Doing Classroom Research: A Guide for Student Teachers and First Time Researchers.

Chapter 3 – Information Skills for Classroom Research

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"Only librarians like to search, everyone else likes to find."

Roy Tennant (2004). Metasearching: The Promise and Peril, California Digital library, New York

Introduction:

This chapter will introduce you to helpful strategies that will enable you to identify, locate, evaluate and utilise appropriate information for doing classroom research quickly and easily.

As student teachers you are increasingly expected to engage with critical research and reflective practice in the classroom. You can benefit greatly by applying practical information skills to help cope with these demands.

Information skills is more than just being able to use technology to find information; it is about making choices about the different kinds of information available and about being discerning and evaluative in the whole research process.

The aim of the chapter is to guide you through a series of progressive steps that will provide a structured approach to good information skills practice. This will help to demystify the often overwhelming and intimidating range of information sources and tools that are now available to you.

The chapter will offer you advice on how to find high quality information effectively with an awareness of the tight timeframes that you often work within. It is also important that when working at M-Level you are critically aware of the varying quality of information and feel confident to evaluate the appropriateness of what you find.

Section 1: Identifying the required information

This section will help you:
Know how to identify required information, access the appropriate resources and utilise the most effective tools for your information need

There is a vast amount of information available to you and it is increasing all the time. It may seem intimidating when you first begin your research to be faced with so much scope and so many options. This section will help you to begin the information gathering process in an organized way; selecting the types of information you require and working out how to search effectively and find it.

Know how to identify what kind of information you might need

Here are some questions that you can ask yourself in the first instance to try and determine what kind of information you need to fulfill your research needs:

- Do you need information that is **up-to-date** or **historical?** Perhaps a mix of both?
- Do you need facts, statistics, results, original artworks, letters?
  Primary information can provide a direct insight into an event because the information has not been re-written or revised
- Are you more interested in the perceptions and uses of primary information?
  Secondary information has been modified or arranged for a specific purpose, e.g. summaries, overviews, critiques, analyses, evaluations? This information may be biased by an author's opinion but can provide a quick way of seeing an overview or viewpoint of a topic
- Do you want **practical evidence**, e.g. the results of a research project or a case study? Or perhaps you utilise **theoretical ideas** for your work, e.g. new theories and models within the area of your studies?
- Do you need **scholarly information** that is assessed for quality before it is published to make sure that the content is accurate, e.g. research articles? Or do you need **popular information** that is released without any quality checks but can be useful for researching popular opinions, e.g. opinion polls or magazine articles?
- Do you need collections of information, summaries of facts, brief definitions, e.g. encyclopaedic definitions? **Tertiary information** is often published a long time after the event has happened, briefly summarising all the information for a specific event.

Know which resources hold the information you need

Once you have identified what kind of information you need, the next step is to determine what resources will provide you with that information. The following list will help you in this process:

- **Audio recordings and Podcasts** can contain useful **primary information** such as interviews but may be quite difficult to find within some disciplines

- **Books/eBooks** are the obvious starting point for all kinds of **secondary information** such as **practical**, **theoretical**, **popular** and **tertiary**
- **Cd-roms** are not as widely used as they once were but they can often provide useful information e.g. **statistics**
- **Conference papers** can provide you with very **up-to-date** and **scholarly** information
- **Journals/eJournals** are extremely useful for **up-to-date**, **practical**, **theoretical** and **scholarly** information
- **Newspapers** are useful for **up-to-date** and **popular** information
- **Theses** are works written for higher level degrees (Masters and Phd) and can be useful for **up-to-date**, **scholarly** and **theoretical** information
- **Videos/DVDs/TV Programmes** can provide **up-to-date, scholarly, practical, primary, secondary** and **popular** information
- **Websites** can provide all the different kinds of information for education including government websites and standards agencies but generally information quality on the Internet is a big issue and this will be discussed in depth in section 3 of this chapter

Know which tools can be used to locate relevant resources

There are a wide variety of tools that you can use to access the resources mentioned above. It is very important that you ask your library what tools they subscribe to as not all libraries offer the same resources. The list below is an indicative selection of tools that you will find useful for locating your desired information:

Library catalogues for books, teaching materials, newspapers and journals

Your library catalogue contains information about all the resources that are held in the library. You can search for titles, authors, keywords and numbers. You *cannot* normally search for journal articles or chapters of books.

Indexing databases for journal articles, theses and conference proceedings

Indexing databases (also called bibliographic databases) hold bibliographic information about journal articles and conference proceedings. They are very useful if you want to identify articles and papers about a specific subject and can be searched easily for article titles or authors. They do not hold the full text of the indexed items but include information on a wide range of different topics.

Examples include:

- AEI (Australian Education Index)
- BEI (British Education Index)
- Index to Theses

Full-text databases for full text journal articles

Full-text databases are similar to indexing databases, except they allow you to find whole articles online, rather than just bibliographic information about the articles. This means that you do not need to go to the library to collect the materials; you can access them immediately from your computer. These tools do however only hold information about a small number of resources; therefore your search results may be limited.

Examples include:

- Education-Line
- Professional Development Collection

Search engines for web pages and files off the Internet

Web search engines allow you to search the web for web pages and documents. A web search engine only searches a small proportion of the total web. Different search engines search different sections of the web, therefore you may want to use more than one search engine or use a metasearch engine that can search many smaller engines at once (although not to the same degree of accuracy).

Examples include:

- Google: http://www.google.com is a very popular search engine, has advanced search available and there is also a “Google Scholar” search engine for academic papers (http://scholar.google.com/)

- MetaCrawler: http://www.metacrawler.com is an example of a metasearch engine

Information gateways for quality-assured web pages

Information gateways hold information on a specific subject area. Quality web resources on a specific subject are selected by trained staff and are compiled into listings of useful resources for you to search or browse.

Examples include:

- Intute: http://www.intute.ac.uk is a free online service providing access to web resources for education and research.

Alert services and current awareness tools for the very latest information in academic research

You could use current awareness tools when you are undertaking large research projects and need to know everything that is currently understood on a specific subject. Some current awareness tools allow you to search unpublished/pre-print papers, and others can let you search for research that is currently in progress.

Most indexing and full-text databases as well as information gateways will have a current awareness feature.

Section 2: Searching skills

This section will help you to:
Identify, expand, refine and combine your keywords, use search techniques to limit your searches and maintain a record of your completed searches.

Searching for information can be a complicated process. As you have seen in the previous section there is a large amount of information available, many places to look for it and all sorts of different search tools available. This section will help you to find relevant information efficiently and effectively.

Keywords

The most important part of the searching process is choosing your keywords. Electronic tools such as databases and search engines will only search for the exact words that you provide so it is important that you are equipped with a range of defining and descriptive keywords to make sure that you cover all the elements of the research topic and that you don't miss out on important information due to alternative ways of expressing your search terms. Remember that you are in control of your searching, not the computer!

A very effective way to begin to gather your keywords is to use techniques such as mind-mapping. Mind-maps can help you to:

- identify major concepts of the topic
- think about these concepts in detail
- decide which concepts are of most interest
- find out which concepts are least clear
- break concepts down into small details and ideas
- generate keywords

Here is an example of how a mind-map might be used:

[pic]

Once you have identified your key areas for investigation you will need to think of synonyms, alternative spellings and singular and plural forms for each of the main terms and consider broader and narrower ways of expressing the topic, , trying them in turn:

- **Synonyms** are 'like' words e.g. 'teacher' or 'educator' or 'lecturer'
- 'education' is a **broader** term than 'teaching'
- Check for **alternative spellings** e.g. organisation or organization
- The keyword 'teach' can be **pluralized** and **expanded** e.g. teaches, teaching, teacher, etc.

Search Techniques
Nearly all databases allow you to refine your search by using techniques of some kind to make it easier for you to retrieve helpful results when keyword searching. The following are the most frequently offered, but using the Help function in whichever database you are searching will give you much fuller information about constructing complex searches.

Boolean Operators

Combining your keywords is crucial to finding what you are looking for. Boolean operators allow you to combine your keywords in ways that give you control over your searching.

Boolean searching at its most basic involves the use of **AND** & **OR** to define the relationships between words.

- The use of **AND** will narrow a search to make it more specific: the records retrieved must contain **both** search words. e.g. EDUCATION **AND** ART.

- The use of **OR** will widen a search and will combine your synonyms: the records retrieved may contain **either** or **both** search words. e.g. TEACHER **OR** EDUCATOR

Truncation or Wild Cards

Truncation symbols, or wild cards, are used to replace one or more letters in order to retrieve different forms of a search word. The symbols used are usually ? or *.
e.g. TEACH* would retrieve *TEACH* as well as *TEACHER, TEACHERS, TEACHING, TEACHES.*

Truncation can also be helpful where there are variant spellings of a word
e.g. WOM?N would retrieve WOM**A**N or WOM**E**N.

Phrases

Many databases will automatically search two consecutive words as though they were joined by the Boolean operator AND, and will therefore return records in which both the words appear, but separated rather than as a phrase. Most tools allow you to search for a phrase by enclosing the words in quotation marks, although sometimes brackets are used.

e.g. “Secondary education” or (Secondary education)

Limiting your search

Most databases and search engines will allow you to limit your search to give you more control over your results.
The most common ways that you can limit your search are:

- By **field**: you can tell a database to look for your keywords in a particular field of a document. You could choose to search for your keywords across all the text in a journal article, or you could choose just to search in the title fields. You will get vastly different results by experimenting this way.

- By **date:** You can usually tell the search tool to limit your search to a particular time period. This is very useful if you are looking for very current information.

Keeping a record of your searches

It is strongly recommended that you keep a record of all the searches you perform. This will help you not to duplicate effort and will also provide evidence of your research process. Most databases allow you to create a personal account and provide a facility for recording your search history. Check the help option of the particular database to find out how to do this. Otherwise a writing pad and a pen will be sufficient.

Search Summary
The following flowchart gives you a helpful pathway to follow when you are carrying out your research. Check you have considered all the details necessary to complete each stage effectively

Section 3: Evaluating information

This section aims to help you:
Know why it is important to evaluate the information you find and what criteria you should use to evaluate the value of information

When you are engaged in your research it is important that you are aware that not all printed and online information is appropriate for use in educational research. For a variety of reasons a significant proportion of the information you find, especially via the Internet, can be unreliable and unsubstantiated.

It is critical that you evaluate the information you find before you begin to use it within your own work. If you use information of a low standard you could base your arguments on incorrect information and jeopardize the integrity of your research.

Here are some questions to ask yourself when evaluating any information you find:

< Is the author writing from a biased viewpoint, resulting in an unbalanced review with limited perspective?
< Is the author qualified in his/her field? What else have they published? Are they accredited to a reliable institution or professional body?
< Who is the publisher of the information? Are they reputable?
< Is the Information written to promote a commercial product or service?
< Is the information produced for entertainment, with no academic purpose intended?
< Has the information been through the Peer Review process? Some books and journal articles go through a process called "peer review" in which panels of experts go through the information and comment on its quality. If peer reviewed information is of a low quality the author will be asked to amend any mistakes before it is published, or the piece of work will be rejected altogether. Not all journal articles go through this process so not all journal articles are of the same quality
< Is the writing style academic in tone or is it intended for a popular audience?
< Is the information supported by references to other work?

Below is the **TICKLIST evaluation tool** devised by Kim McGowan (Learning Advisor, University of Cumbria); apply this to any websites that you intend to use in your research:

Trustworthy**:** Look at the domain name:
.com and .co are commercial sites
.org is a non-profit organisation
.ac is a UK academic site and .edu is a US educational site
.gov is a UK government site
.doh.gov.uk, .nhs.uk are health sites

Intention**:** Who is it aimed at and why? Is 'Help' or 'about this site' available?

Currency**:** When was it last updated and are links active?

Knowledgebase**:** How authoritative is the person or organisation responsible and how credible is the info? Is there a contact email?

Level**:** How detailed is the coverage, is it at the right level?

Information**:** Hhow accurate is the information? Use your subject knowledge or cross reference details to check.

Support**:** Is the information supported by references or citations?

Thoughts**:** What do you feel about the overall presentation and content of the site?

Section 4: Using information appropriately

Once you have found the information you require for your research it is important that you go on to use it fairly and legally. Failure to do this may result in you breaking the law.

This section will introduce you to the importance of:
Making copies of your sources legally (copyright law), ensuring that you don't steal the work of others (plagiarism) and citing information sources you have referred to (referencing)

Copyright

If you wish to make a copy of a source of information it is your responsibility to ensure that you do not infringe copyright law. If you are making a single copy of information for your own use it is likely that this copy can be made under the "fair dealing" guidelines. Many libraries and institutions own licenses that allow additional copying under certain guidelines. More information about these licenses is available from several sites listed in the further reading section of this chapter. Copyright applies to all types of information, including print and electronic information, sound recordings, sheet music, art and drama.

"Fair dealing" usually allows you to make the following copies for "non-commercial" research or private study:

- one whole chapter or up to 5% of a book (whichever is greater)
- up to 10% of a short book or pamphlet (copying no more than 20 pages)
- one article from an issue of a journal or a conference proceeding
- one poem or short story (of up to 10 pages) from an anthology
- the report of one case from a law report
- one separate illustration, diagram or photograph of up to A4 size from a book (more images than this may be copied if they are an integral part of a chapter you are using)

- one article from an issue of a newspaper

Older works may no longer be protected within the copyright law however it is important to check that time has lapsed on all potential "owners" of the copyright before assuming that you are legally able to copy this information freely.

Plagiarism

When using information it is important that you respect the "moral rights" of the author(s) by ensuring that you always acknowledge the author of the information you use and refer to this information accurately in your work. Failure to clearly state the author of any information used in your work will result in plagiarism, whether you use direct quotes from the works you read, or whether you just paraphrase from the ideas or concepts. This applies to all types of information, whether published or unpublished.

To avoid plagiarism you should:

- Ensure that any quotations (direct copies of a piece of text) you use from other works are clearly enclosed within double quotation marks and are referenced accurately.
  It is best practice to avoid the use of too many quotations in your work.
  Large quotations should be avoided and separated from the rest of your text if used.

- Paraphrased information (information from a source described in your own words) does not require the use of quotation marks but must still be referenced accurately to show that the ideas expressed are not your own.

- Any sources of information used in the construction of your work can be listed in a bibliography at the end of your work (see referencing) to show that these sources have influenced you.

Referencing

Referencing is the technique used to indicate which sources of information have been used in your work. It is essential that you reference your sources in full, giving accurate information in order to respect the moral rights of the authors whose work you refer to and to avoid plagiarism.

Many different referencing styles are used across the world. The most common styles include the "Harvard" or "Author-Date" referencing system, " the "Vancouver" or "Numeric" referencing system and the "MLA" and "MHRA" systems. Which ever system you use you must ensure that you follow it consistently throughout your work, including all the necessary information.

Important: if your work is for an accredited course you will normally be instructed as to which style you will be required to follow by your tutor or institution.

There are two places in which you should include details of a reference in your work:

- A **citation** appears in the text of your work, wherever you use a quote or incorporate an idea you have gained from another source
  This is often indicated by the use of a superscript number in the text or by the inclusion of the author's surname and date of publication (depending on which referencing system you are following)

- A **reference** provides the full details about the source you have cited in your text. It must give enough information so anyone else reading your work can track down the source item
  References will be listed at the end of your work in a reference list or bibliography, or you will need to insert them as footnotes on the page in your work where you refer to the source (depending again, on which referencing system you are following)
  A **reference list** is an alphabetical list of references at the end of your work, only including the sources you have referred to and therefore have cited directly in your work
  A **bibliography** is an alphabetical list of references at the end of your work, that includes all the sources you used in the development of your work, not just those cited

Examples of a full reference are given below, showing the same chapter in the same book referenced in two different systems:

- **Harvard:**
  Elton-Chalcraft, S. Hansen, A. and Twistleton, S. (eds.) (2008) *Doing classroom research: a step by step guide for student teachers*. Maidenhead: Open University Press.
- **Vancouver:**
  Elton-Chalcraft S, Hansen A, Twistleton S editors*. Doing classroom research: a step by step guide for student teachers*. Maidenhead: Open University Press; 2008.

Many referencing guides are available on the Internet. Some systems, like MHRA, have handbooks to follow, while other systems, like Harvard, have evolved over time, with many versions available. If you are ever unsure which system to use you should ask the intended audience of your work which they prefer (for example, a tutor or publisher) or look at other works in your field to see what the most commonly used system is.

Section 5: Recommended resources and suggested further reading:

Always ask your library for help with any of the issues raised in this chapter, the library staff will be qualified to give you advice and

support for all areas of your research.

Below is a small selection of online and print materials that you may find useful:

Research Overview

Fink, A. (2005). *Conducting Research Literature Reviews: From the Internet to Paper*. 2nd Edn. London: Sage.

Queensland University of Technology (2006). *Online Information Literacy Tutorial* [Online]. Brisbane: Queensland University of Technology. http://pilot.library.qut.edu.au/ [Accessed 5th July 2007].

University of Texas (2004). *TILT* [Online]. Texas: University of Texas. http://tilt.lib.utsystem.edu/ [Accessed 5th July 2007].

Buzan, T. (2002). *How to Mind Map*. London: Thorsons.

Identifying the required information

Minneapolis Community & Technical College (2001). *Production of* Knowledge [Online]. Minneapolis: Minneapolis Community & Technical College. http://www.minneapolis.edu/Library/tutorials/infolit/tablesversion/lessons/lesson1/production.htm [Accessed 5th July 2007].

Searching skills

Intute (2006). *Intute – Virtual Training Suite* [Online]. Manchester: Intute. http://www.vts.intute.ac.uk/ [Accessed 5th July 2007].

Open University Library (2001). Safari [Online]. Milton Keynes: Open University. http://ltssolweb1.open.ac.uk/safari/signpostframe.htm [Accessed 5th July 2007].

Evaluating information

UNC College Libraries (2007). *Evaluating* Information [Online]. North Carolina: University of North Carolina. http://www.lib.unc.edu/instruct/evaluate/introduction/ [Accessed 5th July 2007].

New Mexico State University Library (2006). *The Good, the Bad and the Ugly: or, Why It's a Good Idea to Evaluate Web Sources*. [Online]. New Mexico: New Mexico State University. http://lib.nmsu.edu/instruction/eval.html [Accessed 5th July 2007].

Copyright

Napier University. *Copyright Tutorial* [Online]. Edinburgh: Napier University. http://www.napier.ac.uk/depts/ed/copyright/Tutorial_3/index.html [Accessed 5th July 2007].

Joint Information Systems Committee (1999). *Fair Dealing and 'Permitted Actions'* [Online]. Bristol, London: Joint Information Systems Committee. http://www.jisc.ac.uk/uploaded_documents/lis_Fair%20Dealing.pdf [Accessed 5th July 2007].

Intellectual Property Office (2007).*Copyright – Basic Facts* [Online]. Newport: Intellectual Property Office. http://www.ipo.gov.uk/c-basicfacts.pdf [Accessed 5th July 2007].

Referencing and Plagiarism

Pears, R. and Shields, G. (2005) Cite *them right: the essential guide to referencing and plagiarism*, Newcastle upon Tyne, Pear Tree Books.

Napier University. *Be wise, don't plagiarise!* [Online]. Edinburgh: Napier University. http://www.napier.ac.uk/depts/ed/copyright/Tutorial_4/index.html [Accessed 5th July 2007].

Pearson Prentice Hall (2007). *Understanding Plagiarism* [Online]. New Jersey: Pearson Education. http://wps.prenhall.com/hss_understand_plagiarism_1/0,6622,427064-,00.html [Accessed 5th July 2007].

Different uses of the same word?
Think of extra terms to add to search?

Widen search -
more results

Mind-mapping

Think about your topic

- Which are the main parts of the topic?
- What are the main concepts of each part?
- What terms can be used to express these concepts?

Alternative endings

Generic words

Synonyms

Think about the words you can use

Link your search words together

AND / +	Truncation
OR	Wildcards
	Brackets

Alternative spellings

American English?
British English?

Alternative endings
e.g. Educat*
Education, Educator, Educational, Educates, Educating

Alternative spellings
e.g. Analy?e
Analyse, Analyze

Narrow search -
fewer results

Classroom Research:
Student progress in literacy skillshere are no formal guidelines in place they are an integral part of a chapter you are using)stem to use, you should ask footnoliteracy

Student age

Years of school

Improving your search

- Which of your search terms were most effective?
  Were any of your search terms ineffective - could these be changed?
- Do you have too few results?
  Have you thought of all the synonyms and alternative spellings for your search terms?
- Do you have too many results?
  Are your search terms generic / should you add another concept to your search?
- Have you searched the most appropriate search tools?
  Are you searching for the right type of information?

Keep a record of your searches

- What search words were used?
- Did you link these words together?
- Which search tools were searched?
- How many results did you find?
- Details of relevant and useful results.

Are you interested in a specific idea or broader overview of the concept / part?

Stage in curriculum

Complexity of words

Pronunciation

Accuracy

Skills observed

Key stage objectives

%

Recognition

Phrasing

Spelling

Speed