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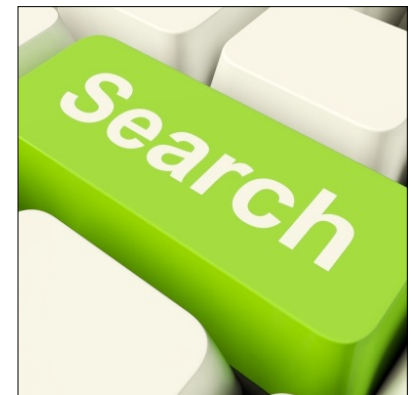
SAMPLE LESSON FROM LEVEL 2

How Does Search Work?

According to a Pew Research Center study, How Teens Do Research in the Digital World, most students think "research" means "Googling." As a result, research "has shifted from a relatively slow process of intellectual curiosity and discovery to a fast-paced, short-term exercise aimed at **locating just enough information to complete an assignment**." Students need help learning how to dig deeper! So, in addition to explaining how search works, this lesson teaches students they shouldn't depend on search engines to do all the work. Elements of this lesson come from Google's Understanding Search Engines (which also offers excellent background on this topic).

Key Standards—Common Core ELA, 7th: SL.7, SL.7.1, SL.7.1.a, SL.7.1.b, SL.7.1.c, SL.7.1.d, SL.7.4, L.7, L.7.3, L.7.3.a, L.7.6. ISTE: 3a, 3c, 3d. CASEL: 4a, 4d, 5d, 5e.

Learning Objectives

Students will...
- Understand how a search engine searches the Web.
- Know what a keyword is and how it works.
- Practice selecting the best keywords in order to get the best results.

Introducing The Lesson

Ask your students how they "search" for something online. Most will say they use Google and type in something like *"What is xxx?"* Tell them there is much more to searching that this!

The Lesson

1. Screen [Video 1: https://youtu.be/BNHR6IQJGZs. It explains how search engines work.

2. After screening, explain that some search engines, like Google, are considered **Crawler-Based Search Engines.** What this means is **they use "spiders" to crawl or index the Web.** Explain that there are other types of search engines too:

- **Directories:** These are human-powered search engines. A website is submitted to the directory and must be approved for inclusion by an editorial staff.
- **Hybrid:** This is a combination of crawlers and directories.
- **Meta Search Engines:** These search several search engines at once and combine the results into one list. Dogpile is an example of a Meta Search Engine.

The Lesson, continued

3. Because crawler-based search engines are the most popular **(and Google is the most popular of those),** use the explanation that follows to help your students understand how they work:

   *A **spider**, sometimes called a **webcrawler**, crawls around the Web exploring webpages and their links and collecting information. After the spider has collected this information, it organizes it so that when we type **keywords** into the search engine, that program goes into the index to find webpages that match these keywords. It then shows these matches on a **results page**. All of the above is done without any human involvement—so a huge number of sites are indexed quickly. Additionally, the spider keeps crawling around, updating the index every time the information on a webpage changes.*

4. Explain that a web search is only as effective as the **keywords** we use. This is a good time to explain this term to your students and have them write down its definition:

   ### KEYWORD

   A word that serves as a key and describes the contents of a webpage.

5. **Activity.** This activity will help your students understand **keywords** better. In preparation, collect 10 or more small items from around your home and put them in a bag. Items can include things like: a grape, small flash drive, fruit peeler, hairband, paper clip, small gemstone, etc. The more unique the item, the better. Bring this bag to your class, and don't let students see what's inside!

   During your class, invite students to come to the front of the room, one at a time, and select **one** item from your bag. Be sure ONLY that student sees the item (**the rest of the class *should not see it).***
   Ask the student standing at the front of the room to **describe the item without using any words in the object's name** (for example, they might describe the paper clip using these keywords: *metal, small, rounded corners, clasp, documents*, etc.). The student *cannot* use the words **paper** or **clip**. The rest of the class should then try to guess what the item is. In other words, the student at the front of the room will have to come up with descriptive **keywords** that will help their classmates (who represent Google) reach the right result. If you are conducting this activity at home, take turns collecting and describing small items in your house. Repeat this exercise until you've run out of items in your bag and then ask: "*What did you learn?*"

6. Explain that this activity demonstrated the importance of keywords. In order to guide their classmates to the best result, the student at the front of the room had to choose just the right words. In other words, the best keywords yielded the best results.

Goal

Students learn that choosing effective keywords is the key to successful online searches.

HOW DOES SEARCH WORK?

KEYWORD

A word that serves as a key and describes the contents of a webpage.