

Overview:

In this lesson students use a directory, search engine and meta-search engine to find information on the Internet.

Objective:

The student will

- use a directory;
- use basic search techniques;
- use advanced search techniques; and
- use a meta search engine.

Alaska Content Standards Addressed:

Technology

- A1 A student should be able to operate technology-based tools. A student who meets the content standard should use a computer to enter and retrieve information.

Materials:

- Computer with Internet access
- STUDENT WORKSHEET: "Mining the Web"

IT Basics

The Internet has a vast amount of information available on it, but finding exactly what you are looking for can be difficult. As the Internet developed it soon became apparent that a way was needed to find information. Several methods were developed.

One of the first methods used to find information on the Internet was a directory. A directory is a collection of web pages organized by subjects. Directories are useful for browsing websites on a particular topic. As a general rule, narrowly defined directories are more useful than broad ones. One of the earliest, Yahoo, started in 1994 by two Stanford students as an organized list for keeping track of personal interests on the Internet. It has since expanded to cover the bulk of the Internet.

A search engine searches Web pages based on terms entered by the user. There are many search engines available. Different engines search the Web in different ways, so the results can differ from one search engine to another. Google, which was started as a research project in 1996, is the most popular search engine used today. It uses a highly successful method of analyzing the relationship between websites to rank results.

Meta-search engines search other search engines. They are useful when a quick overview from several search engines is preferred. Meta-search engines usually do not return as many results as a regular search engine, nor do they work well for extensive research.

Activity Procedure

1. Ask students what tools they use to search the Internet. List student responses on the board.
2. Ask students why they would want to search for science information on the Internet.
3. Explain students will practice some common ways to search for information on the Internet during this lesson.
4. Distribute the STUDENT WORKSHEET: “Mining the Web” and guide students through the worksheet.

Answers

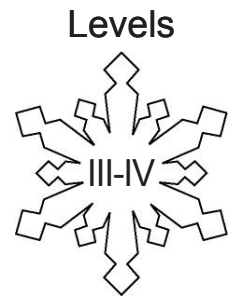
(NOTE: The answers from Google may vary as updates are made.)

1. 82
2. 221,000,000
3. No
4. 1,320,000
5. No
6. 10,700
7. Yes
8. Answers may vary. One possible answer includes: www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?aknome.
9. Wales Straitcam – Looking into Tomorrow
10. Evidence of Climate Change in Glacier Ice and Sea Ice
11. 310,000
12. Study of climate change in the arctic
13. 1,670,000
14. CBS News Indepth: Climate Change
15. One
16. The web page did return pages with the answer, but it was listed lower than on Google.
17. Mt. Everest
18. It is the highest mountain when measured from the base, which is below sea level, to the top of the mountain.
19. The top of Chimborazo is farthest from the center of the earth.

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Background Information

The Internet has a vast amount of information available on it, but finding exactly what you are looking for can be difficult. As the Internet developed it soon became apparent that a way was needed to find information. Several methods were developed.

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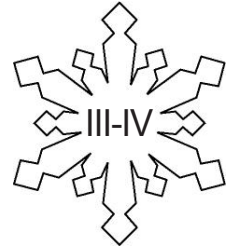
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Part One - Directories

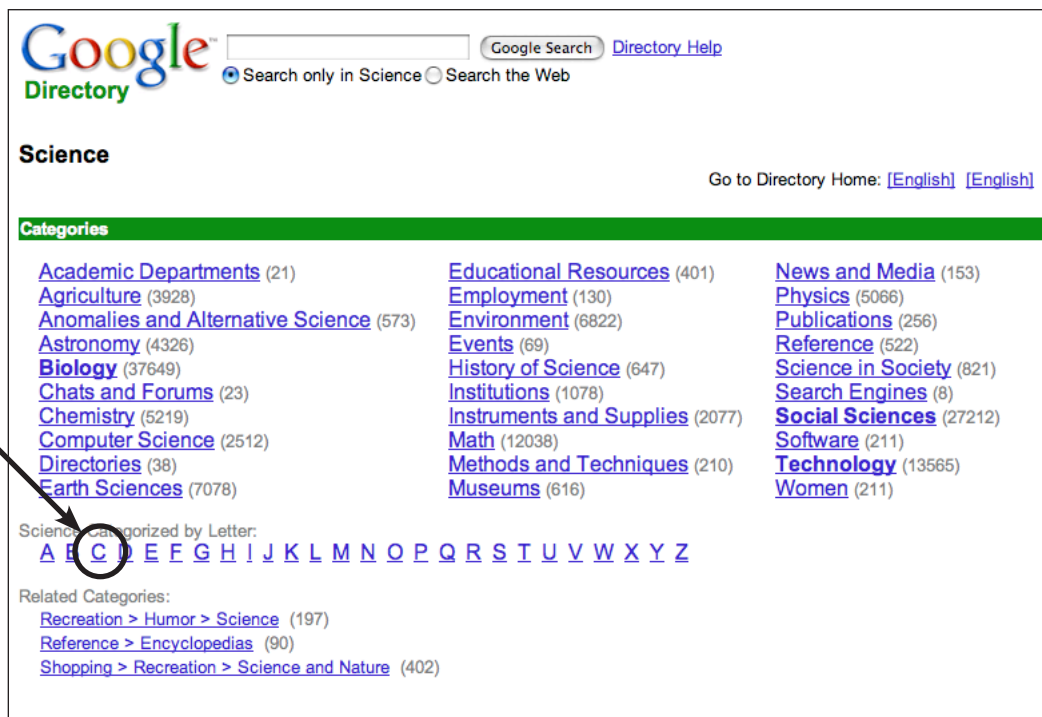
If you were interested in browsing through information about climate change, a directory might be a good place to start, since it is a big topic that would have many hits in a Web search.

STEP 1. Start a Web browser, such as Firefox, Safari or Internet Explorer.

STEP 2. Type <http://www.google.com/dirhp> in the URL (address) bar.

STEP 3. From the list of choices select “Science.”

STEP 4. Since the category for Climate Change is not visible click on the “C” to view more topics.



STEP 5. In the second column there is a category titled “Climate Change.” Click on the link to see a list of sub-categories and Web sites.

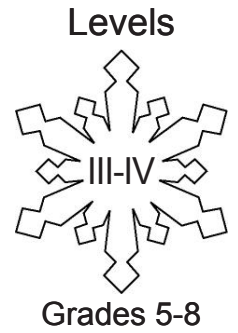
To the right of each category is a number in parentheses. This number indicates how many Web pages are listed in that category. Answer the following question:

1. How many Web pages are listed in the “**Impacts and Indicators**” category?

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Part Two – Search Engines

A search engine is the most common way of searching for something on the Internet.

Using a search engine is fairly simple. However, getting useful results can take a little practice. In general, typing in the specific words you are interested in will produce more useful results. Also try using similar words in the search such as car and vehicle, or pairing words such as 4 wheeler along with ATV.

STEP 1. Start a Web browser, such as Firefox, Safari or Internet Explorer.

STEP 2. To find the climate (average monthly temperature, snowfall and precipitation) of Nome, Alaska from month to month throughout the year, Google would be a good search engine to chose.

To get to the Google Web site type <http://www.google.com/> in the URL (address) bar.

STEP 3. In the Google search bar type: “temperature.”

STEP 4. Look at the results at the top of the page and answer the following questions.

2. How many pages did the search find? _____

3. Scan the results of the search. Look at the headings and descriptions to see if any of them look like they have information about average monthly temperature, snowfall, and precipitation from Nome. Are there any results on the first page that are likely to have the average monthly temperatures for Nome?

STEP 5. Type “temperature nome” in the Google search bar. It is not necessary to type capitals. Google will search “nome” the same as “Nome.” Look at the results and answer the following questions.

4. How many total pages were found? _____

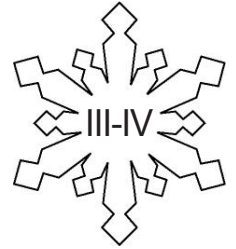
5. Did you find the desired results? _____

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STEP 6. To get more useful results, use more specific search terms by typing “temperature climate nome” in the Google search bar. Look at the results and answer the following questions.

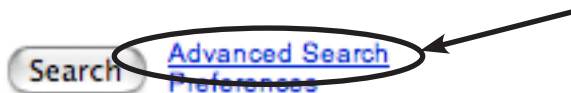
6. How many pages did it find? _____
7. Was the search narrowed to something more useful? _____
8. What is the URL of a page that has monthly average temperatures for Nome, Alaska, as well as monthly precipitation and snowfall?

Advanced Searching

Google has an advanced search feature that can be helpful in narrowing searches.

Finding information about Wales, Alaska might produce better results with the advanced features than the regular simple search since there is also a Prince of Wales Island in Alaska. A simple search in Google might give results about both. Using the advanced search features, you can direct Google to not return results with certain terms.

STEP 1. On the Google home page (<http://www.google.com>) click on advanced search.



STEP 2. In “Find web pages that have all these words,” type “Wales Alaska.”

In “But don’t show pages that have,” type “Prince.”

Click to search. Answer the following question.

9. What is the title of the first result? _____

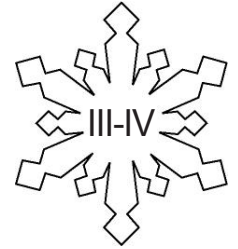
Google’s advanced search features can also be used to limit searches to specific file types such as PowerPoint or Excel or to specific Web domains, such as government or university sites. When doing a lot of research, using the advanced search page can save time by locating more specific Web pages.

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Use the form below and your advanced search will appear here

Find web pages that have...

all these words:

this exact wording or phrase: [tip](#)

one or more of these words: OR OR [tip](#)

But don't show pages that have...

any of these unwanted words: [tip](#)

STEP 3. To find a PowerPoint presentation about sea ice changes in Alaska, use the advanced search to limit the search to PowerPoint files.

In "Find web pages that have all these words," type "sea ice changes Alaska."

In the File Type section use the pull-down menu to select Microsoft PowerPoint (.ppt).

Need more tools?

Results per page:

Language:

File type:

Search within a site or domain:

(e.g. youtube.com, .edu)

Click **Google Search** at the top of the page. Notice that all of the results are .ppt (PowerPoint) files. Answer the following question.

10. What is the title of the first result? _____

When researching arctic climate change it might be useful to limit the search to information available from government sites. This ensures that the information is reliable.

STEP 4. From Google's Advanced Search page click on U.S. Government, which is found at the bottom of the page.

Topic-specific search engines from Google:

[Google Book Search](#)
[Google Code Search](#) **New!**
[Google Scholar](#)
[Google News archive search](#)

[Apple Macintosh](#)
[BSD Unix](#)
[Linux](#)
[Microsoft](#)

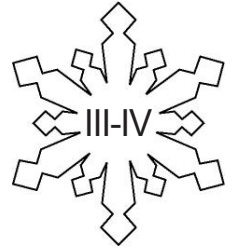


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STEP 5. In the search box type “arctic climate change” and click on **Search Government Sites**. Answer the following questions.

11. How many results were returned? _____
12. What is the title of the first result on the list? (Notice all results are from governmental sites.)

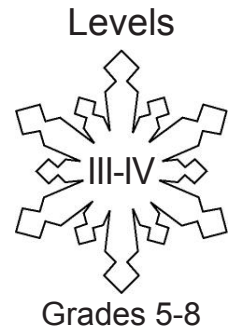
STEP 6. Compare the top hit with a simple search in Google. Go to the Google home page (www.google.com) and type “arctic climate change” in the search box. Click **Search** or hit [Enter]. Answer the following questions.

13. How many results were returned? _____
14. What is the title of the first result on the list? _____
15. How many of the results on the first page are from government websites?
Government sites have “.gov” in the URL.

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Part Three – Meta-Search Engines

STEP 1. Start a Web browser, such as Firefox, Safari or Internet Explorer.

STEP 3. Go to the Metacrawler Web site by typing <http://www.metacrawler.com/> in the browser's URL bar.

STEP 3. Search for average monthly temperatures in Nome. Type "temperature climate Nome" as you did in Part Two of this worksheet.

16. How did the results compare to the results in Part Two? Did the meta-search engine return useful websites?

Part Four

Use your skills to answer the following questions.

17. Mt. McKinley is the highest mountain in the Northern Hemisphere. Use your search skills to find the name of the highest mountain on Earth.

18. Some say the highest mountain is Mauna Kea. Why might that be considered the highest mountain?

19. Others might say the highest mountain is Chimborazo. Why might that be considered the highest mountain?
