

How to search the Internet effectively using the search engine Google

Aim:

To provide an overview on searching the internet effectively using the search engine Google.

Objectives:

By the end of this session, participants will be familiar with:

- How Google works and ranks its search results.
- Some of the additional features in Google (advance search, images, Google Scholar).
- The concept of Boolean logic and how to apply this when conducting a search.
- Techniques and skills needed to find information on the internet.
- Recognising the dangers of Google and unreliable Webpages.
- Webpage evaluation and the ability to apply these skills to viewing Webpages found via Google.

Learning Outcomes:

Upon successful completion of this training course, participants will be able to:

- Conduct an effective search of the internet using Google.
- Understand how Google ranks its results.
- Understanding how Boolean logic works and how to apply this to a search.
- Select and evaluate reliable websites using webpage evaluation techniques.

Search Engines

Google is a search engine; there are other search engines, for example AltaVista or Lycos. There are also metasearch engines that will search other search engines simultaneously; for example Ixquick or dogpile. This will give you a wider set of results.

Remember! **No one search engine is capable of searching every site on the internet**

Some interesting facts:

- **It is estimated that 571 new websites are created every minute of the day, that's 34,260 an hour.** Domo (2012) *Data never sleeps*. Available at: www.neatorama.com (Accessed: 24th September 2012)
- **Every 60 seconds 1 new article is published** Go globe (2011) things that happen on the internet every 60 seconds. Available at: www.go-gulf.com/blog/60-seconds (accessed: 15th August 2012)
- **In one minute around 694,445 search queries are performed on Google.** Go globe (2011) things that happen on the internet every 60 seconds. Available at: www.go-gulf.com/blog/60-seconds (accessed: 15th August 2012)

Two common myths about Google as stated in Devine, J and Egger-Sider, F., (2009) *Going beyond Google: the invisible web in learning and teaching*. London: Facet

That Google searches the whole web. The large number of results achieved from a search would certainly give this impression, however studies have shown that the invisible web is about 500 times the size of the visible

web accessed by Google. It is estimated that 90% of the invisible web is located in databases.

The best information is found in the first ten results. It is worth remembering that search engines use formulas or algorithms to rank search results. This ranking may be based on how often a keyword or phrase appears on a web page. Google uses a slightly more sophisticated method (more below) whereby it evaluates the number of times other sites link into that particular site. Web developers are well aware of this fact and can create web sites that will ensure placement in the first ten results. There are companies who are experts in search engine optimizing and will offer this service to businesses seeking good placement.

How Google works and ranks its search results.

Google searches the web not in 'real time' but over a number of days. The googlebot will visit pages and then stores a copy of these into a single database.

There are two processes that go on when you type a query into Google in order for the result page to be displayed.

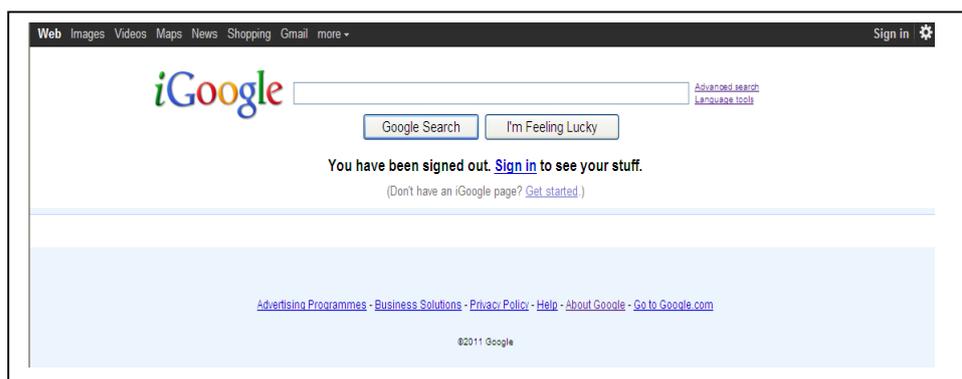
1. The keywords you use in your query
2. Relevancy ranking

Keywords-Google places more importance on where all your search terms appear on the page. It also looks at the order you have written them in and how close to each other they are. This highlights the importance of using the correct keywords and also the order in which you type these in. Google will understand up to 32 keywords (advanced search commands are also included in this).

Relevancy ranking – Put in simple terms pages with many inbound links are given a higher score as are pages with links from high quality websites. Other factors include: a higher score given to those sites who receive a high number of hits and older established sites are also assigned a higher score. This score is worked out before you enter your search question, then combined with your keyword score and displayed in the results page.

The Google Homepage

- Go to the Google homepage at www.google.co.uk



This is the homepage and you will see that you have a list of options along the top (you can find the image search here). The search box is located under the word Google (this is where you type in your keywords). You will also see a list of other options to the right of the search box (this is where you can find the advanced search and language options). If you can't see this, start typing the search term into the box and it will bring up a cog symbol to the right. Click on this to reveal the advanced search option.

- Click on the 'more' tab (found at the top of the screen) and have a look at what other services are available.
- Click on 'About Google' (found under the search box) and this will take you through to a page displaying 4 main options:
 - Our products (this is where you will find the help pages)
 - Our Company (general company information)
 - For site owners (for people who build websites)
 - More Google (this is where you will find FAQ's)

Understanding Boolean logic

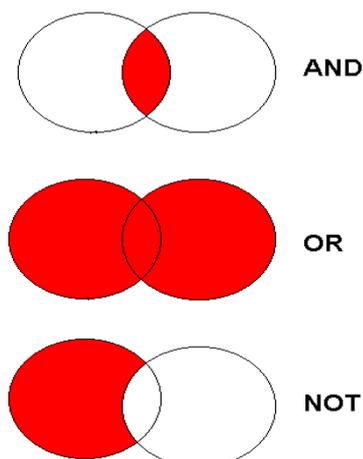
Before you start searching it will help to understand the basic principles of Boolean logic. Boolean logic is the term or concept used for combining sets of words when searching for information. There are 3 main elements used AND, OR, NOT:

AND works by combining 2 (or more) search terms together. This will produce a smaller set of results. (automatically placed between words in Google)

OR is used to look for related terms or spelling variants; for example UK and US spelling e.g. paediatrician (UK) or pediatrician (US). This will produce a larger set of results.

NOT will exclude words or terms from your search. If you would like to search for articles focussing on epilepsy in children and not adults your search strategy would be: Epilepsy **AND** children **NOT** adults (in Google use the minus – sign)

use the NOT operator with caution as it can exclude relevant items.



If you would like some more information on searching, Knowledge Services has a guide to 'Literature searching' that covers searching the databases and the concept of Boolean logic further. Please contact KS for this guide or for a training session on Literature searching.

Searching Google

- Go to the Google Home page and search for information on vaccines. Type the word vaccines into the search box and press return. You should see a page that resembles this:

The image shows a screenshot of a Google search for the word 'vaccine'. The search results page displays 'About 53,200,000 results'. The left sidebar includes navigation options like 'Everything', 'Images', 'Videos', 'News', and 'Shopping', along with filters for 'The web', 'Pages from the UK', and time-based filters. The main results list includes sponsored links for 'child vaccines' and 'Vaccination', and organic results from Elsevier, Wikipedia, ScienceDirect, and the CDC. Annotations with arrows point to the result count, the left sidebar, and the list of search results.

Number of results will be displayed here

You can narrow your results further by clicking on these options.

List of WebPages matching your keywords

You would now like to search Google for some information on obesity in children.

- Type the word obesity into Google and the word children. Google automatically places the 'AND' between the two words.

You would now like to search for some information on paediatricians.

- Type the UK spelling paediatrician into Google - note the number of hits. You realise that this also has a US spelling.
- Type OR and the US spelt word pediatrician into the search box and note the number of results. You should see more.

Now you would like to search Google for information on Doctors.

- Go to the search box and type in the word Doctor - note the number of results. Now add the minus sign and the word TV next to it. Note the number of hits and look at the result - you should see that the more relevant sites are at the top of the results page.
 - Try searching for information on a topic of your choice.
- **If searching for "a phrase" remember to put it in quotations marks. Then Google will search for the words together as a phrase, not separately e.g. "heart attack" not as heart and attack.

Using the Advanced Search Option

The Advanced search option will allow you to refine your search by applying various limits.

- Click on Advanced Search - this will bring up the following box:

The screenshot shows the 'Advanced Search' interface. It is divided into two main sections: 'Find pages with...' and 'Then narrow your results by...'.
Under 'Find pages with...', there are four rows of search criteria, each with a text input box and a corresponding instruction:
1. 'all these words:' with a text box and instruction: 'Type the important words: tri-colour rat teezles'
2. 'this exact word or phrase:' with a text box and instruction: 'Put exact words in quotes: "rat teezles"
3. 'any of these words:' with a text box and instruction: 'Type OR between all the words you want: miniature OR standard'
4. 'none of these words:' with a text box and instruction: 'Put a minus sign just before words that you don't want: -rodent, "Jack Russell"
Below these is a 'numbers ranging from:' section with two text boxes (one for 'to' and one for 'to') and instruction: 'Put two full stops between the numbers and add a unit of measurement: 10..25 kg, £300..£500, 2010..2012'
Under 'Then narrow your results by...', there are four dropdown menus and one text box:
1. 'language:' with a dropdown menu set to 'any language' and instruction: 'Find pages in the language that you select.'
2. 'region:' with a dropdown menu set to 'any region' and instruction: 'Find pages published in a particular region.'
3. 'last update:' with a dropdown menu set to 'anytime' and instruction: 'Find pages updated within the time that you specify.'
4. 'site or domain:' with a text box and instruction: 'Search one site (like wikipedia.org) or limit your results to a domain like .edu, .org or .gov'

Use the advanced search option when you want to:

- Set the language (search for pages in a certain language).
- look for the words e.g. Title or anywhere
- Domain or site searching (can search within a specific site, e.g. Department of Health)
- File type (can search for just pdf's)

Further ways to search Google

Specific web site search

Many websites have a search facility within the site. However some sites do not have this or, if they do, it can be hard to use or ineffective. Google can help you search within a site by limiting your search to a particular domain.

- In the advanced search screen type in www.dh.gov.uk into the search within a 'site or domain' box.

This is a close-up of the 'site or domain' search box from the advanced search interface. It shows a text input box with the label 'site or domain:' to its left. To the right of the text box is the instruction: 'Search one site (like wikipedia.org) or limit your results domain like .edu, .org or .gov'

- Now type 'our health our care our say' into the first search box, click advanced search and Google will display a list of results - you will notice that all of the results are from the Department of health website.
- You can also search general domain e.g. org or .ac
- Remember to remove these filters before starting a new search

Information from: Kraynak J., 2005. *Google: top 100 simplified tips and tricks*. Hoboken: Wiley

Language tools



- Click on the option 'language tools'. It can be found under the more tab as 'translate'. This will display the following screen



From this page you can translate text from one language into another. This may be useful if you've come across relevant journal articles that are in another language. You can also translate WebPages using the 'translate a webpage' option.

Similar pages option (from the results page)

- Go to the Google homepage and type in healthy eating into the search box



From the list of results you will see a similar pages option - click on this to bring up a new list of results that are similar to that particular website. It may sometimes be better to use the similar pages option than clicking on the next result in the list. By using a similar search it gives Google more information in order to target its search. Google can then return a list of links to pages that are more likely to contain the information you need.

Information from Kraynak J., 2005. *Google: top 100 simplified tips and tricks*. Hoboken: Wiley

Additional Features of Google

Google is more than just a search engine: it has a number of additional useful features. Most of these can be found along the top left hand side of the screen or via the “more” drop down menu.



Google Images

With Google Images you can:

- Use advanced search to limit image size, file type, colour. You can also search via specific website for an image

It is worth remembering that:

- Most are copyrighted so do not distribute or reproduce an image unless you have written permission or the image is in the public domain.
- Most recently published images are displayed first on the list

Google Scholar

Google Scholar is useful for searching and looking up journal articles.

- Go to the Google homepage, click on the “more” option and select scholar from the drop down list. If it is not displayed in this list type Google Scholar into the search engine or type <http://scholar.google.co.uk/> into the address bar.



You can search Google Scholar the same way you search Google. So you can use Advance Search and Preference as shown earlier in this course.

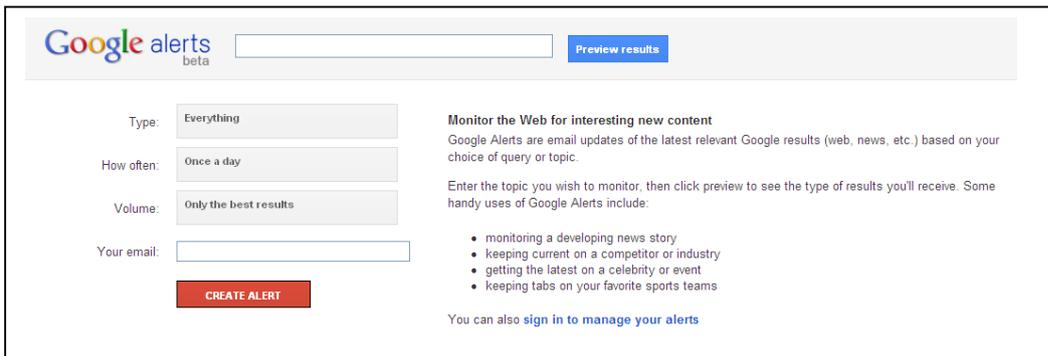
- To search for an author, type in the author's name or author colon and their name e.g. author: smith, J
- To search on a title of an article enter it into the search box in quotation marks "".

However you will find that in most cases you are asked to pay to view the article. It is best to search for articles via NHS Evidence using your Athens account as this will show freely available online content.

Google alerts

This is useful if you search for the same topic every day or like to be kept up to date. Google will do the search for you and will email you with any new sites.

- Go to www.google.com/alerts
- Fill in the request box
- Click on Create Alert; a verification email will be sent to your inbox. Once verified, the request alerts will come through to your inbox.



The screenshot shows the Google Alerts creation page. At the top left is the 'Google alerts beta' logo. To its right is a search input field and a 'Preview results' button. Below the logo are four dropdown menus: 'Type' (set to 'Everything'), 'How often' (set to 'Once a day'), 'Volume' (set to 'Only the best results'), and 'Your email' (with an empty input field). A red 'CREATE ALERT' button is positioned below the email field. To the right of these settings is a section titled 'Monitor the Web for interesting new content' with explanatory text and a list of use cases: monitoring a developing news story, keeping current on a competitor or industry, getting the latest on a celebrity or event, and keeping tabs on favorite sports teams. At the bottom right, there is a link to 'sign in to manage your alerts'.

Extra Google Tips

- Use Link: to find pages that link to specific pages, e.g. link:NHS
- Info: to display any information Google has about a site
- You can also use Google to make conversions; for example seconds into minutes. Type convert 60 seconds into minutes and hit enter.
- For numerical ranges a hyphen does not work as Google will take it as a character. To look for ranges of numbers type the two numbers of your range separated by two periods with no spaces between the periods or the numbers e.g. 1980..1990 or £30..£100. Indicate what the numbers represent e.g. pounds, miles, pixels (Kraynak, 2005). This option can also be found under the advanced search option.

Webpage Evaluation

A **word of caution** -using Google to search for medical information is not recommended. This is because **anyone can put anything onto the internet**. The Internet has no publisher, guidelines or process that people have to adhere to. Anyone with a little knowledge and time can produce a webpage or site and publish it onto the net. We would recommend looking for medical articles or evidence based healthcare resources via a recognisable and trusted gateway or resource centre. NHS Evidence is a good example of this and solves the problem of checking for reliable sources as everything found on this site has been validated.

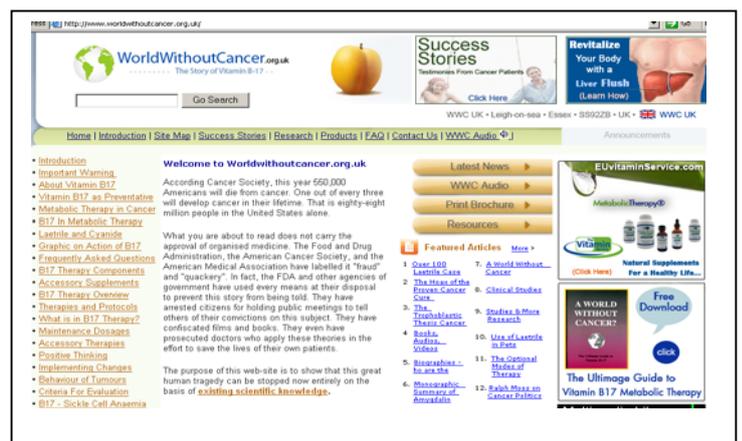
However is it still worth spending some time learning how to recognise a reliable website. Below are a few tips that should help you to do this:

- Check the URL (Uniform Resource Locator) - is it a personal site i.e does it contain a name e.g. %jamie or ~jsmith. As a general rule the following apply:
 - Companies tend to end in: .com or .co.uk
 - Educational establishment tend to end in: .edu or .ac.uk
 - Government sources tend to end in: .gov
 - Non profit organisations tend to end in: .org
- You should assess the author of a web page by the same rules you would for something published in a book.
- Check for bias: who wrote the website/put it together, why is this page on the web and is it sponsored or co-sponsored by an individual or group that has created other sites?
- What are the author's credentials on the subject? Are they a hobbyist? Or is it written by a subject expert with recognized knowledge and expertise in the field? Where do they get their information from?
- Does the page link to other reputable sites
- Look for links that give information about the site; usually they say "contact us" or "about us"
- See when the page was last updated. Is the information contained in the site still relevant/valid and up-to-date?
- Does the site follow the basic rules of grammar and spelling?
- What is the general presentation of the site? Is it logical and are there lots of adverts? Is the presentation consistent throughout the source?
- Finally ask yourself if the web is really the best place to find resources for the research you are doing

Below are 4 sites found using the search term 'cancer cure'. Which is the more reliable? Why do you think this?

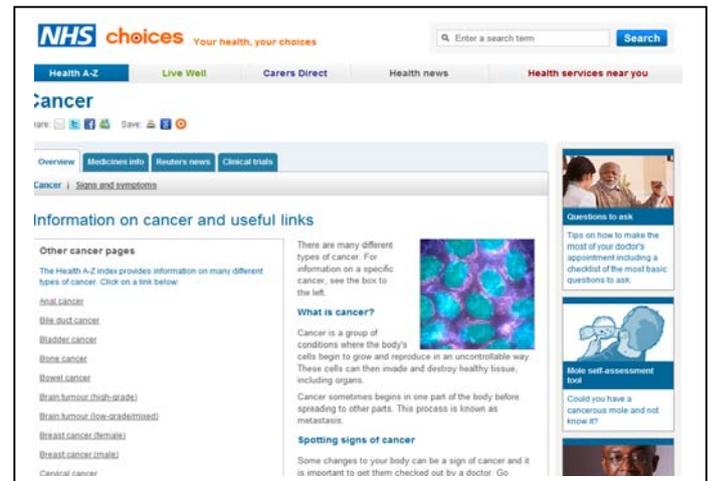
www.CancerTruth.net

www.worldwithoutcancer.org.uk



www.mariecurie.org.uk/

www.nhs.uk/conditions/cancer



Answers to web site reliability

CancerTruth.net

Ends in net so the site is not from an organisation, educational establishment, company or government department

Site bias -he wants you to buy his book, site is there to make money.

Has no credentials about the subject (about from losing several family members). There is a statement at the bottom of the site 'I am not a doctor' and 'the information is for educational purposes only'.

Check out a few of his claims-the book is on Amazon. Also check to see if the people supplying these quotes are real.

The site looks like it was designed in-house rather than by a company (lots of scrolling is needed to move down the page).

There are no links to reputable sites.

No personal information.

worldwithoutcancer.org.uk

Ends in org, so we know it's an organisation that has put this page together.

Some bias-links to biblical quotations, under the heading "In God we trust" implies a bias towards a religious group.

Adverts down one side

Opening sentence contains statistics from U.S.A.; it's a UK site, so why are they using US figures.

Author is the organisation itself, there is contact information available and a mission statement as such.

No external links, other than for ordering. It would be interesting to know what business links there are between the suppliers and the organisation.

Looks like the page was last updated in 2001 - clicking on the latest news link displays items from 2000.

mariecurie.org.uk

Ends in org so it's an organisation and it also has a registered charity number displayed at the bottom of the page, giving it more credibility

The site has a lot of information available on who they are and what they do.

The site has links to other reputable sites

The site is updated regularly; the latest news section had information from today on it.

No adverts

Familiarity, having heard of Marie Curies Cancer Care, and having seen the charity shops, adds credibility to the organisation.

NHS Choice - Cancer

Has NHS as a domain name; a recognised organisation well supported and government funded.

The site is written by experts in the field. Information contained with the site is based on clinical evidence and research.

It has links to other reputable sites.

The about us section contains full names, which you can locate

The page has details about when it was last updated and when it is due to be updated next.

No adverts

This completes the course: If you require any further training or a refresher session please contact Trish Lacey Information skills and Outreach Knowledge Services Professional on: 01384 816591