



## Lesson Plan: Search Software

**Instructional Days:** 1-2

**Topic Description:** The application and implications of Google's search software is examined by understanding how search software works, examining features of the software, and looking at further or future uses of existing software.

### Objectives:

The student will be able to:

- Explain how Google's search software helps us find information on the internet.
- Improve how they use search software.
- Think about software as a creative product and a tool.

### Outline of the Lesson:

- Discussion: introduction to search engines (5-10 minutes)
  - Searching for information in a book: use table of contents or index.
    - Web directories are like a table of contents for the web.
    - Search engines work by looking at the "index" of the web.
  - Many search engines, and many *types* of search engines, too.
    - Web: Yahoo! Google, bing
    - People: facebook (personal), LinkedIn (professional), twitter (both!)
    - Businesses: yelp, Google Maps,...
  - Search engines are *software*, meaning they provide a set of instructions. Today we'll look at one specific set of search instructions, which is Google's search software.
- Introduce, watch, and debrief each video:
  - How Google Search Works (3:14)
    - What instructions does the search software carry out? (5-10 minutes)
      - Looks through Google's index of the web
        - This index is created by spider software that "crawl" the webpages on the internet to figure out what is on each webpage.

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- Asks questions about each entry in the index:
  - Does the keyword appear? How many times? Where does it appear?
  - Do synonyms of the keyword appear?
  - What site hosts this webpage? Is it a high-quality website?
  - What is its page rank? How many other pages link to this one?
    - This last question ties back into the PB&J activity and the discussions of artificial intelligence: computers do not know what it means for a webpage to be “important,” so we need to give it some way of measuring importance.
  - What are the implications of having access to search software? Why does it matter that we are able to search the web?
- Google Search Tips & Tricks (1:02)
  - Introduce: Why is it important to understand what instructions the computer is carrying out? Why should software users care about what’s inside their computer?
    - We understand a little more about what instructions the computer is carrying out; how can this help us use search software better?
  - Debrief: How do the tips given relate to what we know about how search works?
    - We know that the search software asks about:
      - Whether the keyword is in the title
      - Whether the webpage contains synonyms of the keyword
      - What site hosts the webpage
    - We can tell the computer what to do with the answers to these questions!
    - Take-home message: what instructions the computer carries out affects the way we use the software.
- Google Easter Eggs (4:57)
  - Introduce: Software is a *creative* product built by people who (hopefully) have a sense of humor, so not all features in software are purely functional!

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- “Easter eggs” are usually humorous hidden features in software. Google’s search software sometimes will return your search results in a funny or interesting way.
- Google Voice (7:43)
  - This is a longer video, feel free to skip around or just watch parts, as needed!
  - Introduce: Voice Assistant software is common in smartphones and combines a search engine with an “assistant” who can complete tasks for you. There are also some “easter eggs” in this video.
  - Debrief: the Voice Assistant is one further application of search engine software. Can you think of any new uses for search software?
- Wrap-up (5-10 minutes)
  - What kinds of software would you want to make?
  - What would it do, and what impact would it have?
  - What useful or fun features would you add?