Deciphering Search Engine Results

Topics Covered
- Understanding search results
- “Reading” a URL

Essential Questions
- How do I know which search results have information that will answer my research question(s)?
- What are the different parts of a search result? What appears on my search results screen?
- What do I need to know to be able to choose the best links?

Vocabulary
- Search Engine: a program that searches for content that contains your search terms OR “a computer program that searches documents, especially on the World Wide Web, for a specified word or words and provides a list of documents in which they are found”
- Search Engine Results Page (SERP): The pages of results returned by a search engine when a user enters a query
- Traffic: the number of visitors a website receives

Overview
Your students have created their research questions, typed their search terms in a search engine (i.e. Google) and are ready to get to the meat of the research process – finding and gathering information. How do students know what websites to visit from the millions and millions of search results returned? This pod’s activities explain the information that is found on a search engine results page so that students can make smart and thoughtful choices on which websites would be best to use for their research.

Activities
What are Search Results?
Have your students ever searched for something on the Internet and found the results to not be what they were looking for? This activity gives an overview of the search engine results page (SERP) and how your search query (keywords used) impact the results.
Activities (continued)

**Google Search Results**
Do you ever wonder what makes students want to visit a specific website from all the search results given when doing Internet research? This activity will give you a better idea of why students choose certain websites over others and help you understand any misconceptions they may have about what a “good” search result looks like.

**Anatomy of a Search Engine Results Page**
There is a lot of information on a search engine results page. Knowing what information is there can be helpful in choosing the right websites to visit for conducting research. This activity introduces students to the various parts of a search engine results page and discusses how they can use the various parts to help them in their search for credible, quality information.

**Understanding an Individual Search Result**
This activity introduces students to the different parts of an individual search result and how they can use it to make wise decisions as to which websites they should visit in conducting their research.

**Reading a URL/Web Address**
What do all the parts of a URL stand for? How can students use the information in a URL to make an educated guess on what that website is about? This activity helps kids decipher many different kinds of URLs they might encounter throughout their research.

**Computer Search Time**
This activity provides students with some dedicated time to use everything they learned about search results and URLs and apply it to their own health-related research.

**Vocabulary (continued)**
- **Search box**: the box (usually at the top of the screen) where you type your search query
- **Link (or hyperlink)**: clickable text that will take you to a different location on the Web or on the same Website

**Objectives and Goals**
At the end of the pod, students will be able to:
- Interpret and assess potential usefulness of each search result
- Assess the relevance and credibility of the resources they find, given their topic
- Demonstrate flexibility in the use of resources by adapting their information strategies to each specific resource and by seeking additional resources when clear conclusions cannot be drawn
Standards Addressed

Students will:

1.1.4 Find, Evaluate, and select appropriate sources to answer questions
1.1.5 Evaluate information found in selected sources on the basis of accuracy, validity, appropriateness for needs, importance, and social and cultural content.
1.2.2 Demonstrate confidence and self-direction by making independent choices in the selection of resources and information
2.1.1 Continue an inquiry-based research process by applying critical thinking skills (analysis, synthesis, evaluation, organization) to information and knowledge in order to construct new understandings, draw conclusions, and create new knowledge.
2.1.3 Use strategies to draw conclusions from information and apply knowledge to curricular areas, real-world situations, and further investigations.
2.1.4 Use technology and other information tools to analyze and organize information.
What are Search Results?

1. Set the stage. Say to students: “In the last pod/lesson, you developed queries using key search terms tied to your research projects. In this activity, you will eventually type in these queries and examine a search engine results page. Today we will look at search engine results pages and learn what information they give to help guide you through the research process.”

2. Examine and discuss a search engine results page.
   a. Refer to the video that what was presented in the last lesson. Recall how search terms are interpreted to gather information. Emphasize that search engines cannot truly understand the context of a query the way a person can (although Google is trying to bypass this by using natural language searching), and that they function by simply matching the words you type in to the search box with the words that occur on various webpages. Therefore, it is not surprising that many similar search results appear.

   b. Go to Google and conduct a search for the query [nautilus pompilius]. [Slide 2] You might say: “There are other times when, for a variety of reasons we will explore today, some results are better matched to my particular need than others. If I were looking for information on the animal called a nautilus pompilius, my first screen of results might look like this. What is going on in these results?” Emphasize to students that the search was intended for seeking information on an animal. Your students might note that many of the results are about a band called Nautilus Pompilius.

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Plan

Have your students ever searched for something on the Internet and found the results to not be what they were looking for? This activity gives an overview of the search engine results page (SERP) and how your search query (keywords used) impact the results.

Approximate Time

20 minutes

Materials

- Computer with Internet connection

1. The steps in this activity come from the Google for Education Search Education lesson for beginners “Understanding Search Results.” http://www.google.com/insidesearch/searcheducation/lessons.html
rather than the animal, and the query isn’t specific enough. Ask students if they can point to cues on the page that indicate certain results are about the band. Restate that search engines cannot “understand” which interpretation of the search term a searcher intends; they can only match patterns of letters/terms. Ask them what cues indicate that some of the results are about an animal. Students might identify cues in the actual title, the web address, a snippet (definition below), clicking on the down arrow/triangle to learn more about the creator of the site, or even ads that appear. Laud them for these keen observations stating that this lesson will go into more detail about what appears on the search engine results screen.

c. Tell students that in their search process they should always carefully look at their results to make educated decisions about where to click. In fact, advise them to look past the first screen of results, and even past the first whole page to make smart decisions. Advise them to think about: What appears on my screen when I get results for a search? Are there problems with the results, or are they on target with my task? What do I need to know about Google’s search results to select the best links for my task?
Google Search Results

1. Tell students that you did a search for the “causes of Alzheimer’s” and this is the results page you got (show results on the Smartboard or handout).

2. Give each student the “Google Search Results” handout for “causes of Alzheimer’s” (or other relevant health topic). Remind the students that this sheet has a back page (or tape together to create a long sheet – more similar to what they will experience on the Web or print out on legal size paper).

3. Ask the students to draw stars next to the top three sites they would click on if this was their search and ask them to write explanations for their choices in the margins of the sheet.

4. Post the Directions Poster on the board so students know what they are doing:
   a. Step 1 - Put a “star” next to any link you would click on
   b. Step 2 - Number your top 3 choices
   c. Step 3 - In the margin (or where there’s space), write why you would click on these sites

5. After all students finish, lead a group discussion on why the students chose the sites they did. Leading questions: 1) What sites would you click on? Why? 2) What were some of the things you looked for when choosing these sites to click on (including your top 3 choices)? 3) What links would you NOT click on? Why?

6. If you showed the video in Pod 2, Activity 2, ask students if they remember how Google orders the search results. Ask: Did knowing how Google “page ranks” websites factor into your choices?

Plan

Do you ever wonder what makes students want to visit a specific website from all the search results given when doing Internet research? This activity will give you a better idea of why students choose certain websites over others and help you understand any misconceptions they may have about what a “good” search result looks like.

Approximate Time

20 - 30 minutes

Materials

- Handout: Google Search Results (Do a Google search for “pertinent health topic” – HackHealth uses Alzheimer’s disease – and print out the first search engine results page, one for each student)
- pencil/pen
- Directions Poster (see #3 above)
7. If there’s time, have students type in their own health search terms/queries and evaluate the search results, taking note of which ones they would like to visit in the future. [NOTE: If using EverNote, have students put the links they found in EverNote.]
Anatomy of a Search Engine Results Page

1. Tell students that the search results page in Google gives you a lot of information besides the results of your search query.

2. Matching activity: Split students up into groups of 2 or 3. Give groups of students an envelope with the words below (#4) and their definitions (or images) on strips of paper and have students match the word with the definition/image. Make it a game and see which group can match them all correctly the fastest.

3. After students are done with the matching game, show poster (or give handout or bring up on smartboard) of a Google search results page. It could even be the same results page as in Activity 1.

4. Highlight (talk about) each part of the results page, saying more about each part:
   a. Search verticals/Filters - Links to the vertical search engines, the specialized ones that narrow your search into a specific type of result, such as news or images. Clicking one of these links takes you to a results page with only news or only images, for example.
   b. Search bar/box - near the top of the results page, where you can type in, see your query, and modify it or enter a new one
   c. Related searches - Other topics that contain your query or other searches Google thinks might be relevant.

Plan

There is a lot of information on a search engine results page. Knowing what information is there can be helpful in choosing the right websites to visit for conducting research. This activity introduces students to the various parts of a search engine results page and discusses how they can use the various parts to help them in their search for credible, quality information.

Approximate Time

30 -45 minutes

Materials

- Poster of Google Search Results page (first page only) - you can also give students handouts or bring it up on the smartboard
- Envelopes for each group with search results words and definitions/images on strips of paper (see Handout “Parts of a Search Results Page”)

d. Disambiguation - The “Did you mean . . . ?” suggestions that usually display after a misspelled search query turned up very few results. Google is trying to guess what you actually wanted. Because roses was spelled correctly, no disambiguation appears in the figure.

e. Page count - The number of Web pages Google found that match your search query in some way.

f. Time search took - How long the search engine took to retrieve your results.

g. News results - Any news results pertaining to your query or containing one or more of your keywords. These come from the vertical news engine. Clicking the link would take you to relevant search results that are categorized as “news.”

h. Sponsored Links/Ads - results appearing in the right-hand column, and sometimes at the top of the results in a colored box. These results appear because someone paid for them to be there. They only appear if Google thinks they are relevant to your search. They always are marked with the word “Ads,” so you can identify paid results. Note how some of them relate to a specific geographic location near you. This is thanks to the local vertical search engine.

i. Knowledge Panel - When you search for an entity, such as a person, place, book, movie, character, animal, etc., Google may show a special informational box on the right-hand side of the screen with more information about that entity.

j. Natural results - These results are not paid for by anyone and cannot be bought. Google asks over 200 questions about how your query matches different pages it found on the web when deciding which pages to feature and in what order to list them. One reason search engines do not reveal more about how they rank search results is they don’t want people to be able to manipulate the system and force irrelevant or malicious pages to be highly ranked in the results. The listing results from a general search of Google’s index, with algorithms applied to determine relevance.

k. Images - Picture files that match your query. This comes from Google’s Images vertical engine. Clicking the link would take you to the vertical search results - a page containing only images related to your query.

l. Pagination - Links to the additional pages of results.

5. Return to Matching activity: After explaining the different parts of the Google Search Engine Results page, have students look at their matches and correct any that are wrong.

6. Go over the answers after all groups are done.
Extension

Have students create a short 30-second video for the different parts of a Google search results page. Give each student 1 or 2 parts and have them create a sentence describing it, why it’s important, and why users should know about it. Teach them how to use Animoto to make a video and have them create their videos. (20 - 30 minutes)
Handout: Parts of a Search Engine Results Page

DIRECTIONS: Print one copy for each group. Cut out each word and definition/image along the dotted line and place all in one envelope for each group. Have students match the words, definitions, and images of each search results part.

<table>
<thead>
<tr>
<th>Words</th>
<th>Definitions</th>
<th>Images</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search verticals/filters</td>
<td>Links to the vertical search engines, the specialized ones that narrow your search into a specific type of result, such as news or images. Clicking one of these links takes you to a results page with only news or only images, for example.</td>
<td><img src="image" alt="Search bar and search box" /></td>
</tr>
<tr>
<td>Search bar/search box</td>
<td>Near the top of the results page, where you can type in, see your query, and modify it or enter a new one</td>
<td><img src="image" alt="Search results with related searches" /></td>
</tr>
<tr>
<td>Related searches</td>
<td>Other topics that contain your query or other searches Google thinks might be relevant.</td>
<td><img src="image" alt="Search results related to Alzheimer's disease" /></td>
</tr>
<tr>
<td>Disambiguation</td>
<td>The “Did you mean . . . ?” suggestions that usually display after a misspelled search query turned up very few results. Google is trying to guess what you actually wanted.</td>
<td><img src="image" alt="Did you mean: Alzheimer's disease" /></td>
</tr>
</tbody>
</table>

Pod 3, Activity 3: Anatomy of a Search Engine Results Page
<table>
<thead>
<tr>
<th><strong>Page count</strong></th>
<th>The number of Web pages Google found that match your search query in some way.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Time search took</strong></td>
<td>How long the search engine took to retrieve your results.</td>
</tr>
<tr>
<td><strong>News results</strong></td>
<td>Any news results pertaining to your query or containing one or more of your keywords. These come from the vertical news engine. Clicking the link would take you to relevant search results that are categorized as “news.”</td>
</tr>
<tr>
<td><strong>Images</strong></td>
<td>Picture files that match your query. This comes from Google’s Images vertical engine. Clicking the link would take you to the vertical search results - a page containing only images related to your query.</td>
</tr>
<tr>
<td><strong>Pagination</strong></td>
<td>Links to the additional pages of results.</td>
</tr>
</tbody>
</table>

**Pod 3, Activity 3: Anatomy of a Search Engine Results Page**

- **Page count**: About 14,800,000 results
- **Time search took**: (0.24 seconds)

News for alzheimer

News for alzheimer

Images

Pagination
Natural results

Results that are not paid for by anyone and cannot be bought. Google asks over 200 questions about how your query matches different pages it found on the web when deciding which pages to feature and in what order to list them. One reason search engines do not reveal more about how they rank search results is they don’t want people to be able to manipulate the system and force irrelevant or malicious pages to be highly ranked in the results. The listing results from a general search of Google’s index, with algorithms applied to determine relevance.

Knowledge panel

When you search for an entity, such as a person, place, book, movie, character, animal, etc., Google may show a special informational box on the right-hand side of the screen with more information about that entity.
Sponsored links/ads

Results appearing in the right-hand column, and sometimes at the top of the results in a colored box. These results appear because someone paid for them to be there. They only appear if Google thinks they are relevant to your search. They always are marked with the word “Ads,” so you can identify paid results. Note how some of them relate to a specific geographic location near you. This is thanks to the local vertical search engine.
Understanding an Individual Search Result

1. Explain to students that each individual source that Google identifies as matching your query is called a search result. Run a search, such as [Alzheimer’s], and explain that each result has several parts that can help students decide which ones to click on.

2. Define and point out the following components. Invite volunteers to help you identify these components:
   
a. Title: In blue, the first line of a search result. [Slide 12]
   
b. Web address: In green, just under the title. This is the location of the page on the Web and can help you understand at a glance who is offering you the source, what kind of source it will be, and more. [Slide 13]
   
c. Snippet: The black text under the web address. This text is taken from the source to which the link points and gives an idea of how your search terms appear in the text. It is not a summary of what appears on the link, does not provide full information on a topic, and is not intended to do so. You should always click through to see your search terms (and the information they provide) in context. [Slide 14]
   
d. Bolded words: The words that appear darker on the screen are your search terms. In some cases, Google automatically finds synonyms for your search terms, so if you search for “kid,” you might see “child” bolded in your results. [Slide 15]

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Please note: For students who are writing works cited lists, it is important to note that Google’s job is to find matches to your queries and communicate to you why they were chosen so that you can decide which links to click on. As a result, Google is developed to identify relatively unhelpful page titles and auto-improve them, where possible, to something clearer, based on the content of the page. As a result, it is not appropriate to rely on Google search results to tell you the title of a page that you want to cite.

**Extension**

For more experienced readers, or older learners, introduce the term ellipses: Google uses three dots (…) in snippets to show places in the source where the search terms appear. Unlike ellipses used in traditional writing to show omission of text but still with a fluid thought, the ellipses in a search result are intended to show where search terms appear in the source, and so can omit portions of the text important to the actual meaning. Remind students that they should not take information from the snippet, but click through to the source itself and see the full text there. [Slide 16] Also remind students of the gray upside-down “triangle” to view more about the website’s author.
Reading a URL/Web Address

1. Explain to students that knowing how to choose the most useful links among the possible results Google offers increases their efficiency and gets them quickly to a good source they can use for their research. To begin to get an idea about a source, look at the web address. It is not a sure-fire way to know what type or quality of information the source will contain, but it can give important clues.

2. Relay information about Google web addresses, and then tell students that they’ll use what they learn to decode a few web addresses. Say to students: “Google usually points you to specific pages on a website, though that might sometimes be the front page, or homepage. It can sometimes be helpful to notice if the website on which the page is located is one you know about and if it is well-matched to your task. Sometimes, the name of the site gives you an idea about the kind of information you will find there. The name of the website is usually in the first part of the web address located AFTER the http and www and BEFORE the “suffix,” which typically can be any of these: .com, .org, .edu, .gov, etc. However, sometimes a site may not have a www. So the page http://www.whitehouse.gov is the White House website. By looking at this key part of the search result, we can predict important information about what the source will include in order to determine if it might be worth accessing. Note that after the .com or .org or .edu, there is often a string of other information.”

3. Through demonstration and discussion, continue using the “Alzheimer’s disease” topic we are using as an example

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research topic. Tell them that several sources include a title with the words Alzheimer’s and causes that you will show them. Then say: “Look at each web address and tell me what kind of information you’d expect to see. To help you, let’s first narrow down each web address to its core. To do this, let’s find the suffix such as .com, .org, .edu, or .tv and then look at what precedes it to get information about the source.” Once students identify what is before the suffix, talk about what you might find using the information in the web address. [Slide 17] The table below is provided to show you some sample responses about these web addresses.

<table>
<thead>
<tr>
<th>Alzheimer’s Web Addresses</th>
<th>What the Source Might Include</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.mayoclinic.org/diseases-conditions/alzheimers-disease/basics/causes/con-20023871">http://www.mayoclinic.org/diseases-conditions/alzheimers-disease/basics/causes/con-20023871</a></td>
<td>Organizational site about the causes of Alzheimer’s disease</td>
</tr>
<tr>
<td><a href="http://www.nia.nih.gov/alzheimers/topics/causes">http://www.nia.nih.gov/alzheimers/topics/causes</a></td>
<td>Government site about causes of Alzheimer’s</td>
</tr>
<tr>
<td><a href="http://www.alz.uci.edu/alzheimers-disease/what-is-alzheimers/what-causes-alzheimers/">http://www.alz.uci.edu/alzheimers-disease/what-is-alzheimers/what-causes-alzheimers/</a></td>
<td>University website (UCI) talking about Alzheimer’s</td>
</tr>
</tbody>
</table>

4. Have students decode the following web addresses and share what they suggest about the sources located at each. Distribute the sheet “What Might You Find at These Web Addresses?” that feature these URLs:
   b. www.bl.uk/onlinegallery/features/americanrevolution/index.html
   d. wiki.answers.com/Q/Where_was_George_Washington_born

**Extension**

For individual students or classes with more computer exposure, you might try some of these more difficult web addresses (see Handout):

- bohr.winthrop.edu/faculty/grossoehme/link_to_webpages/
- personal/InteractivePeriodicTable/PeriodicTable.html
- www.history.navy.mil/faqs/faq56-1.htm_
• scs.student.virginia.edu/~vjil/PDF/48_249-306.pdf
• http://afe.easia.columbia.edu/literature/china/6_8.html
• www.xpmath.com/forums/arcade.php?do=play&gameid=61
• www.mathwords.com/i/integers.htm
• www.history.navy.mil/faqs/faq56-1.htm_
• britishbattles.homestead.com/eastasia.html
• www.redcoat.me.uk/Rev-War.htm
• scs.student.virginia.edu/~vjil/PDF/48_249-306.pdf
<table>
<thead>
<tr>
<th>Web Address</th>
<th>What might you find at this address?</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.bl.uk/onlinegallery/features/americanrevolution/index.html">www.bl.uk/onlinegallery/features/americanrevolution/index.html</a></td>
<td></td>
</tr>
<tr>
<td>wiki.answers.com/Q/Where_was_George_Washington_born</td>
<td></td>
</tr>
</tbody>
</table>
### Handout: What Might You Find at These Web Addresses? [EXTENSION ACTIVITY]

<table>
<thead>
<tr>
<th>Web Address</th>
<th>What might you find at this address?</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. bohr.winthrop.edu/faculty/grossoehe/link_to_webpages/</td>
<td></td>
</tr>
<tr>
<td>b. personal/InteractivePeriodicTable/PeriodicTable.html</td>
<td></td>
</tr>
<tr>
<td>c. <a href="http://www.history.navy.mil/faqs/faq56-1.htm">www.history.navy.mil/faqs/faq56-1.htm</a>_</td>
<td></td>
</tr>
<tr>
<td>d. scs.student.virginia.edu/~vjil/PDF/48_249-306.pdf</td>
<td></td>
</tr>
<tr>
<td>g. <a href="http://www.xpmath.com/forums/arcade.php?do=play&amp;gameid=61">www.xpmath.com/forums/arcade.php?do=play&amp;gameid=61</a></td>
<td></td>
</tr>
<tr>
<td>h. <a href="http://www.mathwords.com/i/integers.htm">www.mathwords.com/i/integers.htm</a></td>
<td></td>
</tr>
<tr>
<td>i. <a href="http://www.history.navy.mil/faqs/faq56-1.htm">www.history.navy.mil/faqs/faq56-1.htm</a>_</td>
<td></td>
</tr>
<tr>
<td>j. britishbattles.homestead.com/eastasia.html</td>
<td></td>
</tr>
<tr>
<td>k. <a href="http://www.redcoat.me.uk/Rev-War.htm">www.redcoat.me.uk/Rev-War.htm</a></td>
<td></td>
</tr>
<tr>
<td>l. scs.student.virginia.edu/~vjil/PDF/48_249-306.pdf</td>
<td></td>
</tr>
</tbody>
</table>
1. Tell students that they will be using the computer to do some research on their health topics.

2. Remind students about the queries they created for their health topic research question (from Pod 2, Activity 4) and the search results page activity (from Pod 3, Activity 2). Tell students they will be using their queries and their knowledge about search engine results pages to find some good online websites/resources to use in answering their research questions.

3. Give students a good chunk of time to research and take notes on the computer (at least 20-25 minutes).