



Crawling the Web

Essential Question

How can you best use search sites to help you find the information you need?

Lesson Overview

Faced with a large and ever-changing array of options about how to find information they need, students learn to make informed choices about which search sites to use for different purposes. They also learn to use multiple search tools to get the best results.

As a class, students review the **Three-Way Search Student Handout** and learn the names and features of the three major types of search sites: search engines, directories, and meta-search engines. They then go on to sample and compare the different search sites available within each category. In groups, they investigate assigned search sites and answer questions about them on the **Compare Your Hits Student Handout**. Students then print out and post sample search results, and compare their own search sites to those of other groups.

Learning Objectives

Students will be able to ...

- understand the differences between search engines, directories, and meta-search engines.
- evaluate different types of search sites by investigating the features of one and then comparing and contrasting it with others.
- discover that trying out more than one search site can be the most effective way to search.

Materials and Preparation

- Copy the **Three-Way Search Student Handout**, one for each student.
- Copy the **Compare Your Hits Student Handout**, one for each student.
- Review both student handouts for background information on differences between search engines, directories, and meta-search engines.
- Tape or tacks to post students' work

Family Resources

- Send home the **Strategic Searching Family Tip Sheet (Middle & High School)**.

Estimated time: 45 minutes

Standards Alignment –

Common Core:

grade 6: RI.2, RI.3, RI.4, RI.7, W.4, W.6, W.10, SL.1a, SL.1b, SL.1c, SL.1d, SL.2, SL.6, L.6

grade 7: RI.2, RI.3, RI.4, RI.10, W.4, W.6, W.10, SL.1a, SL.1b, SL.1c, SL.1d, SL.2, SL.6, L.6

grade 8: RI.2, RI.2, RI.4, RI.10, W.4, W.6, W.7, W.10, SL.1a, SL.1b, SL.1c, SL.1d, SL.2, SL.6, L.6

NETS•S: 3a-c

Key Vocabulary –

search site: any website that helps you search the Web for the information you want

search engine: a site that uses computer programs to search for information on the Web

index: a place where information is stored and organized

directory: a site that uses people to search the Web and put together information on different subjects

meta-search engine: a site that sends inputted keywords to several different search engines at the same time

introduction

Warm-up (5 minutes)

INVITE students to define the Key Vocabulary term **search site**, then provide the given definition.

ASK:

What are some search sites that you have used?

Students may name Google, Yahoo, or Bing, among others.

What makes you decide to use one search site over another?

Students answers' will vary.

Sample responses:

- *All my friends use it*
- *I like the way it looks*
- *I usually get the information I need when I use it*
- *I didn't know I had a choice, I've just always used one*
- *Results are easy to read*

DISCUSS with students that search sites have different benefits and drawbacks, so it is important for them to make informed decisions about which ones to use depending on the situation. Explain that they will now look at three different types of search sites to find out how each one works and how they are different from one another.

teach 1

Three-Way Search Student Handout (10 minutes)

DISTRIBUTE the **Three-Way Search Student Handout**, one for each student.

GUIDE students through the first section of the handout: "Do you know how a SEARCH ENGINE works?"

DEFINE the Key Vocabulary terms **search engine** and **index**.

DESCRIBE the three main components of a search engine: a spider, an index, and a results page.

EXPLAIN that search engines collect information from webpages, index the information, and match the webpages to their keyword searches.

Note: Consider conducting a search for the class in either or both of these kid-friendly online search engines: Factmonster and Quintura. You could search the term "search engine," or something else of interest to the class. Project the results for class discussion.

GUIDE students through the second section of the handout: "Do you know how a DIRECTORY works?"

DEFINE the Key Vocabulary term **directory**.

POINT OUT that directory editors, like spiders, are always looking for new information on the Web. However, they can't look at quite so much as spiders, or do it so quickly. Explain to students that editors sometimes add new subject categories and sites based on the number of information requests users make for certain subjects.

ASK:

How is the information in a directory different from the information retrieved by a search engine?

Students should understand that people, not computer programs, select the sites that are included in directories.

What are some of the advantages and disadvantages of using a directory instead of a search engine?

Sample responses:

- Advantage: People carefully choose the sites in a directory, so they might be better sites
- Disadvantage: The editors who create directories can't index everything on the website, so they might miss some relevant sites

Note: Consider conducting a search for the class in either or both of these kid-friendly online directories: Yahoo (kid directory) and ipl2. You could search the term “directories,” or something else of interest to the class. Project the results for class discussion.

GUIDE students through the third section of the handout: “Do you know how a META-SEARCH ENGINE works?”

DEFINE the Key Vocabulary term **meta-search engine**.

DISCUSS the difference between a “narrow” topic and a broader one, provide them with the following examples of keywords they might use for each type:

Broad

Abraham Lincoln
World Cup

Narrow

Abraham Lincoln 1860 Cooper Union Speech
2010 World Cup United States-England match

Note: Consider conducting a search for the class in either or both of these kid-friendly online meta-search engines: Dogpile and MetaCrawler. You could search the term “meta-search engine,” or something else of interest to the class. Project the results for class discussion.

teach 2

Compare Your Hits (25 minutes)

TELL students that they will have a chance to investigate some search sites on their own.

DIVIDE students into groups of three or four, and distribute a copy of the **Compare Your Hits Student Handout** to each group.

ASSIGN to each group one of the search sites mentioned on the **Three-Way Search Student Handout**. To ensure that different groups sample each different type of search engine, you may wish to assign the following sites in order. The number of sites used will vary depending on the size of your class, but make sure to assign at least the first three.

EXPLAIN to students that they will be looking at some of the features of their assigned sites and answering questions about them. They will try out two searches, see what results or “hits” they get, and then compare and contrast the results from different sites.

1. Google (search engine)
2. Yahoo Directory (directory)
3. Dogpile (meta-search engine)
4. Ask (search engine)
5. Dmoz (directory)
6. MetaCrawler (meta-search engine)
7. Quintura for Kids (search engine)
8. Yahoo Directory for Kids (directory)

INSTRUCT each group to follow these five steps, allowing a total of 10 to 15 minutes:

1. **READ** through the **Compare Your Hits Student Handout**.
2. **DRAW** your site's logo, or print it out and cut and paste it onto your handout.
3. **EXPLORE** your assigned site and answer the first two questions on the handout. (Students can return to the **Three-Way Search Handout** for help if they are not sure which type of site they have.)
4. **SEARCH** for the keywords on your search site.
5. **PRINT OUT** or copy the main items on the first page of search results.

INVITE students to post their handouts, with results below them, on a bulletin board, blackboard, or wall. Give students 5 to 10 minutes to look at the results posted by other groups.

DISCUSS the similarities and differences among the results from each search site. Ask students to identify one thing they liked about the site they investigated, and one thing they prefer about the results from another site visited by their classmates.

closing

Wrap-up (5 minutes)

You can use these questions to assess your students' understanding of the lesson objectives. You may want to ask students to reflect in writing on one of the questions, using a journal or an online blog/wiki.

ASK:

How do search engines and directories differ?

Search engines are indexed by computer programs, and directories are indexed by people. Search engines usually have many more sites indexed than do directories.

What was one feature you liked about the site you visited?

Have students refer to the data they recorded on the **Compare Your Hits Student Handout**.

EXPLAIN that effective communicators change, shift, and adapt their forms and norms depending on the audience, purpose, and context of their message. People online generally cannot see your facial expressions or hear your tone of voice. They have only two ways of judging what you're thinking: One way is by the words you choose; the other is by the manners you use. It is therefore important to choose what you say wisely.

REVISIT the questions you asked students in the lesson introduction. (*What search sites have you used? What do you like about each site? What made you decide to use it?*) Ask them to respond to the same questions again.

REFLECT on the value of trying the same search on the three different types of sites. Students should begin to grasp that different types of sites — and different sites within each type — may be more effective for

different kinds of searches. They should understand that no one site, no matter how popular, offers the “definitive” search results. They can and should experiment with them to learn how to make informed choices about which search sites to use.

Extension Activity

Have students practice being directory “editors.” Remind students that one of the jobs of a directory editor is to place websites in different categories, depending on the information they contain. Invite students to choose a simple keyword to submit to a search engine that relates to a topic they are learning about in your class. Have them click through to each of the first five search returns they believe are high-quality sites. Ask students to assign each site to one of the subject categories from a popular directory, such as Yahoo Directory.

Homework

Have students make a three-part “blueprint” showing the three steps a search engine uses to collect information from the Web, index information, and match the information to keywords. The three parts of the blueprint should show: (1) an example of a word that they are searching, (2) what happens when that word is searched, and (3) the results or “hits” they get. When they are finished, they should describe to their parents how the three different types of search engines work. They should also explain how searches are performed in the blueprint that they drew.

Crawling the Web

Directions

How much do you know about search engines? Read about the three common ones below. After reading each description, be ready to describe what they do and how they compare to one another.

Do you know how a **SEARCH ENGINE** works?

DEFINITION

A site that uses computer programs to search for information on the Web

HOW DOES IT WORK?

Search Engines use a computer program called a spider. A spider is sometimes called a webcrawler because it crawls around the Web, exploring webpages and their links and collecting information.

After the spider has collected the information, a second computer program indexes, or organizes in a list, all the information. Each search engine's spider and index organize webpages a little bit differently.

Search engines also have a third computer program. When you type keywords into the search engine, that program goes into the index to find webpages that match your keywords. It shows these matches on a results page.

The sites with the best matches are displayed first. Each search engine has a different way of identifying the best matches. This is why you will probably get different results from different search engines.

These three tasks are all done without any human involvement — so a huge number of sites are indexed quickly. The spider keeps crawling around, updating the index every time the information on a webpage changes.

CHECK THEM OUT!

Some of the most popular search engines are Google, Yahoo, Bing, and Ask. Other search engines, such as Factmonster or Quintura, might also be helpful.

Do you know how a **DIRECTORY** works?

DEFINITION

A site that uses people to search the Web and put together information on different subjects

HOW DOES IT WORK?

In a directory, people, not computers, put the index together. Editors, the people who choose information to include from directories, evaluate websites and organize them into subject categories.

Because people have chosen them, the sites in directories may be of higher quality, and more related to the subject you are searching. However, the number of sites in a directory is usually much smaller than in a search engine's index.

Many people use the term “search engine” to describe either a search engine or directory. And some search sites offer both services.

CHECK THEM OUT!

Some well-known directories are Yahoo Directory, Lycos, About, Open Directory Project (dmoz), and ipl2. Also, check out Yahoo and ipl2 because they have special directories for kids.

Do you know how a **META-SEARCH ENGINE** works?

DEFINITION

A site that sends inputted keywords to several different search engines at the same time.

HOW DOES IT WORK?

A meta-search engine sends your keywords to several different search engines at the same time. It searches the search engines! The results from each search engine are organized and displayed on one page.

This type of service is useful when your topic is very narrow, or specific, and you want to search as many websites as possible.

CHECK THEM OUT!

Popular meta-search engines for you to check out are Dogpile and MetaCrawler.

Crawling the Web

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Directions

For the type of search engine that was assigned to you, draw the website’s logo and answer the following questions. (The word “hits” refers to the results from a search.)

Cut and paste or draw the logo of your search site below.

STEP 1 Explore!

1. This site is generally known as a (check one):

- Search engine
 Directory
 Meta-search engine

2. What other kinds of information or activities are on the home page of this search site?

STEP 2

Search!

1. Try a quick search for “World Cup 2010.” What kinds of information are provided on the results page? Print out the first page of results, or copy the first five results on a separate sheet of paper.

2. Now try “World Cup 2010 United States-Ghana match.” What kinds of information are provided on the results page? Print out the first page of results, or copy the first five results on a separate sheet of paper.

3. How do your results compare to the results found by other groups?

4. Describe one thing you like (or don't like) about the type of results you found:

5. Describe one thing you like (or don't like) about the search site another group found:

Crawling the Web

1. Define the terms *directory* and *search engine* by writing the correct term in the blanks below.

A _____ is a site that uses people to search the Internet to put together information on different subjects.

A _____ is a site that uses computer programs to search for information on the Internet.

2. Why do you think people sometimes refer to search engines as “spiders”?

- a) Because they crawl around looking for different search terms
- b) Because they are big and scary
- c) Because they get rid of computer bugs

3. True or false: The best way to find all of the information you need on a subject is by using only one search site.

- a) True
- b) False

Crawling the Web

1. Define the terms *directory* and *search engine* by writing the correct term in the blanks below.

Answer feedback

A **directory** is a site that uses people to search the Internet to put together information on different subjects.

A **search engine** is different from a directory because a search engine uses computer programs instead of people to search.

2. Why do you think people sometimes refer to search engines as “spiders”?

a) Because they crawl around looking for different search terms

b) Because they are big and scary

c) Because they get rid of computer bugs

Answer feedback

The correct answer is **a**. The reason that certain types of search programs are called “spiders” is because they crawl around the Web searching and collecting information from websites.

3. True or false: The best way to find all of the information you need on a subject is by using only one search site.

a) True

b) False

Answer feedback

The correct answer is **b**, False. There is no one perfect search engine or directory. To get the best results from your search, try using different kinds of search sites (directories, search engines, or metasearch engines).