

Keywords Engineering

Keyword selection is perhaps the most vital part of your search techniques. You can type an assignment or dissertation title into Google, [Google Scholar](#) or [Discovery](#) and you will get results. You can just type in words that occur to you, and you will find material. However, you can dramatically improve what you are retrieving with a little thought.

Let's take an example where your assignment or project title is concerned with 'power management systems for wind turbines in Cornwall'. Typing that phrase into Discovery, for example, will find some 2000 items. You might think that's enough to be going on with but by the time you've refined your results – perhaps by date or by source type – there may be very little material of any use.

If we start to think about alternative terms we can widen the pool of our original search and include more relevant articles.

For 'wind turbines' we might also think of 'wind farms' or 'wind power'. Note that these are not all synonymous but may be the preferred term for a subject area, or a term used by some authors, or close enough to give relevant results.

For 'power management' we might think about 'energy management' and/or 'active load management' or 'demand management'; this might lead us on to ideas such as 'integration, control, communication and metering' or 'ICCM' (or even 'I.C.C.M.' which most databases will treat as a different search).

We can consider using phrase searches to increase relevance. The phrases given above would be suitable, but other examples might include "renewable energy" (which with the double quotes will find fewer items than simply typing renewable energy, but the fewer results will almost certainly be more relevant).

We might consider different spellings such as 'wind farm' or 'windfarm'; or perhaps there's an American spelling to be aware of. We can try using the truncation feature of most databases to search for several words at once, e.g. environment* would also find 'environments' or 'environmental' etc. Note that you can't always use truncation within a phrase search – although some databases such as Discovery allow this. Note also that Google will ignore punctuation, such as truncation or full stops in abbreviations, except for “ ” which it treats as a phrase search.

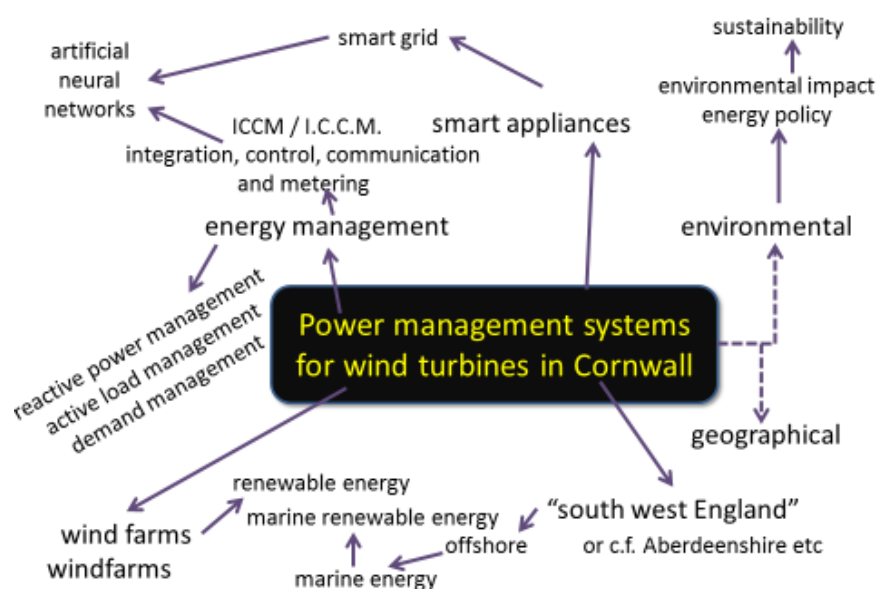
If you're finding too much material, you might choose to use narrower keywords, for example instead of 'smart grid' try 'smart appliance' or instead of 'wind turbine' try 'offshore wind turbine'. If you're finding too little, you might need to broaden your search. For example, instead of just Cornwall, try 'south west England'.

The mindmap on the following page shows an example of how you might develop your thinking but this will be an ongoing process and this map, or lists of words if you prefer, will be an ongoing, organic process that will develop as your knowledge of a topic grows. Our Library Guide [Applying a Search Strategy](#) gives you a form that can help with thinking through this process.

When you find an article, look out for keywords that a database or author or publisher has assigned. Even if the actual paper is not relevant, you might get good ideas for your keywords from these to reutilize in your subsequent searches.

Some databases offer a thesaurus which can help with keyword selection. [Engineering Village](#) – is a good example.

Note that you may find terms referred to as 'keywords', 'subject headings' or perhaps 'descriptors'.



Now take a look at how thinking about our search terms can affect an **advanced** search on Discovery. Instead of:

"wind turbines"
AND
power management
AND
Cornwall

which at time of writing produces over 1000 results (less results than typing the topic as a phrase into the simple search box as we started with), we might try:

"wind turbines" OR windturbine* OR "wind farms" OR windfarm* OR "wind power"
AND
power management OR energy management OR active load management
AND
Cornwall OR "south west England"

which gives some 2600 results. A much bigger pool of relevant results with which to refine our search by date or source type etc.

For more on using OR and AND (as well as NOT), see our Library Guide on [Boolean Logic](#).

In summary:

Think about the keywords you use in the Library Catalogue, in database searching, or in Google or Google Scholar. Consider:

- Alternative words – lift/elevator; colour/color
- Note tips such as truncation: motor* will search (in most databases but not Google) for motor, motors, motorised, motorized etc. (but also motoring etc)
- Watch out for punctuation such as hyphens which Google ignores but many databases treat as a separate search (e.g. ecommerce, e-commerce OR "electronic commerce")
- Use " " to search for phrases "artificial intelligence"
- Try out related keywords: bridges, causeways, hydraulic structures, transportation
- If you're finding too much, narrow down your search
- If you're finding too little, broaden your search out