

USING NVIVO FOR YOUR LITERATURE REVIEW

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Introduction

Literature reviews are a common feature of all dissertations, regardless of discipline or subject matter. They feature as a basis for all other kinds of research or learned work. However, they are usually overlooked as a form of qualitative analysis. Yet the processes involved in building an argument from a body of literature are similar to processes involved in analysing qualitative data. The processes involved include: reading and reflecting; interacting with the literature/data and commenting on it; identifying key themes and coding for them; extracting from the codes 'gold dust' quotes to be used when writing up; linking similar ideas from different articles/transcripts; identifying contradictions in arguments; comparing dissimilarities in articles/transcripts; building one's own argument/analysis with links to supporting evidence in the data/literature.

Researchers have developed various strategies to deal with the amount of material a literature review generates. In the past, card index systems were used as tools but in the past few years, bibliographical software has emerged as the favoured tool to organise literature. Packages such as EndNote, Reference Manager, ProCite etc. have excellent tools to manage references. It is possible to download abstracts and, in some, whole articles to be included in the bibliographic database. They offer flexible ways to search and sort references. They have direct links with word-processing packages, making it easy to insert the correct citation at a point in the text. They also have the ability to generate bibliographies in the house styles appropriate to a wide range of journals. It is also possible to do some of the tasks similar to analysing qualitative data, mentioned above. It is possible to comment and reflect on an article, code it with certain key words etc. However, these packages were not designed for the analysis of data, so these processes can be carried out only in a limited way. A dedicated software analysis package is needed to support the analysis processes involved in a literature review.

Software packages such as Atlas.ti, N4 Classic, N5, NVIVO, WinMax etc. can be used to support the analysis processes involved in a literature review. They do not replace the bibliographic software mentioned above, as they do not have the bibliographic tools that those packages have. But their analytical tools can be used in addition to the bibliographic tools to support the whole literature review process. Of all the qualitative analysis software packages, only NVIVO (to date) has a particular set of tools that is ideal for analysing literature. It is possible to analyse literature in the other packages mentioned, but their tools are not as flexible as NVIVO's are for this purpose. (However, these software packages are developing at a very fast rate, so this situation may change in the future.)

The rest of this article will demonstrate the tools in NVIVO's toolkit which can support the various processes and strategies involved in constructing arguments from the literature. The example literature review (which is on the CD) is the beginning of a review on qualitative analysis and computer software.

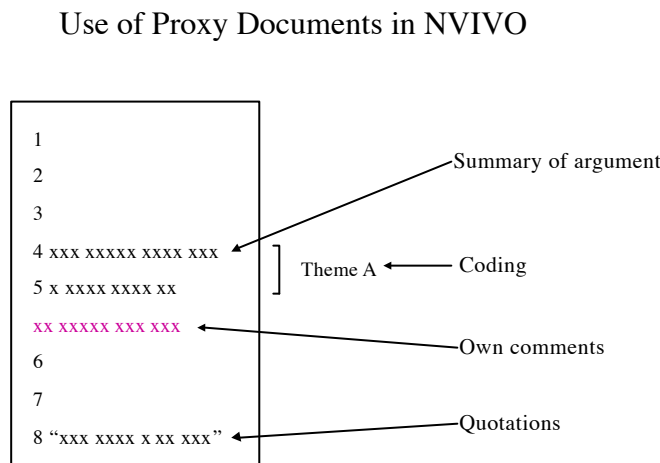
Strategy - Reading, reflecting on and extracting from an article/book

Tool 1 - Proxy Documents

The first step in any analysis of literature is to read! As you read, you want to summarise parts of the text that you want to remember. These may be passages that

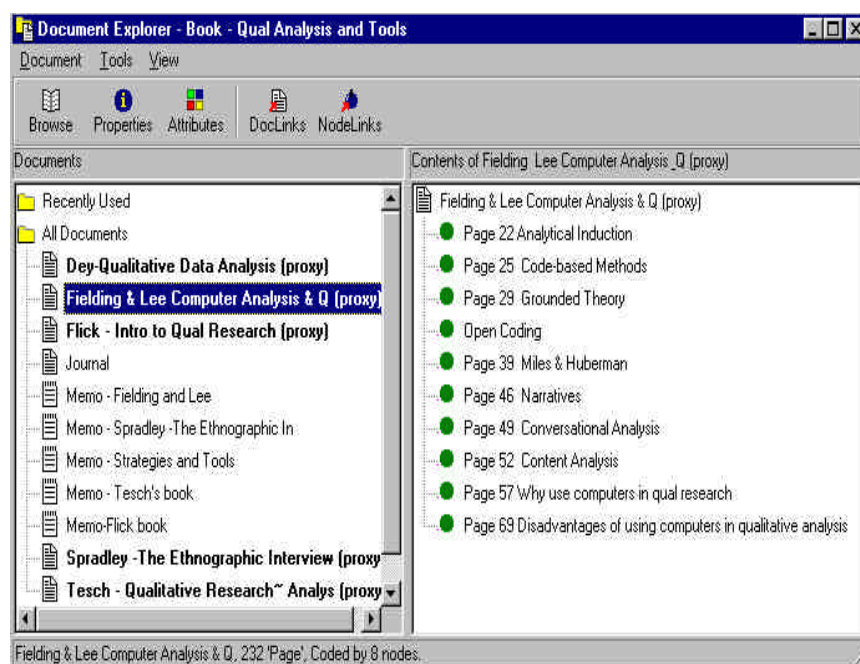
explain the author's central ideas, arguments etc. You summarise them so that you can remember the argument later. There may also be particular key passages that you want to extract verbatim - so that you can quote the author when you are writing up your own argument. You also may start to identify key themes that are occurring across the literature. So for each piece of literature you read, you want to extract instances of that key theme so that you can compare it with other instances of that key theme. In effect, you are coding for that key theme. In addition, as you are reading through a piece of text, you may get a sudden insight/thought that the text has stimulated. You want to record that thought at that point in the text before you forget it. If it is your own book, you may write it in the margin.

Figure 1:



The Proxy Document is the NVIVO tool that can handle the above processes. Figure 1 above illustrates how it does this. A Proxy Document is used in NVIVO to *represent* a particular book or article from your literature review. You create a Proxy Document directly in NVIVO - there is no need to write in a word-processor first. You simply type the name of your book/article, type any description you may find useful, make a record of where it is located (so that you can find it again), and record the start page number and the end page number. NVIVO will automatically format a Proxy Document with the page numbers listed down the left-hand margin. You are now able to type directly into your Proxy Document. You can have NVIVO open on your laptop and the book open as you read. At the appropriate page number, you can type in your summary of the author's argument. You can use different coloured fonts to distinguish summaries of arguments from direct quotations. You can give a title to your summaries and format it to a particular heading level, so later you can view an outline of your summaries/quotations and jump to that point in your Proxy Document. You can code any of the summaries/quotations for key themes which you feel occur across the literature so that you can later retrieve references to all passages referring to those key themes. You can also write your own insights which have been prompted by the text using either a different font style (for example, italics) or an NVIVO tool called a DataByte which will be described later. Figure 2 is an example of a list of Proxy Documents from a real literature review project in NVIVO.

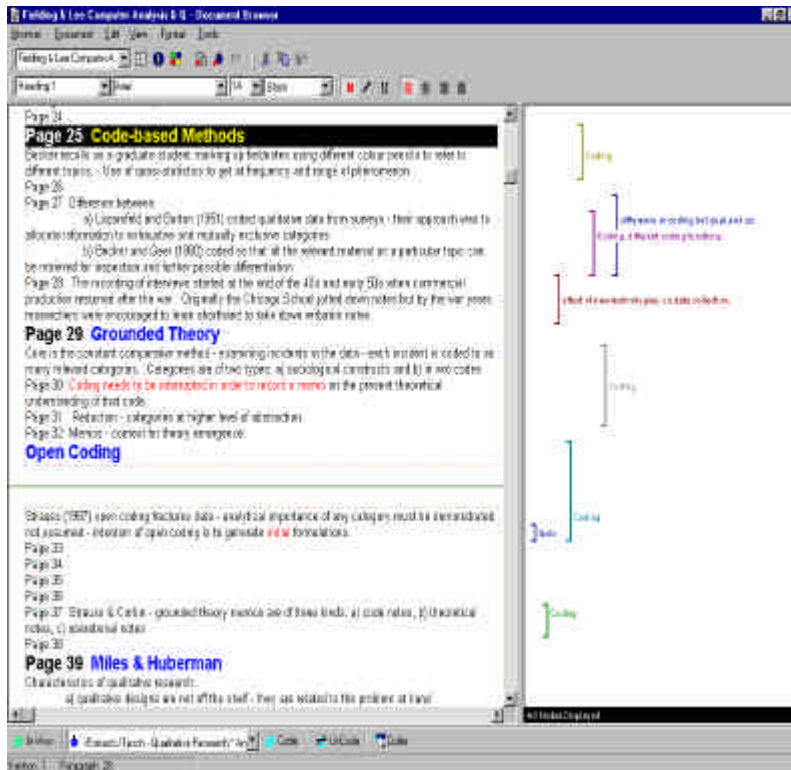
Figure 2: List of Articles in Literature Review NVIVO Project



In the left hand column is a list of books and memos relating to a literature review on using computers for analysing qualitative data. The books are represented as Proxy Documents. NVIVO automatically marks out Proxy Documents by adding '(proxy)' next to a title of such a document. The Fielding and Lee book is highlighted in Figure 2. The column on the right shows in outline view, the sections from the Fielding and Lee book where notes/comments were made. These sections were made by formatting each section title as a Heading Level 1 when typing up the comments in NVIVO. It is possible to jump to a particular section in a Proxy Document such as this by clicking on that section in the right hand corner. Figure 3 shows what the section on Code-based Methods from the Fielding and Lee Proxy Document looks like.

Next to the appropriate page numbers, summaries have been written of Fielding and Lee's arguments. Using a Heading Level 1 in the title and the colour blue are the ways used to identify the different sections of their book. Points important to the literature reviewer have been typed in the colour red. Note that summaries have not been written for pages covering topics not relevant to the purpose of the literature review. The right hand margin shows where codes have been applied to key themes. Parts of this section have been coded for 'coding', 'differences in coding between qual and quant methods', 'different coding functions', 'effect of new technologies', 'on data collection', and 'tools'.

Figure 3: Example of a Proxy Document showing summaries and coding



On the CD-ROM you can look at the other Proxy Documents in this literature review project. In particular, have a look at the Uwe Flick Proxy Document. DataBytes are used to indicate my own comments on certain topics. The DataBytes are in Green and are underlined. To access them, click your cursor in the middle of such a green word or phrase and click on the DB icon on the toolbar. This will open the DataByte and you will see my comments! It is the equivalent of writing in the margin or using footnotes.

It is possible to scan in or download whole articles and import them from your word-processor into NVIVO so you can work with them. However, this is not recommended except perhaps for very key articles. On a practical level, they would occupy too much space on your hard drive. On an analytical level, it could lead to a very lazy approach. Literature reviews should be done with a purpose in mind. Books and articles should be gleaned for those aspects that are relevant to this purpose. The process of summarising an argument or even copying out a quote engages your thinking and reinforces your understanding. You are starting to interact with the text, which can stimulate your own critique. Proxy Documents are a nice tool to hold those summaries and comments. It is always possible to add to a Proxy Document a section that had previously not seemed relevant. You may also want to copy and paste the citation from your bibliographic software into the relevant NVIVO Proxy Document.

Strategy - Organising the Literature Tools 2 & 3 - Using Attributes and Sets

Once you have a few Proxy Documents in your NVIVO literature review project, you should consider ways to organise them. Common ways of organising literature are by author, date of publication, and country of publication. In addition, you can organise

them by academic discipline and by topic. The way you organise your literature depends on the purpose of your literature review. Once organised, you can pull out all the literature, for example, on a particular topic from a particular discipline since 1990. Bibliographic software packages are very good at sorting references in this way. However, the purpose of doing this in NVIVO is that once you have collected this combination of references, you can save them as a set. Then you can restrict your further analysis to just that set of documents - using NVIVO's powerful Search Tool, if required.

The tools that you can use in NVIVO for organising your literature are attributes and sets. Attributes are best thought of as the characteristics of your documents, in this case the Proxy Documents representing the literature. In my literature review example project, I used as attributes 'Nationality' - to refer to the nationality of the author, and 'Publication date'. These can be viewed in the NVIVO Attribute Explorer, Figure 4.

Figure 4: Example of Attributes set up for Proxy Documents

The screenshot shows the 'Document Attribute Explorer' window in NVIVO. The window title is 'Document Attribute Explorer - Book - Qualitative Analysis and T...'. The 'Document' dropdown is set to 'Field - Info to QualProsech'. The 'Attribute' dropdown is set to 'Nationality'. The table below shows the following data:

	Nationality	Publication date
Key Quantitative Data Analysis	UK	1991
Fielding & Lee Computer Analysis & Q	UK	1990
Field - Info to Qual Research Journal	Germany	1998
Memo - Fielding and Lee		
Memo - Corradley - The Ethnographic Interview		
Memo - Strategic and Tools		
Memo - Teacher's BOOK		
Memo - Field tool		
Corradley - The Ethnographic Interview	USA	1975
Teacher - Qualitative Research - Analysis	USA	1990

At the bottom of the window, it says 'No Rows Selected' and 'No Columns Selected'.

Note that these attributes are relevant to only the books and articles in the data base. The other documents in the project are not assigned these attributes.

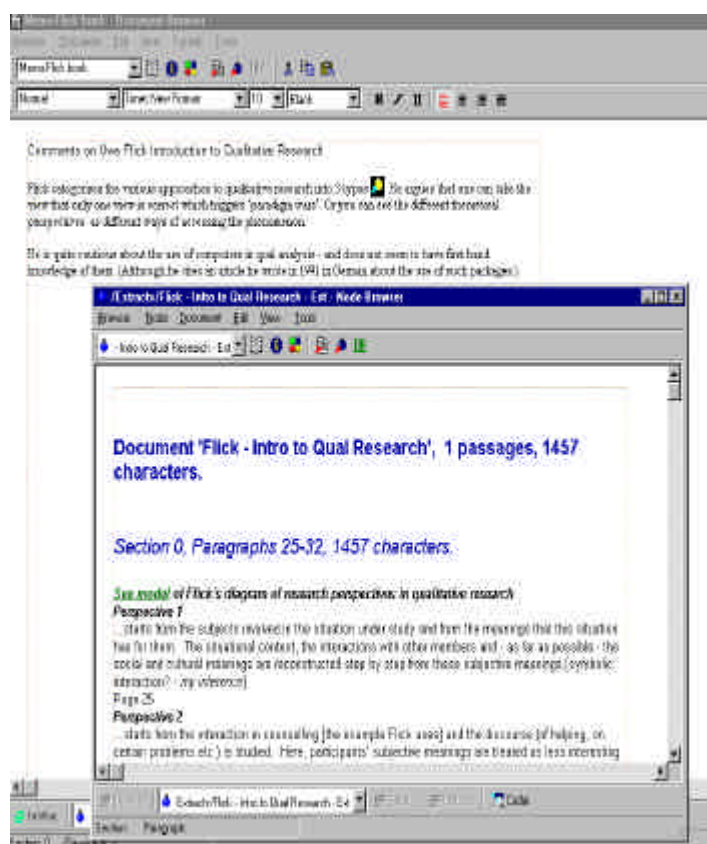
Once attributes have been assigned, it is possible to use NVIVO to pull out different combinations of attributes and create them as sets. This is done through NVIVO's Set Editor. The example in Figure 5 shows how NVIVO automatically selected all the literature that was published in 1990 or earlier. NVIVO does this by filtering out and selecting only those documents that have a 'publication date' attribute as less than or equal to 1990. Once selected they can be saved as a set and named.


Figure 5: The NVIVO Set Manager - used to quickly organise documents into sets

A Memo to a particular Proxy Document is the NVIVO tool that can support the above processes. Figure 6 demonstrates how it can support them. In the Memo to Book A is an outline of its argument. A critique of that argument is under it. A NodeLink is used to be able to jump to a quote in the Proxy Document of Book A. Where reference is made to other articles in the critique, DocLinks can be used to jump to the Proxy Documents representing those articles.

You can see the list of Memos to Proxy Documents together with the Proxy Documents in Figure 2 (above). They all begin with the word 'Memo' followed by the name of the Proxy Document to which it refers. You will see in the list Memos to the following books - Fielding and Lee, Spradley, Tesch, and Flick. Figure 7 shows the Memo for Uwe Flick's book.

Figure 7: A Memo showing a NodeLink



You can see in the Memo to Flick's book a reference to the way he categorises qualitative research into 3 types. A NodeLink  is put at that point in the reference. In the screenshot above the node reference was clicked, and the window which is open below the memo, is from the Flick Proxy Document. The window only contains the bit from the Proxy Document that refers to the 3 types of qualitative research. The memo is used to reflect on his categorisation. But I have a direct link to his argument if I need to remind myself about it.

In the CD, look at the other Memos to the Proxy Documents. In particular, look at the Memo to the Tesch book. See how I try to understand her categorisation. There is

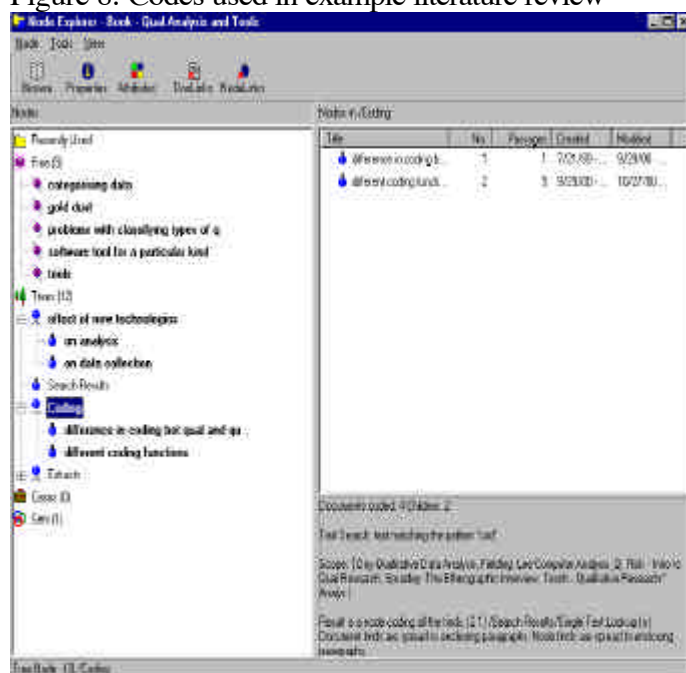
another NodeLink to the Tesch Proxy Document. At the end there are two colour-coded bits which are my reflections on her categorisation and how I will proceed.

Strategy - Aggregating data - pulling together themes

Tool 5 & 6 - Coding and The Search Tool

We have already seen in the discussion about Proxy Documents how it is possible to code. Coding can be used as a tool to collect information about a particular theme. In Figure 8, you can see the codes that have been used this far in this literature review.

Figure 8: Codes used in example literature review



The Node Explorer in NVIVO lists all the codes you have created. There has only been limited use of the coding tool so far in this example of a literature review. NVIVO's text search function was used to search for the word 'cod' in order to pick up all references to 'coding'. The results were carefully checked to make sure that everything picked up referred to 'coding'. Irrelevant passages were deleted from the node. If not enough of a relevant passage was coded, then the coding was spread. All the passages coded for 'coding' were then 'coded-on'. This refers to a process of refinement in the coding. In this case, the process is not yet completed. However, two types of 'coding' issues have so far been developed - 'differences in coding between qualitative and quantitative analysis' and 'different coding functions (within qualitative analysis)'.

The other codes were created at the point of writing up the summaries of arguments in the Proxy Documents. Note that there is a node called 'gold dust'. This is a useful place to code your 'juicy' quotes that you may want to use in any article you are writing.

Once you have some coding, you can use NVIVO's Search Tool to pull out combination of themes. On a simple level, you could pull out all your 'gold dust' quotes relating to a particular theme. You would use the Boolean search 'Intersect

(and)'. Or you could do more complex searches. For example, you could restrict your search to publications since 1995, and search for 'different coding functions' near 'software tool for a particular kind of analysis'. But there are not enough documents or enough coding to be able to get any interesting results at the moment in this initial literature review.

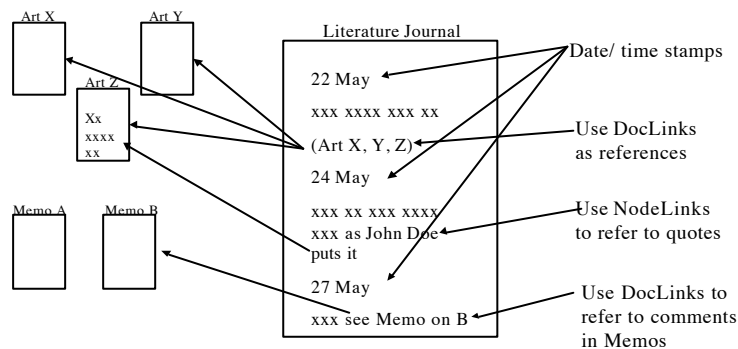
Strategy - Building arguments supported by the literature

Tool 7 & 8: The Literature Review Journal and Thematic Memos

The Literature Review Journal is an essential tool to use right from the very beginning of your literature review. You should record your developing thoughts about how you think the literature review is shaping up. You can date-time stamp your thoughts. It is possible to divide your Literature Review Journal in NVIVO according to different themes or to separate out themes from 'housekeeping tasks' - such as recording which book/ article you need to look at next etc. You can even start writing up parts of the review in the Journal itself - using DocLinks and NodeLinks to refer to the Proxy Documents which back up your argument. DocLinks can be used as you would use a general citation in writing an article. NodeLinks can be used as you would use a direct quotation in an article.

Figure 9:

Use of Literature Review Journal

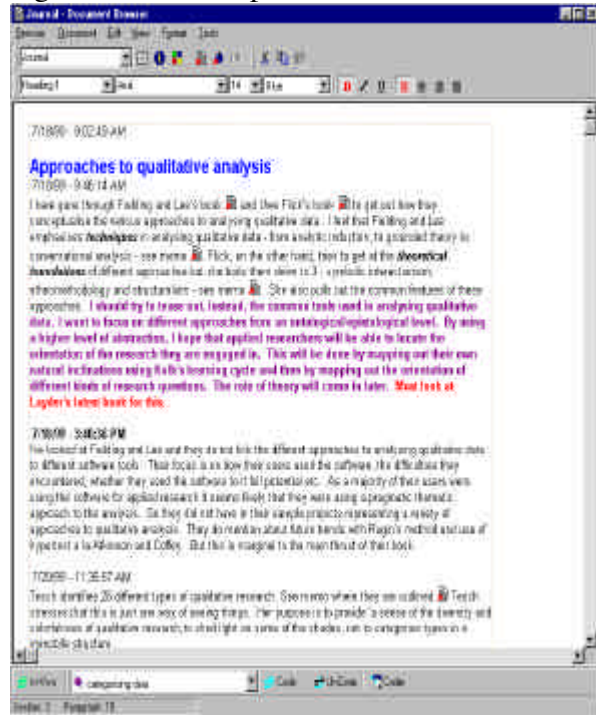


The Journal in the example Literature Review is divided into 3 sections:

- a) approaches to qualitative analysis
- b) using computers in qualitative analysis
- c) next steps

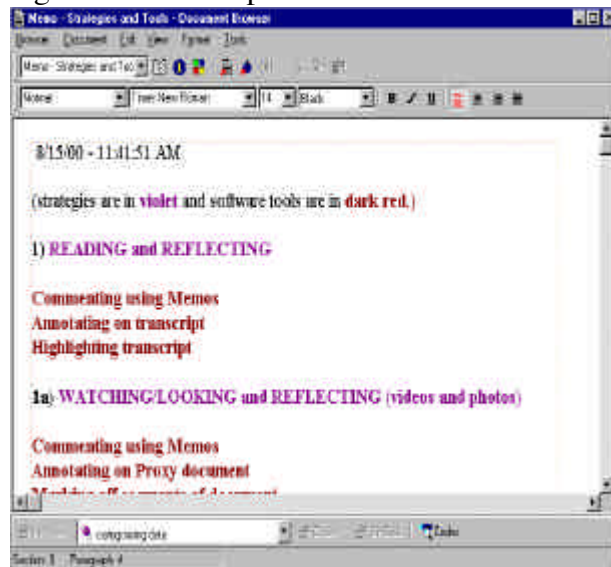
The first two sections refer to themes I want to explore in the book that relates to this literature review. The third section is for 'house-keeping' issues. Figure 10 refers to the initial section of the Literature Review Journal. You can explore the DocLinks and NodeLinks in the CD.

Figure 10: An example Literature Review Journal



When you want to elaborate on a particular argument, you can create a separate thematic memo. The memo labelled 'Memo - Strategies and Tools' is an example of a thematic memo (Figure 11).

Figure 11: An example thematic memo



These are my thoughts on pairing strategies for analysing qualitative data and the software tools you would use to aid those strategies. They were based on reflecting on my own experience in conjunction with reading the literature.

It is possible to write any number of these kinds of thematic memos. It is in these kinds of memos that you are moving away from the literature and starting to write your own arguments. Although they are your arguments, they are grounded in the

literature. It is possible to use NVIVO's tools to check how grounded your arguments are in the literature. In this way, you start to write up your literature review.

Conclusion

As I hope I have been able to demonstrate, carrying out a literature review is a form of qualitative analysis. NVIVO has features that are well suited to aid in a literature review. To summarise, Proxy Documents (which are created directly in NVIVO) are used to write summaries of a particular author's argument and/or direct quotations. These can be coded in order to be able to retrieve later, particular themes. Memos to Proxy Documents are used to write up your own reflections on a particular book/article and to start building your own critique. You can refer to other books/articles by using DocLinks and NodeLinks. You can organise your documents by using attributes and sets. This enables you, later on, to restrict searches to particular documents by author, date, discipline or whatever is relevant to your research. You can keep a Literature Review Journal in NVIVO and write directly in it. You can use this to start writing up your literature review - using DocLinks as you would general citations and NodeLinks as you would direct quotations. You can create any number of thematic memos where you can explore in detail any theme. You can copy and paste citations directly from your bibliographic software into an NVIVO document.

By using such a software tool for your literature review, you are creating a literature archive, which you will be able to dip into and add to for future reference and research. For those who are doing a qualitative piece of research, this is a good way to start to learn how to use NVIVO before you have collected your data. For those who are doing quantitative research, you may be surprised to learn that you have been doing a form of qualitative research when doing a literature review and that NVIVO is a tool that can help.