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Transparency and Coherence in a Doctoral Study Case Analysis: Reflecting on the Use of NVivo within a 'Framework' Approach


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Abstract

This article describes and reflects on the analytical process undertaken on a qualitative case study analysis exploring the concept of interprofessional education (IPE) in Malta. The analysis which employed the 'Framework' approach executed by qualitative data analysis (QDAS) software, specifically NVivo, served to produce an audit trail eliciting how the data, findings, interpretations and subsequent conclusions were all tracked and grounded in the raw data. This paper offers a reflective account of my experience in using NVivo highlighting the potential of this software as facilitating a more rigorous and transparent approach to qualitative data analysis.

Keywords

Framework, QSR * NVivo, Qualitative Case Study, Interprofessional Education, Transparency, Rigour

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Transparency and Coherence in a Doctoral Study Case Analysis: Reflecting on the Use of NVivo within a ‘Framework’ Approach

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*This article describes and reflects on the analytical process undertaken on a qualitative case study analysis exploring the concept of interprofessional education (IPE) in Malta. The analysis which employed the ‘Framework’ approach executed by qualitative data analysis (QDAS) software, specifically NVivo, served to produce an audit trail eliciting how the data, findings, interpretations and subsequent conclusions were all tracked and grounded in the raw data. This paper offers a reflective account of my experience in using NVivo highlighting the potential of this software as facilitating a more rigorous and transparent approach to qualitative data analysis. Keywords: Framework, QSR * NVivo, Qualitative Case Study, Interprofessional Education, Transparency, Rigour*

Introduction

“The ultimate excitement and terror of a qualitative project is that you can’t know at the start where you will end” (Richards, 2009, p. 133).

There is much debate surrounding qualitative data analysis software (QDAS) and the novice researcher is often left bereft and perplexed trying to make sense of it all. It is not the scope of this paper to go into these debates; suffice to say that on one hand it has been hailed as invaluable to qualitative data analysis for managing and organising data, querying data, graphically modelling ideas built from data and reporting from data (Bazeley, 2007; Côté, Salmela, Baria, & Russell, 1993). On the other hand, it has also been critiqued over separation/distancing, misrepresentation, mechanisation of the entire data analysis process, and homogenisation of qualitative approaches to analysis (Bazeley, 2007; Jackson, Paulus, & Woolf, 2018; Richards & Richards, 1994; Weitzman, 2000). For my master’s degree, I had used manual methods of analysis, devoting much time to tasks such as cutting, pasting, mapping and charting. For my doctoral study, I aimed for deeper levels of creative and reflective analysis combined with rigour and transparency of the entire research process. This necessitated an extensive electronic audit trail which would ensure that my work would be dependable—one of the criteria to ensure trustworthiness of qualitative research (Lincoln & Guba, 1985). The software package NVivo, one of the most popular QDAS, seemed to set the standard in qualitative data analysis and with its support for ‘Framework’ and personalised training for my study, I decided to make use of this software package.

This paper starts with a brief overview of the ‘Framework’ approach. It then continues with a synopsis of the study, explains the methodology used, and is followed by the key stages of how this approach was executed by NVivo (Versions 9 & 10). It also presents personal reflections of my experiences in using this software package.

‘Framework’ to Synthesise and Interpret Data

The ‘Framework’ Method was developed by Jane Ritchie and Liz Spencer during the 1980’s, from the Qualitative Research Unit at the UK’s largest, independent non-profit research institute, the National Centre for Social Research (Ritchie & Lewis, 2003). This method employs a hierarchical thematic framework that is used to classify and organise data according to key themes, concepts and emergent categories. It identifies a series of main themes subdivided by a succession of related subtopics and, once deemed to be comprehensive, each main theme is charted by completing a matrix or table where each case, respondent or participant has its own row while the columns represent the subtopics. These charts are used to examine the data for patterns and illustrate the relationships, both by participant and by theme. ‘Framework’ is used by hundreds of researchers in areas such as health research, policy development, and programme evaluation (Gale, Heath, Cameron, Rashid, & Redwood, 2013); although it may generate theories, the prime concern of ‘Framework’ is to describe and interpret what is happening in a particular setting (Ritchie & Spencer, 1994). ‘Framework’ can also be used for inductive and deductive thematic analysis depending on the research questions (Gale et al., 2013). My study did not have an *a priori* theory or hypothesis but anticipated that meanings would emerge out of the data (Lincoln & Guba, 1985). Hence, the questions required an inductive approach to data analysis, allowing me as the researcher to explore the context and to generate themes from open coding of the data.

Focus of the Study

This doctoral study is contextualised at the Faculty of Health Sciences, University of Malta. It concerns the concept of interprofessional education (IPE) as a possible model of practice for the education of health care professionals. Interprofessional Education is defined as “occasions when two or more professions *learn with, from and about each other* to improve collaboration and the quality of care” (CAIPE, 2002, p. 1). This study adopts a qualitative case study approach with the unit of analysis being “IPE at the Faculty of Health Sciences positioned within the Maltese context.” This faculty is responsible for the education and training of nursing and allied health professions which at pre-registration level takes place in traditional educational silos. The specific objectives of the study were to:

- explore how academic staff and other stakeholders at the Faculty of Health Sciences perceive and understand IPE,
- explore the perceived barriers and/or enhancers of a possible IPE undergraduate initiative, and
- understand how micro, meso and macro contextual factors could possibly influence IPE in Malta.

The purposive sample totaled 64 participants and these included academics at the Faculty of Health Sciences, key informants from the education/health policy sectors, and newly qualified health professionals. Data was gathered through a combination of focus group discussions, one-to-one interviews and documentary searches carried out inductively over two phases (Figure 1).

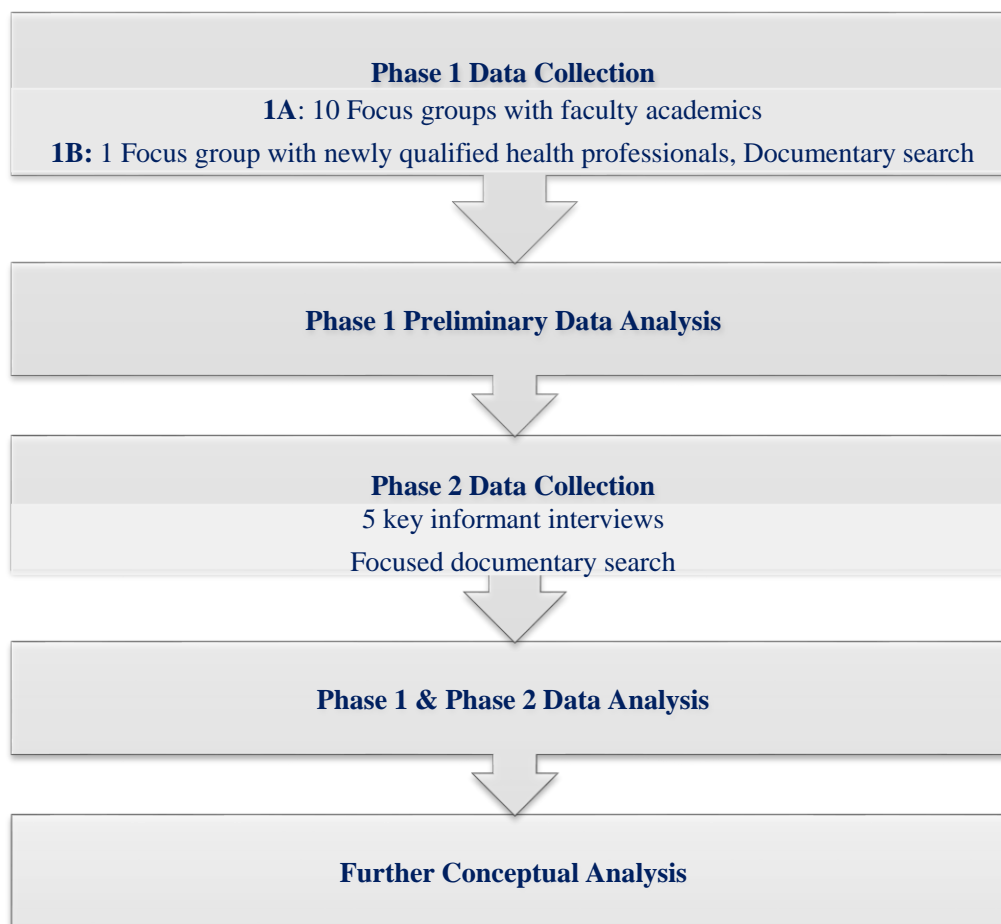


Figure 1 – Key stages in the research process

The main ethical issue in this study was the researcher researching her own institution. This could have raised issues of power and risk both to the researcher and to the participants and was addressed by adopting a reflexive and self-critical approach through the entire research and writing up process (Coghlan, 2007; Creswell, 2007; Unluer, 2012). A local ethical supervisor was also assigned, and his role was to ensure that all ethical principles were adhered throughout the research process. Ethical approval was granted from the Faculty Research Ethics and Governance Committee at the University of Brighton and from the University Research Ethics Committee at the University of Malta.

‘Framework’ in Practice Using NVivo

This case study generated rich data which emanated from eleven focus groups (ten with academics and one with newly qualified health professionals) and five key informant interviews. The challenge was to reduce this large volume of information (data reduction), identify significant patterns, and construct a framework for communicating the essence of the data (Patton, 2002).

The ‘Framework’ approach outlined above was used as an analytical hierarchy and this allowed me as the researcher to gain an overview and make sense of the raw data, to move from describing and analysing the data to finally conceptualising and explaining the data. The defining feature of the ‘Framework’ Method is the matrix output: rows (cases), columns (codes) and “cells” of summarised data, which provide a structure into which the researcher can systematically reduce the data in order to analyse it by case and by code (Gale et al., 2013).

Analytical Process (Ritchie & Spencer, 1994)	Practical Application in NVivo	Strategic Objective	Iterative process throughout analysis
1. Familiarisation	Stage 1: Open (free) Coding	Data Management (Descriptive) <i>(Open and hierarchical free coding of raw data through NVivo This process was exploratory, and participant led.)</i>	Assigning data to codes to capture units of meaning. (deconstructing data from original chronology to initial, non-hierarchical codes). ↕
2. Identifying a thematic framework	Stage 2: Categorisation of Codes and Propositional Statements	↓ Data Interpretation <i>(Re-ordering, “coding on” and annotating through NVivo. This process involved interpretation so was both participant and researcher led)</i>	Reviewing, refining, merging, renaming distilling and organising open codes into broader categories of codes (reconstructing open codes to a framework to address research questions and aims of the study). ↕
3. Indexing	Stage 3: Coding on	↓	Conceptually mapping and collapsing categories to a thematic framework. ↕
4. Charting	Stage 4: Triangulation with Key Informants and Conceptual Mapping using NVivo	↓	Systematically reviewing thematic framework using analytical memos ↕
5. Mapping and interpretation	Stage 5: Analytical Memos and Abstraction of Data	Explanatory Accounts – data abstraction <i>(Extrapolating deeper meaning, drafting summary statements and analytical memos through NVivo. This process moved analysis from the specific to the abstract and was researcher only led)</i>	Synthesising analytical memos to cohere and report findings

Table 1 – Stages and processes involved in practical application of framework qualitative analysis. Source: Adapted from Ritchie & Spencer (1994).

The software for conducting this type of analyses was developed by Ritchie and Spencer through NatCen and known as FrameWork (Ritchie & Lewis, 2003). In 2011, Ritchie and Spencer decided that their matrices were less effective than those provided by NVivo, a well-established globally used computer aided QDAS software package developed by QSR International (QSR International, 1995 - 2019). NatCen thus ceased production of FrameWork and handed over the production of Framework Matrices to the NVivo developers who have included Framework Matrices as a feature of NVivo ever since.

I thus used NVivo with its Framework Matrices as a tool to condense large volumes of data into more manageable quantities. This process required three kinds of activity: data management, descriptive accounts, and explanatory accounts (Ritchie, Spencer & O'Connor, 2003). This was not a linear process and necessitated going backwards and forwards between the data and my analytical concepts to reconsider, rework, and refine ideas (Spencer, Ritchie, O'Connor, Morell, & Ormston, 2014). It also required that I carried out several stages of coding to ensure a rigorous analytical method.

Table 1 shows how the five key stages outlined in 'Framework' were applied with NVivo stages of analysis to build knowledge out of the data. Each stage will be described in more detail in the sections to follow.

Familiarisation

At this stage, I familiarised myself with the data gathered from Phase 1 (focus groups with faculty academics and focus group with newly qualified health professionals) by reading the transcripts, the observational/field notes, and listening to the audio-tapes innumerable times. I immersed myself in the overall discourse, slowly becoming aware of recurrent themes and ideas. I also started to compile my database in NVivo by importing the demographic details of all the participants (so as to track the contribution to source), the transcripts of the eleven focus groups, and my reflection notes on each focus group (Figure 2).

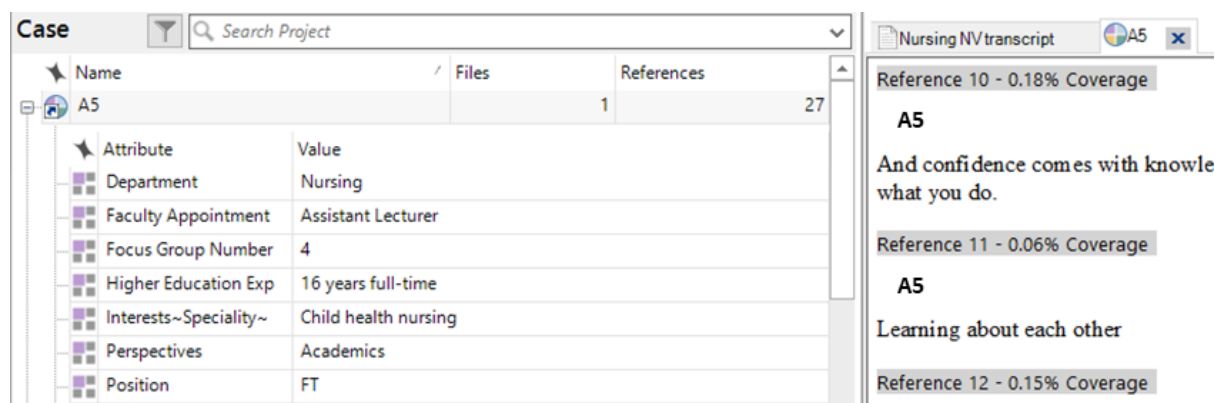


Figure 2 – Cases link Participants' words to their demographic and profiling information

NVivo had the potential to link these sources, thus facilitating quick retrieval and contextualisation of cases. Cases in NVivo represent units of analysis and observation. They also support in-case and cross-case analysis, a key element of framework analysis. In this study people were units of analysis so a case node was created in NVivo for each person containing their entire commentary from focus groups or interviews, linked in turn to their demographics and profiling information. Linking qualitative and quantitative information at unit level (a person being the unit in this study) is important for analysis as it facilitates cross referencing of attitudes, beliefs, and behaviors coded to thematic nodes with profiling and demographic

information stored against participants. Framework matrices allow for consideration of voice and perspective distribution across inductively coded themes.

At this early phase, I started preliminary exploratory coding. A code refers to a broad descriptive category or to a more interpretative or analytical concept (Richards, 2009). In this first stage, coding involved broad-brush or open coding giving rise to *free* codes. *Free* codes are free in that they are non-hierarchical and not bound by the research question but allow for emergent themes to arise organically out of the data. In NVivo language, codes are also referred to as “nodes,” providing storage areas for references to coded text (Bazeley, 2007).

Identifying a Thematic Framework

This was the stage in which I started to recognise recurrent themes and ideas arising from the data, and I started thinking about these themes in a more abstract way. It was a cyclical process of listing key ideas, making notes, going back to the sources, and repeating the process over and over again. Being an inductive process, I was mindful that *in vivo* nodes needed to be derived directly from the data (Strauss, 1987).

As an interpretative researcher, I also made use of the “constant comparative method” (Maykut & Morehouse, 1994, p. 126). This is a nonlinear and iterative process in which each new “unit of meaning” or text segment selected for analysis was compared to all other units of meaning and categorised and coded with similar nodes. This process allowed me to compare data looking for similarities and/or differences eventually emerging with the essence of the data (through themes). I also wrote annotations and electronically attached them to the relevant documents.

Annotations play an important role in qualitative data analysis as everything is time and context bound (Miles & Huberman, 1994). Thus, tools that capture and integrate contextual factors are important as they represent a core value philosophically underpinning the qualitative paradigm. Annotations were used to capture, field notes and observations, coding assumptions and researcher’s thoughts and ideas. These annotations were my own comments, reminders and/or reflections on the text which captured my thinking at that moment in time, reminding me of particular observation/s. Figure 3 is an example of such an annotation.

Ability to see:
 Researcher's annotations of transcript linked field notes and observations, coding assumptions and researchers thoughts and ideas and coding, offering a more holistic view of participants' world view. Overlapping codes may help identify overlapping concepts.

A46:

by policy of the working environment which is not the same as ... I mean sometimes not even that is evidence-based, so we try to be evidence-based but the policy of the workplace is not evidence-based, and it's a problem. But I see IPE more as a way of facilitating learning rather than of improving health outcomes; I don't see that jump from IPE to improved health outcomes, I find it very difficult, and that can be because of my experience rather than because of my leaning but I'm comfortable that way. I'm comfortable that students may learn ... may have more fun learning and can remember more – what's that word I'm looking for – remember more later, than ?? On the other hand, this thing of dilution worries me; there's always a compromise with IPE and so ...

Annotations

Item	Content
1	Participant was categorical in that he equated IPE with facilitating learning...but what sort of learning was he meaning? Did he mean learning with each other, from each other...or / and about each other? And if IPE could facilitate learning between health professionals, wouldn't that in the long haul enable them to work better during the realities of practice?

Figure 3 – Example of an annotation in NVivo

By this stage, I had finished the preliminary coding of the ten transcripts and ended up with a substantial number of *free* nodes. This involved lifting the data from its original textual context (transcripts) and placing it in these *free* nodes which were largely descriptive, broad,

participant-driven, and stand-alone categories (units of meaning) with no evident relationships or connections to each other. Due to the subjective nature of this process, each *free* node was defined and detailed with a descriptive “rule of inclusion” which was a rule outlining the basis for including (or excluding) particular text segments (Maykut & Morehouse, 1994). Figure 4 shows this process.

Free Codes			
Name	Description	Files	References
Barriers	Challenges towards IPE being introduced at the Faculty	16	254
Client centred care	References towards creating client centred health professionals	11	34
Courses & Ideas	Courses and/or other initiatives which are perceived to be suitable for IPE initiatives	11	63
Culture	Ways of doing things which impinge on professional practice.	14	70
Drivers for courses	Factors influencing academics to design their courses the way they do	13	94
Drivers for MHEC	Drivers, ethos and implications practiced by MHEC	2	9
Facilitators	Existing factors which could facilitate IPE at the Faculty	14	58
Identity	Views of how faculty members perceive professional identity in their own students	11	88
Interface with MHEC	Relationships & linkages between FHS & MHEC	3	13
IPE outside Faculty	Perceptions on collaborations outside the Faculty with other faculties at UOM	11	37
Local determinants for IPE	Various historical, cultural and social determinants (at macro, meso and micro levels) which could affect the way we d	1	16
Motives for IPE	Participants' perceived motives and motivations for IPE	16	69
Past initiatives and practices	Past attempts at creating more collaboration between health professionals	3	5
Perceptions IPE	Broad perceptions towards the principle of IPE	16	242
Personal Experiences of IPE	Participants' perceived personal experiences of IPE and possible IPE elements in their course	12	37
Post-qualification education	Present post-qualification state of affairs with the possibility of embarking IPE at this level	3	13
Preparedness to work in a team	Extent to which participants felt prepared to work in a team	2	6
Pre-requisites	Perceived attitudes and pre-requisites for an IPE initiative to take place at FHS	16	136
Professional issues	Anything connected with professional boundaries & territories	14	126
Readiness for practice	Academics' perceptions of their own graduates' preparedness to practice	11	91
Realities of collaborative practices	Collaborative and non-collaborative work practices as experienced by new graduates	5	20
Shared Learning	Perceptions on shared learning at FHS (under and post-grad)	9	56
Starting off	Why, who and how should an IPE initiative be introduced?	14	76
Stroke Symposium	Perceptions on the stroke symposium	8	15
Teaching approaches & methods	Teaching approaches amenable to IPE	7	18
Teaching skills	Perceptions on what is needed to be able to facilitate IPE	6	13
Teamwork	Issues associated with collaborative ventures across health care professions	13	41
Timing	When should IPE happen	14	69

Figure 4 – Initial free coding in NVivo

This process was taken further by writing this “rule of inclusion” as a “propositional statement” summarising the essence of each code as a “statement of fact the researcher tentatively proposed, based on the data” (Maykut & Morehouse, 1994, p. 140). My thinking was shifting from “categorising units of meaning to preparing a statement that reflects the collective meaning” within each *free* code (Maykut & Morehouse, 1994, p. 140); this involved refinement and/or collapsing of *free* nodes by making numerous assumptions as to the meaning and significance of the data (Bazeley, 2007; Maykut & Morehouse, 1994). I also started to identify key issues, concepts and themes from the data, and this signified the emergence of an early thematic framework. NVivo facilitated this process as I had instant access to read and cross compare participants’ transcripts.

Indexing

This was the process during which the evolving thematic framework consisting of *free* nodes was systematically reviewed. Phases 1 and 2 essentially deconstructed the data from its original chronology in transcripts to initial non-hierarchical codes. Phase 3, indexing, aimed to reconstruct the data into a framework that began to make sense in terms of addressing the research questions and aims of the study (Figure 5).

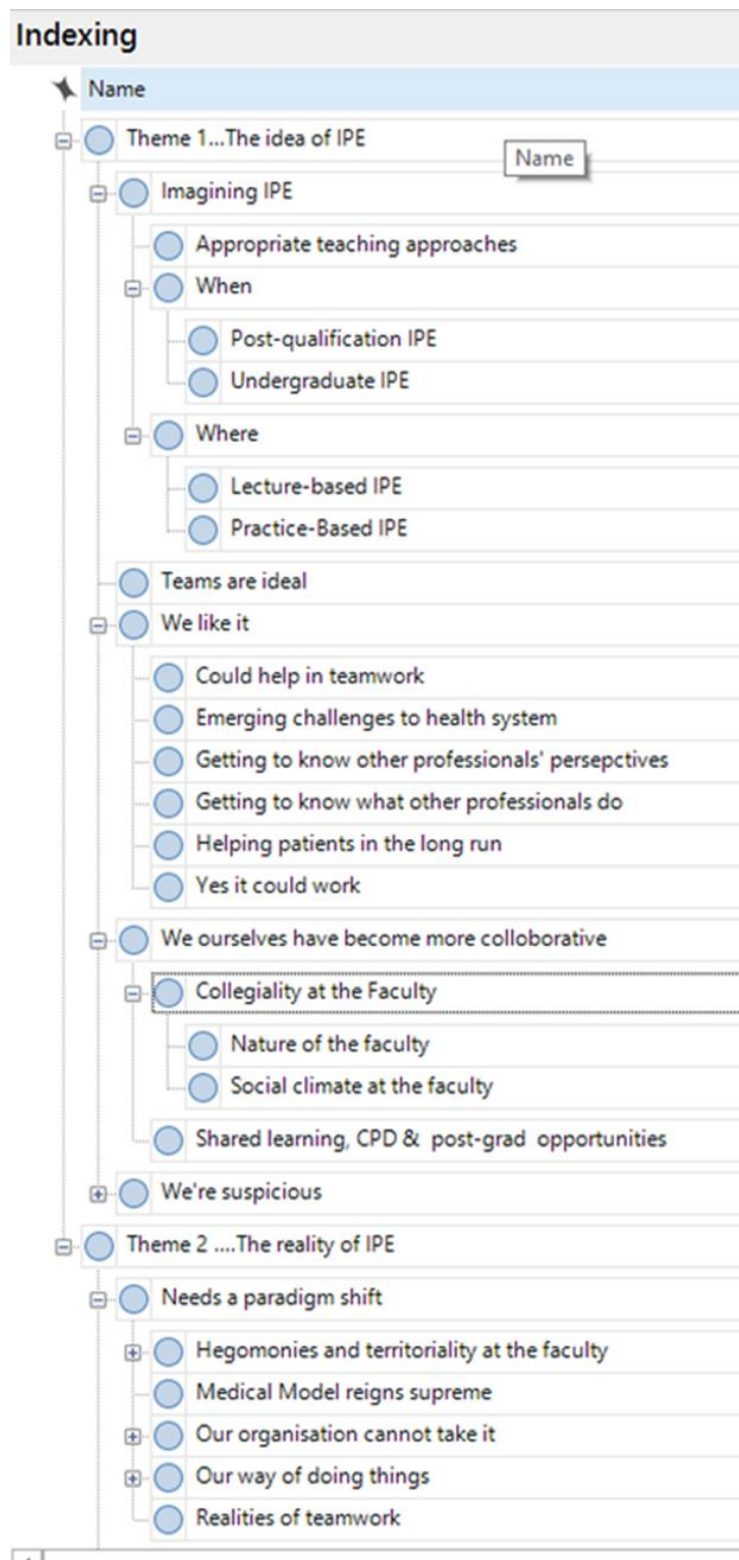


Figure 5 – Example of indexing in NVivo:

The review resulted in some nodes being merged, others being renamed, others being clustered together into related categories of codes. Gradually, my emerging ideas derived from the data were being refined (reconstruction of the data) and the flat structured *free* nodes developed into a more complex hierarchical structure (*tree* nodes). Organisational and theoretical patterns were becoming apparent. Through NVivo, I was checking on my ideas and assumptions by

going back and forth between transcripts, audio and observational note sources (Figure 6). This process reflected my social constructionist epistemology to see how, and in what context participants were constructing meanings of IPE.

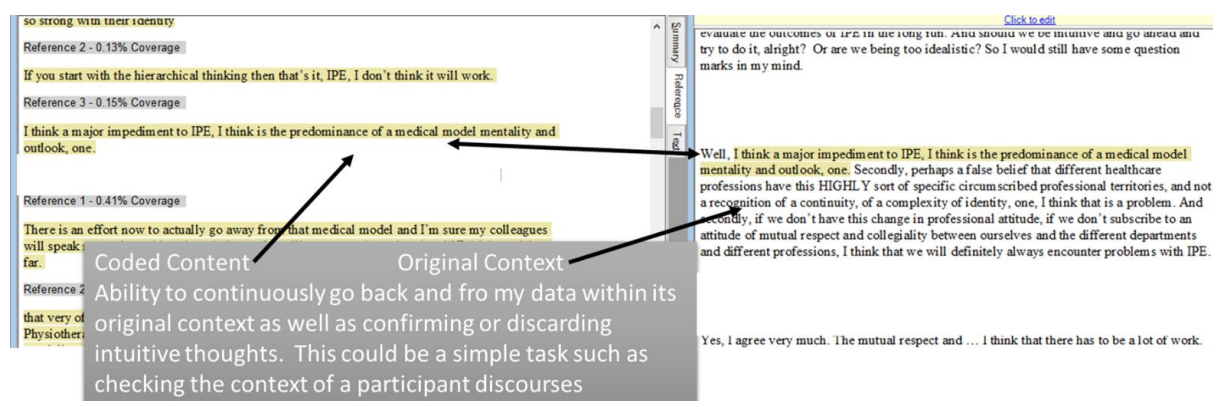


Figure 6 – Example of linking and identifying sources in NVivo

Charting

At the charting stage, data from all participants that had been indexed in the previous stage (*free* nodes) were arranged in the appropriate *tree* nodes with headings and subheadings (thematic cross-sectional analysis) and situated in the ‘Framework’ matrix. This process created conceptual order to my coding system. I continued to make use of “propositional statements” to help me understand the nodes’ contents and refine relationships between them. This stage of node refinement for all eleven transcripts coincided with the stage of the five key informant interviews (Phase 2), further reflecting my research approach that each phase would build on the preceding one. This stage was also one in which a picture of the data as a whole was starting to emerge.

Once all five key informant interviews had been conducted and transcribed, the stages of familiarisation, identifying a thematic framework and indexing outlined above could be similarly carried out on this data set. Although this was a new data set, I started off by coding on the *free* codes which I had drawn up for Phase 1A and Phase 1B adding on new codes as required. I did this because there were many common issues, albeit raised by the different stakeholder groups (at this stage, the key informants). When this process was completed (which by then encompassed both the focus group transcripts and key informant interviews), all *free* nodes were rechecked for their content, rules for inclusion and re-organised into a re-structured *tree* node hierarchy (or in ‘Framework’ terminology, charts). This was a messy stage of analysis extracted from triangulation of all data and methods, and one which consolidated and reduced the data. Divergent views were captured, challenging my ideas of emergent patterns.

This stage of ‘Framework’ involved placing the indexed coded data into a grid or matrix. Figure 7 shows an example of Ritchie and Spencer’s (1994) ‘Framework’ Grid in NVivo. The purpose of the grid is to reduce data to manageable proportions by writing in-case and cross case summaries. The first column contains the Case ID and relevant demographics/profiling information whilst each subsequent column is a theme. Each row contains the themes from phase 3 “Indexing.” Clicking into any cell for the case “A1” shown in figure 7 reveals all coded content for A1’s case coded at that theme on the right of the grid. I then wrote summaries for each theme coded for case “A1” and then systematically synthesised content for each participant, theme by theme, by writing overall summaries or memos about each theme into the grid. Reading each row across offered a summarised view of each case, while reading each column down, offered a summarised view of each indexed theme.

This process helped me move beyond what was said in the transcripts (factual descriptions) to deeper aspects of the discourses (interpretative analysis) (Bazeley, 2007).

The screenshot displays the 'Framework Matrices' interface in NVivo. It features a grid with three columns labeled A, B, and C. Column A is titled 'How, where and when IPE could be introduced', Column B is 'IPE could be good', and Column C is 'Opportunities at the Faculty'. The grid contains several rows of text excerpts from transcripts, some of which are highlighted in pink or orange. A grey box on the right side of the screenshot contains the following text: 'Ritchie & Spencer's Framework Grid Theme Researcher Memo/Synthesis Case Linked to live data for a given case in a given "indexed" theme'. Arrows point from this box to specific cells in the matrix.

Figure 7 – Example of Ritchie & Spencer's 'Framework' Grid in NVivo as applied to my data

Mapping and Interpretation

This stage involved analysis of the key issues as laid out in the charts. It was an iterative, intuitive, and creative process in which I tried to interpret the data set as a whole “searching for a structure rather than a multiplicity of evidence” (Ritchie & Spencer, 1994, p. 186). This phase was dominated by long periods of working deeply and sensitively with the data so as to try and identify patterns in the data which were at a deeper level than participants’ spoken discourses. It was only by going through this process that I could understand how “textual level of work” was interlinked to “conceptual level work” (Richards & Richards, 1994, p. 448). The former refers to data management methods, such as “code and retrieve” methods to identify key concepts and map the phenomena, whilst the latter refers to higher order abstraction during which evidence and arguments are brought to the fore (Richards & Richards, 1994). There were no hard distinctions between these levels and Richard and Richard’s (1994) explanation of how conceptualisation takes place, albeit dated, is worthy of note.

And so the web-of code, explore, relate, study the text-grows, resulting in little explorations, little tests, little ideas hardly worth calling theory but need to be hung as wholes ... Together they link together with other theories and make the story, the understanding of the text. The strength of this growing interpretation lies to a considerable extent in the fine grain size and tight interknittedness of all these steps: and the job of qualitative data handling (and software) is to help in the development of such growing interpretations. (Richards & Richards, 1994, p. 448)

Using NVivo at this stage involved going through the data, propositional statements and memos, verifying whether each node was a true representation of participants’ discourses, so as to eventually work towards synthesis. This “bottom-up” approach ensured that all the nodes created in previous stages reflected higher order themes. NVivo has a number of tools that facilitate this process whilst at the same time providing a comprehensive audit trail of decision-

making processes; one of these is writing memos (or thick descriptions) at node level linked to the conceptual hierarchies and this is illustrated in Figures 8 and 9.

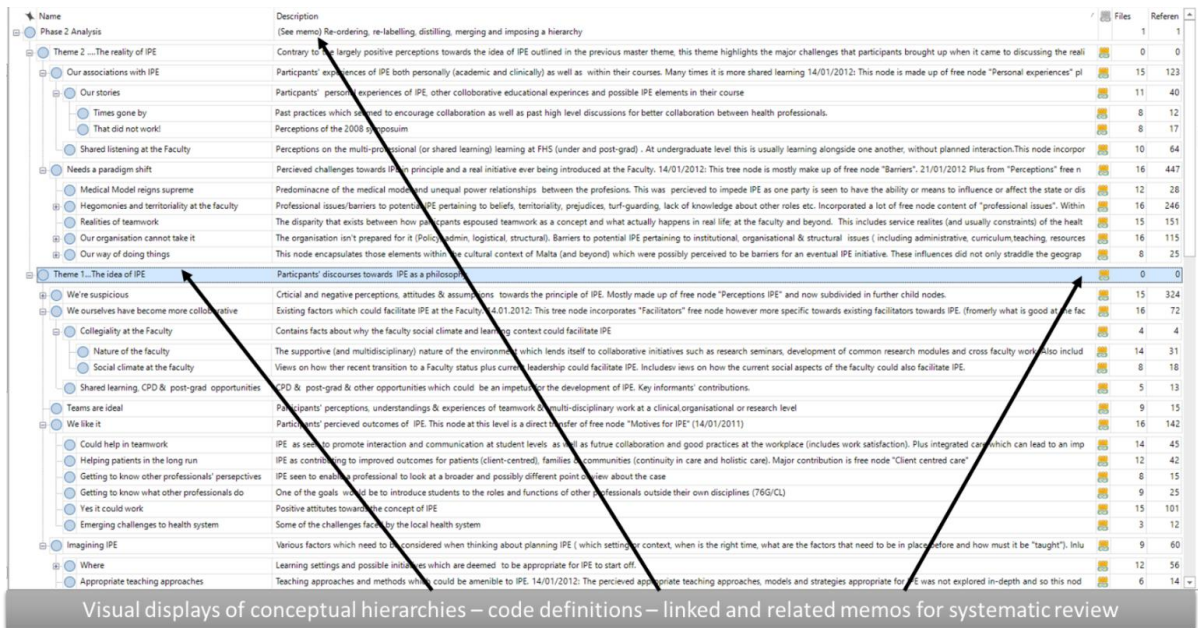


Figure 8 – Example of conceptual hierarchies to aid mapping and interpretation

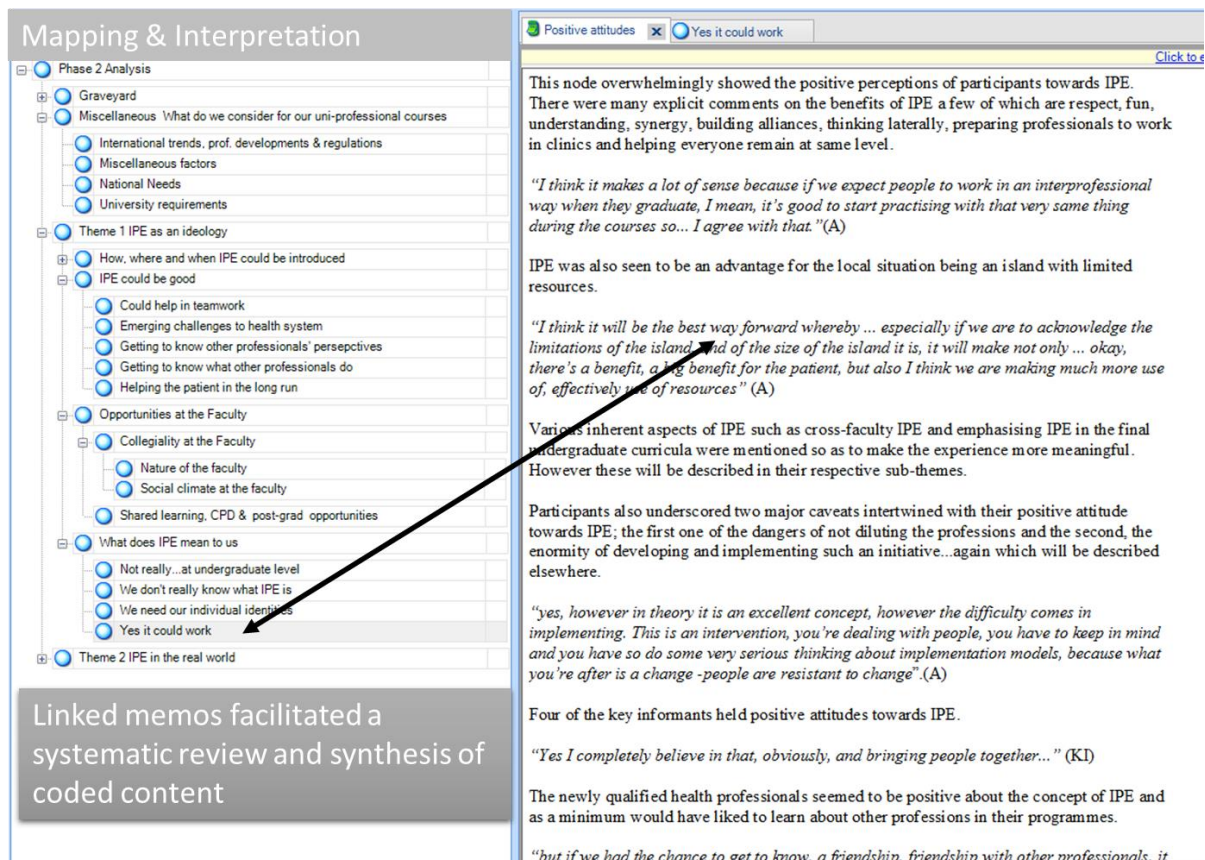


Figure 9 – Example of an analytical memo linked to coded content

Other NVivo tools such as “visualisations” aided mapping and interpretation as they allowed for consideration of perspectives within themes (Figure 10).

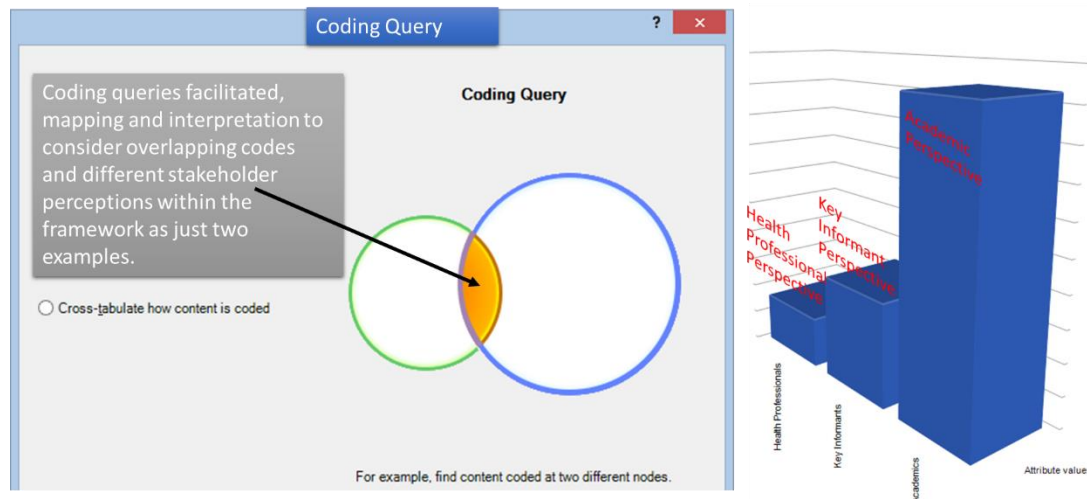


Figure 10 – Example of data interrogation using queries in NVivo to aid mapping and interpretation

There are also “search” tools with which I could ask questions or interrogate the data and during which I considered various factors, such as examining the code in context, pattern analysis, and using divergent views and/or negative cases to safeguard against drawing generalisations. I also engaged deeply with the literature and this encouraged me to ask complex questions of the data followed by reflection on how I might interpret the results of such questions (Bazeley, 2007). Conceptual maps were drawn up comparing findings to extant literature (Figure 11).

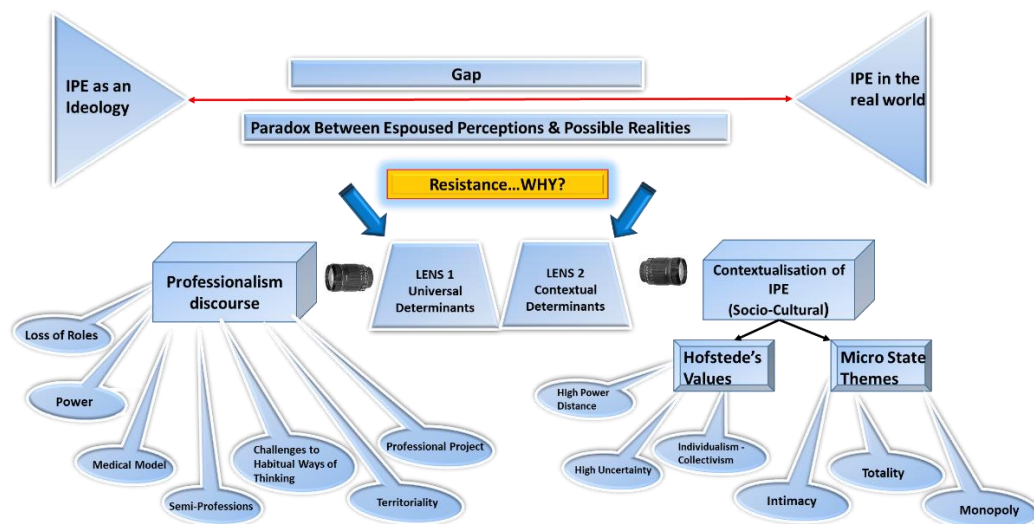


Figure 11 – Mapping and linking patterns to the literature

During this stage, I looked at the data in new ways, exploring both its breadth and depth (Richards, 2009). I was making connections and seeking explanations for these connections (Ritchie & Spencer, 1994). Documentary sources helped me in exploring some of these connections so as to appreciate their significance and deeper purpose. They also played a valuable role in providing background information to particular events/issues brought up during data collection as well as augmenting details to confirm/contradict data from the different sources (Yin, 2009).

During this mapping and interpretation stage, I wrote analytical memos (conceptual synthesis of my findings) for higher order themes and used concept maps and NVivo models to help me go further with my ideas and arguments and to identify the overriding core themes and patterns which permeated the data. As my thoughts progressed and my ideas gradually shifted, my initial concepts were reinterpreted, and I developed different ways how to make sense of patterns and relationships in the data. With stages of deeper thinking, synthesis, and revisiting the data with new perspectives, I became confident in knowing which were consistent issues and patterns in the data and which/ were not. Eventually, I felt I was “above the noise of the data” (Richards, 2009, p. 143) and was able to see the “bigger picture” (Richards, 2009, p. 173). In so doing, I could present coherent findings and tentative interpretations of the meaning of those findings for possible IPE in Malta (Figure 12).

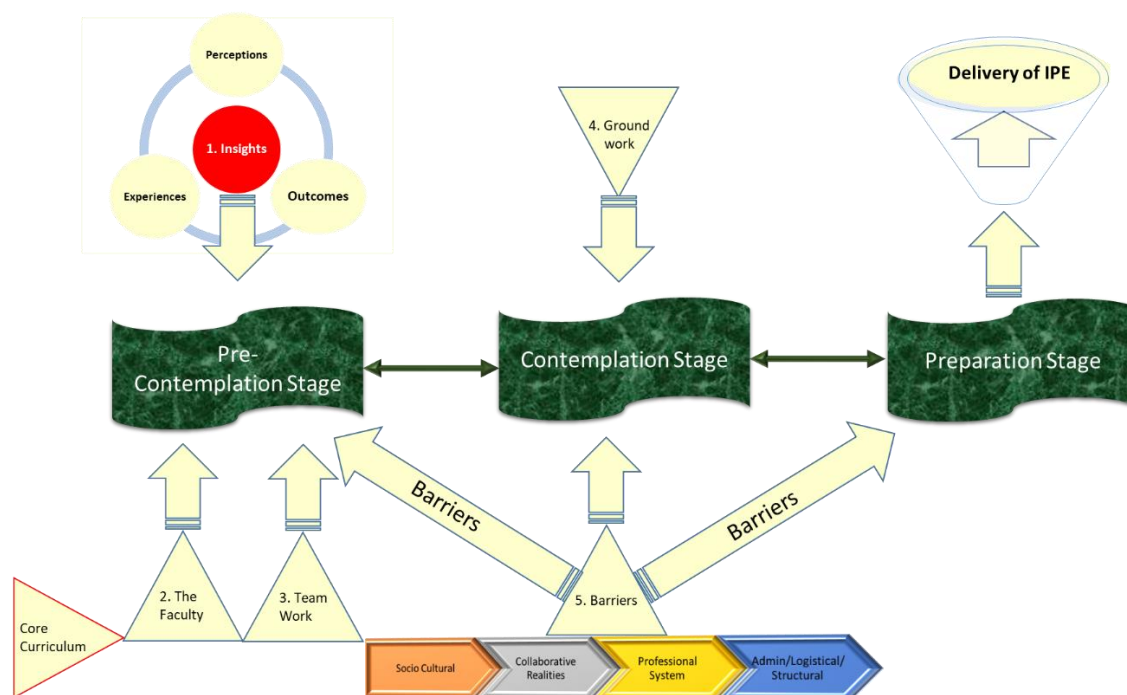


Figure 12 – Example of a conceptual map of findings

Reflections on Using NVivo

While thinking about and working with the data, I often asked myself how my analysis could have been different if I had not used NVivo. Although this remains a hypothetical question, I believe that using this software improved the rigour and quality of my research which would not have been possible with a manual process of data analysis. The programme supported my analysis by enabling me to drive my data through a complex, systematic and iterative data interrogation process (Bazeley, 2007). The software programme never takes over the cerebral and intensive process of data analysis; it is merely a tool for making the analysis process more robust, efficient and transparent.

Critics of NVivo argue that using NVivo could potentially fragment the data and thus alienate the researcher from the data. Another argument is that the researcher tends to become too immersed in the data making it difficult to appreciate the bigger picture (Bazeley, 2007). I would argue that the closeness and distance of the data could equally be compromised by the use of basic word processing software, other than NVivo, which is commonplace in data

analysis. During the entire data analysis process, I felt close to the data as, with a simple mouse click, I could have an overview of the data, as well as read and hear participants' excerpts in context. There was also a continual connection and visibility between the original data and the classification taking place. In the later stages of the analysis, I continued using NVivo to confirm and/or question my interpretations in preparation for further synthesis. Eventually, the closeness to the data became more abstract and distant, enabling me to see the findings from a broader perspective. My experience reflected current thinking where closeness is required for familiarity, distance is required for abstraction and synthesis, and the ability to switch between the two perspectives is recommended (Bazeley, 2007).

Using NVivo software provided me with an audit trail which is visual evidence of the processes employed during data analysis, such as coding, managing codes through various iterations, annotation, and memoing content, as well as mapping concepts and themes developed during analysis. This audit trail provides a transparent account of the use of QDAS and shows how my analytical strategy was entirely consistent with the philosophical underpinnings of my methodology and its practical application.

I also question how my emerging core themes might have been different had I not used NVivo as an analytical tool. Within my relativist ontological position, I could certainly never, nor would ever wish to claim that my analysis of the data is the only true interpretation that may be offered. However, although the breadth and depth of my analysis could have been carried out using a manual method, the thoroughness might have been less. For example, using this software allowed me to question my data comprehensively which meant that whilst focusing on the overall picture, I also had access to the various levels of my analysis, right down to the particular context of participants' discourses. This simultaneous viewing of the bigger picture and the more intimate and deep one allowed me to pursue ideas emerging from the data forming the basis of my conceptual and analytical ideas, which were, in turn, guided by the research questions. Furthermore, since I did not base my coding on frequency of phrases in the texts but rather on content and contextualisation of content, it is fair to say that my conceptual coding would have been similar had I used a manual method of data analysis.

As with all other computer technologies, NVivo needed to be learnt by doing. The fact that I was motivated and learnt how to use it during the initial stages of my data collection meant that I achieved a familiarity and a sense of "naturalness" with the software. Moreover, the availability of ongoing personalised NVivo support meant that I was able to discuss the iterative data analysis process with knowledgeable experts.

Conclusion

This paper has presented an account of my data analysis using Ritchie and Spencer's (1994) hierarchical 'Framework' approach. I have shown how the use of NVivo software facilitated systematic data handling and contributed to a more rigorous and transparent analysis. Analysing my data was more than just identifying themes; it was a process of "contextualising and making connections between those themes to build a coherent argument supported by data" (Bazeley, 2009, p. 21). This ultimately gave me an intimate sense of what was going on in my data slowly working towards synthesis of this data.

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