web.

--Ben Johnson
**Microsoft Internet Explorer Window**

- **title bar**
- **menu bar**
- **button bar**
- **URL address field**
- **web page**

**minimize, maximize, and close window buttons**

- **Back** – Takes you back one page. (Takes you to the last web site you visited.)
- **Forward** – Takes you forward one page. (Returns you to the web page you stepped back from.)
- **Stop** – Stops loading the current page. If a page is loading slowly you can click on stop.
- **Refresh** – Refreshes the web page displayed. You may click this to update real-time data or if a page loads improperly.
- **Home** – Takes you to the default home page. Change this by selecting the **Tools** menu and then selecting **Internet options**.
- **Search** – Will take you to MSN’s search page. This is not the best search engine.
- **Favorites** – A folder containing links to your favorite web pages. Useful for web pages that you visit often.
- **History** – Opens a folder of all the web sites you have visited. This may be helpful if you cannot remember the URL of a website that you visited recently.
### Search engine features of some popular search engines.

<table>
<thead>
<tr>
<th>search engine</th>
<th>operators accepted</th>
<th>default operators</th>
<th>Truncation</th>
</tr>
</thead>
<tbody>
<tr>
<td>All the Web</td>
<td>+, -</td>
<td>and</td>
<td>No</td>
</tr>
<tr>
<td>Google</td>
<td>-, OR</td>
<td>and</td>
<td>No</td>
</tr>
<tr>
<td>Northern Light</td>
<td>and, or, not, () +, -</td>
<td>and</td>
<td>Yes: *</td>
</tr>
<tr>
<td>AltaVista Simple</td>
<td>+, -</td>
<td>phrase, or</td>
<td>Yes: *</td>
</tr>
<tr>
<td>AltaVista Advanced</td>
<td>and, or, and not, () sort results for best relevance</td>
<td>phrase, or</td>
<td>Yes: *</td>
</tr>
</tbody>
</table>

### Tutorial

#### Opening Microsoft Explorer

**Getting Started**

1. Press Ctrl Alt Delete to log on to your computer.
2. Type your user name and password. Make sure to select the correct domain.
3. Double click on Internet Explorer.

#### PART ONE: Information about URLs

URL stands for uniform resource locator. This is simply the address of a web site. It is the famous “www dot company name dot com” you hear every day. It is difficult to guess the URL of most web sites. If you don’t believe me try to guess the Monterey Bay Aquarium or the Denver Botanic Gardens site. You can probably search for most URLs faster than you can guess them. If you want to try, here’s how it works.

Type www dot, then the company name, and then a suffix, like dot com, into your browser’s address field.

1. Enter: www.
2. Use the company name or acronym: honda.
3. Add one of the following suffixes: .com

.com for commercial
.edu for higher education
.org for other organizations
.mil for military
.gov for federal government
.state.XX.us for state governments

*New suffixes have been added recently, which makes guessing even more difficult.*

For example, the popular electronics store BestBuy has the following URL: www.bestbuy.com
URL Guessing Practice

Locate the following:
Denver Museum of Nature and Science
What is the address?

National Aeronotics and Space Administration
What is the address?

International Society for Technology in Education
What is the address?

Ocean Journey
What is the address?

Colorado Department of Education
What is the address?

Public Broadcasting System
What is the address?

Type your guess into Microsoft Explorer's address field and press return or click on go to see if your guess is correct.

The page cannot be displayed

If you get this message you typed the wrong address.
PART TWO: Search Techniques

Guessing URLs is not a very efficient way to locate web sites. What happens if you cannot guess the URL of a web site? What happens if you don’t know what web site has the information that you are looking for? The first step should be conducting a search with a search engine. Search engines are search services that use computer programs to index and create a database of some of the web pages found on the World Wide Web. These search engines have millions of web pages indexed in their database. Typing a simple one-word term into a search engine will inundate you with results.

**Basic term searching. (Not recommended for large search engines)**

1. Type www.google.com into the address field.
2. Now type Saturn into Google’s search field and then press enter on your keyboard.

**How many results did you get? ______________________________**

**How long would it take you to preview all of these sites?__________________**

**Improve your search by requiring additional terms.**

You can narrow your search by adding more terms. Most search engines require placing AND or a + sign between additional terms (pyramid AND Egypt or pyramid +Egypt). However, by default, Google automatically searches with AND between terms. Please see the table above to see how specific search engines use operators. Searching for pyramid AND Egypt will only return results containing both words.

1. Return your cursor to Google’s search field.
2. Use the space bar on your keyboard to add a space after Saturn.
3. Add the word planet to your search and then press enter on your keyboard.

**How many results did you get? ______________________**

**This improved your search because Google only returned pages that contain both the word Saturn and planet. This eliminated many of the sites related to Saturn the car and game system.**

4. Improve your search further by adding rings after planet.

**How many results did you get?__________________**

**Why did this reduce the number of results?______________________________________________________**

**Can you think of other words that would be found on web pages related to Saturn?______________**

**Improve your search by joining terms using phrase searching.**

Put words that you want to appear together in quotation marks. This will eliminate many of your unwanted results. Phrase searching is useful when searching for famous sayings, specific names, and words that usually appear together. This is probably the best way for a beginner to improve their search query in a large search engine.

- Colorado State University without quotation marks yields 569,000 results in Google.
- “Colorado State University” yields 131,000 results in Google. This is better but still unmanageable.
- “Colorado State University” “Teresa Yohon” yields 13 results in Google. (Note: Google automatically searches both phrases. Other search engines may need you to type AND between two terms.)

1. Return to Google’s home page by clicking on the Google emblem located in the upper left hand corner.
2. Type city park nine in Google’s search field and then press enter.

**How many results did you get?**

Google returned results of all the pages that contain the words city, park, and nine. They could be in any order and spaced throughout the document. However, we are only interested in finding information about City Park Nine, the Ft. Collins golf course.

3. Now type “city park nine” with quotation marks.

**How many results did you get?**

**Why did this reduce the number of results?**

4. Use the adding more terms technique to improve your search further.

5. Add “Fort Collins” behind “City Park Nine”

**How many results did you get?**

**Why did this reduce the number of results?**

Does combining search techniques improve your results? ______________________

**Improve your research by excluding irrelevant terms**

Improve your search by eliminating irrelevant terms. Most search engines allow placing NOT or a – sign before a term you would like to exclude in your results (Saturn NOT car or Saturn –car). Please see the table above to see how different search engines use operators. Saturn NOT car will not return results that include the word car. This will eliminate many of the pages related to the Saturn the car manufacturer.

1. Return to Google’s home page.

2. Type dolphins into the search field and then press enter.

**How many results did you get?**

3. Add a space after dolphins and then type –football with no space between – and football.

**How many results did you get?**

This reduced the number of results because Google did not return any results that included the word football. This eliminated many of the sites related to the Miami Dolphin football team.

4. Type –NFL after –football.

**How many results did you get?**

**Can you think of other words to eliminate that are not related to the animal?**

5. Now practice combining some of the search techniques you have already learned.

6. Type “bottle nose dolphins” research –“sea world” into the search field.

**How many results did you get?**

What search techniques were combined? ______________________

**Improve your results by accepting equivalent terms**

Expand your search by accepting equivalent terms. For example, dog and canine are equivalent terms. Searching for only dog may eliminate many valuable results. In most search engines you can add the operator OR between two terms. This will return results for either term ‘dog OR canine’.

1. Go to AltaVista’s homepage. Type **www.av.com** in the address field.

2. After you arrive at AltaVista’s homepage click on advanced search.

3. Type dolphins into the Boolean query field and then click on enter.
How many results did you get?_______________

4. Now add a space behind dolphins and then type OR porpoises.
How many results did you get?_______________
Why did the number of results increase?________________________

Use nesting for complex Boolean phrases.
Some search engines allow using parentheses for nesting complex Boolean logic searches. For example, (red light camera OR photo radar) AND (Fort Collins OR Ft. Collins) will return documents that contain 'red light camera and Fort Collins', 'red light camera and Ft. Collins', 'photo radar and Fort Collins', and 'photo radar and Ft. Collins'.
1. Type (dolphins OR porpoises) AND NOT (football OR NFL) then click on OK.
How many results did this produce?______________________________

Find plurals and grammatical variations using an asterisk
Some search engines allow using an asterisk to find plural or grammatical variations of words. For example, 'depart*' will return documents with depart, departs, departure, departures, etc.
1. Type ‘math AND lesson plan”
How many results did this produce?______________________________
2. Now type ‘math* AND lesson plan*’
How many result did this produce?______________________________
Why did it produce more results than the first example?________________________

Improving the relevance of your results by using the ‘sort’ box in AltaVista.
If you do not ‘sort’ your results in advanced AltaVista they will appear randomly. If you have no special ranking requirements for your search but don’t want the results presented randomly, then simply enter the same terms in the query and the Sort by box (except those which you have excluded by AND NOT).

1. Type ‘science AND lesson plan*’. Now take a look at your results.
Do any of the first 10 abstracts mention ‘genetics’?______________________________
2. Now in the sort box type ‘genetics’.
Now how many of the first 10 abstracts mention ‘genetics’?______________________________
AltaVista placed documents containing the word ‘genetics’ higher in the results.

Find a specific word within a web page
Internet explorer allows you to press ‘cntrl and F’ to find a certain word within a web page. This is helpful when you are directed to a lengthy web page and are unable to find the specific term that you were looking for.
1. Type ‘snow rollers’ into AltaVista’s advanced search box.
2. Click on

  1. No Title
    Climate and Weather Terms Glossary. A
    The mass of water vapor in a given...
    URL: www.wrcc.dri.edu/ams/glossary.html
    Translate  Related pages
3. Press cntrl and the F key at the same time.
4. Type snow rollers into the find field.
5. Click on find next.

**Search for terms within the title of a web page**
You can focus your search by specifying that your search term must be found in the title of the web page. This will eliminate many of the results that only mention the term in the body of the page. Searching within the title of web pages may help locate pages that are relevant but it may also eliminate many other good pages too.
1. Type ‘www.google.com’
2. Type “Fort Collins” into Google’s search field.
   How many results did you get?________________________________
3. Click on Advanced Search
4. Click on the down arrow next to occurrence and select ‘in the title of the page’.
5. Click on ‘Google Search’.
   How many results did you get?
   Why is this number smaller?______________________________________
6. Now try this in AltaVista’s search engine.
7. Type ‘www.av.com’.
8. Type ‘title:Fort Collins’
   How many results did you get?_________________________________
9. Take out ‘title:’
   How many results did you get?_________________________________

**Find similar web pages**
At some point you will find a good web site and you may want to find other web sites that are similar. For example, you may like the web site “thetrip.com” but would like to get price quotes from other on-line travel agency. However, you don’t know the addresses of other similar companies. Many search engines will allow you to find similar web sites.
1. Type ‘www.google.com’
2. Click on Advanced search.
3. Scroll down to the ‘Page Specific Search’
4. Type ‘www.thetrip.com’ into the ‘Similar’ field.
5. Click on Search.
   What are some of the URLs that are found?______________________________
PART THREE: Directory Searching

Directory searching is a convenient way to reduce and focus your results. Directories are search services that have sorted all of the websites within their database into categories. So when you search for Dolphins in the science directory of Google none of your results will include the Miami Dolphins football team. Searching within a category of interest allows you to quickly narrow in on only the most relevant pages to you.

Dolphins in Google’s regular search yield 758,000 results. About half of those are related to the Miami Dolphins football team.

Dolphins in Google’s web directory Science>Biology>Zoology yields 340 results. This is a big improvement!

Practice using yahoo.com
1. Type www.yahoo.com into the address field.
2. Scroll down and click on Animals located in the science category.
3. Click on just this category. Type bears into the search field. Hit enter.
4. Locate the Search Results at the top of the page. How many sites did Yahoo find for bears?__________.
5. Now click on the rectangle that says web pages.
6. How many pages did Yahoo report outside of its directory?________________
7. How many of those pages are related to the animal?_________________
8. Did Yahoo really do the search outside of its directories?__________________ (Hint: Look at the top of the page after you click on the web pages rectangle to see who powers the search outside of the directories.)
9. Conduct some more searches within Yahoo’s directory.
10. Try searching these other popular directories; www.about.com and www.lii.org.

PART FOUR: Meta-searching

Meta-Search engines work by submitting your search terms to several search engines simultaneously. A few results are returned from each individual search engine that was queried. Meta-search engines have been criticized because they only return a very small portion of results from each search engine queried. In addition, each individual search engine accepts different operators. If the individual search engine does not accept your operators they will be ignored. Meta-search engines are sometimes recommended to “test run” your search terms.
1. Type ‘www.metacrawler.com’ into the address field.
2. Type ‘2002 winter olympics’ into the search field and press enter.
3. Take a look at your results.
Which individual search engines were queried?

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

4. Try another meta-search in ‘www.ixquick.com’
<table>
<thead>
<tr>
<th><strong>Evaluation:</strong></th>
<th><strong>Troubleshooting Help:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>An evaluation will be distributed after class.</td>
<td>Every search service has a ‘help’ section. It is helpful to visit this section to learn the best search techniques for a specific search engine.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Additional Resources:</strong></th>
<th><strong>Other Integration Ideas:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Visit <a href="http://www.searchengineshow.down">www.searchengineshow.down</a> for additional help.</td>
<td>See the list above.</td>
</tr>
</tbody>
</table>