The Boolean operators **AND**, **OR** and **NOT** combine the relationships between words or groups of words in a search strategy. By applying Boolean operators with your keywords you will be able to execute a much more powerful search than only using phrases or natural language.

Use Boolean operators with **databases**, the **library catalogue** and **search engines**. Consult the **Help** option of the database or search engine on how to conduct effective searches and retrieve accurate results.

For help on searching with **GoogleScholar™**, use the **Google™ Cheat Sheet**

<table>
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<th>Operator</th>
<th>How the operator works</th>
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| **AND**  | Use AND to retrieve records containing both search terms: all terms must be included in the record. Use AND to narrow your search and retrieve fewer records.  
**Example 1:** *hydrodynamics AND viscosity* retrieves records containing both the keywords.  
**Example 2:** *elephants AND lions* retrieve records containing both the keywords. |
| **OR**   | Use OR to retrieve records containing either or both search terms. Use OR to broaden your search and retrieve a greater number of records. Use OR for synonyms or spelling variations.  
**Example 1:** *milk OR dairy* retrieves records containing either milk or dairy, or both the keywords.  
**Example 2:** *citrus OR oranges OR navels*  
**Example 3:** *behavior OR behaviour* |
| **NOT**  | Use NOT to exclude certain items from your search. **Caution:** It is easy to exclude relevant terms; use the NOT operator with care!  
**Example 1:** *pathogens AND plants NOT human* excludes all records where pathogens are related to human diseases.  
**Example 2:** *learning AND adults NOT children* retrieves records which focus on adult learning. |
| **ADJACENT/ NEAR/ SAME**  
(Proximity Operators) | Proximity operators (variations of the basic Boolean operators), are supported by library abstract databases. Consult each database's Help for tips on how to apply |
proximity operators in that specific database. E.g. *ISI Web of Knowledge* use the *SAME* operator while other databases apply the *NEAR* operator. Use the proximity operators only when you retrieve too many records where the keywords are not closely related to each other.

**ADJACENT** requires that the words appear next to each other. **NEAR** or **SAME** require that the search terms appear in close proximity or in the same sentence.

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**TRUNCATION/ WILDCARDS**

Truncation allows the searcher to insert a truncation symbol, usually an * or ?

**Example 1:** *teen* will retrieve records with the terms *teens, teenagers, and teenaged*.  
**Example 2:** *econom* will retrieve records with the terms *economics, economically, economize, economise*, etc.  
**Example 3:** *wom?n* will retrieve *women or woman*.

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**PARENTHESES (NESTING)**

When combining different Boolean operators, use parentheses to group the search terms.

**Example 1:** *(bridge* OR *tower*) AND *(construct* OR *design*) AND concrete  
**Example 2:** *((team* OR *organis*) AND *climate*) AND *perception*