

## Informatievaardigheden Samenvatting

### How to recognise a document type

To recognise the document types in a list, check if the references contain:

- City and name of publisher. This will indicate a:
- Book
- Book chapter: in this case page numbers are given, and the title of both the chapter and the book
- Report: published by the research institute or university.
- Dissertation or thesis: published by the university as PhD- or MSc-thesis.
- Journal name and pages. These indicate an article. A journal often has volumes, split into issues.

Book	Research report	Dissertation	Scientific article	Professional article
All chapters are written by the same author(s) or chapters are written by different authors.	Is written mostly by scientists and published by an organization or research institute.	Written by a PhD-student to earn the title of doctor.	Is written by scientists, for scientists.	Usually written by journalists, but sometimes by policy makers.
Contains comprehensive information on a topic.	Often presents results of a project that was carried out for - and paid by - a commissioner.	Contains detailed information about scientific research and is reviewed by <u>promotors</u> and other members of the <u>thesis committee</u> .	Contains detailed information about scientific research, and is <u>peer-reviewed</u> .	Contains popularized or simplified information about scientific research or discoveries.
		Some of the chapters may be published as articles in scientific journals.	Article of several pages with tables, figures and references.	Article with colourful pictures and/or text boxes, with no or few references.

Document type	Google Scholar	Global Search	Library Catalogue
Books	+	+	++
Book chapters	+	-	-
Journal titles	-	-	++
Scientific articles	++	+	-
Professional articles	-	+	-
Reports	+	+	+ (++ for WUR reports)
Dissertations	±	+	+ (++ for WUR dissertations)

Website	Great when it's coming from a credible organisation or individual author.
Wikipedia	Can be very useful for an introduction and vocabulary or jargon.
<u>Professional journal</u>	Good choice to get informed about current developments in the sector.
<u>Scientific journal</u>	Often not the first choice, because the information is very specific.
<u>Scientific review article</u>	Can be very useful, because it gives an overview of previously published work.
<u>Book</u>	If you have time, and want to get comprehensive information.
News story	Useful for current developments and opinions.

4W + H questions	
<b>What?</b> What environmental issues are related to agriculture?	<b>Why?</b> Why does the EU subsidise agriculture that promotes environmental issues?
<b>Where?</b> Where are environmental issues most threatening to agriculture?	<b>How?</b> How do environmental issues impact agriculture?
<b>Who?</b> Who are affected by environmental issues in agriculture?	

*Note that you don't need to include all 4W + H questions! The more questions you include, the narrower or more specific your topic is. To do a literature search, it is important that your topic is just right: Narrow enough to avoid getting too much information and broad enough to find sufficient information.*

## Databases

A lot of information is stored in databases. Databases help to organise information, and generally come with a search system that makes it easy to find and filter the information you need.

For each type of information, a database or finding aid is available. The table shows some examples.

Information type	Database/Finding aid
Websites	Google or another search engine
Books, encyclopedias, and reports	Library Catalogue
Professional articles	Groenekennis (Netherlands), LexisNexis Academic
Scientific articles	Global Search, Google Scholar, Bibliographic databases like Scopus, Web of Science or CAB Abstracts (OvidSP), PubMed
Newspaper articles	LexisNexis Academic
Patents	ORBIT, Espacenet
Statistical data	StatLine (Netherlands), Eurostat, FAOSAT
Government information	Europa.eu (European Union), Overheid.nl (Netherlands)

Bibliographic databases are important tools if you want to find journal articles on your topic or from a specific author.

Bibliographic databases:

- contain a description of a publication (author, title and source)
- contain abstracts of publications
- come with a link to the PDF of a publication
- can be multidisciplinary or specialised in one subject
- can be focused on one type of information (patents)
- can also provide information on books, book chapters, proceedings, and patents.

As you can see, picking the right database can be challenging, because they all have different uses, focal points, and even subjects. Now that you have learned that there is some nuance to using databases, we're going to focus on choosing one

### Picking the right database

The library offers a selection of databases via its website. The find & discover page gives you several options.

You can start at:

- Global Search (covers many different topics and contains information on articles and books)
- Scopus or Web of Science (contains scientific journal articles on multiple topics)
- Other databases from the list of Frequently used databases

You can also browse a list of databases and find recommended ones for your subject.

## Finding search terms

To find relevant words, you can use a dictionary or encyclopedia (Wikipedia is very useful for this).

You can also do a quick search for journal articles and have a look at the results list. In the titles or abstracts (note the 'keywords!') you will definitely find some extra search terms.

This piece of text shows the title and description of an assignment. When you start searching you can use these words for your search query

## Using operators

Now that you have your key concepts and search terms, you can start your search in a database. To get the results you are looking for, you can combine various search terms using Boolean operators.

The green area in the Venn diagrams below represents your goal, and the boolean operators help you get there.

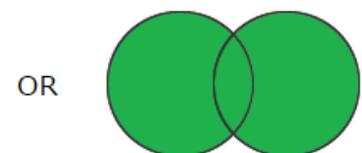
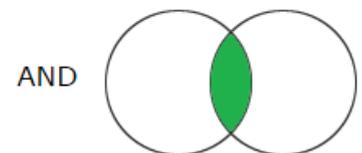
*What are Boolean operators?*

*Boolean operators help narrow or broaden a search by using them between search terms.*

*There are three Boolean operators: AND, OR, and NOT*

*Tip: Search engines, such as Google and Yahoo!, automatically add AND to your search terms.*

**AND** When you combine search terms with **AND**, you'll find references in which **BOTH** terms are present. This narrows your search, since you are retrieving records with **BOTH** concepts.



**OR** With **OR** you'll find records with **EITHER** term, thus expanding your results

**NOT** When you use **NOT**, you'll get results that will **exclude** a term, which narrows results and eliminates records with unwanted concepts.

**Effectively, this means that you group all synonyms and related terms from each concept with OR, and you combine different concepts using AND.**

## Parentheses

When search commands contain various Boolean operators, you can use parentheses "(" and ")". Just like in a mathematical formula, parentheses make sure the separate parts or words will be combined in the right order.

### Example:

(pigs OR swine) AND (welfare OR well-being)

## Wildcards

Instead of typing all relevant search terms in a search box, you can save time by using wildcards. Wildcards can be used for words with the same root or for words that differ by one letter. There are two types of wildcards:

### Question mark: A wildcard that replaces zero or one character:

- **wom?n** finds woman and women
- **analy?e** finds analyse and analyze
- **cat?** finds cat, cats and Catz
- **colo?r** finds color and colour

*Note: in some databases ? replaces one character only and not zero characters, when you search for "cat?". Those databases will give results for "cats", but not "cat".*

### Asterisk: A wildcard that replaces zero or more characters:

- **econom\*** finds economic, economics, economical, economically, economist, economists, econometry, etc.
- **int\*net** finds internet and intranet
- **\*cellular** finds intracellular, intercellular, extracellular, etc.

*NOTE: Symbols used for wildcards are not the same across databases. Also, some databases automatically search for plural/singular forms and alternative spellings. Look at the database's search tips or help file to find the right wildcards and the default search options.*

## Phrases

Some of your search terms might be a phrase rather than one word: *food quality management* or *waste water*.

If you type a phrase in a search box, it depends on the database or search system what you will find. Most databases or search systems automatically put AND in between the words.



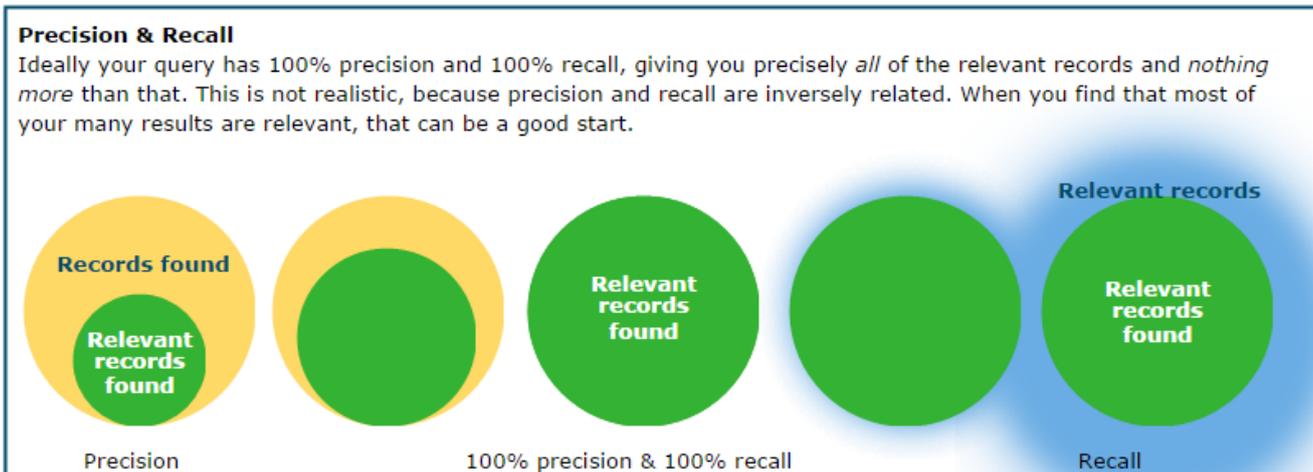
Both terms are searched for, but they do not necessarily have to be next to each other in the text, because it is not recognized as a phrase. Your results will be about "waste water", but also about water AND waste, *e.g. articles about people throwing household waste in waters*.

If you want to find the exact phrase you will have to put double quotes around it. The terms will be recognized as a phrase, and you will get only results about "waste water".

## Precision and recall

Once you know your query includes the relevant search terms and that it contains no errors, you have to ask yourself two questions to check the quality of your search:

1. How many of the records you found are relevant? (precision of the search)
2. What percentage of all relevant records have you found? (recall)



To determine if a record is relevant for your topic, you must read the title, keywords and abstract. If you retrieved many records, estimate the relevance by checking the first 20 – 30 references.

*Warning: when the search program ranks on relevance, the results shown at the top will probably have a higher relevance rating than the results further down the list.*

## Stop searching

Keep evaluating and improving your queries until the precision and recall are appropriate for the goal of your search. What a reasonable precision and recall is depends on the topic, the time you can spend and your information need. Try to find a balance.



**What can you do to assess whether you found almost all relevant records (high recall)? Check if:**

- references you know are included in the retrieved results
- the records are highly cited
- you can find relevant additional records by looking at the reference list of known articles
- you will find new records if you repeat the search in another database

**Submit**



**Correct:** A high recall should include the references you already know or gathered, you should check why you did not find these with your search, and another database might cover other sources and has a different search system. It is always wise to search more than one databases.

## Following a thread

This search starts with one or two relevant publications that you already have. This might be a review paper or some papers you received at the start of your research project.

The references listed in these publications lead you to other, but *older*, relevant publications. Moreover, if you look up these references in Scopus, Web of Science or Google Scholar, you will find papers that cite this publication, and are therefore *younger*.

This type of search is very useful to orientate yourself at the start of your project, because it will quickly give you some good papers. These papers can be used to find relevant search terms for your structured search, and again, later, to check if you found all relevant papers.

**Note:** *Be aware that authors tend to cite papers from people they know or agree with. So, if you use the following a thread method as the only method of literature search, you might end up circling around in a group of people sharing the same ideas and research paradigms.*

### Save a search

In most databases you can save your search for reuse later on. This is convenient for when you want to adapt your search, or want to repeat your search after some time to find newly added records. When you are working on the topic for a longer period, you might want to consider setting up an alert. Then you will automatically receive an e-mail or rss-feed with the new references.

### Evaluate a source

#### Authority

- Who wrote it?
- Does the author have expertise in this field?
- What kind of organisation is the author working for? And what's its reputation?

#### Purpose

- What's the purpose of the publication? Is it to inform, to sell a product, to give opinions, or to present research findings?
- What is the intended audience? It is written for scientists, for professionals or for the general public?

#### Currency

- When was the information published?
- Is it important to have up-to-date information?

#### Type of resource

- What type of document is it? Book, journal article, report, website, ...?
- Is the publication peer-reviewed?
- Does it reflect primary or secondary research?

#### Suitability

- Is the content of the source relevant for your topic? Does it give the information you need?
- Is this source too elementary or basic, too technical or applied, too advanced, or just right for your needs.
- Is the publication in English or another language you can understand?

#### Reference & source

- Can you check the accuracy of the information?
- Do the authors cite other work? Is there a reference list?
- What types of references have been used? Scientific or popular sources?

## Citation management

After evaluating your search results, you will end up with a final list containing printed books, PDFs of journal articles or book chapters, and bookmarked internet links.

The quantity of sources, but also the different formats, makes it hard to organize the information. Several tools exist to help you manage your references. In Wageningen the most frequently used tools are EndNote and Mendeley.

### Your own database of references

Both tools allow you to create a database of your references. In such a database you cannot only store the bibliographic information of the reference, but also the PDF and an internet link. Moreover, you can add all your notes about the publication.

Another feature of EndNote and Mendeley is that they help you create a reference list in your report or thesis. You will find more about these tools at the end of the next section. First, you are going to learn the ins and outs of citing and referencing.

### Why cite and make references?

When you are writing a research assignment, thesis or other paper, you must also "stand on the shoulders of giants". You have to incorporate information that was already discovered by others.

### It is essential to cite and reference the sources you used:

- To distinguish your own ideas and findings from those of others
- To support your arguments and criticisms
- To allow readers to locate and verify your sources
- To give authors of these sources credit for their work
- To avoid plagiarism

### Avoiding plagiarism

If you forget, neglect or ignore the need to cite and reference your sources, your work might be considered plagiarism. Plagiarism is a serious academic offence, which will sooner or later be found out.

It is plagiarism when you...	True	False
copy a paper and turn it in as your own Correct. It's absolutely plagiarism: a very serious form of fraud!	<input checked="" type="radio"/> ✓	<input type="radio"/>
copy a few sentences from another paper without citing the source Correct. It is plagiarism. If you copy a few sentences, you must cite the source and indicate that it is copied word for word.	<input checked="" type="radio"/> ✓	<input type="radio"/>
rephrase a paragraph from another paper without citing the source Correct. It is plagiarism. Even if you put another author's ideas in your own words, you must cite the source.	<input checked="" type="radio"/> ✓	<input type="radio"/>
translate a paragraph from another paper without citing the source Correct. It is plagiarism. Even if you translate parts of a document, you must still cite the source.	<input checked="" type="radio"/> ✓	<input type="radio"/>

Students who commit plagiarism will be punished conform the [Regulations and guidelines of the Examining Boards](#).

You must cite any information you use and have drawn from others, regardless of the type of source you used. (In the case of the professor you should find the source paper that presents the theory for the first time.)

### Common knowledge

Besides information that you only read as an introduction to your topic, you don't need to cite information that is common knowledge.

#### Common knowledge is:

- General information that most people know
- Discipline-specific information that:
  - everyone in that field knows
  - is described in all textbooks on that subject.

### Citing the original

It is recommended to cite the source that is as close to the original as possible. This is important, because an author might have interpreted somebody else's text differently than you would have done - and the author may have made mistakes. Also, you should give credit to the right author.

### Paraphrasing

When you are using information or ideas from another author, you can write it down in your own words (paraphrasing or summarising), or use the exact words of the original source (quoting). If you are restating words or ideas, take care not to alter the meaning or to provide your interpretation or opinion.

### Quoting

If you directly copy the words of another author (word for word), you are quoting a source. Use direct quotation sparingly in scientific writing, and only when you have a very good reason to use an author's exact words.

When quoting use exactly the same words and punctuation as the original. The in-text citation must include the page number.

Short direct quotations must be put within quotation marks. Long direct quotations (also called block quotations) are not enclosed by quotation marks, but separated from the rest of your text, often indented and in a smaller font size.

#### Example short quotation:

According to Howard (1940) in nature, the "rule in these matters is to live and let live" (p. 4).

#### Example block quotation:

Howard (1940) explained a key concept of organic farming. This concept also included the idea of self-regulation in nature:

Nature has never found it necessary to design the equivalent of the spraying machine and the poison spray for the control of insect and fungus pests. There is

nothing in the nature of vaccines and serums for the protection of the live stock (Howard 1940, p. 3).

*The length of short quotations and the format of block quotations varies by citation style. Consult the appropriate style guide for more details on how to quote a source.*

### How to cite

Citing and referencing involves two steps. You must provide:

1. An in-text citation with brief details about the sources in the body of your text.
2. A reference list with full publication details of the sources at the end of your document

Basically, there are two citation styles:

#### The author-date style

In-text citations give the surname(s) of the author(s) and the publication year in round brackets. The reference list (at the end of the document) is ordered alphabetically by the surname of the first author.

*Example author-date:* (Jones, 2012); (Jones 2012); Jones (2012) studied ....

#### The numbered style

In-text citations are given a number (with superscript or bracketed numerals). The reference list is arranged numerically according to the order of appearance in the text. The numbers in the text refer to the numbers in the list.

*Example numbered:* (1); [1]; <sup>1</sup>; Jones [1] studied .....

### Citation styles

Within the two main citation styles there are many possible variations for how to format a reference in a reference list. Just have a look at this example

The same reference in five different formats:

#### **Wageningen UR:**

Rishi, P., and K. Gauli. 2005. Who should lead us?: The voice of the western Terai region of Nepal. *International Forestry Review* 7 (3): 235-240.

#### **APA 6th:**

Rishi, P., & Gauli, K. (2005). Who should lead us?: The voice of the western Terai region of Nepal. *International Forestry Review*, 7(3), 235-240.

#### **Global Policy:**

Rishi, P. and Gauli, K. (2005) 'Who Should Lead Us?: The Voice of the Western Terai Region of Nepal', *International Forestry Review*, 7 (3), pp. 235-240.

#### **Nature:**

1. Rishi, P. & Gauli, K. Who should lead us?: The voice of the western Terai region of Nepal. *Int. For. Rev.* 7, 235-240 (2005).

#### **Science:**

1. P. Rishi, K. Gauli, *Int. For. Rev.* 7, 235 (2005).

Note 1: the first three references belong to an author-date type of style, whereas the last two have a numbered style

Note 2: the Science style shows the absolute minimum publication details for a journal article.

## Journal style

If you are writing a journal article you have to use the journal's citation style. Each journal has its own citation style. Consult the journal's instruction for authors, or look at examples of reference lists in the pdf (not html) of articles published in the journal.

## Reference style

List: References should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters 'a', 'b', 'c', etc., placed after the year of publication.

## Secondary source

Occasionally it might prove impossible to obtain the original source to read and check it yourself. In this case, you should refer to both sources: The original source (the primary source) and the source you read (the secondary source).

*Note:*

You should treat online documents that are also available in print as if they were, in fact, printed. But if you use an online copy of a book or journal article that has no hard copy equivalent, you must include the DOI in your reference. When there is no DOI assigned, provide the URL.

Give the article number along with the DOI, if the journal uses article numbering instead of page numbers. Follow the rules of the citation style that you use.

## Social media

URLs are not sufficient. For these social media, the same rules apply as to webpages and other types of sources. You must provide an in-text citation and a reference list entry. The publication details required and the format vary with citation style. Use citation guides or blogs to cite these sources correctly.

Note: Most citation styles, also require an in-text citation and a reference list entry when citing a Twitter feed, Facebook profile or page, or other social media as a whole. In some styles (e.g. APA style) it is sufficient in that case to give the URL (in parentheses) in just the text.

## Publishing

When you are done with your research project, you write down your findings in a report or thesis according to instructions given by your tutor.

Researchers publish their findings mainly as an article in scientific journals. They write the articles especially for other scientists and use a scientific language style and article format.

At research institutes, part of the work is published in research reports. Most of this research is done by government order and has an applied nature. The reports are written for scientists and professionals, but also for policy and decision makers.

## Peer review

Publishing articles in scientific journals is important in academic research. Researchers and research groups are judged on the number and quality of articles they publish.

Before an article is published it goes through a rigorous evaluation process called peer review. In this process, the scientific editor will send the submitted paper to two or three

experts on the topic, who will review the paper on originality, research quality, and relevance of the topic. When they have done this they will advise the editor whether to accept the paper for publication or not.

An accepted paper will often be published online ahead of a printed publication. If a paper is not accepted, an author is either allowed to submit a revised version to the same journal or he/she has to submit the paper to another journal. Online publication is mostly within a few months after acceptance, whereas the print publication can take up months or years. The whole process can consume quite some time.

Peer review is a quality criterium for a journal. Other quality factors are reputation, the number of readers and the impact it has on science (impact factor). Impact is measured by the number of times that articles from a specific journal are cited in other articles. Researchers prefer to publish in journals with a high impact factor.

### Copyright

When you write a report or thesis you automatically own the copyright of the text, the graphs and tables and the drawings or pictures you made.

Owning copyright means that nobody is allowed to make a copy of your report, to change it, or to distribute it without your permission. However, there are some exceptions. One of them is that people are allowed to make a copy of your report for personal use. Besides exceptions, contracts like a thesis agreement overrule the copyright law.

Some authors find the copyright law too restrictive for users and provide a Creative Commons license with the publication. A CC license is an easy way to grant copyright permissions in advance.

The course material comes with a Creative Commons license, but you will also come across these type of licenses in Open Access journal articles. Open Access articles are freely available on the internet, do not require a journal subscription, and can be freely used, provided that you mention the source.

#### ***In this module you learned:***

- ***that not every source is relevant or valuable for your thesis,***
- ***that it is important to cite and reference your sources,***
- ***how to create in-text citations and reference lists,***
- ***that peer review and impact factors are quality parameters for journals.***