Course 5. Information research tools

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Course plan

1. Sources of Information

2. Research strategy

3. Scientific information on the web

Objective

The objective of the course on information research tools included in the MTT1 course is to enable students to follow an effective documentary research strategy. This strategy will help them locate the information they need by accessing appropriate sources

Introduction

Bibliographic research is an essential part of any research project. It consists in finding sources in order to learn about a subject, answer a question or carry out a project.

Documentary research can be carried out in different ways

➢ the first thing to do is to consult people who are competent in the field who are easily accessible

➢ By reviewing a few recent, specific articles, you can typically find valuable additional references for your bibliography. This approach allows you to quickly establish a comprehensive network of articles related to your topic.

➢More and more people are using online searches in bibliographic databases. This trend is due to the convenience and accessibility of digital resources, which allow users to quickly find relevant literature in various fields. Online databases offer advanced search functions that allow users to filter results by keywords, publication date and other criteria, making it easier to find specific studies or articles.

However, you should know that

➢there is no single tool that can be used to carry out an exhaustive search.
➢Documentary research is carried out using a variety of tools

➢There are both general and specialized tools;

▸*Document exploration tools'* can search several resources from a single interface. This is generally the first tool used to explore the vast literature in a particular field.

1. Information sources

‣Research reveals what has already been said on the subject, and since there are many sources of information, it's necessary to ***evaluate the ideas contained in the literature and make a selection from the*** material available, retaining only those sources that contain *correct,* ***creditable and pertinent*** information

1.1. Primary sources

Primary sources or documents are produced by direct witnesses to the event.

Primary sources are original materials or firsthand evidence related to a topic, typically created by someone directly involved in the research, event, or discovery. These sources present new information or data that has not been previously interpreted.

Characteristics:

•Provide direct, original information or raw data.

•Created at the time of the event or study.

•Often include detailed methods and results in scientific contexts.

1.1. Primary sources

Examples:

•**Research Articles**: An article presenting original findings from a study, such as the effects of a new drug on a specific disease.

•**Reports**: Government or scientific reports presenting new data, like a national census report.

•**Conference Proceedings**: Papers or presentations detailing new discoveries, such as findings on climate change presented at a scientific conference.

•**Theses and Dissertations**: Research projects by students presenting original studies, such as a master's thesis analyzing the migration patterns of a bird species.

•**Historical Documents**: letters, photographs, or recordings made during a specific time period.

▸1.2. Secondary sources

Secondary sources interpret, analyze, or summarize information from primary sources. They provide context, commentary, or criticism and are created by those not directly involved in the original research or events.

Characteristics:

•Offer interpretations or summaries of primary sources.

•Created after the original events or research.

•Often review, compare, or synthesize existing knowledge.

▸1.2. Secondary sources

Examples:

•**Review Articles**: Articles summarizing multiple studies on a topic, such as a review of research on the health effects of a specific diet.

• **Book "Textbooks"**: Educational books explaining established knowledge in a field, like a biology textbook covering various cellular processes.

•**Encyclopedias**: Reference works summarizing information on a wide range of topics, such as an entry on global warming in an environmental encyclopedia.

•**Documentaries**: Films that interpret historical events or scientific topics, like a documentary on ancient civilizations based on archaeological findings.

•**Commentary Articles**: Opinion pieces discussing new research or events, such as a commentary on the social impacts of climate policies.

1.3. Tertiary sources

Tertiary sources compile and summarize information from both primary and secondary sources. They provide an overview or digest of a topic, often in a very simplified form, and are designed to give a broad, general understanding without the detailed analysis found in primary and secondary sources.

Characteristics:

•Summarize and organize information from primary and secondary sources.

•Provide a quick reference or an introductory overview of a topic.

•Often used as starting points for research.

1.3. Tertiary sources

Examples :

•**Encyclopaedias and dictionaries**: These provide general summaries or definitions, such as an entry on 'photosynthesis' in a biology encyclopaedia.

•**Almanacs**: Collections of statistics and factual information, such as an almanac listing data on world population and geographical facts.

•**Manuals (for general concepts)**: Introductory textbooks that cover a wide range of topics in a field without going into specific research studies.

•**Manuals and guides**: Instructional or reference books that bring together standard information, such as a medical guide summarising basic treatments for common illnesses.

•**Factbooks**: Government or institutional publications such as the *CIA World Factbook*, which provides summaries of geographical, political and economic data for different countries.

Key Difference:

Primary sources provide original, direct evidence, while secondary sources interpret and analyze that evidence. For example, a **primary source** would be a study on fish behavior, while a **secondary source** would be a review summarizing multiple studies on fish behavior

While **primary sources** are original materials and **secondary sources** analyze or interpret them, **tertiary sources** further distill and organize information from both primary and secondary sources. They are useful for obtaining background information, but they generally lack detailed analysis or new insights (perspectives.).

For example, a **primary source** would be a scientific study on soil erosion, a **secondary source** might be a review article on soil conservation methods, and a **tertiary source** could be an encyclopedia entry summarizing soil erosion and conservation.

2. Search strategy

Internet search tools, or more precisely those on the "web," are categorized according to their operating logic.

I am looking for…		I consult
Books	Available at the UAMB library	My library's catalog (OPAC; Online Public Access Catalogue)
	Available in other libraries in Algeria	The Algerian Collective Catalog (CC/dz)
Theses	To see theses defended at UAMB	My library's catalog (OPAC)
	To see theses defended in Algeria	The PNST catalog (National Portal for Thesis Cataloging)
Journal Articles	To find articles on a subject	Bibliographic databases like PUBMED, Springer……
	To access the full text electronically	My library's catalog or electronic journals
	To access the full text in print	CCdz/CERIST catalog (Centre de recherche sur l'information scientifique et technique)[14]

3. Scientific information on the web

3.1. Search engine

Search engines are software applications that scan web pages and index them by keywords. The best-known is Google, which claims to have indexed 1,000 billion web pages; the others are Bing, Yahoo, Exalead and Ask.

There are hundreds of other engines, both general and specialized.

Search engines offer an interface on their site that allows you to find web pages using keywords and search operators.

Search engines allow you to search the web in depth, but you need to be familiar with how they work.
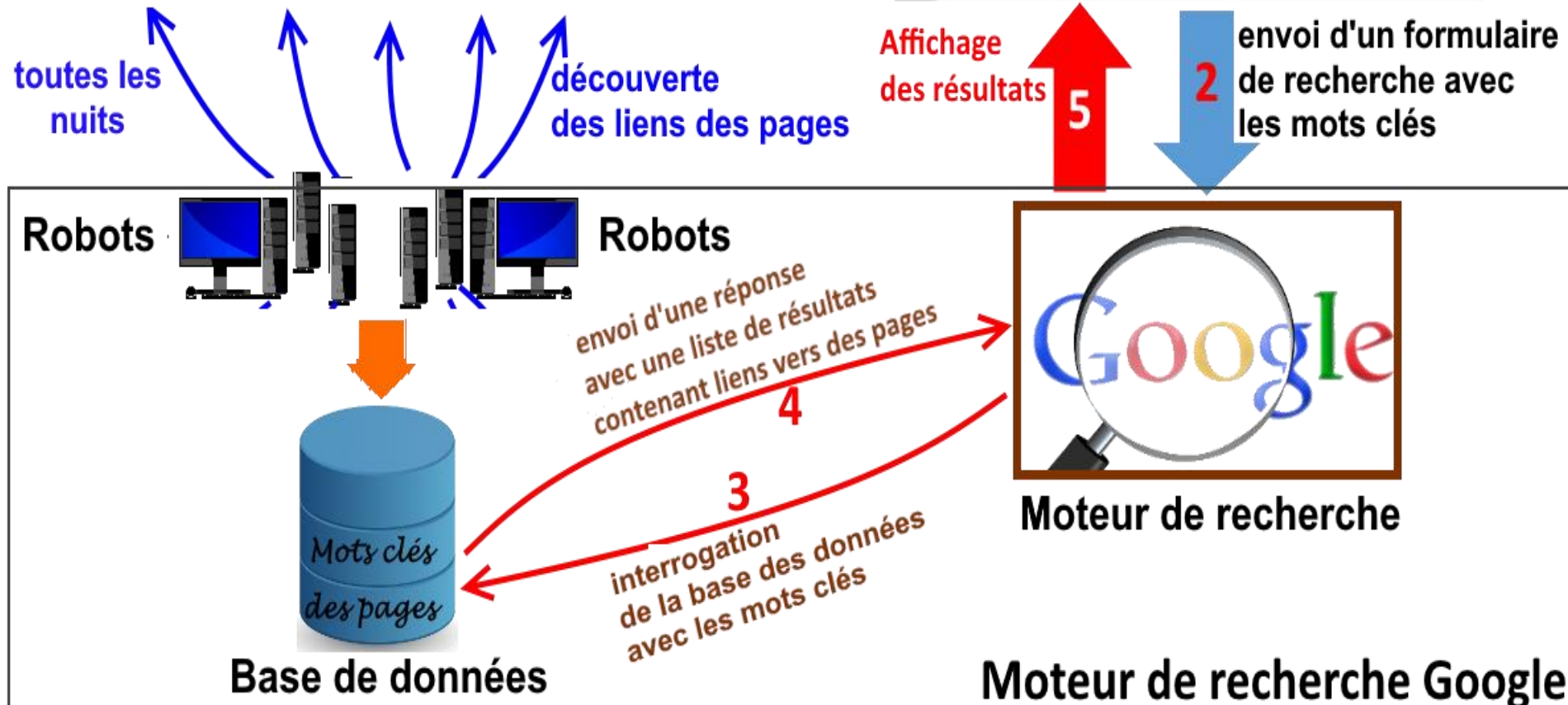
How does a search engine work?

A **search engine** works thanks to a large number of servers called **robots , which scan existing websites** at regular intervals to **discover links on billions of** web **pages**. Each identified page is then **indexed in a database, which can** then **be accessed** by Internet users **using keywords**.

World Wide Web

milliards de pages Web

Navigateur Web

cours informatique gratuit et sans pub

1

toutes les nuits

découverte des liens des pages

Affichage des résultats **5**

envoi d'un formulaire de recherche avec les mots clés **2**

Robots **Robots**

envoi d'une réponse avec une liste de résultats contenant liens vers des pages **4**

interrogation de la base des données avec les mots clés **3**

Mots clés des pages

Base de données

Moteur de recherche

Moteur de recherche Google

▸Each engine has its ***own specific*** ranking criteria and ***operators, and operates according to its*** own logic.

An in-depth search requires the use of several engines, as each produces different results.

Refseek (http://www.refseek.com)

WorldCat (http://www.worrldcat.org)

Springer (http://link.springer.com)

Microsoft_Academic (http://academic.microsoft.com)

Bioline (http://www.bioline.org.br)

EThOS (http://ethos.bl.uk)

Science.gove (http://www.science.gov)

ISEEK Education (http://education.iseek.com)

Base_search (http://www.base-search.net)

pdfdrive (http://www.pdfdrive.com)

Sci-hub (https://sci-hub.se)

▸3.2. Meta-Search Engines

Meta-search engines are online tools that do not have their own database of web pages. Instead, they send user queries to multiple search engines simultaneously and compile the results in a single list. This allows users to receive a broader range of results from various sources without searching each search engine individually.

Meta-engines are tools that perform a keyword search in several search engines and then sort the results.

Example: DuckDuckGo (in its early versions), Dogpile, and MetaCrawler.

www.search.com,
www.dogpile.com,
www.yippy.com

3.3. Multi-Search Engines / Super Engines

Multi-search engines, or super engines, are advanced tools that gather results from various search engines, databases, and directories to provide a comprehensive overview of available information. Unlike meta-search engines, which simply compile results from multiple sources, super engines may categorize and prioritize results, offer filtering options, and present additional tools to refine the search process.

Examples:

•**Excite** and **InfoSpace** are examples of earlier super engines that aggregated and organized search results.

•Modern examples include **Google Scholar** (aggregates academic articles across databases) and **Microsoft Academic** (compiles results from academic and research sources).

Key Differences

Meta-engines are different from multi-engines, which are pages that use several engines separately.

•**Data Aggregation**: Meta-search engines primarily focus on search engine results, while multi-search engines may pull from various types of data sources.

•**Result Handling**: Multi-search engines often offer enhanced features for organizing and filtering results compared to meta-search engines, which typically present results in a more linear fashion.

3.4. Database

Databases can be used to locate document references.

▸Article databases are also known as abstracts databases, as they list articles published in journals and periodicals.

▸These are private companies that subscribe to tens of thousands of journals and classify and index their articles, often accompanied by an abstract.

The best-known are
INIST   **http://www.refdoc.fr/**
Thomson   **http://wokinfo.com/ Factiva**

▸These services are not free, but they cover an immense amount of information.

Open archive tools such as « **http://doaj.org/ »**

« **http://hal.archives-ouvertes.fr/** » are very useful.

▸**Some databases accessible via the University of Bejaia server:**

Science direct : (www.sciencedirect.com)

Springer link: (www.springerlink.com)

Jstor: (http://www.jstor.org)

Global plant on Jstor: (http://www.plants.jstor.org)

NCBI (www.ncbi.nlm.nih.gov)

Geo science world: (http://www.geoscienceworld.org)

Web of science : (https://webofknowledge.com)

Scopus (www.scopus.com), qui sont supports d'analyses bibliométriques.

SNDL : Système National de Documentation en Ligne
(**https://www.sndl.cerist.dz**)
which provides access to several databases.

▸3.4. Directories

Directories are sites that list the addresses (http) of web sites and classify them by category.
Most directories are compiled by humans.

The best-known directory is Dmoz, [[dmoz:.]]

▸Bookmark lists, such as **http://signets.bnf.fr/,** as well as address selections and specialized lists are also directories.

There are also directories of directories, library directories, etc.

Directories allow you to quickly find references before delving deeper into a search.

3.5. Library catalogs :

▸**Descriptive list of documents held by a** library or library network.

▸Allows you to identify documents by various criteria (author, title, subject, etc.),

locate them and check their availability. (Example: OPAC).

▶3.6. Human tools

There are sites where you can ask humans questions and receive a correct answer.

We can distinguish :

▶- question-and-answer sites: where web users ask questions and other web users answer, e.g. http://fr. **answers.yahoo.com/**

- library information services: *professional librarians or documentalists carry out document searches free of charge. Their job is to provide* references to documents that can be consulted to carry out an information search.

▶- newsgroups and forums: google groups, public or semi-public forums, ...

▶ these are sites *for exchanging specialized information*

Surprisingly, a difficult search for information can sometimes be resolved in this way, provided you examine the answers carefully.

▸3.8. Specialized tools depending on the nature of the document

- cartography (google maps, geoportail, cadastre ...)
- - images
- - sound
- - audiovisual (youtube, ina)

Conclusion

It should be noted that the use of search tools requires a double search:

first, the relevant search tools must be found, and then, using these tools, the information is searched for. Methodologically, it may even be useful to separate the search for sources of information from the search for tools to exploit these sources.

Bibliographie

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