Strategic Searching Online: How Search Engines Work: Page Ranking

National Curriculum

Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.

Aim

To understand and explain what page ranking is.

Lesson Duration

It is estimated that this lesson will take approximately 60 minutes.

60 mins

Success Criteria

I understand that search results are ranked.

I can explain how search results are ranked.

I can suggest some of the criteria that search engines use to decide on web page ranking.

I can compare the page ranking across different search engines.

Key Vocabulary:

Page rank, ranking, criteria, advertisements, program, query.

Resources

Lesson Pack

PC devices, such as laptops, Chromebooks and/or tablets

Preparation

Page Ranking: Comparing Search Engines Activity Sheet - one per pair

Differentiated **Page Ranking Detectives Activity Sheet -** one per child

It is advised that appropriate search engines are chosen prior to the start of the lesson. Choose three child-friendly search engines for children to use.

Prior Learning: In this unit, children have frequently used search engines with a focus on choosing keywords and have learnt how search engines work. Children should have a good knowledge of search engines and should be confident in using them with efficiency.

Learning Sequence

Remember It: Using the **Lesson Presentation**, ask the children to write down the answers to the questions based on the previous lesson. A one-minute timer is provided along with the answers.

Page Ranking: Using the **Lesson Presentation**, introduce what page ranking is in the context of search engines. Explain that search engines may have pay-per-click advertisements at the top of their search results. It would be beneficial to show children what these look like on a chosen search engine.

Page Ranking: Comparing Search Engines: Using the **Page Ranking: Comparing Search Engines Activity Sheet**, allow children the opportunity to explore different search engines. Children could use the suggested search terms on the **Lesson Presentation**, however these can be altered to fit the needs of children. It is recommended that in order to complete **Page Ranking: Comparing Search Engines Activity Sheet** appropriate search engines are chosen prior to the lesson.

Page Ranking: Comparing Search Engines: Using the questions on the **Lesson Presentation**, ask the children to reflect on what they have discovered when comparing search engines. Then ask them why they think some web pages rank higher than others. Explore what page ranking does when a search query is inputted. **What criteria do children think the page rank program is looking for?**

Page Ranking Criteria: Using the **Lesson Presentation**, explain some of the things the page ranking program takes into consideration. It is important to note that this list is not exclusive to one search engine and different search engines may have different criteria in their page ranking program.

Page Ranking Detectives: Using the **Lesson Presentation**, explain the scenario to the children. Ask the children what they would be expecting to see on a highly ranked web page for a given search. The example search results can be altered to fit the needs of the children or class.

Why do you think Wikipedia is often a top-ranking web page?

Page Ranking Detectives: Using the differentiated **Page Ranking Detectives Activity Sheet**, children should compare the web pages using one given search term. They should compare a web page ranked highly (not Wikipedia) and a web page ranked much lower.

| ★ | Children will compare a high-ranking web page with a lower-ranked web page. Children should use the six criteria they are given and are encouraged to add their own. | ★ ★ | Children will compare a high-ranking web page with a lower-ranked web page. Children should use the four criteria they are given and should add their own. | ★ ★ ★ | Children will compare a high-ranking web page with a lower-ranked web page. Children should create their own criteria, one example is provided. |

Rank It: Using the **Lesson Presentation**, show the children three different web pages from the same search result and ask them to rank them in the order they think they appeared. Ask children to justify their answers.

On the **Lesson Presentation**, the examples can be clicked and will take you to the web pages directly.

It is recommended that web pages are checked prior to the beginning of the lesson.

Exploreit

Sortit: Children could create their own rank it game, similar to the plenary of the lesson. Children could find three web pages which have been page ranked and ask their partner to suggest which web page was ranked the highest.

Rankit: Children could take a selection of books on a given topic and rank them based on usability. A similar criteria to the differentiated **Page Ranking Detectives Activity Sheet** could be used but adapted for physical books.

Organiseit   Using the **Knowledge Organiser**, children could go through the words previously underlined as ones that they didn't understand and see if they can now explain them. Ask the children to highlight any words that they are still unsure of. Children could work in partners or groups to further explain any key words or vocabulary that has been mentioned but children have not yet understood.

Assessment Notes:

Computing

Strategic Searching Online

How Search Engines Work: Page Ranking

Question Marks

You will spot question marks at certain points in this **Lesson Presentation**.

Clicking the question marks will bring up key questions.

The assessment questions that appear will enable you to check your understanding against the lesson aim and success criteria.

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- I can compare the page ranking across different search engines.

Remember It

Write an answer to these questions, based on your learning from last lesson. You have one minute.

What does a web crawler do?

What is a search engine's index?

What information does a web crawler store about a web page?
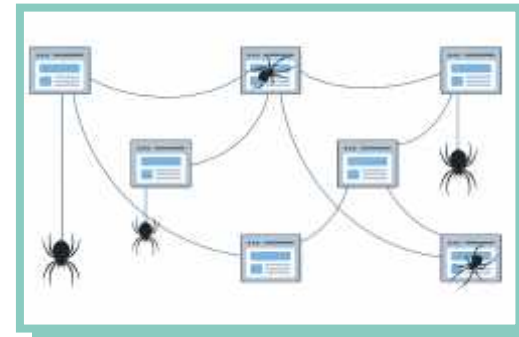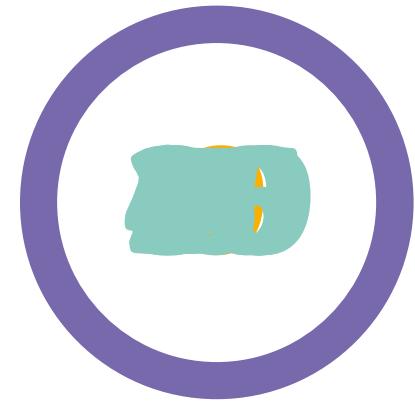
Remember It
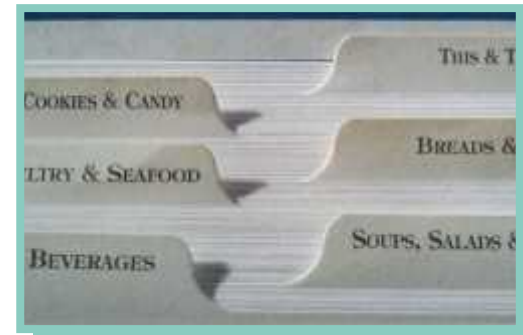
Web crawlers or spiders crawl the World Wide Web. They visit web pages through hyperlinks and store information about each page they visit. Web crawlers look for: key words, titles, sub-headings, images, videos and links to other websites. The information they find is stored away in the search engine index.

Page Ranking

It is the job of the page ranking program to sort your search results into the order they think you would find most useful. Similarly to the web crawler or spider program, each search engine has its own page ranking program. This means that web pages may be presented in a different order, depending on the search engine.

Sometimes a search engine may have an advert at the top of their search results. These web pages have paid to be at the top of the search results and have not necessarily been ranked number one by the page ranking program.

Page Ranking: Comparing Search Engines

Using the **Page Ranking: Comparing Search Engines Activity Sheet**, compare the page rank of the following search terms across different search engines.

Look at the first page of search results.

rainforests
animals
computer science for kids

Page Ranking: Comparing Search Engines

What did you notice about the search results for different search engines?

Did you notice any similarities in the search results?

Were the search results ranked in the same order?

Did you notice any websites or web pages that appeared in one search result but not in another?

Page Ranking: Comparing Search Engines

Why do some web pages rank higher than others?

When you input your search terms into a search engine, the search engine goes through its index (made by their web crawler program) and displays the web pages in a particular order (ranked by their page ranking program) in the hopes of solving the searcher's query. In general, you can assume that the higher a website is ranked, the more relevant the search engine believes that web page is to the search terms inputted.

X What criteria do you think the page ranking program could be looking for?

Page Ranking Criteria

Click on the key terms to find out more.

Remember, the domain name is in a web page's URL. The domain name tells us who owns the

Remember, a website that is secure will have https within the URL.

Domain authority is a ranking domain names get out of 100. Their domain authority is based on how good their content is on a particular topic.

Page Ranking Detectives

You have been tasked to do some research about living things and their habitats. Your teacher has asked you to choose an animal to research. The animal you have chosen is a lion.

Before clicking on a web page, what are you expecting to see on these web pages?

Think about:
- What key words are you expecting?
- What images do you expect to see? Photographs or illustrations?
- What format are you expecting to see?
- Are you expecting sub-headings?

x

Why do you think Wikipedia is often a top-ranking web page?

Page Ranking Detectives

Now, let's compare web pages using the search term 'lion facts'. Click on to the first web page in your search results (unless it is Wikipedia, then choose the second) and you are going to compare this web page with another web page lower down in the page rankings. Choose a web page that is on the 10th page of search results.

Use the **Page Ranking Detectives Activity Sheet** to compare the two web pages.

Rank It

Compare these three web pages. The search term inputted into a search engine were 'cheetah facts for kids'.

Can you decide which web page was ranked the highest?

Can you decide which web page was ranked lowest?

Can you justify your reasons?

Web page 1: Empire Unleashed

Web page 2: National Geographic Kids

Web page 3: Animals Adda

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Search Engine 1:	Search Engine 2:	Search Engine 3:
Search Term: **rainforest** Search Results: 1. _____ 2. _____ 3. _____	Search Term: **rainforest** Search Results: 1. _____ 2. _____ 3. _____	Search Term: **rainforest** Search Results: 1. _____ 2. _____ 3. _____
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Page Ranking Detectives

To understand and explain what page ranking is.

Use the table below to evaluate two web pages. Using the criteria, tick according to whether it applies to each web page. You may wish to add your own criteria of things you have spotted.

Search term:			
Web page name:		Web page name:	
search term appear in web page >5 times		search term appear in web page >5 times	
search term appear in title, headings or sub-headings		search term appear in title, headings or sub-headings	
secure protocol		secure protocol	
trusted web page domain		trusted web page domain	
easy to read		easy to read	
quality content		quality content	

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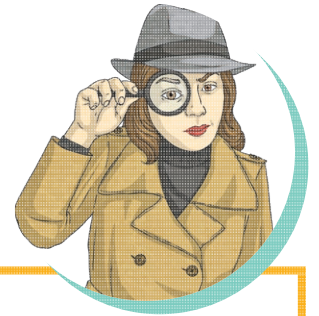| Web page name:		Web page name:	
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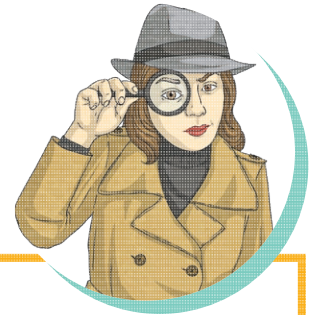
Search term:

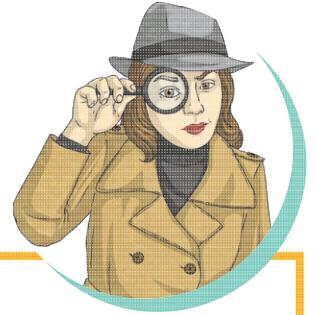| Web page name:		Web page name:	
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