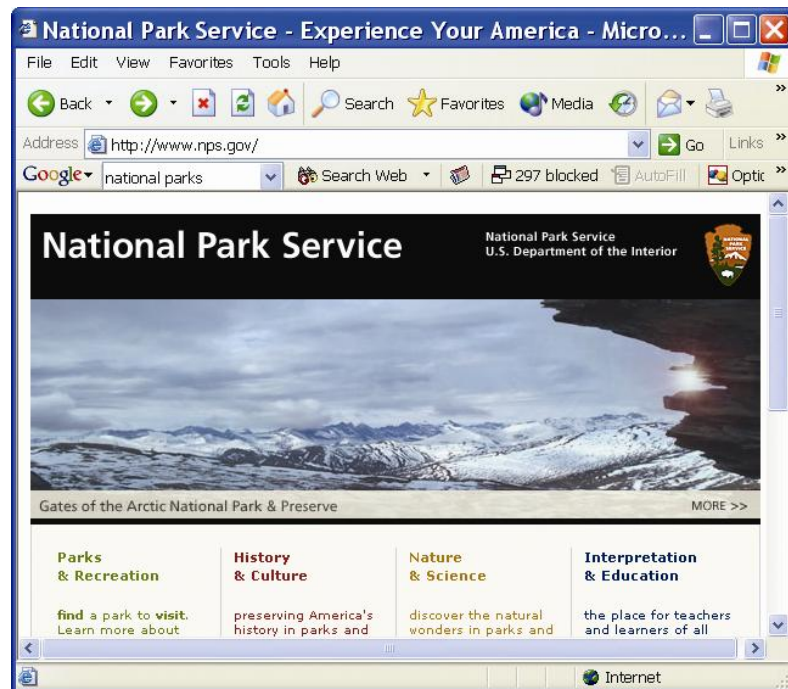# Technology Handbook
Module 7

Research on the Internet

Key Terms

ISP

modem

browser

hyperlink

search engine

multimedia page

Using the Internet

Computers connect to the Internet in different ways. Homes and businesses pay an **ISP**, or Internet Service Provider, to connect to the Internet. A **modem** connects a computer to the Internet. As you will learn later in this module, dial-up modems and DSL modems use phone lines to connect to the Internet. A cable modem uses cable TV wires to connect to the Internet. A **browser** is the software that sends and retrieves information on the Internet. Study the figure below to learn about some important browser functions.

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A **hyperlink** is an item on a Web page that links to another Web page.

The Favorites menu allows you to bookmark Web pages. A bookmark sends the browser automatically to a page that you specify. Web pages that contain information in many forms, like sound and movies, are called **multimedia pages**.

The Internet contains so much information that it is often hard to find what you are looking for. **Search engines** search the Internet for keywords that you provide. In addition to the search engine in Internet Explorer, there are several very good search engines on the Internet.

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Regardless of which search engine you use, it is important for you to be able to search effectively.

✓ Tech Check
Answer the questions on a separate piece of paper.

1. **Define** What is a browser?

2. **Explain** Why are bookmarks useful?

3. **Compile** Make a list of five of your favorite multimedia pages on the Internet.

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Speed on the Internet

Internet speed is determined by the type of modem and Internet connection that you have. In general, the more expensive the modem and Internet service, the faster the Internet connection.

The slowest, and least expensive, type of modem is a **telephone modem**. This type of modem uses a **dial-up connection**, meaning that it uses telephone lines to connect to the Internet. A dial-up connection relies on what is sometimes referred to as **POTS**, or Plain Old Telephone Service. Originally, POTS was intended for voice communications, but in the past decades, many Internet users have come to depend on the telephone companies for their Internet connections.

Due to high Internet traffic on phone lines as well as the limitations of a telephone modem, dial-up connections are often quite slow. To be exact, a telephone modem has a speed of 56 Kbps (56 thousand bits per second). Another disadvantage of a telephone modem is that your telephone line is busy while using the Internet. In other words, you cannot receive or make any calls as you e-mail or surf the Web. Additionally, some multimedia Web pages cannot be viewed using a telephone modem.

The digital family of modems and Internet connections are much faster, albeit more expensive. Digital modems use digital signals, instead of the analog signals used by POTS, to send and retrieve information over the Internet. Digital signals are much faster and more efficient than analog signals—digital modems can be from 20 to 100 times faster

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than a telephone modem, enabling not only higher speeds but also greater access to multimedia Web pages. The three major types of digital modems are discussed below:

- A **DSL modem**, as does a telephone modem, uses telephone lines to connect to the Internet. However, a DSL connection is different than a dial-up connection in several ways: a DSL connection is always on, so there is not need to dial in to connect; a DSL connection uses digital technology that is much faster than POTS; and the digital signals that a DSL modem sends and receives do not interfere with telephone service, so you can make and receive phone calls while connected to the Internet.

- A **cable modem** uses a TV cable to connect to the Internet. Many of its advantages are similar to those of a DSL modem: its processing speed is much faster than a telephone modem; the connection is always on; and although a cable modem transmits signals on a TV cable, the Internet connection does not interfere with cable TV service.

- A **satellite modem**, as its name suggests, uses a satellite dish to connect to the Internet. Some cable TV companies now provide small satellite antennas that enable you to both connect to the Internet and receive cable TV. As is the case with cable modems, a satellite modem is much faster than a telephone modem, its connection is always on, and it does not interfere with cable TV service.

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The main drawbacks of digital modems and their corresponding Internet service are cost and availability. A digital Internet connection can cost around twice as much as a dial-up connection, and although nearly anyone with phone service can set up a dial-up Internet account, digital Internet service is not offered in many areas.

✓ **Tech Check**
   Answer the questions on a separate piece of paper.

1. Recall What does POTS stand for?

2. Discuss What is the processing speed of a telephone modem?

3. Compare Name one advantage of digital Internet connections over dial-up connections. Name one drawback of digital Internet connections.

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Techniques for Searching

The Internet is probably the single most important new tool for research since the public library. However, the advantage provided by the Internet can also be its greatest challenge: There is so much information out there that it is difficult to know where to begin!

A good place to begin work regardless of your research topic is Google. Arguably the most useful search engine, Google is an enormous "spider" (an automated piece of software that "crawls" the Web looking for information) that keeps an index of over three billion URLs. Simply type your topic into Google's search bar.

When you use the Internet for research, you want to find Web pages that contain useful, or relevant, information. The first step towards finding this information is choosing appropriate keywords. **Keywords** are the words a search engine uses in its search for relevant Web pages.

If you use only one keyword to search the Web, you may find that you get a very high number of results, most of which are irrelevant. For example, if you want to find information about tennis lessons, a general keyword such as *tennis* might produce results as varied as tennis-related products, the history of tennis, tennis rankings, tennis clubs, and tennis lessons. To avoid sifting through irrelevant links, use the more specific phrase *tennis lessons.*

Many search engines also have an advanced search that allows you to indicate exactly what you want the engine to search for and what you want it to ignore.

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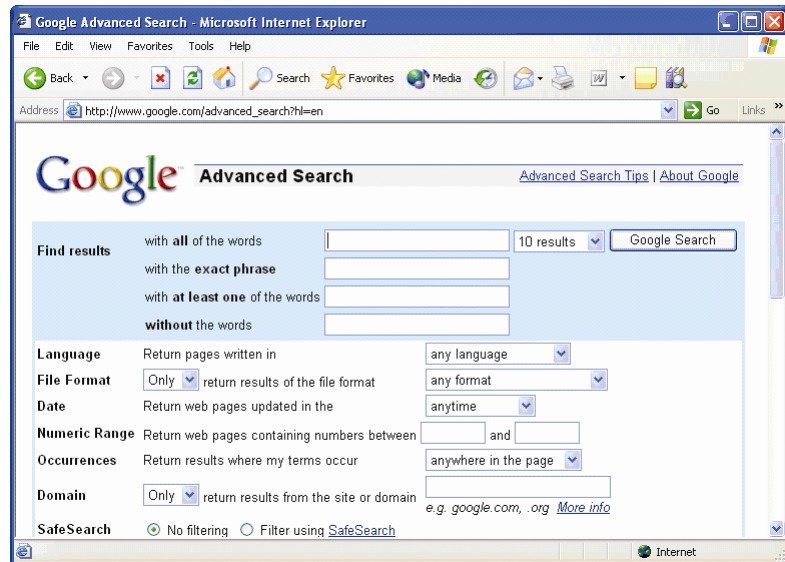
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Boolean logic, named after nineteenth-century mathematician George Boole, is a form of algebra in which all values are reduced to TRUE or FALSE. This logic system can be applied to search engine keywords in order to find only the most pertinent results. **Boolean operators**, or the conventions used in keywords to apply Boolean logic to Internet searches, are as follows:

- To find Web pages with an exact phrase, place the keyword or phrase in quotation marks. Phrases in quotation marks such as *"Boston terriers"* and *"Siamese cats"* will only produce Web pages that include that exact phrase.

- You can search for Web pages that include two or more keywords, although the words will not always

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be near each other on the Web page. To do such a search, use the following Boolean operators: AND, +, &. You can also simply include a space between words. The following are examples: *cats AND dogs, cats & dogs, cats + dogs, cats dogs.* These phrases will only produce Web pages about both cats and dogs.

- To search for Web pages with one or both keywords, use the following Boolean operators: OR, ^. Examples of keywords with these Boolean operators are *lizards OR snakes, lizards ^ snakes.* These phrases will produce Web pages that refer to lizards, snakes, or both.

- To find results with one but not another keyword, use the following Boolean operators: NOT, –. Examples are *cats NOT tigers, cats –tigers.* These phrases will produce results about all cats except tigers.

- If you are looking for a combination of specific information, you can use a combination of Boolean operators, such as *"pet care" + lizards OR snakes.* This phrase will produce Web pages about pet care for lizards or pet care for snakes.

- If you only want to find information from a specific Web site, just add the domain after the search term along with the "site" tag, and the search engine will only look for documents on that site: "pet care" site: www.hsus.org.

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On Google, after you have entered your search phrase and have finished looking at the results, click on the "News" tab near the top of the page. This will show you recent news stories about your topic from a number of news services and wires.

Your Web searches will likely give you page after page of hits, each with a brief summary of some of the text from that page. Some things to think about while browsing your results:

- Links on the right hand side of the page (and sometimes at the top, in a colored box) are sponsored links—this means that the company in question has paid to have their link show up. While this does not necessarily mean that the link is not worth exploring, it is usually an indicator that the site is selling a product or service, and might not be valuable for pure research.

- Many search engines display a few lines of text from each page and shows your search phrase in bold. Read the sentence surrounding the bold information to see if it is appropriate for your work.

✓ Tech Check
Answer the questions on a separate piece of paper.

1. Define What is Boolean logic?

2. Predict Describe a situation in which it would be best to use an advanced search.

3. Reproduce Name three Boolean operators and describe the results they produce.

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Evaluating Web Sites

While there is a lot of valuable information online, there is also a lot of information that can be deceptive and misleading. The books in your library have been evaluated by scholars and publishers; Web sites, however, are not verified. Learning to **evaluate**, or determine the value or credibility of, Web sites will make you a more savvy surfer and enable you to gather the information you need quickly and easily.

When you are trying to decide whether a Web site provides trustworthy information, there are a number of components to consider.

Authorship:

When dealing with information from a Web site, the first and most important question to ask is "Who wrote this information?"

Once you have found the name of the author (usually located near the top or bottom of the page), do a quick Web search to see what else that author has written. Typing the author's name into Google or another search engine will often return not only pages by that author, but also pages about that author, such as reviews of his or her work.

Check to see if the author has published in print. Search online for books that he or she has written. All this information will help you decide whether you should consider the person's information trustworthy.

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Sponsorship/Publishing:

Take a look at the group that is offering the information. Why have they published this article? Are they trying to sell a product or service, or are they an impartial organization providing unbiased information?

Determining the group that sponsors or publishes the site will help you decide whether the information is biased. For instance, if an article that suggests a certain pesticide is very effective is posted on the Web site of a company that sells that pesticide, it is probably biased.

Accuracy:

When you write a term paper, you are expected to provide sources for each of your facts. Look for Web sites that do the same thing by providing citations containing bibliographical information or references.

Also, look for clues that the information was written by someone knowledgeable.

Timeliness:

Most articles will contain information about when it was written and when it was last updated. Recent update information normally appears at the very bottom of a Web site's main page, while date of authorship information usually appears near the title of the specific article.

TIP

Spelling errors and grammatical mistakes are warning signs that the information provided may not be accurate.

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The more recently something was written, the more likely it is to be accurate. An article from 1995 about "Internet trends," for instance, probably does not contain up-to-date information.

One final guideline when using information from a Web site: remember to treat it with more scrutiny than you would print information. Anyone can post information to a Web site; however, not everyone can have a printed article published.

✓ **Tech Check**

Answer the questions on a separate piece of paper.

1. Define What does "evaluate" mean?

2. Differentiate What is the difference between authorship and sponsorship?

3. Explain Why is timeliness important to consider when evaluating the information on a Web site?

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Useful Online Resources

One of the most useful elements of the Internet is the **World Wide Web** (also called "the Web"), which allows documents to be viewed by anyone anywhere in the world. This is particularly helpful when it comes to documents that are normally expensive or hard to find. For instance, many families do not own an encyclopedia, so a student who needs to do research would normally have to make a trip to the library. The Web makes it possible for documents like encyclopedias and dictionaries to be accessed by many people.

Dictionaries
There are hundreds of online dictionaries. Some specialize in certain types of information, such as law, medicine, or technology.

Dictionary.com Easy to remember, this site also contains a fully searchable thesaurus. (www.dictionary.com)

OneLook Dictionaries A "meta-dictionary," this site lets you type in a word once to search across more than 840 dictionaries. (www.onelook.com)

Merriam-Webster A Web version of one of the best-known print dictionaries, this site includes a "word of the day" feature, a thesaurus, and links to other research sites. (www.m-w.com)

Encyclopedias
Encyclopedias need to be updated often, making them a perfect choice for online delivery. Online encyclopedias are searchable, and many contain photos and illustrations.

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Britannica Online The online version of one of the most respected print encyclopedias offers both free and premium access. (www.britannica.com)

World Book Online The online version of *World Book* does not offer any free information; you have to pay a monthly fee to access the entries, which include all the contents of the print versions dating back to 1922. (www.worldbook.com)

Encarta A popular encyclopedia by Microsoft, the Encarta Web site offers lots of free content, but to access all their information you will need to buy either a subscription or a copy of the CD-ROM. (www.encarta.msn.com)

Other Resources
While dictionaries and encyclopedias offer lots of useful information, other specialized resource sites can give you information about other subjects.

Roget's Thesaurus The online version of the definitive thesaurus lets you search for words or browse them alphabetically or by category. The site also offers plug-ins that put dictionary and thesaurus buttons right in your browser window. (www.thesaurus.com)

RefDesk A comprehensive site with links to every kind of information imaginable. If you do not know where to start looking for a particular fact or statistic, start here. (www.refdesk.com)

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Bartleby also contains the complete text of dozens of biographies, articles, and books.

Bartleby Bartleby is fully searchable and contains the complete text of *Bartlett's Quotations*, *Simpson's Quotations*, the *Columbia World of Quotations*. (www.bartleby.com)

iTools This "meta-research" tool lets you search not only the Web, but also discussion groups, dictionaries, and other sources. (www.itools.com)

eLibrary This premium site searches the full text of hundreds of periodicals, newswires, books, maps, and more. (www.elibrary.com)

✓ Tech Check
Answer the questions on a separate piece of paper.

1. Recall What is a "meta-dictionary"?

2. Predict Why might you want to use Bartleby?

3. Explain If you are not sure where to look for a particular fact or statistic, why might RefDesk be a good choice?

Module 7
Assessment

Research on the Internet

Answer the following questions on a separate sheet of paper.

1. Homes and businesses pay a(n) _____, or Internet Service Provider, to connect to the Internet.
2. A(n) _____ connects a computer to the Internet.
3. A(n) _____ is the software that sends and retrieves information on the Internet.
4. A(n) _____ is an item on a Web page that links to another Web page.
5. Web pages that contain information in many forms, like sound and movies, are called _____.
6. _____ search the Internet for keywords that you provide.
7. A telephone modem uses a(n) _____ connection to connect to the Internet.
8. A dial-up connection relies on _____, or Plain Old Telephone Service.
9. A(n) _____ uses a TV cable to connect to the Internet.
10. A(n) _____ uses a satellite dish to connect to the Internet.
11. A word used by a search engine in its search for relevant Web pages is called a(n) _____.
12. _____ is a form of algebra in which all values are reduced to TRUE or FALSE.
13. _____ are the conventions used in keywords to apply Boolean logic to Internet searches.
14. To _____ means to determine the value or credibility of.
15. The _____ is the part of the Internet that allows documents to be viewed by anyone anywhere in the world.

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Assessment

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Concept Review

Answer the following questions on a separate sheet of paper.

16. The slowest, and least expensive, type of modem is a
_____ modem.
17. The _____ menu allows you to bookmark Web pages.
18. The three major types of digital modems are _____,
_____, and _____.
19. Boolean logic was named after nineteenth-century mathematician
_____.
20. To search for Web pages with one or both keywords, use the following Boolean
operators: _____, _____.

Critical Thinking

Complete the following exercises to reinforce your understanding of the lesson.

21. **Describe** Write a paragraph about a school project that could be made easier with
Internet research. Describe the steps you would take to perform your research and
give examples of the kinds of results you would expect to find.
22. **Compile** With a classmate, create a list of ten actual Web sites that would be useful
for school research. All the Web sites should contain information on a variety of
topics, and all of the sites should contain reliable and accurate information.