

# Search Strategies for Literature Reviews

Save time! Write out your question to determine what it is you are really looking for.

Example: What are the effects of microfibril angles and fibre length on wood strength?

Define and refine your concepts. What is it you are really searching for?

Most topics consist of two or more concepts. Developing effective search strategies depends upon identifying:

- the primary concept
- the secondary concepts
- the relationships between the concepts
- the keywords, synonyms, and related terms for each concept

Look at your concepts. What other terms can be used in addition to the ones in the statement?

<b>Effect</b>	<b>Microfibril angles</b>	<b>Fibre length</b>	<b>Wood strength</b>
relations	microfibril(s)	fiber(?)	wood properties
relationship(s)	MFA(s)		wood density
effects			
cause(s)			

**Additional terms:**

tracheid(s)  
cellulose  
cell wall (structure)  
hardwood  
softwood  
specific species of tree (scientific and common name)

Use the “Concept Table” to organize your search terms.

When searching a database, you will build search strategies using terms in the columns to broaden or narrow the scope of what you hope to find. Most databases use Boolean Logic. Search for terms within a column to broaden the number of results (use OR – I want things with either term returned). Combine concepts from different columns to narrow the results (use AND – the result must have both terms to be retrieved). See examples under “Refining your Search.”

Having trouble thinking of additional terms? Not to worry. As you begin searching, look at the results of the articles. Many have descriptor or subject fields. Add these terms to your list of potential search terms. Not every term will work in all databases, but the more terms you have, the better your chances of finding information will be.

## Working from a known citation

If you have an article in hand, use it to find additional information about your topic. Look at the bibliography and use the journal titles there to gain a sense of what journals are available. Check the E-Journals to see if we have full text access to a specific journal title or browse through the list to see if anything else looks useful. Search by specific title or browse subject heading (Technology and Applied Sciences has a section under Engineering “Engineering Mechanics and Materials”) or title <http://www.lib.vt.edu/find/ejournals/>:

The screenshot shows the University Libraries website interface. At the top, there is a navigation bar with "Home", "Hours", and "Ask a librarian" links. Below this is a search bar for "Addison, the library catalog" with a "Keyword" dropdown and a "GO" button. The main content area is titled "Full text electronic journal holdings" and features three search options: "Search for:" with a dropdown set to "a title beginning with" and a "Search" button; "or browse for titles by subject:" with a dropdown set to "Technology and Applied Sciences" and a "Search" button; and "or browse for a title that begins with:" followed by a "Browse e-journals by title" link and a list of letters from "numbers a b c d e f g h i j k l m n o p q r s t u v w x y z".

If you don't have a citation, or you want to search for articles directly, use the library databases.

## Selecting and Searching Databases

There is no “one-stop shopping” in information, so it's always beneficial to search a multitude of sources.

From <http://www.lib.vt.edu>:

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Two options:

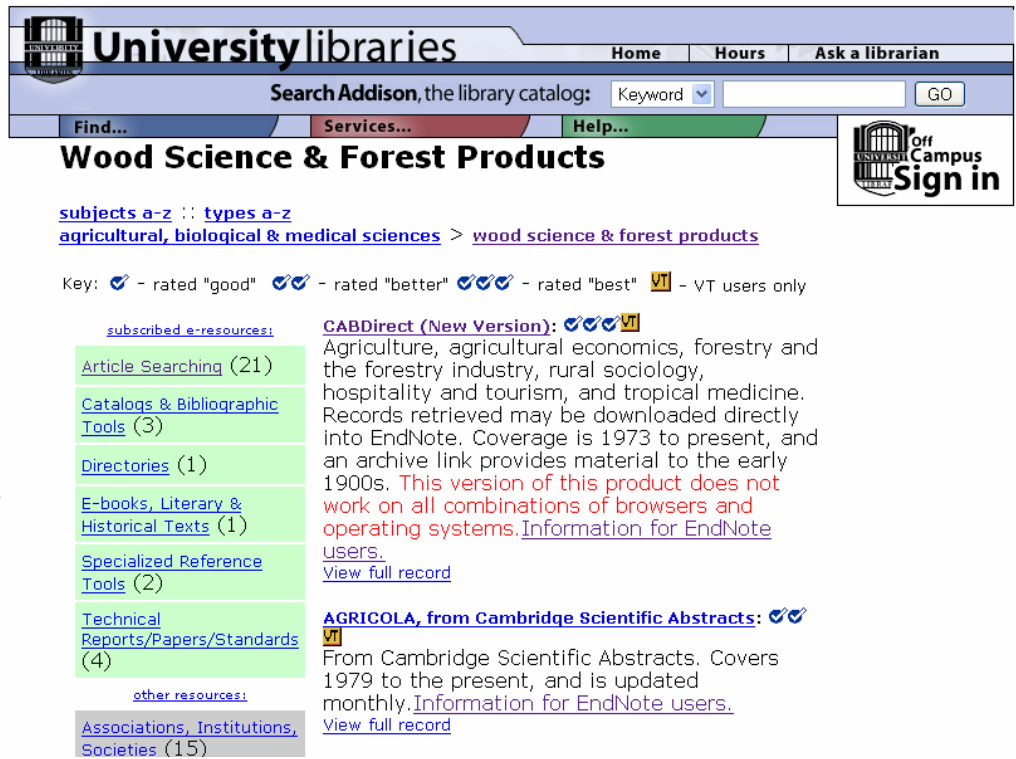
Under **Find** select “Articles/databases”

Under **Help** select “Subject Help”

Subject starting point “Wood Science and Forest Products.”

Select one of the databases from the list and “jump in”

Note, the first page offers the primary or core databases for a subject. Additional databases can be found under “article searching.” These are still important for the subject, but may not be core resources



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When in a database, start adding the concepts from your Concept Table. Start with a keyword search (get a feel of how much is in the database).

### Refining your search.

- 1) Use the terms in the concept table, and use synonyms or alternative terms for each concept.
- 2) Each database interface is different, but they operate using the same logic called “Boolean.” To narrow your search, use AND between your main concepts:

#### **Microfibril AND Fibre**

Results must have *both* terms in the record to be retrieved.

To broaden your search, use OR between your other terms:

#### **Microfibril OR Microfibril angle OR MFAs**

Results can have *any* or all three of these words in the record to be retrieved.

Use the Boolean terms to create more complex search strategies:

#### **(Microfibril OR Microfibril angle OR MFAs) AND (Fibre length OR Fiber length) AND softwood**

Note that the use of parenthesis is very important. Written this way, the database will search for three concepts (shown by the use of AND) and related terms within those concepts (shown by the use of OR).

- 3) Look for terms to be found in certain fields, such as the abstract or title. This limits the search to finding the terms in those fields (e.g. by limiting “Wood” to be found in the abstract, any authors with the last name Wood would be omitted from the results retrieved).

### Use the “Map”

When an article that looks very relevant is retrieved, look at the index record. Publishers use what is called “controlled vocabulary,” meaning certain terms or phrases are used consistently throughout the database to organize articles based on their content. These terms are called Descriptors or Subject Terms (there are usually additional indexing fields in the record; select the ones that best match your criteria to find additional related articles).

From CABDirect:

One article:

<input type="checkbox"/> CABICODE	<input type="checkbox"/> FF030 - Plant Morphology and Structure	
<input type="checkbox"/> Descriptor	<input type="checkbox"/> KK510 - Wood Properties, Damage and Preservation	
	<input type="checkbox"/> Growth rate	<input type="checkbox"/> Juvenile wood
	<input type="checkbox"/> Wood anatomy	<input type="checkbox"/> Wood density
	<input type="checkbox"/> Wood fibres	<input type="checkbox"/> Xylem

Another article:

<input type="checkbox"/> CABICODE	<input type="checkbox"/> KK510 - Wood Properties, Damage and Preservation	
<input type="checkbox"/> Descriptor	<input type="checkbox"/> FF030 - Plant Morphology and Structure	
	<input type="checkbox"/> ZZ200 - Materials Science	
	<input type="checkbox"/> KK100 - Forests and Forest Trees (Biology and Ecology)	
<input type="checkbox"/> Organism Descriptor	<input type="checkbox"/> Wood properties	<input type="checkbox"/> Shrinkage
	<input type="checkbox"/> Hardness	<input type="checkbox"/> Variation
	<input type="checkbox"/> Wood anatomy	<input type="checkbox"/> Fibres
	<input type="checkbox"/> Wood density	<input type="checkbox"/> Wood strength
	<input type="checkbox"/> Compressive strength	<input type="checkbox"/> Bending strength
<input type="checkbox"/> Broad Term	<input type="checkbox"/> Acacia mangium	<input type="checkbox"/> Acacia auriculiformis
	<input type="checkbox"/> Acacia	
	<input type="checkbox"/> Acacia	<input type="checkbox"/> Mimosoideae
	<input type="checkbox"/> Fabaceae	<input type="checkbox"/> Fabales
	<input type="checkbox"/> Dicotyledons	<input type="checkbox"/> Angiosperms
	<input type="checkbox"/> Spermatophyta	<input type="checkbox"/> Plants

Cambridge Scientific Abstracts (Natural Sciences)

One article:

<b>Descriptors</b>	<input type="checkbox"/> Genetic Correlation	<input type="checkbox"/> Heritability	<input type="checkbox"/> Lignin	<input type="checkbox"/> Pulp yield	<input type="checkbox"/> Spiral grain	<input type="checkbox"/> Tracheid dimensions
	<input type="checkbox"/> Wood density					

Another article:

<b>Descriptors</b>	<input type="checkbox"/> Cellulose	<input type="checkbox"/> Fibre	<input type="checkbox"/> Functional genomics	<input type="checkbox"/> Microfibril angle	<input type="checkbox"/> Populus	<input type="checkbox"/> Secondary cell wall
	<input type="checkbox"/> Tension wood	<input type="checkbox"/> Wood formation				

### Other Areas to Consider:

How does your research relate to other fields? You may need to check other subject guides to find additional databases (e.g. Structural Engineering & Materials, Business, etc) that would also have relevant information about your topic.