

The NVivo Toolkit

How to apply NVivo in your PhD for research and publishing success.

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Dr. Maureen O'Neill
University of the Sunshine Coast
moneill@usc.edu.au

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Table of contents

Table of contents	i
About the author	ii
Foreword.....	iii
Acknowledgements.....	iv
The Toolkit: Data analysis and the use of NVivo in your higher degree study	1
High performance school-aged athletes at Australian Schools: A study of conflicting demands.....	1
1.1 Using NVivo for data analysis.....	2
1.2 Building a picture in NVivo	3
1.2.1. Stage 1: Descriptive	4
1.2.1.1 NVivo sources	5
1.2.1.2 Attributes, values and classifications	9
1.2.2 Stage 2: Topic.....	12
1.2.2.1 Creating initial nodes	13
1.2.3 Stage 3: Analytic	16
1.2.3.1 Merging nodes into hierarchies	16
1.2.3.2 Sets	17
1.2.3.3 Models and relationships	19
1.2.3.4 Using Queries	21
1.2.3.5 Running queries	23
1.2.3.6 Matrix coding queries	25
1.2.3.7 Cross case queries analysis	27
1.2.4 Stage 4: Conclusions	30
1.2.4.1 Verification	30
1.2.4.2 Developing theories	40
1.3 Summary	41
Glossary:.....	42
References	44
Appendices	45
Appendix A: Athlete friendly school	45

About the author

Dr Maureen O'Neill is a research assistant and NVivo consultant at the University of the Sunshine Coast, Australia.

She received her BSc. Honours from the University of New South Wales and continued on to complete her Graduate Diploma of Education with the same university.

She commenced teaching in secondary schools in New South Wales and then moved to Queensland, where she then continued her educational studies, adding on primary and tertiary degrees in teaching.

After her eighteen-year career as a primary and secondary teacher and tutor, she decided to launch into university teaching in the areas of Education, Business, Tertiary Pathways and Indigenous One-on-One Assistance Programs. She enjoyed the Sunshine Coast lifestyle and found it wonderful to raise her six children in its unique environment.

As a teacher and mum, she then decided to take her concerns about school-age athletes to an experienced educationalist, Dr Bill Allen, and an expert in the field of coaching science, Angela Calder. This launched her into a PhD specialising in both educational studies and sport sciences at the University of the Sunshine Coast. Comments made concerning her awarded PhD dissertation included:

“...unique and worthwhile area of study for a doctoral dissertation”

“...lead to opportunities to share this work with a range of audiences”

“...gave voice to a community that to date has not been the subject of research activity”

She has co-authored a number of journal articles, conference presentations and posters, appearing at national and international conferences focusing on health promotion education and sport sciences.

In addition to her research work, she has presented and designed online learning materials for NVivo, in collaboration with QSR international and the University of the Sunshine Coast.

She appeared at a world conference on Sport Sciences in Malaysia and will present at a world conference on health promotion in Thailand as a way to disseminate a number of her significant findings from her thesis which gave voice to school-age athletes - their needs and problems in balancing their dual endeavours in life.

Maureen currently resides on the Sunshine Coast with her two youngest children who are still at school. She can be contacted at moneill@usc.edu.au and you can tour her research portfolio by visiting the [USC Research Bank](#).

Foreword

In April 2013, I gained my PhD from the University of the Sunshine Coast, Australia. My thesis investigated what the needs and problems of high performance school-age athletes are in balancing their dual endeavours of sport and education.

During my studies, I found that NVivo contained multiple tools to assist with creating a significant and original contribution to knowledge.

While completing my PhD, I developed a four stage process for using NVivo that guides the researcher from lower themes of descriptive analysis, to higher order levels to commence drawing objective conclusions. I found that NVivo helped me to identify key issues of research questions and assisted in achieving answers. I wrote this guide because I believe it will enable others to explore the numerous opportunities NVivo provides.

I found NVivo to be full of helpful and useful devices to assist the researcher's performance and to complete designated tasks. NVivo allows the researcher to move thesis data analysis and literature review from lower order themes that involve descriptive and topic issues, to higher order aspects of themes concerned with analysis and drawing conclusions.

It is my hope that, after reading *The NVivo Toolkit*, you'll gain understanding of how NVivo can enhance your research and eventually your publishing opportunities; and that this handbook will assist and guide you in completing the qualitative data analysis of your research (as seen in a recent published article by O'Neill, Calder & Allen, 2013 in the Elsevier online journal *Performance Enhancement & Health*).

Lastly, here are my personal 'lifesaving tips' for you, when using NVivo in your PhD journey:

- There is no right answer
- There is no right code
- Ask yourself constantly "Is this a sort of"? in category /sub category
- Merge nodes to extrapolate higher order themes
- Grammatical punctuation such as : ? - / \ cannot be used in the wording of nodes or attributes, so keep this in mind when designing your nodes and data sets.

With best wishes,



Maureen O'Neill



Maureen O'Neill accepting her PhD from Vice-Chancellor and President of The University of the Sunshine Coast, Professor Greg Hill

"I took a leap of faith that resulted in a remarkable journey."

Maureen O'Neill

Acknowledgements

I would like to acknowledge the dedicated and professional work Zoe Gaylard from QSR International has contributed to the production of this manual. Her encouragement and creativity in the production was very much appreciated. I would also like to thank my dear friend Bev who kindly assisted in the editing of this Toolkit.

The Toolkit: Data analysis and the use of NVivo in your higher degree study

Successful research using qualitative data relies on the rigour and thoroughness of the data analysis methods; and, consequently, this manual focuses on how qualitative data can be rigorously analysed. Key to the qualitative analysis process is diminishing any doubt surrounding the reliability and validity of qualitatively produced findings, and formulating a serious method of data analysis (Miles & Huberman, 1994).

This Toolkit describes in detail how the data analysis of a higher degree study was conducted, using NVivo qualitative data analysis software. By applying the detailed guidelines set out in the Toolkit to your own research, you will be able to clearly demonstrate rigour in your data analysis to a level required in a higher degree study.

Four stages of analysis

Throughout the Toolkit, four stages of analysis are referred to as outlined below:

1. Descriptive: Entering data sources in to NVivo
2. Topic: Organising and coding your data
3. Analytic: Analysing and querying your data
4. Conclusion: Drawing answers from your data

Support material

Findings, data and screenshots from the author's study "*High performance school-aged athletes at Australian Schools: A study of conflicting demands*" (O'Neill 2013) are referred to and used for demonstrative purposes throughout the Toolkit.

Additionally, screenshots of NVivo are used throughout the manual to assist the reader's understanding.

High performance school-aged athletes at Australian Schools: A study of conflicting demands

Maureen completed her PhD "*High performance school-aged athletes at Australian Schools: A study of conflicting demands*" over three years at the University of the Sunshine Coast.

O'Neill's (2013) study examined:

- 39 in-depth interview transcripts
- 2,000 journal articles and books
- 1,500 newspaper articles
- 200 YouTube videos
- 200 photos
- 100 pages of field notes
- 45 hours of taped interviews
- 10 hours of videos of high performance athletes
- 10 autobiographical books that contained 200 pages about former high performance school-age athletes

All 39 interviews were conducted in Queensland and New South Wales in Australia at unique locations such as beaches, sporting grounds, airports and highway rest stops, with 19 current and former school aged athletes, 10 teachers and 9 parents.

Throughout Australia, the interviewees came from 30 specialist sport schools, 120 government schools, 100 non-government schools, 50 specialist and specific pathway schools, 100 in-school excellence programs and a few home-schooled athletes. Also, 100 examples of overseas school examples were outlined.

Data was stored and analysed in NVivo 9; however, after NVivo 10 was released the project file was moved to the newer software. NVivo 10 offered increased storage and also the ability to easily and directly import online newspaper articles into the project using the NCapture tool.

Each of the 39 interviews from the O'Neill (2013) PhD study were recorded using a Livescribe pen, transcribed and then imported into NVivo as both audio and word files. Endnote literature review themes, Livescribe audio transcripts and written notes from the attached notebook, field notes, YouTube clips and photos were all easily imported into the NVivo project. Throughout the study, data was exported from NVivo to Excel to produce figures and tables.

1.1 Using NVivo for data analysis

Why use NVivo?

There are a range of benefits offered to the researcher from Computer Assisted Qualitative Data Analysis Software (CAQDAS) such as NVivo. Various benefits have been outlined below.

Create an auditable footprint

Sinkovics & Alfoldi (2012, p.5) say that CAQDAS such as NVivo create an “auditable ‘footprint’ of the progressive dialogue between the researcher and their data”. NVivo was used to enhance the transparency of the research process in conducting and interpreting the qualitative data in the O'Neill study.

Be more explicit and reflective

Bryman and Burgess (1994) and Veal (2005) suggest that CAQDAS compels researchers to be more explicit and reflective about the process of the analysis in this study.

Increase transparency

Coffey, Holbrook and Atkinson (1994) argue that the style covered in the use of data analysis through NVivo results in the “emergence of a new orthodoxy” (p. 4). Moreover, as suggested by Bryman (2008), such conventions in higher degree studies that “presume and are predicted on such certain style of coding and retrieving text owe a great deal to grounded theory” (p. 567).

New opportunities for data analysis

Using NVivo, new opportunities are offered in the process of analysing data, which are helpful in the development of explanations (Mangabeira, 1995). The researcher can use any

of the tools in NVivo to tease out themes from the data. It also allows the researcher to be aware that constant reflection on the participants' transcripts, to re-examine and confirm certain aspects, is essential.

1.2 Building a picture in NVivo

A higher degree study can be built and conceptualised in four stages. By using NVivo, it is possible to constantly interrogate the data, moving from lower order to higher order themes.

How a project can develop with NVivo is outlined in four stages in Table 1.1. This follows the pattern suggested by Edhlund (2011).

Table 1.1

Stages and processes of the project used in NVivo for this study

Analysis stages using NVivo	Processes involved in each stage
1: Descriptive	Project details and research design Inputting sources Assigning attributes Creating values Creating classifications
2: Topic	Finding the obvious topics Creating initial nodes
3: Analytic	Merging nodes into hierarchies Sets Models and relationships Using Queries Running Queries Matrix coding queries Cross case queries analysis
4: Conclusions	Verification Developing theories

Adapted from Edhlund (2011), NVivo essentials p.13.

Each stage contains important processes that need to be completed before entering the next stage. A similar progressive focusing model of the qualitative research process was designed by Sinkovics and Alfoldi (2012). The six steps Sinkovics and Alfoldi developed were as follows:

1. Choosing a topic, literature review, development of theoretical/conceptual foundations and research questions
2. Research design
3. Sample, context and negotiating access
4. Data collection and preparation
5. Data analysis and constant comparison with theory
6. Discussion and final write-up (Sinkovics and Alfoldi, 2012, p.21).

After reviewing the design of Sinkovics and Alfoldi model, attending workshops, participating in [QSR eSeminars](#) and having colleagues and higher degree research students enquire about the use of this software in their studies, O'Neill (2013) designed her own stages and processes, as seen in Table 1.1. Using the data from O'Neill's PhD study, the following sections of this manual deconstruct each of the processes in the four stages in Table 1.1. Each stage will be addressed separately.

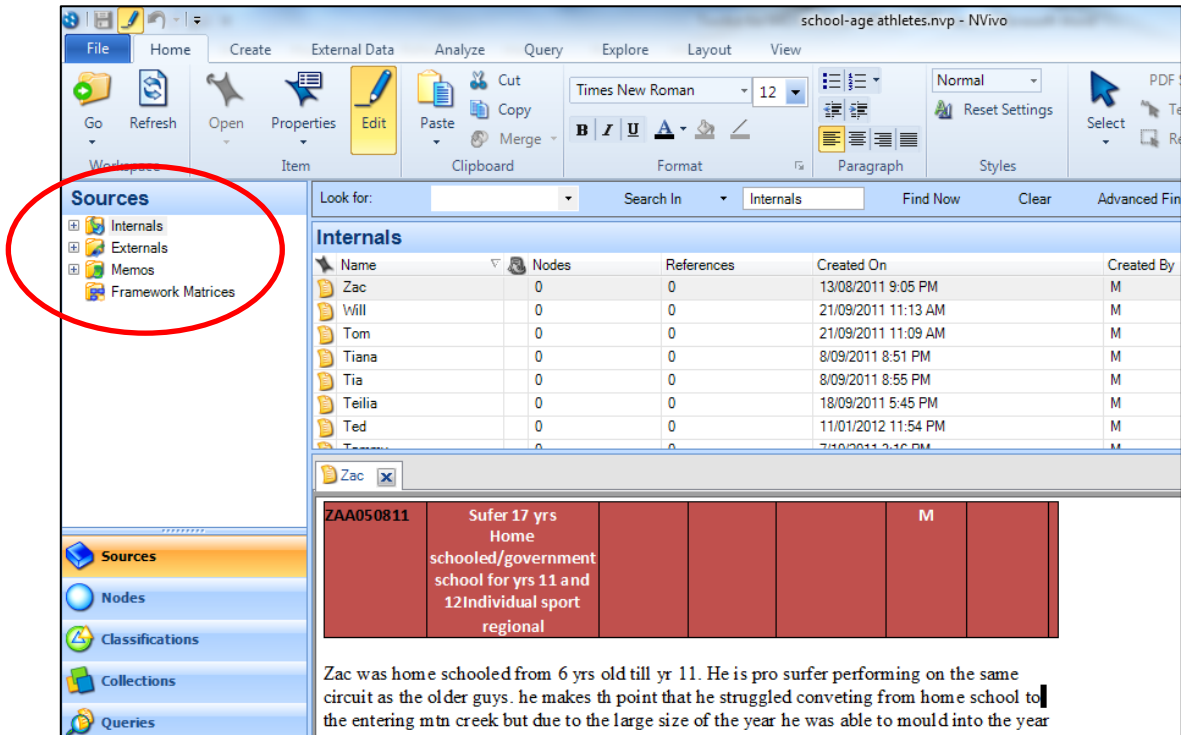
1.2.1. Stage 1: Descriptive

Stage 1 of a study involves entering the project details and data into NVivo. Examples include:

- Interview schedules and recordings
- Participant demographics
- Journal articles (in PDF format)
- Websites
- Ethics approval
- Field notes

The author entered all of these descriptive details of the research project into NVivo **sources**, which contained the sub-sections of **internals**, **memos** and **externals** (Bryman, 2008).

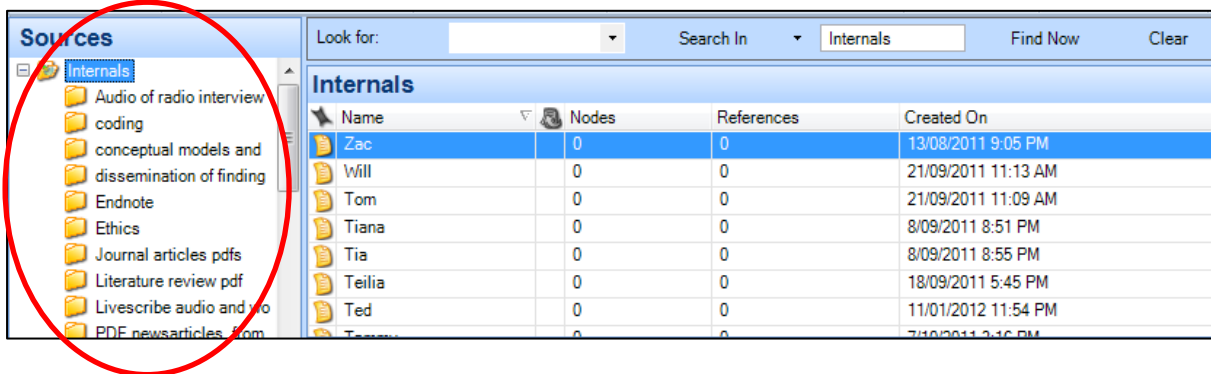
1.2.1.1 NVivo sources



As illustrated in the graphic above, the **sources** section of NVivo consists of **internals**, **externals** and **memos**.

Internals

Internals are primary research materials that you import or create in NVivo - including any combination of documents, PDFs, audio, video, pictures or data sets.



In the example study, **internals** included literature from Endnote, details of each of the 39 participant interviews and any additional information, audio visuals, researcher's ABC radio interview concerning this study and images relevant to this project.

Selections of the images stored in O'Neill's project are displayed below.



Figure 1.1 illustrates samples of the **internals** entered for this project.

Literature review pdf			
Name	Nodes	References	Created On
Tribalism in sport	0	0	3/03/2013 7:29 PM
Tom Daley celebrates A	0	0	16/12/2012 7:49 PM
Sport Schools in Canada	0	0	3/03/2013 7:36 PM
self efficacy	0	0	5/12/2011 3:53 PM
self efficacy.Bandura	0	0	4/12/2011 5:36 PM
response styles	0	0	16/12/2012 7:49 PM
resilience	0	0	3/03/2013 7:29 PM
RelativeAgeEffectSportsHelsenEtAl_2005	0	0	16/12/2012 7:49 PM
Pressures to perform article	0	0	3/03/2013 7:29 PM
positive em	0	0	16/12/2012 7:49 PM
People's Choice Awards[1]	0	0	3/03/2013 7:36 PM
Passion in sport	0	0	16/12/2012 7:53 PM
notes_talentsneverenough	0	0	3/03/2013 7:36 PM
News article IRON WILLED	0	0	15/11/2011 8:27 AM
Marginalisation[1]	0	0	3/03/2013 7:38 PM
learning theories	0	0	15/11/2011 8:17 AM
leadership pdf	0	0	3/03/2013 7:36 PM

Internals							
Name	Nodes	References	Created On	Created By	Modified On	Modified By	
Zac	0	0	13/08/2011 9:05 PM	M	3/03/2013 6:52 PM	M	Green
Vill	0	0	21/09/2011 11:13 AM	M	3/03/2013 6:52 PM	M	Green
Tom	0	0	21/09/2011 11:09 AM	M	3/03/2013 6:52 PM	M	Pink
Tiana	0	0	8/09/2011 8:51 PM	M	3/03/2013 6:52 PM	M	Pink
Tia	0	0	8/09/2011 8:55 PM	M	3/03/2013 6:52 PM	M	Orange
Tellia	0	0	18/09/2011 5:45 PM	M	3/03/2013 6:50 PM	M	Orange
Ted	0	0	11/01/2012 11:54 PM	M	3/03/2013 6:41 PM	M	Orange
Tammy	0	0	7/10/2011 3:16 PM	M	3/03/2013 6:50 PM	M	Orange
Sun	0	0	29/09/2011 7:35 PM	M	3/03/2013 6:52 PM	M	Orange
Sue	0	0	28/08/2011 9:07 AM	M	3/03/2013 6:50 PM	M	Orange
Shelly	0	0	26/08/2011 9:49 AM	M	3/03/2013 6:51 PM	M	Orange
Phil	0	0	29/09/2011 7:38 PM	M	3/03/2013 6:51 PM	M	Orange
Pete	0	0	7/10/2011 2:29 PM	M	3/03/2013 6:52 PM	M	Orange
Noel	0	0	13/01/2012 11:24 PM	M	3/03/2013 6:52 PM	M	Orange
Ned	0	0	11/11/2011 3:25 PM	M	3/03/2013 6:52 PM	M	Orange
Mike	0	0	13/08/2011 11:21 AM	M	3/03/2013 6:52 PM	M	Orange
Melinda	0	0	14/09/2011 9:40 PM	M	3/03/2013 6:52 PM	M	Orange

Figure 1.1 Samples of **Internals** from this project.

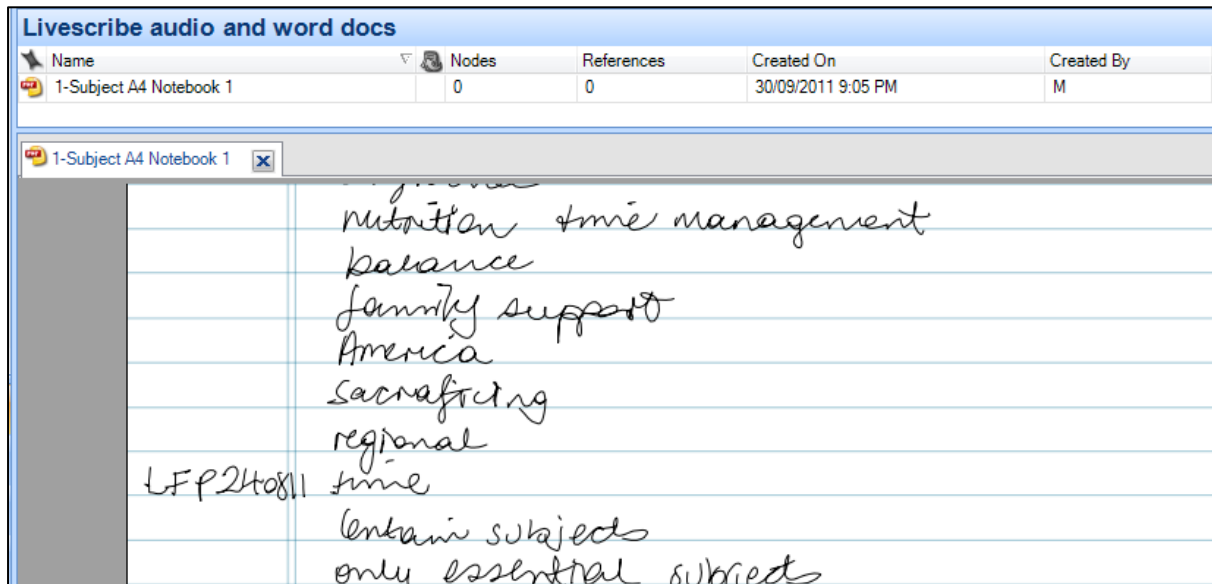
The icons on the left of each internal highlight the file format, for example PDF. Additionally, the author used colour codes to mark categories of information. In this study, the attributes corresponding to the characteristics or properties were:

- Green: athlete
- Red: parent
- Pink: teacher
- Orange: athlete sub category
- Blue: EndNote literature

The reasons behind this colour coding categorisation will be further detailed in, 1.2.3.7 Cross case queries analysis.

Livescribe with NVivo

As a [Livescribe](#) pen was used to record all 39 interviews in the high performance school-age athlete study, it was possible to download and then import the audio of the interviews, along with notes as **internals**, as displayed below.



The advantage of teaming Livescribe with NVivo is that audio could be easily played back at the speed you can transcribe. Additionally, any bookmarks that were made on the tape during the recording of the interviews allowed direct access in NVivo to these initial thoughts.

Memos

Within NVivo, **memos** are a type of document that enable you to record the ideas, insights, interpretations or growing understanding of the material in your project. They provide a way to keep your analysis separate from (but linked to) the material you are analysing. **Memos** can evolve into an important part of the 'writing up' stage of your project - for example, they might lead into the chapters of a book or the outline of a presentation.

Memos enabled the author to easily make and keep relevant footnotes and **annotations** about the 39 interview transcripts that were imported and stored in NVivo.

A sample of a **memo** from this project is shown in Figure 1.2.

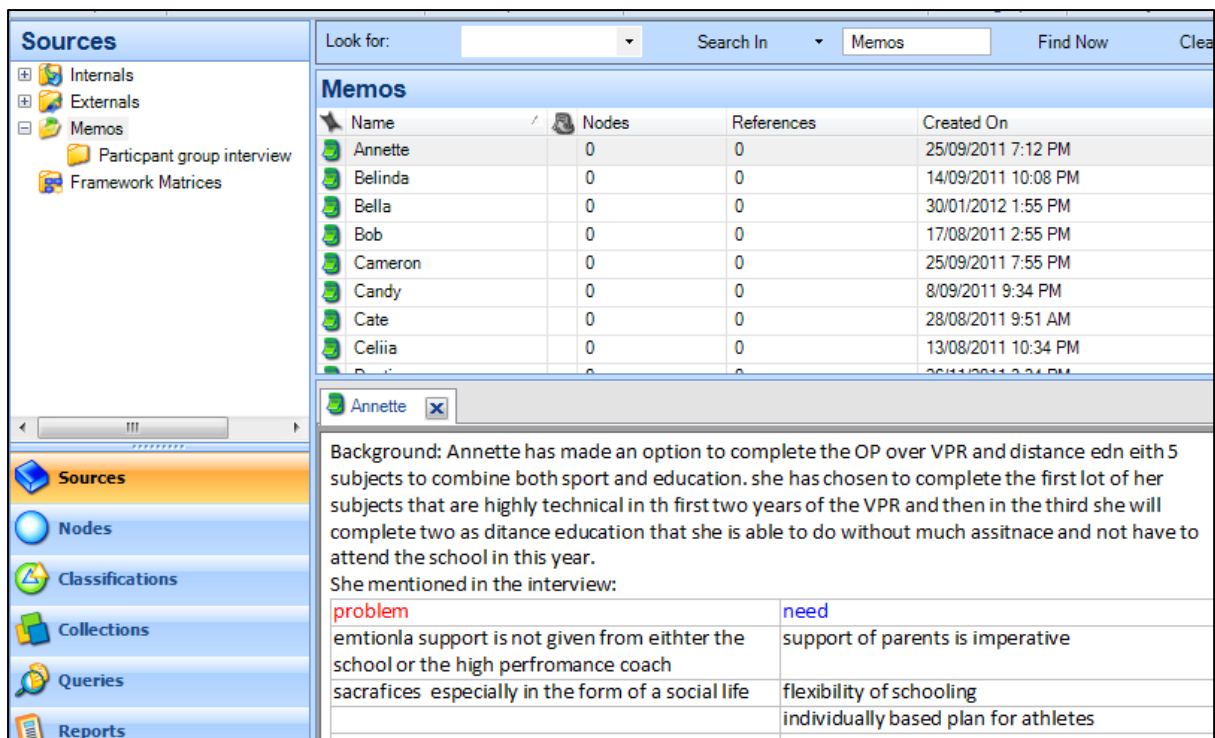


Figure 1.2 Sample of **memos** from this project.

Memos store ideas and reflections related to individual interviews. Links to materials that might be important to the project were created between objects in the **internals** and **memos**; and which can then be linked to **externals** that contained all the interview transcripts (Figure 1.3).

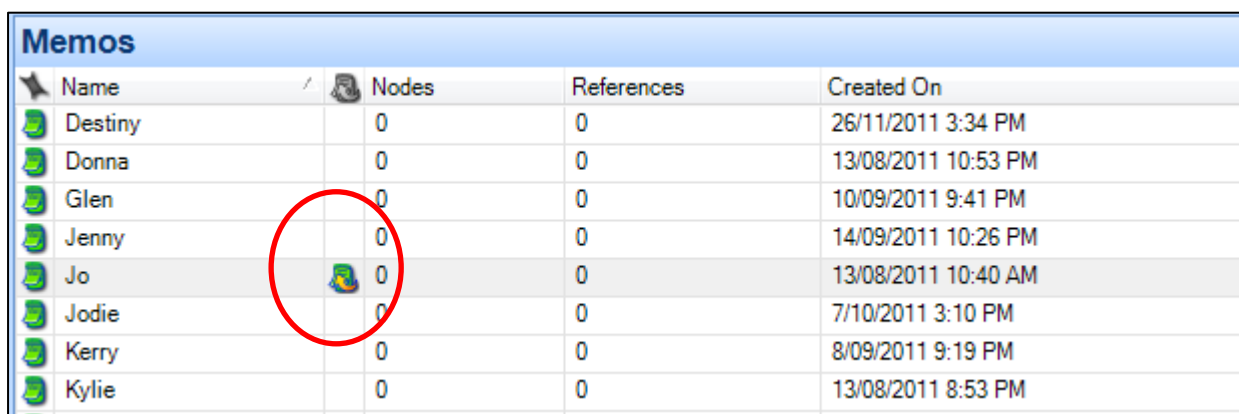


Figure 1.3 Links between participants in **memos**.

Icons on the right of each **memo** indicate whether there are links between interviews or just a note to self by the researcher. For example, as seen in Figure 1.3, 'Jo' has the link icon beside her name. This indicates a link exists with another participant in the project through a common thread which, in this case, was with the sport of gymnastics.

Author's note: As seen in Figure 1.2, spell check was not available in NVivo 9. Once the project was in NVivo 10, spell check was used to correct spelling errors in this section such as 'eith, dtiance, asstinace, emtionla, perfromnace, sacrafices'. Spell check can also be used

in the description of the nodes as seen in spelling error of 'assignemtn' in the image in section 1.2.2.1 .This useful function helps the researcher to quickly tidy the presentation.

Externals

Externals are proxies that represent research materials that you cannot import in to NVivo, such as books or manuscripts. However, you can create an external source and summarize the content of the item.

In the high performance school-age project, **internals** and **externals** were coded by colours which represented similar groupings of participants or attributes, shown in Figure 1.4.

Name	Nodes	References	Created On	Created By	Modified On	Modified By
Annette	191	9359	9/11/2011 11:39 PM	M	3/03/2013 7:00 PM	M
Tom	81	671	30/09/2011 8:57 PM	M	26/09/2012 10:34 AM	M
Candy	104	633	9/11/2011 11:23 PM	M	26/09/2012 10:03 AM	M
Bella	6	6	1/03/2012 11:44 PM	M	26/09/2012 10:01 AM	M
Will	168	6721	9/11/2011 11:37 PM	M	26/09/2012 9:58 AM	M
Jodie	180	8540	9/11/2011 11:46 PM	M	26/09/2012 9:57 AM	M
Lee	168	7737	30/09/2011 7:19 PM	M	26/09/2012 9:55 AM	M
Mark	69	304	9/11/2011 11:54 PM	M	26/09/2012 9:30 AM	M
Donna	133	3257	22/09/2011 10:36 PM	M	15/09/2012 4:04 PM	M
Jo	126	1230	22/08/2011 8:52 PM	M	15/09/2012 4:03 PM	M

Figure 1.4 Sample of **externals** from this study.

Referring to Figure 1.4, the sub-group of athletes was delineated by orange, which identified the data for female athletes. This was designed to permit a higher order theme to be discerned about female athletes. Additionally, it assisted with the delineation of the values of node attributes to be used in queries. This will be outlined in a later stage of this manual (1.2.4.1 Verification).

1.2.1.2 Attributes, values and classifications

In NVivo, **attributes**, as suggested by Edlund (2011), correspond to “characteristics or properties of a source item or a node which has or will have an impact when analysing data” (p.123).

Each **attribute** has a set value, with the corresponding classification being the collective name given to the **node** or **source**. For example, in the high performance school-age athlete project, the **attributes** correspond to the characteristics or properties of the athletes, parents and teachers, as seen in Figure 1.5.

Name
school status
Age
age groups
participants
gender
SportType
Schooling model
option
assessment type

Figure 1.5 **Attributes** used in this project.

Each **attribute**, as listed previously, had a value attached. Examples are as follows:

Attribute	Values
Gender	Not applicable, unassigned, male, female
School type	government, non-government, specialist, specific pathway, in-school scholarship, excellence, home schooled
Age groups	15 years, 16-17years, 18+ years
Participants	athletes, parents, teachers
School status	at school, left school
Schooling model	government, non-government, in-school scholarship, in-school excellence, specific pathway, specialist sport high, home schooled

These values were selected to run queries, and these will be outlined in, 1.2.3.5 Running queries.

Specific set values were assigned to the characteristics of the participants and the classification was the name given to such values.

Case	A : Age	B : age groups	C : assessme...	D : gender	E : option	F : participants	G : school stat...	H : Schooling ...	I : SportType
Meg	15 years old	15 to 18 years	formative	female	2 years full load	athletes	at school	in-school scholars	Individual
Noel	18+ years old	18 + years old	summative	male	Unassigned	school officials	Unassigned	specialist sport	Unassigned
Annette	16 years old	15 to 18 years	formative	female	VPR over 3 years	athletes	at school	government	Individual
Belinda	17 years old	15 to 18 years	formative	female	2 years full load	athletes	at school	specific pathway	Individual
Bob	18+ years old	18 + years old	summative	male	2 years full load	athletes	left school	government	Team
Cameron	18+ years old	18 + years old	summative	male	2 years full load	athletes	left school	government	Individual
Candy	18+ years old	18 + years old	formative	female	Unassigned	school officials	Unassigned	government	Unassigned
Cate	18+ years old	18 + years old	formative	female	Unassigned	parents	Unassigned	in-school scholars	Unassigned
Celia	15 years old	15 to 18 years	formative	female	2 years full load	athletes	at school	non-government	Individual
Destiny	17 years old	15 to 18 years	formative	female	2 years full load	athletes	at school	non-government	Individual
Donna	18+ years old	18 + years old	formative	female	Unassigned	parents	Unassigned	non-government	Unassigned
Glen	18+ years old	18 + years old	formative	male	Unassigned	school officials	Unassigned	in-school scholars	Unassigned
Jenny	18+ years old	18 + years old	formative	female	Unassigned	parents	Unassigned	government	Unassigned
Jo	18+ years old	18 + years old	formative	female	Unassigned	parents	Unassigned	government	Unassigned

For example, athletes were grouped by school status which was made up of 'at school' or 'left school'. Overall, a **case classification** sheet for the 39 participants in this study was generated by designing a demographics table outside, and then importing it into the **node classifications**, as seen in the sample of the ten adult athletes, outlined in Table 1.2.

Table 1.2

Sample (18+ athletes) demographics created in Excel.

Code	School model and State	Sport Individual(I)/ Team(T)	Age	Pseudo	Competition status	Gender
060911	Non-government In-school scholarship Qld	I	18	Tiana	International AIS	F
250811	Government VPR In school excellence Qld	T	18+	Sue	NTID National	F
050811	Government Qld	I	18+	Kylie	International	F
160811	Government Qld, NZ & USA	T	18+	Bob	International	M
160911	Non-government Catholic NSW	I	19	Teila	Age range National	F
160911	Non-government Catholic NSW	I	18+	Lee	International	F
160911	Government NSW	T	18+	Will	International	M
240911	Government SA	I	18+	Cameron	International AIS	M
260911	Government Qld	I	18+	Sun	International	F
290911	Government Qld Scholarship	T	18+	Pete	Age group	M

Assigning specific demographics in the manner outlined in Table 1.2 allowed attributes and values to be assigned and imported into the project for each of the 39 participants. A sample then generated in the NVivo project is presented in as Table 1.3.

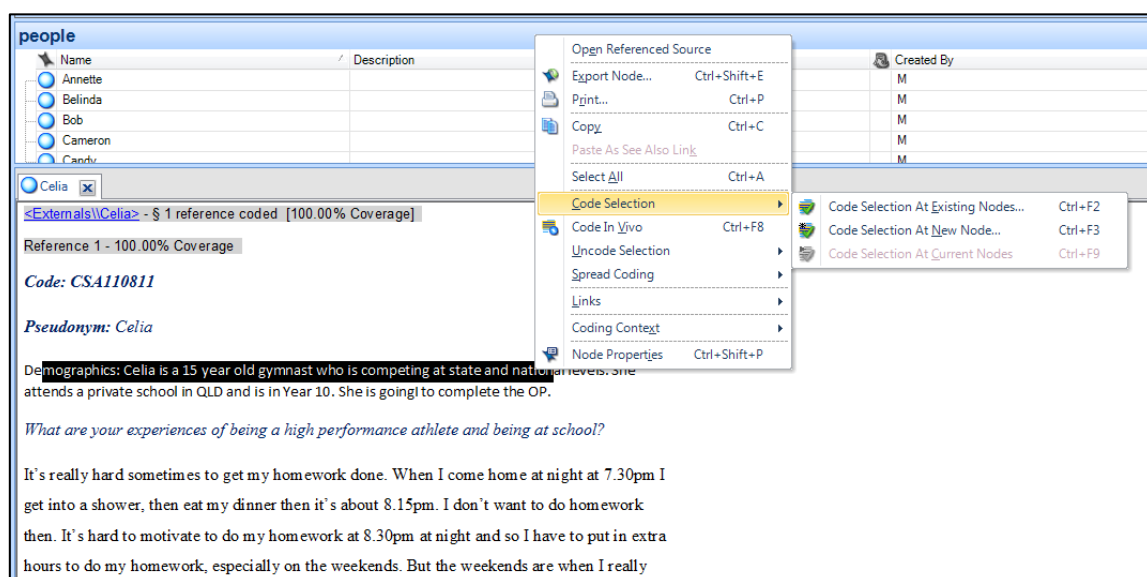
Table 1.3

Sample of **case classification sheet** from this project: Case attributes and values.

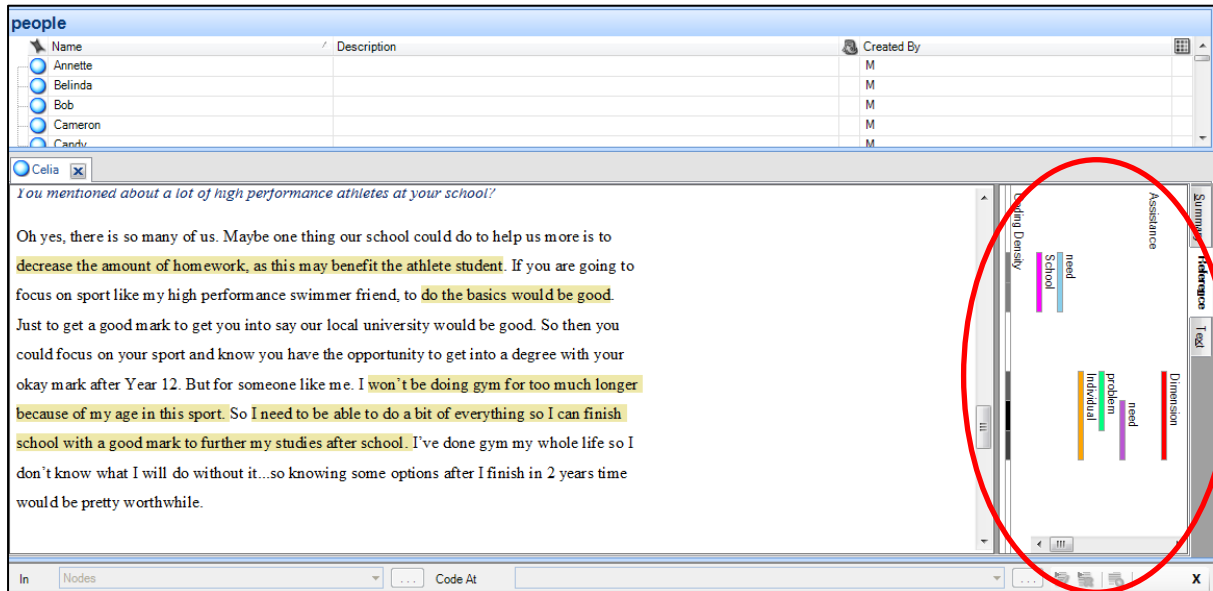
Case	Age	Schooling model	Sport Type	age groups	assessment type	gender	option	participants	school status
Nodes\people\Annette	16 years old	government	Individual	15 to 18 years	formative	female	VPR over 3 years	athletes	at school
Nodes\people\Belinda	17 years old	specific pathway	Individual	15 to 18 years	formative	female	2 years full load	athletes	at school
Nodes\people\Bob	18+ years old	government	Team	18 + years old	summative	male	2 years full load	athletes	left school
Nodes\people\Bella	18+ years old	government	Unassigned	18+ years old	Unassigned	female	Unassigned	teacher	Unassigned
Nodes\people\Cameron	18+ years old	government	Individual	18 + years old	summative	male	2 years full load	athletes	left school

1.2.2 Stage 2: Topic

In stage 2, abstracting obvious topics from the transcripts commences. Coding in NVivo permitted the grouping of related concepts to be organised in containers called **nodes**. The process of coding is seen in the image below where the researcher simply **'right clicks to code'**.



This process was facilitated by allocating **coding stripes** and highlighting certain phrases and sentences which denoted obvious topics that had originated from the formulation of **nodes**. This can be seen in the following image.



Coding stripes can be displayed on the right side of each transcript. They show the **node** to which the coded content is related.

1.2.2.1 Creating initial nodes

Nodes	
Name	Description
Assignments	assignemtn work that has to be completed
Last minute completion of assignments	completing assignments at the last minute
Leniency of handing in assignments	submission dates for the assignments
Modified assignments	condensed or altered assignments so they can fit
Bella	school official
Dimension	
Home	home environment
need	need associated with home dimension
problem	problem related to home dimension
Individual	applies to oneself

*Authors note: To edit the spelling errors in the description of the nodes as shown by 'assignemtn' in image above, right click, open **node properties**, correct the spelling errors then click **apply** and **ok**.*

Referring to Table 1.1 on page 3, each initial node was considered to be a topic, an idea, or

an abstraction that came from the study (Bryman, 2008). It was imperative at this stage for the researcher to link nodes to each of the 39 participants' characteristics and values.

This was enabled by inputting **node classifications**. In order for NVivo to associate data for each source so queries could be generated, a node classification sheet was created.

All participants' pseudonyms were imported and a source and reference to each was nominated. This meant that a **node classification** was attached to all participants, and thus linked all nodes to each participant's attribute and values (extract image of **nodes** on page 16). This is an imperative process as it permits queries to be generated; this will be detailed in a later section of this chapter.

Name	Sources	References	Created On	Created By	Modified On
Annette	1	1	16/12/2011 9:57 AM	M	3/03/2013 7:00 PM
Belinda	1	1	16/12/2011 9:57 AM	M	13/02/2012 2:23 PM
Bob	1	1	16/12/2011 9:57 AM	M	3/01/2012 9:28 PM
Cameron	1	1	16/12/2011 9:57 AM	M	3/01/2012 9:28 PM
Candy	1	1	16/12/2011 9:57 AM	M	11/02/2012 10:56 PM
Cate	1	1	16/12/2011 9:57 AM	M	11/02/2012 11:36 PM
Celia	1	1	16/12/2011 9:57 AM	M	25/02/2012 7:04 PM
Destiny	1	1	16/12/2011 9:57 AM	M	25/02/2012 4:51 PM
Donna	1	1	16/12/2011 9:57 AM	M	14/09/2012 2:36 PM
Glen	1	1	16/12/2011 9:57 AM	M	17/01/2012 12:29 PM
Jenny	1	1	16/12/2011 9:57 AM	M	14/01/2012 6:42 PM
Jo	1	1	16/12/2011 9:57 AM	M	11/02/2012 11:14 PM
Jodie	1	1	16/12/2011 9:57 AM	M	25/02/2012 8:31 PM

Figure 1.6 Sample of **node classifications** from this project

Moving from NVivo 9 to NVivo 10

The high performance school-age project was started in NVivo 9, but as the university upgraded to NVivo 10 the researcher moved the project to NVivo 10.

To move from NVivo 9 to NVivo 10, the researcher made a copy of the project file. This was done by selecting the file **'tab > manage'** and then **'copy project'**.

After ensuring the current version was saved to an external hard drive or USB device, the researcher opened NVivo 10 and simply chose the option 'open the project'. This prompted the researcher to browse to the project file and upload it. The project file will then convert to an NVivo 10 file.

At this point, the high performance school-age athletes study had 15 nodes including 'transition', 'time', 'support network', 'study habits', 'sibling rivalry', 'role models', 'recognition', 'life after sport', 'learning theories', 'issues', 'individual plans for athletes', 'homework', 'flexibility', 'dimensions' and 'assignments'.

The creation of concept maps for each of the groups including athletes, parents and teacher permitted issues to be easily discerned. Overall, such mapping made it easier for the researcher to initialise the beginning nodes. Excel concept maps were designed outside of the NVivo project for each group. Each of these was imported into the **internal** section of the project to provide easy cross-reference.

Samples of the concept maps designed outside of NVivo are seen in Figure 1.7 below.

Chapter 5	common issues	at school	left school	dispute issues between at school to left school	
support networks					<p>3 Who can help me? Who can help me cope with the double life?</p> <p>1 What's happening to me? as I try to cope with the double life</p> <p>2 What I need? to help me cope with the double life</p>
school	missed class time Flexibility technological aides mentors assistance of teachers	teacher specialisation	culture embedded one on one tutoring	empathy school environment school facilities	
parent		reassurance	role models pressure to achieve 'pushy'		
coach				coach support	
emotional	emotional				
specialist	specialists				
individual features					
social	inequity sacrifices social fit	bullying drugs and alcohol life balance	social media procrastination	prejudices preferential treatment disruption to family life adult squad members high expectations focus motivation	
mental	mindset stress passion	resilience	anxiety		
physical	nutrition tiredness soreness		fatigue and recovery	injury prevention heavy training sessions drop out	
personalised strategies	time management scheduling goal setting assignments homework	study habits		adaptability essential classes assessment life after sport communication back up plans self efficacy	
	in-school				
	out of school				
	equally shared				
	Three themes				

Chapter 6	common issues	Parent issues	Teacher issues	conflict issues	
support network					<p>3 Who can help me? Who can help me cope with the double life</p> <p>1 What's happening to me as I try to cope with the double life</p> <p>2 What I need? to help me cope with the double life</p> <p>Chapter 7 commencement of discussion (meaning) flexibility /VPR etc. missed class time technological aides procrastination Bullying(Female only) high expectations social fit drugs and alcohol sacrifices adult squad members reassurance guilt empathy fatigue -physical and mental goal setting</p>
school	learning difficulties empathy missed class time mentors spare lessons technological aides one on one tutoring	school environment assistance of teachers	school facilities fill in/time wasters	to help me cope with the double life Flexibility teacher specialist school policies	
parent	pressure to achieve 'pushy'	sibling rivalry			
coach				coach	
emotional				emotional	
specialist			specialists		
individual features					
social	inequity prioritisation	fun bullying	life balance		
mental	mindset motivation resilience	disruption to family life stress passion	empathy		
physical	tiredness nutrition	travel burn out injury prevention	exhaustion		
personalised strategies	assessable sport subjects time management scheduling communication assessment essential classes	assignments and homework organisation transition	assessment goals		
	in-school				
	out of school				
	equally shared				
	Three themes				

Figure 1.7 Athletes, Parents and Teachers Excel concept maps.

The two concept maps displayed in Figure 1.7 provided a vehicle not only to move outside of the project and reflect on aspects that were developing, but also to **identify the emergence of higher order themes**. Such concept maps then allowed the researcher to easily discern the different issues that directly related to athletes, parents and teachers.

As indicated in Figure 1.7, the parents' and teachers' concept map commenced the extrapolation of concepts facilitating the triangulation of the data between the three groups of participants. Thus, the beginnings of the higher order themes commenced appearing outside of the project, which could not be adequately discerned whilst entrenched in the NVivo project.

1.2.3 Stage 3: Analytic

The analytic stage of this project involved the initial merging of **nodes** and the running of **queries**. Bryman (2008) suggests that this is the process of exploring more complex aspects of the nodes.

Name	Sources	References	Created On
Modified assignments	1	1	1/12/2011 9:06 AM
Bella	0	0	25/03/2012 10:57 AM
Dimension	27	946	23/09/2011 9:44 AM
Home	31	171	23/09/2011 9:45 AM
need	24	122	9/10/2011 9:05 PM
problem	17	51	9/10/2011 9:05 PM
Individual	37	676	23/09/2011 9:45 AM
need	36	382	9/10/2011 9:06 PM
problem	35	298	9/10/2011 9:05 PM
School	37	647	23/09/2011 9:44 AM
need	37	406	9/10/2011 9:07 PM
problem	35	257	9/10/2011 9:07 PM
Flexibility	29	101	10/10/2011 4:53 PM
Options	24	88	10/10/2011 4:55 PM
Assessable sport subjects	5	9	3/12/2011 6:55 PM
Colleges for yr 11 and 12	1	2	6/12/2011 9:07 PM

1.2.3.1 Merging nodes into hierarchies

Stage three commenced with initial nodes being moved, merged and renamed into eight nodes of 'support network', 'individual athlete plans', 'issues', 'flexibility', 'time', 'recognition', 'life after sport' and 'transition', some of which are listed in the screen shot in Figure 1.8.

Life after sport
Meg
Noel
procrastination
procrastination guilt
Recognition
Role models
Sibling rivalry
Study habits
Ted
Time

Figure 1.8 Formation of merged and renamed **nodes** in the study.

As shown in Figure 1.8, some participants (Meg, Noel and Ted) had to be added to the project at various times (based on their availability to complete an interview). As a result these transcripts were loaded as a node to allow their content to be incorporated into the data analysis.

Nodes were then renamed and merged into a hierarchical arrangement to allow greater analytical coding using queries (Edhlund, 2011).

For example, the support of ‘school’, ‘parent’, ‘coach’, and ‘specialists’, and the in-school support issue of ‘flexibility’ were merged into ‘support network’. ‘Individual athlete plans’, ‘time’, ‘recognition’, ‘life after sport’ and ‘transition’ merged and were renamed ‘personalised strategies’. Finally, issues which incorporated ‘social’, ‘mental’ and ‘physical’ aspects were renamed and merged into ‘individual features’.

The final structure and scaffold of the hierarchical layout of all nodes were eventually generated and show the final nodal structure of this project, incorporating 15 nodal hierarchies as seen in Figure 1.9 (page 18).

1.2.3.2 Sets

To extrapolate higher order themes from the lower categories, it was necessary to create **sets**. Another feature adopted in the high performance school-age athletes project was the use of the colour coding as seen in Figure 1.9 (page 18). The yellow code showed merged lower nodes to create the higher order data sets. This **merging of the higher order nodes** streamlined the project into three main themes: ‘impact of double life’, ‘what I need as I try to cope with my double life’ and ‘who can help me’.

The groupings of these **sets** were also included in the last column of the concept maps as seen in Figure 1.7 (page 15). This allowed issues to be discerned that directly related to the higher order node. The conceptualisation of the **sets** of higher order themes is available in NVivo **collections**. For example, a snapshot of the data sets created in the **collections** sections for this project is seen in Figure 1.10 (page 18).

Name	Sources	References	Created By
Impact of double life	37	382	M
Social	35	266	M
Social media	5	7	M
Social fit	8	21	M
Sacrifices	7	11	M
Prioritisation	8	14	M
Pressure to be social	6	14	M
Prejudices	2	11	M
No social life	7	11	M
Mentors	5	10	M
Limit friends to training members	8	13	M
Life balance	20	37	M
Guilt	6	10	M
Fun	8	17	M
Finances	16	29	M
Drugs and alcohol	7	12	M
Disruption to family life	5	10	M
Decisions	7	16	M
Compromise	3	3	M
Bullying	4	19	M
Adult squad members	2	2	M
Physical	28	103	M
Travel	5	10	M
Tired and sore	6	10	M
Struggle of the long training hours	8	10	M
Sleep	9	10	M
Rest	3	4	M
Nutrition	10	18	M
Location	3	4	M
Injury prevention	5	6	M
Heavy training schedule	7	9	M
Fatigue and recovery	6	7	M
Exhaustion	4	7	M
Drop out	3	6	M
Dedicated practice	3	4	M
Mental	31	138	M
Stress	13	21	M
Routinisation	3	3	M
Respect and honesty	7	9	M
Resilience	7	8	M
Relaxation	6	12	M
Positivism	2	2	M
Passion	11	14	M
Motivation	10	17	M
Mindset	18	41	M
Inspiration	1	2	M
Focus	13	24	M
Compartmentalisation	1	2	M
Anxiety	2	4	M

Figure 1.9 Structures of the nodal hierarchies in the project.

Three themes	
Name	In Folder
Impact of double life	Nodes
What I need as I try to cope with my double life	Nodes
Who can help me	Nodes

Figure 1.10 Sets of data in the **collections** section of the project.

*Author's note: All spelling of node names can be corrected by double right clicking on the **node**. For example, in Figure 1.9 'prejudices' after double right clicking on it was changed to prejudices.*

1.2.3.3 Models and relationships

The entire data sets including text, summary and references can be exported to an external file outside of your project or used to create a **model** in NVivo. This provides a visual that clearly delineates all coded references and/or sources as seen in Figure 1.11.

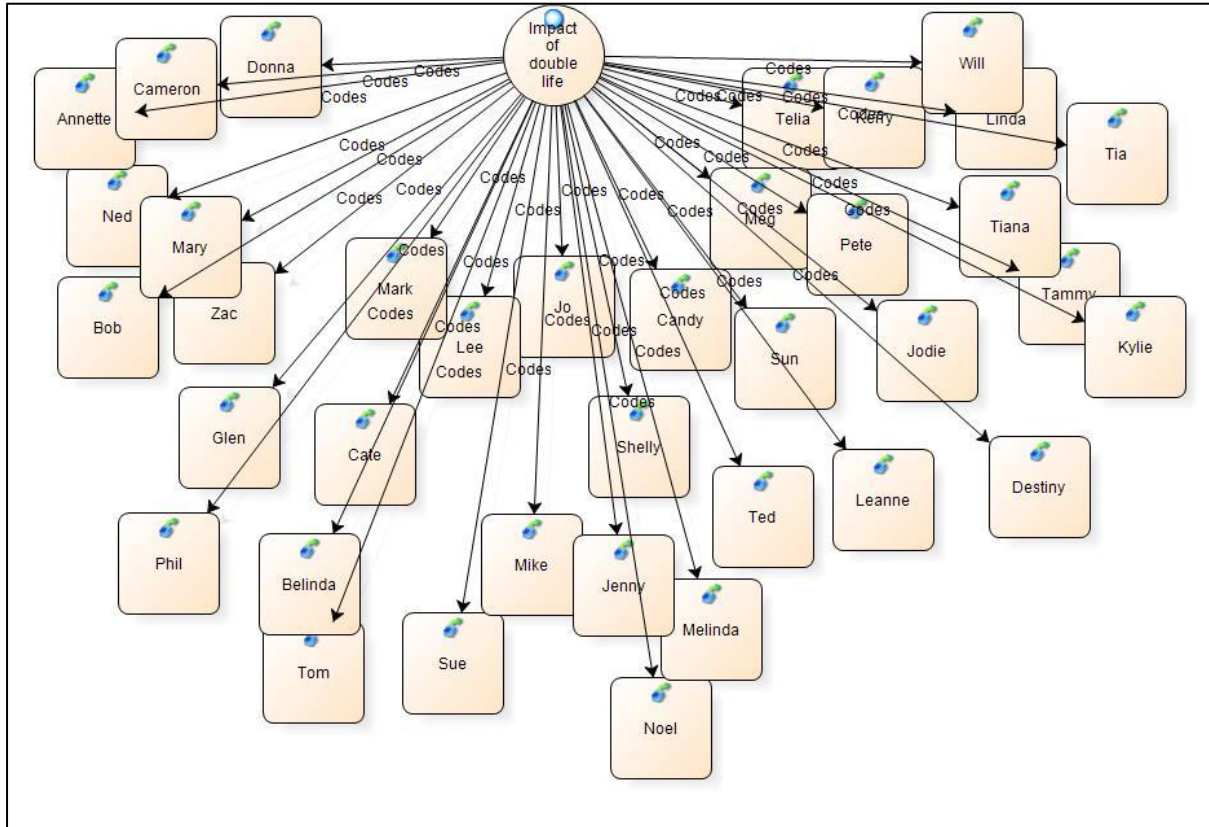


Figure 1.11 **Model** of the impact of double life (**set**) by **sources** and **coded references**.

Referring to the model in Figure 1.11, to aid analysis, it is possible to show the relationships in each **set** of data visually. For example, to explore the codes for 'resentment' from the above model it was possible to just click on 'Donna' and the visual (Figure 1.12) appeared.

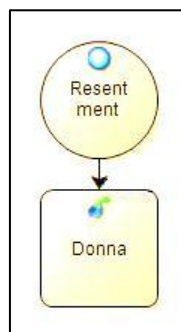


Figure 1.12 Visualisation of the **node** resentment.

This process allowed the researcher the scope to define concepts and relationships directly from each participant's visualisation in each of the three higher order themes.

Additionally, the same three themes were continued from data analysis of the athletes' perspectives to the significant adults' perspectives (the parents and teachers). These

outputs clearly indicated that the merged higher order nodes of ‘impact of double life’, ‘what I need as I try to cope with my double life’ and ‘who can help me’ had percentage data from all three groups. This reaffirmed that the themes identified by the athletes’ data could be carried through to the parents’ and teachers’ data analysis as seen in Figure 1.13.

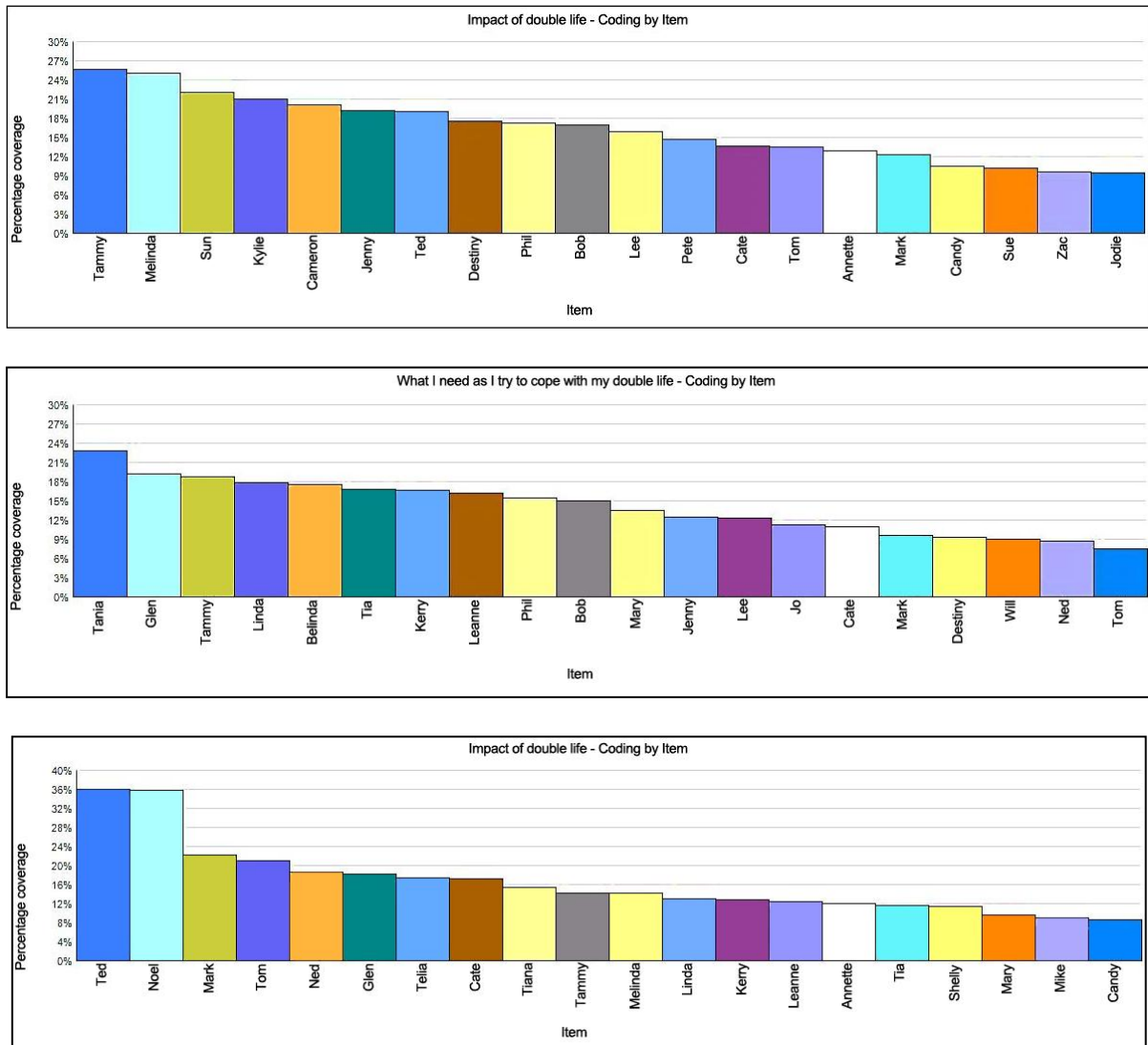
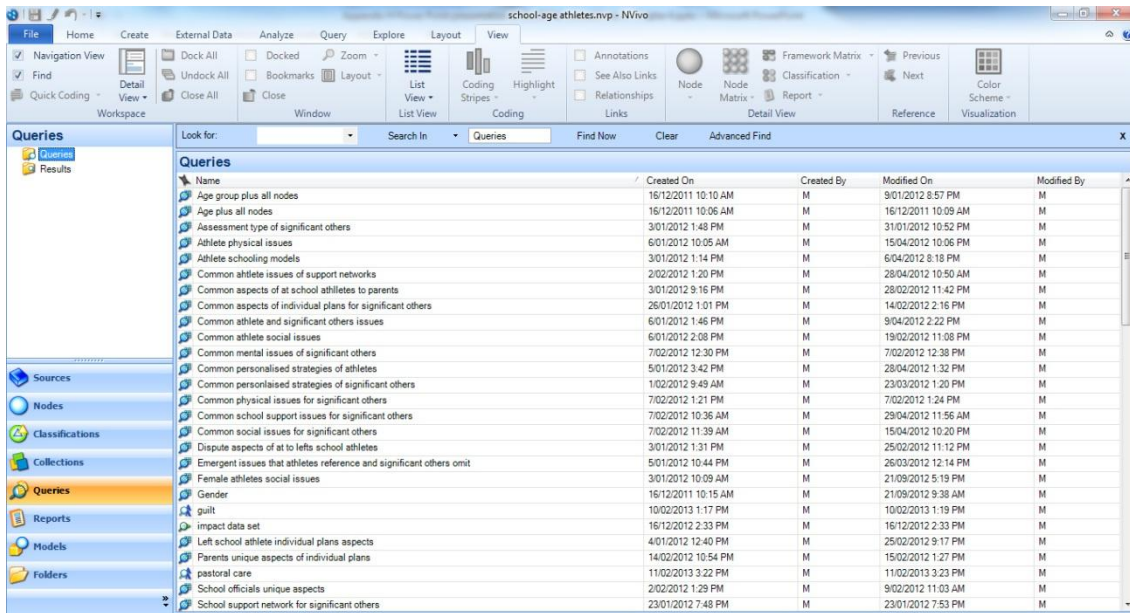


Figure 1.13 Visualisation of the percentage data of participants in each of the three main themes.

The visuals of the main three themes (Figure 1.13) confirmed that all three groups of participants had percentage data in the form of coded responses in each theme. In this situation, 20 participants across the three groups of athletes, parents and teachers made coded references to each of these three themes. By clicking on each column, the participant’s response, including the frequency, appeared. This prompted the researcher to access the audio transcripts imported from Livescribe to discern and more clearly interpret the meaning of each participant’s statements, with reference to each of the themes.

1.2.3.4 Using Queries



Queries, as suggested by Edlund (2011), recognise the parts of the sources in a project that contain specific and desired information. A simple query is generated by clicking on the node. An example of a simple word frequency query that O’Neill (2013) used in her study to delineate the main terms in the data set themes is seen in the following ‘**Word Frequency Query**’ image.

Some of the major clusters observed in the image clustered around the terms of ‘training’, ‘school’, ‘balance’, ‘sport’.

Furthermore, in the O’Neill (2013) study, when the node of ‘support network’ was opened, a summary of all sources referenced in this node was produced, as shown in Table 1.4 (page 23).

Table 1.4 illustrates the query of ‘support network’ that was run on the athlete group. This discerned that 16 athletes spoke of the importance of their support network. This allowed the opportunity of reflection on all 16 original interviews to elicit the issues mostly referred to by these athletes.

Word Frequency Query

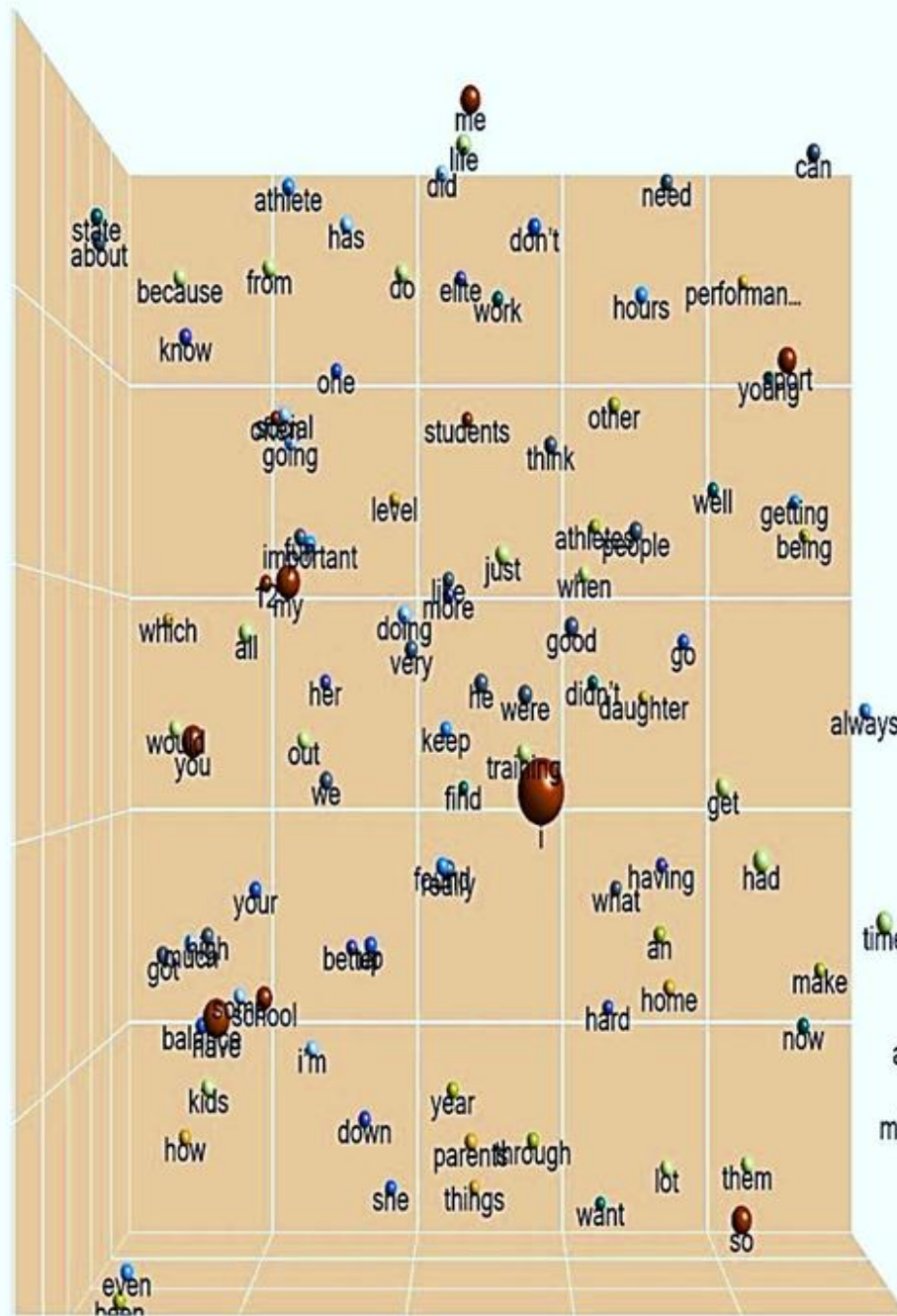


Table 1.4: **Query of support network node.**

Annette	Externals	13	12.02%
Bob	Externals	6	4.01%
Cameron	Externals	5	3.88%
Celia	Externals	3	1.80%
Destiny	Externals	2	1.04%
Jodie	Externals	10	7.96%
Kylie	Externals	10	5.81%
Lee	Externals	1	1.71%
Ned	Externals	11	18.98%
Pete	Externals	5	4.13%
Phil	Externals	2	3.72%
Sue	Externals	4	4.34%
Sun	Externals	6	5.51%
Tiana	Externals	18	15.43%
Will	Externals	3	3.59%
Zac	Externals	7	4.34%

1.2.3.5 Running queries

The screenshot shows a software interface with a 'Queries' tab on the left and a 'Results' tab on the right. The 'Results' tab displays a table with columns: Name, Sources, References, Created On, Created By, Modified On, and Modified By. Below this table, there is a matrix of data with columns labeled A through F and rows labeled 1 and 2. The matrix cells are shaded in various colors (orange, green, blue, yellow, red) to represent different values.

	A : Flexibility	B : coach sup...	C : emotional ...	D : parent sup...	E : school sup...	F : specialists ...
1 : Case:school status = at school	45	5	2	16	46	7
2 : Case:school status = left school	20	6	4	39	61	4

Running queries is simply a process of exploring more complex aspects of nodes (Bryman, 2008). The researcher gave each **query** a given name and then applied an attribute, processing and saving all of them. As illustrated in the image above, the tool of 'cell shading' can be turned on and it allows easy detection of the more densely data concentrated nodes.

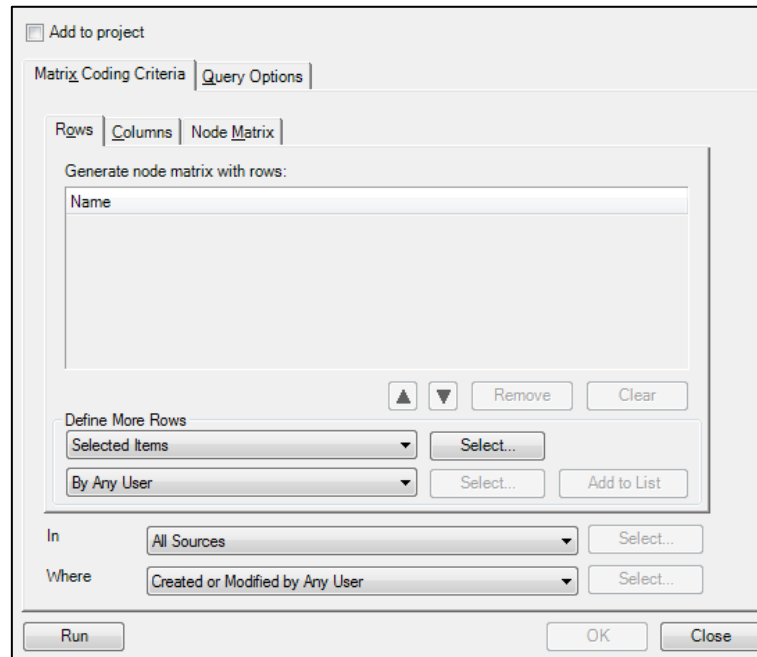
To **run queries**, choose the **queries** tab and then commence making new queries to explore your hunches about the relationships of your themes. A sample of the **matrix coding queries** that were run in this project is seen in Figure 1.14 (page 24).

Queries	
Name	
Age group plus all nodes	
Age plus all nodes	
Assessment type of significant others	
Athlete physical issues	
Athlete schooling models	
Common athlete issues of support networks	
Common aspects of at school athletes to parents	
Common aspects of individual plans for significant others	
Common athlete and significant others issues	
Common athlete social issues	
Common mental issues of significant others	
Common personalised strategies of athletes	
Common personalised strategies of significant others	
Common physical issues for significant others	
Common school support issues for significant others	
Common social issues for significant others	
Dispute aspects of at to lefts school athletes	
Emergent issues that athletes reference and significant others omit	
Female athletes social issues	
Gender	

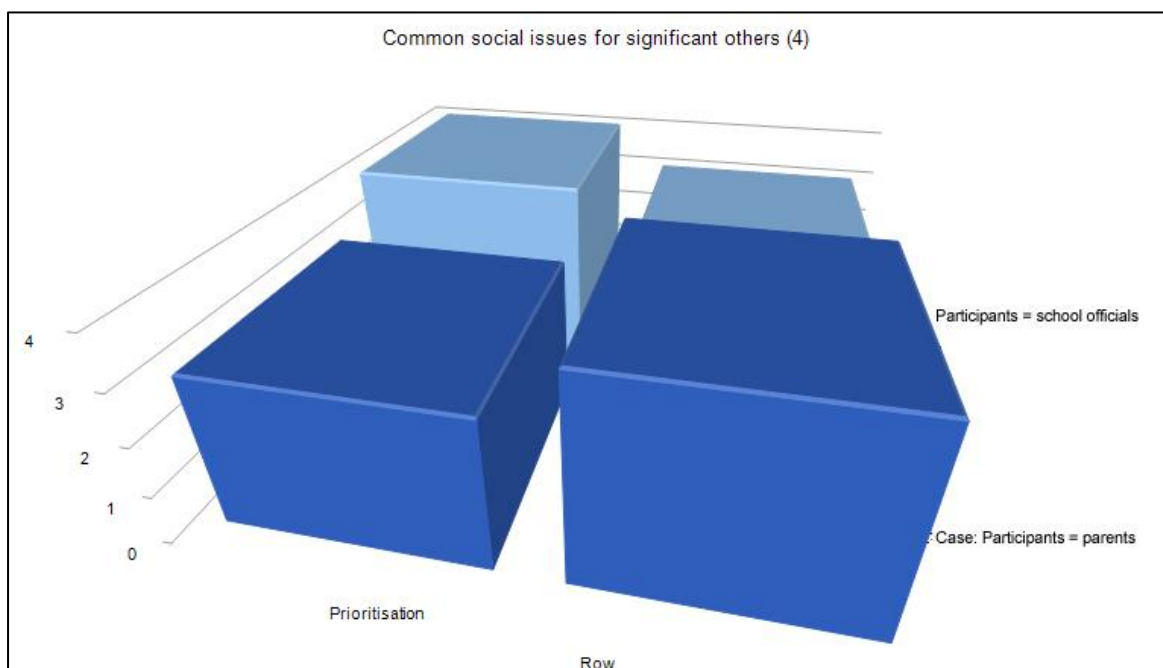
Figure 1.14 Sample of **matrix coded queries** run in this project.

The **queries** in Figure 1.14 could be considered as the initial hunches that were beginning to appear from the data. For example, the first query was the characteristic of 'age' against all nodes in the project, as a means to begin teasing out associated themes. This was particularly useful for the athlete group, where there were two distinct sub-groups, comprising still 'at school' and 'left school' athletes. By selecting the attributes associated to age of '15 years', '16 -17 years' and '18+ years', the queries that were generated prompted the researcher to consider themes which could be extrapolated about the differences and similarities of perspectives of the athlete group according to their ages.

1.2.3.6 Matrix coding queries



Matrix coding queries can produce results in chart or tabular form, represented as coded references, sources and/or the percentage data in each node cell.



For example, the **matrix coded references query** of 'athlete' run against the node 'school support network' produced the chart in Figure 1.15 (page 26).

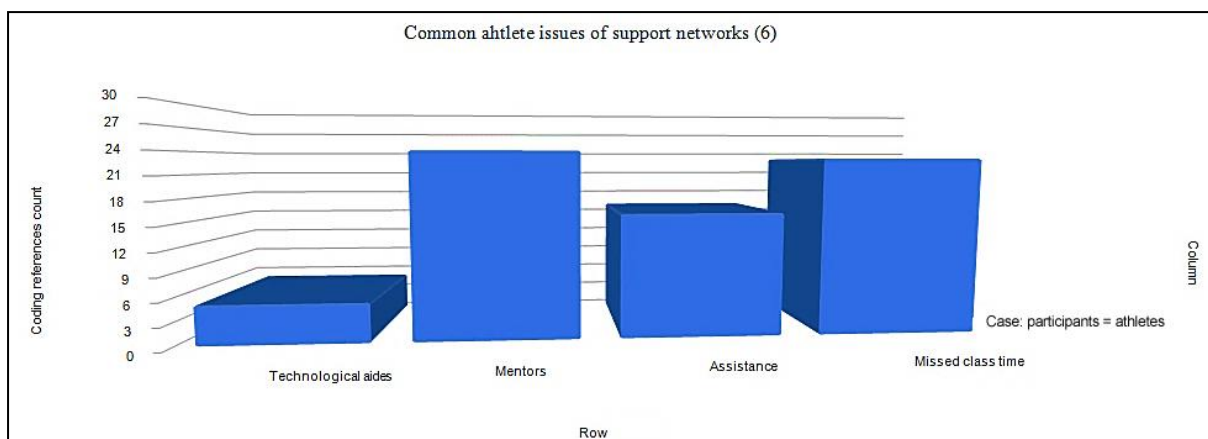


Figure 1.15 **Matrix coding query** athletes against school support network in chart format.

For presentation and interpretation, the researcher exported all three-dimensional charts out of NVivo and converted them into two-dimensional Excel charts. For example, the three-dimensional chart in Figure 1.15 of athlete issues of ‘support network’ was exported out of NVivo into Excel and presented for thesis presentation in Figure 1.16.

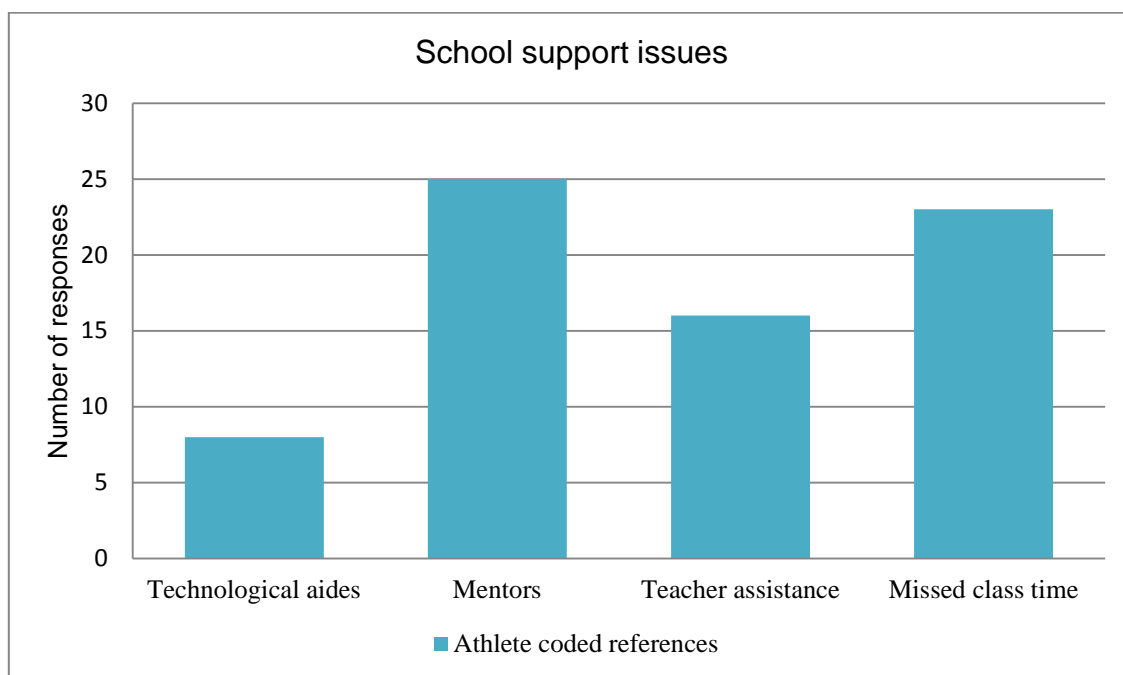
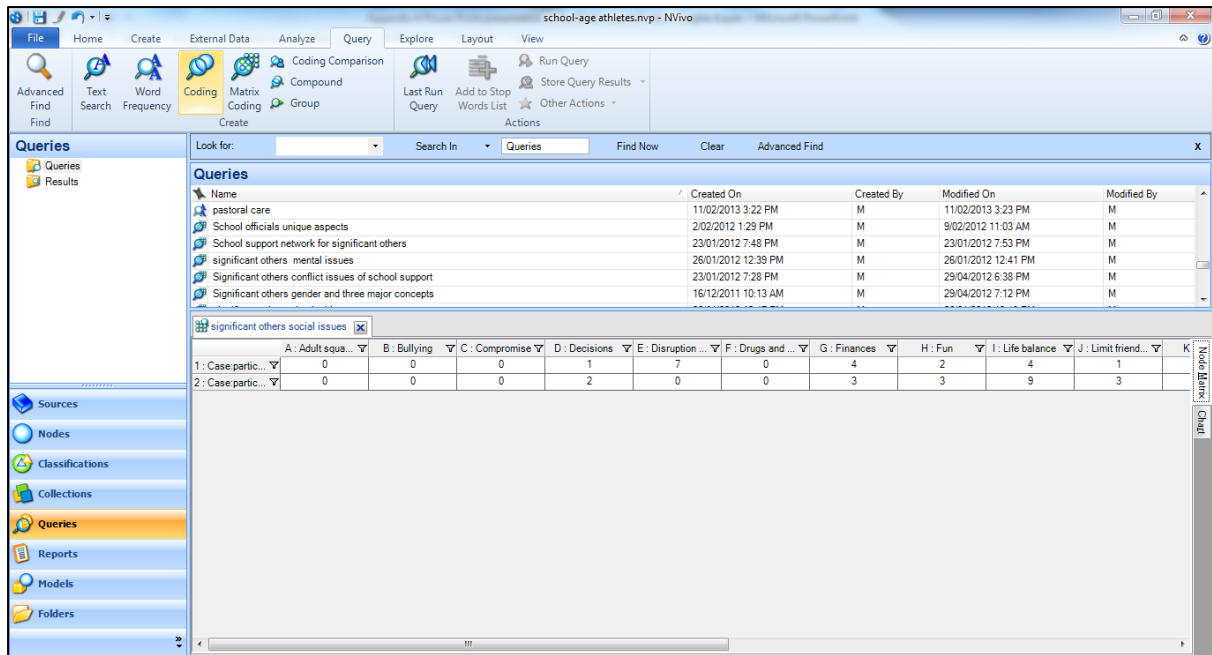


Figure 1.16 Export of the three-dimensional NVivo chart to two-dimensional Excel chart showing athlete school support issues.

Queries to determine differences in perspectives for athletes were run on ‘gender’, ‘school type’ and ‘sport type’ (individual and team). In relation to the parents’ and teachers’ groups, only ‘school type’ was used.

Queries were then produced as a **matrix** in chart or table form, represented as coded references, sources and/or the percentage data in each node cell (Edhlund, 2011). All queries could be numerically examined by coded references and sources by the use of **density matrix** tables as seen in the following image.



For example, an initial run of athlete ‘school support’ issues produced the number of coded references to issues, as seen in Table 1.5.

Table 1.5

Matrix density table initial run of athlete school support issues.

Nodes	A : Case: participants = athletes coded references
1 : Technological aides	5
2 : Mentors	24
3 : Assistance	14
4. Missed class time	23

By changing the cell content, it allowed the content to be viewed by coded references, coded sources or percentage coded data in each row or column. The researcher turned on ‘cell shading’ to ‘blue/white’ which revealed in colour shades the concentration of data in each node.

1.2.3.7 Cross case queries analysis

A more complex query known as a **cross case query**, distinguishes and compares characteristics both within and between groups of participants in the project. For example, cross case queries could be established and findings extrapolated on the athlete group attribute of ‘school status’ and the node of ‘support network’, exemplified in Figure 1.17 (page 28).

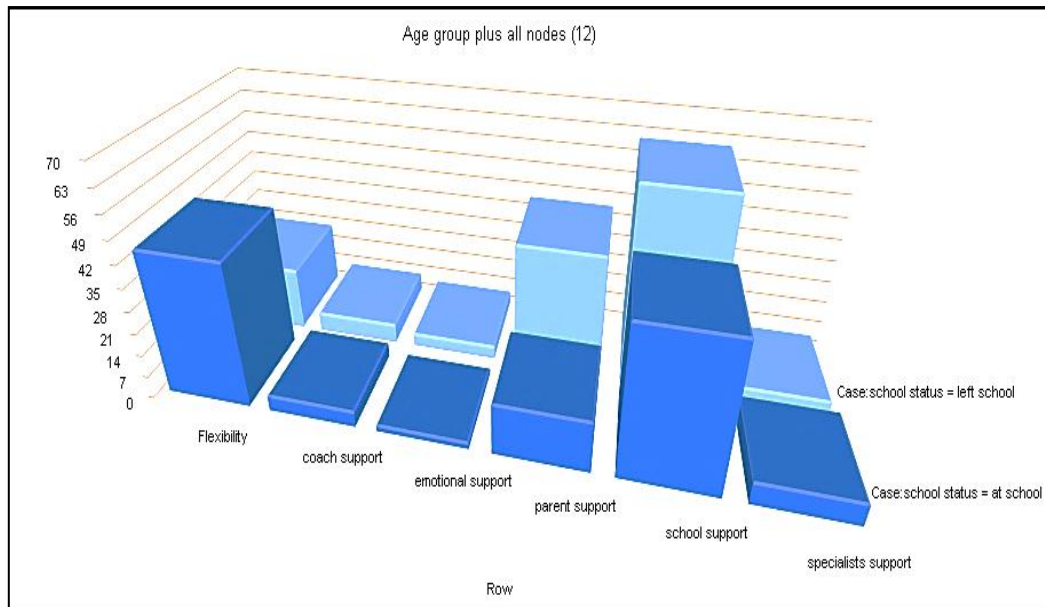


Figure 1.17 **Cross case query** of the athlete group school status run against support network.

As previously mentioned, the 'at school' athlete coded references are delineated from the 'left school' athletes by designated colour codes in the project. The sources coloured green (representing 'athlete') were selected and then run against the school 'support network' of 'flexibility', 'coach', 'emotional', 'parent', 'school' and 'specialist' support nodes to generate a **cross case query**.

Additionally, the resulting visual from this **cross case query** in Figure 1.17 highlighted that no coded references were made by the athletes in relation to nodes of 'coach' and 'emotional'. This finding prompted the researcher to review all athletes' audio tapes and discern that negligible responses were made by athletes about their coach.

All charts in the high performance school-age athletes project were exported in three-dimensional chart form out of NVivo and converted into two-dimensional presentations in Excel, as seen in Figure 1.18.

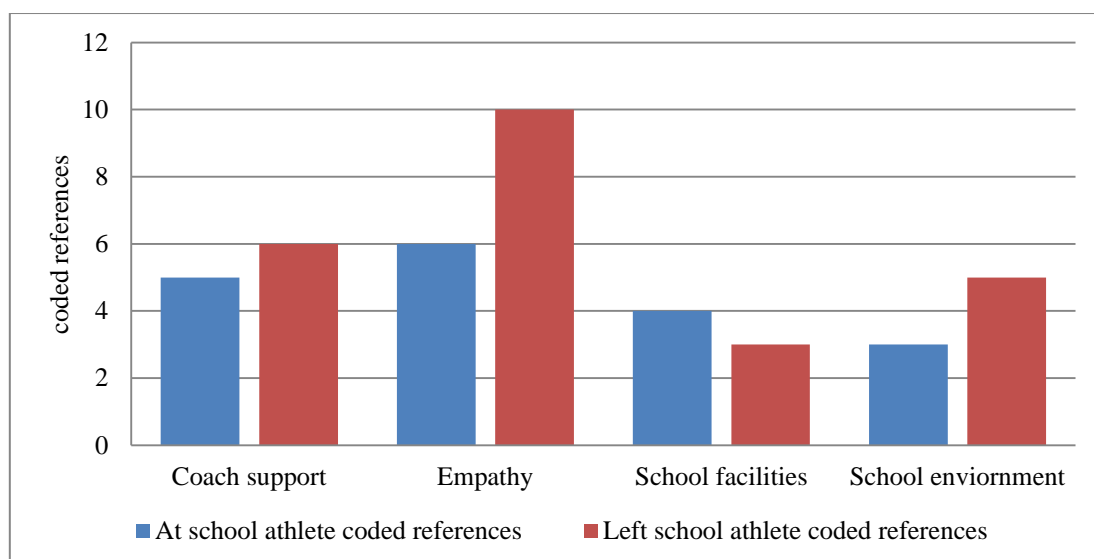


Figure 1.18 **Cross case query** on athlete school issues.

A **cross case query** was also used to discern group commonalities of nodes. This allowed the teasing-out of the common concerns referred to all three groups. For example, a **cross case query** was run on the three groups of parents, teachers and athletes by selecting the colour codes of teacher(pink), athlete(green) and parent(red), and then selecting the node of 'technological aides', which resulted in Figure 1.19.

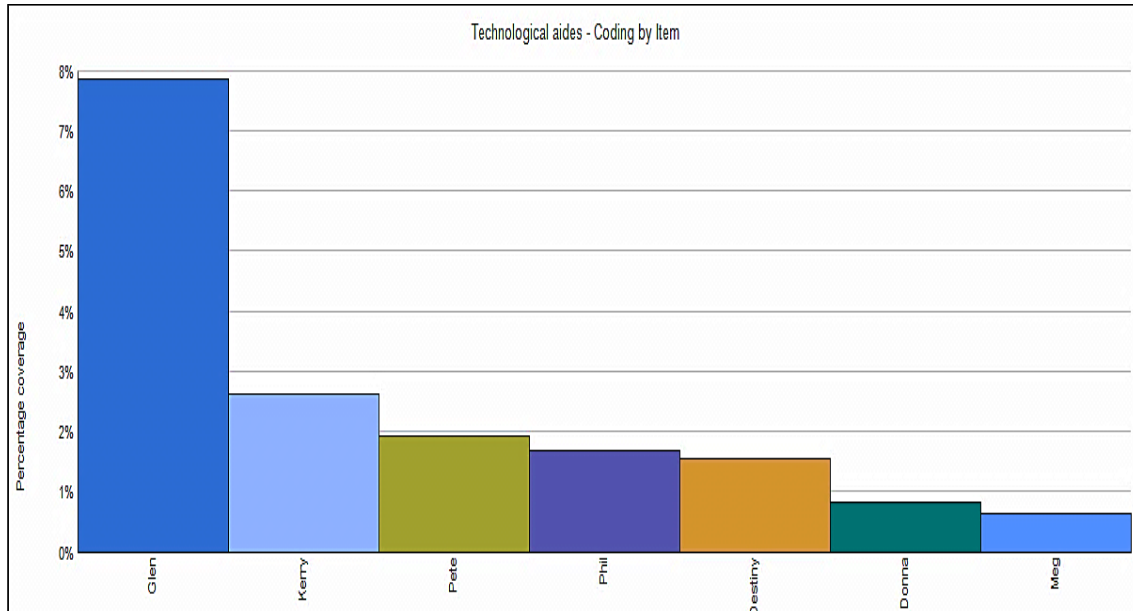


Figure 1.19 Node of technological aides.

Referring to Figure 1.19, teacher (Glen), parents (Kerry and Donna) and athletes (Pete, Phil, Destiny and Meg) all collectively made comments about technological aides.

The researcher also used this technique to discern issues that were collectively referred to by all participants.

One of the major discussion points on common concerns for all three groups was that of 'resilience'. This finding was reached by running a query on the node 'resilience' with each group of participants. For example, the athlete group was selected by first choosing the colour green in the project and then selecting the node 'resilience' (Figure 1.20).

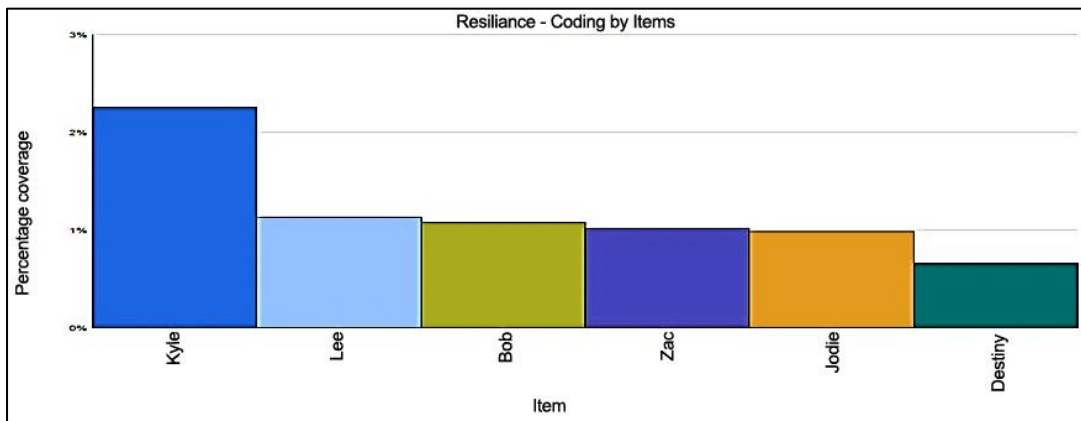


Figure 1.20 Athlete **node** of resilience.

This process was repeated for the parent (red) and teacher (pink) groups and it delineated that all three groups collectively spoke of the term ‘resilience’ (Figure 1.20).

The initial triangulation of the data between athletes, parents and teachers was commenced in conjunction with the manual concept maps (in Figure 1.7 page 15) to tease out the common theme of ‘resilience’. Additionally, the nodes of ‘mentors’, ‘scheduling’, ‘missed class time’ and ‘technological aides’ formed the higher order common theme of ‘connectedness to school’ (Figure 1.21).

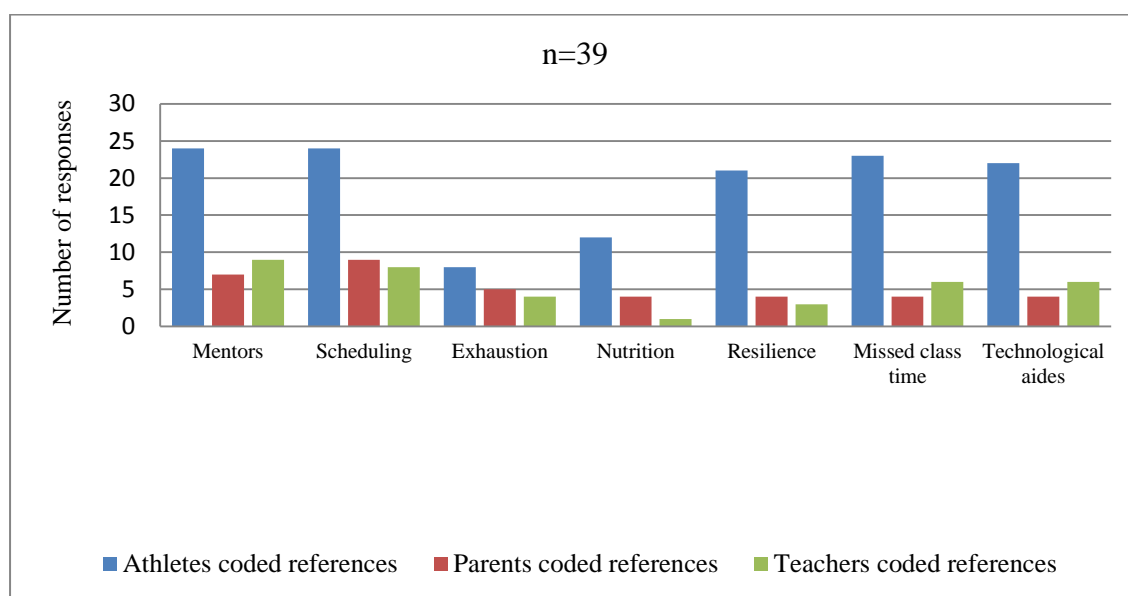


Figure 1.21 Excel representation: Identified issues for high performance school-age athletes as shared by athletes, parents and teachers.

The chart in Figure 1.21 highlighted a finding concerning the negligible number of teacher responses in relation to nutrition.

1.2.4 Stage 4: Conclusions

Conclusions are more readily verified as the analysis continues, but certainly do not completely appear until the data collection is finalised (Miles & Huberman, 2002). For this study, as recommended by Edlund (2011), NVivo assisted in organising the data so the analysis could draw conclusions that were reliable and unproblematic.

1.2.4.1 Verification

Verifying higher order themes can be aided by visualising each participant’s percentage of coverage in each node. For example, one significant finding of the high performance school-age athlete study was the higher order theme of ‘female athlete bullying’. This finding was verified by extrapolating and initially examining each athlete’s visual of percentage coverage of data in each node. For example, the visual of ‘Sun’s’ percentage coverage of data in all nodes is shown in Figure 1.22 (page 31).

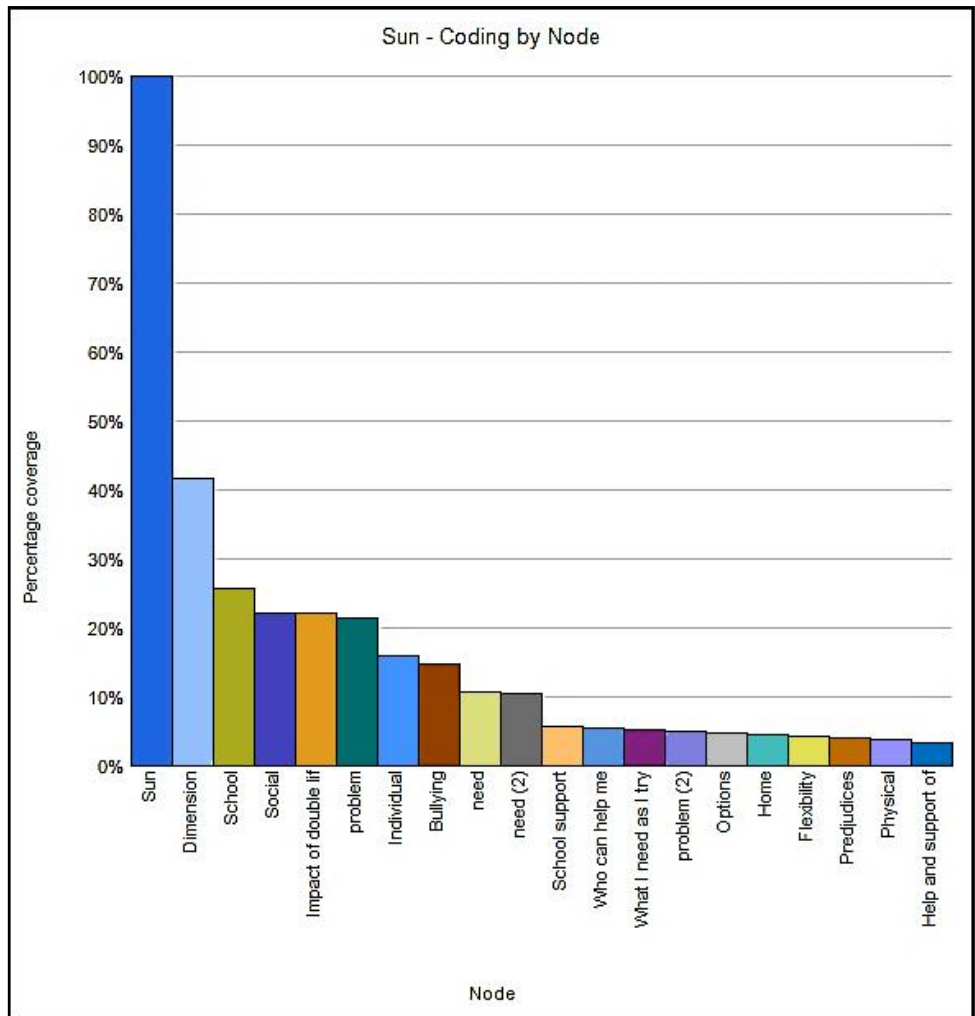


Figure 1.22 A summary of the percentage data in each **node** of the **external** ‘Sun’.

Referring to Figure 1.22, it was possible to investigate more thoroughly the issue of bullying as mentioned by ‘Sun’. Sun’s chart of bullying led to the realisation that bullying of female athletes was a significant finding in this study and needed further interrogation of the original 12 female athlete transcripts.

One of the initial visuals used to determine this significant finding concerning bullying, mentioned by all 12 female athletes, is shown in Figure 1.23.

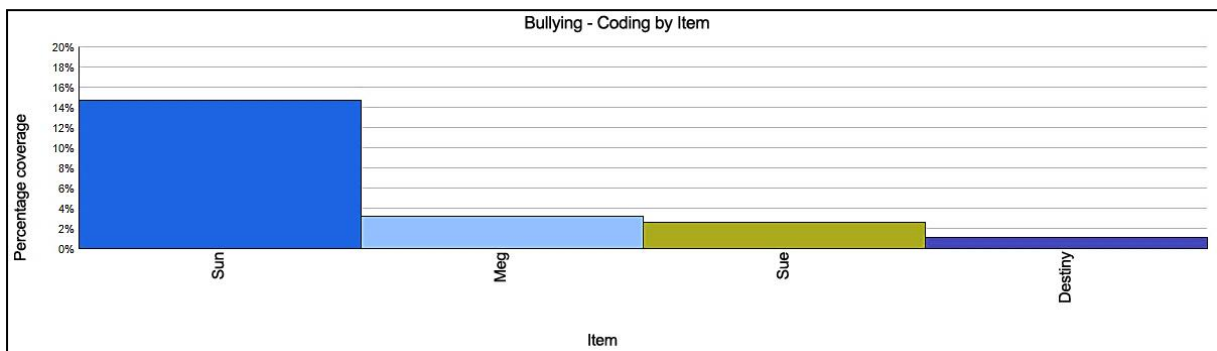


Figure 1.23 Visual of female athlete bullying issue.

Another example using the initial visualisation of a node to delineate a significant finding was that of the athletes' own words of 'tired' and 'sore' as shown in Figure 1.24.

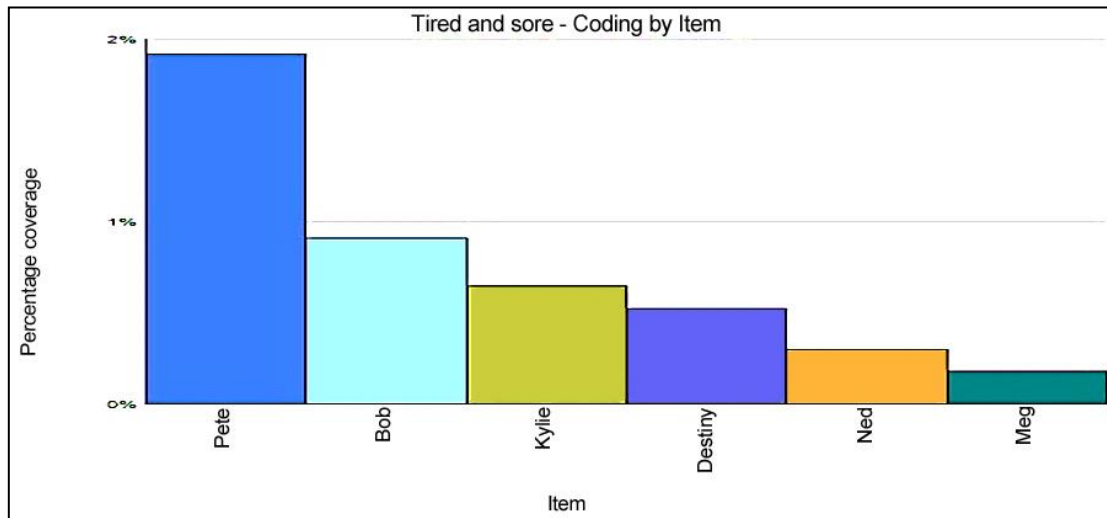


Figure 1.24 Athletes node of 'tired' and 'sore'.

Referring to Figure 1.24, this initial visualisation indicated six athletes spoke the words 'tired' and 'sore'. This prompted the re-examination of all the athletes' original transcripts and the audio recordings. By listening to the audio again, it highlighted the point that no one seemed to be listening to the athletes about their physical symptoms of being tired and sore.

The analysis of sub-group data was also made possible by visualising nodes. For example, to determine the difference in the node of 'procrastination' between the athletes 'at school' and 'left school' athletes, a visual of the node of 'procrastination' was produced (Figure 1.25).

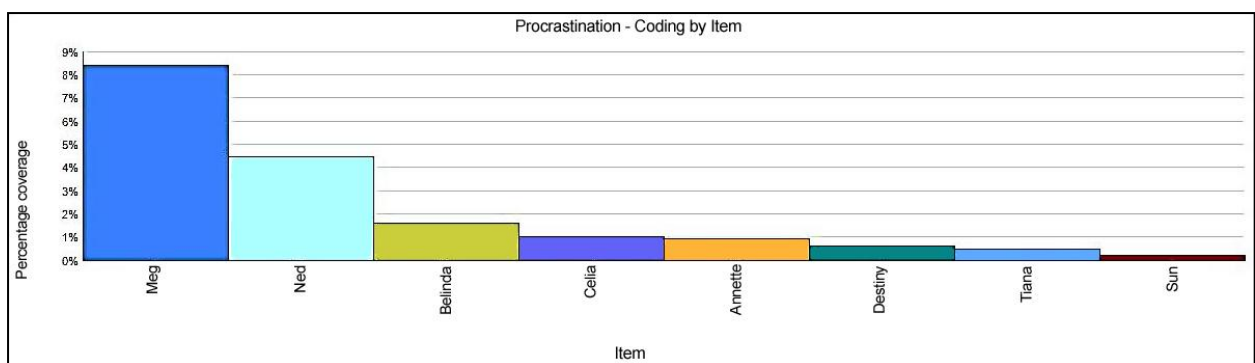


Figure 1.25 Athletes node of 'procrastination'.

Referring to Figure 1.25, data concerning time-wasting emerged for the two sub-groups of athletes 'at school' (Meg, Ned, Belinda, Celia, Annette and Destiny) to 'left school' athletes (Tiana and Sun). With this knowledge, the original audio transcripts from Livescribe were re-examined to determine the differences in comments between the athlete sub-groups concerning the theme of 'procrastination'. This re-examination of the athletes' transcripts established that both sub-groups of athletes spoke of time-wasting; and, in particular the 15 year old athlete, Ned, described the wasting of time in his own words as 'procrastination'.

A **model** was developed in NVivo and then exported to Excel (Figure 1.26).

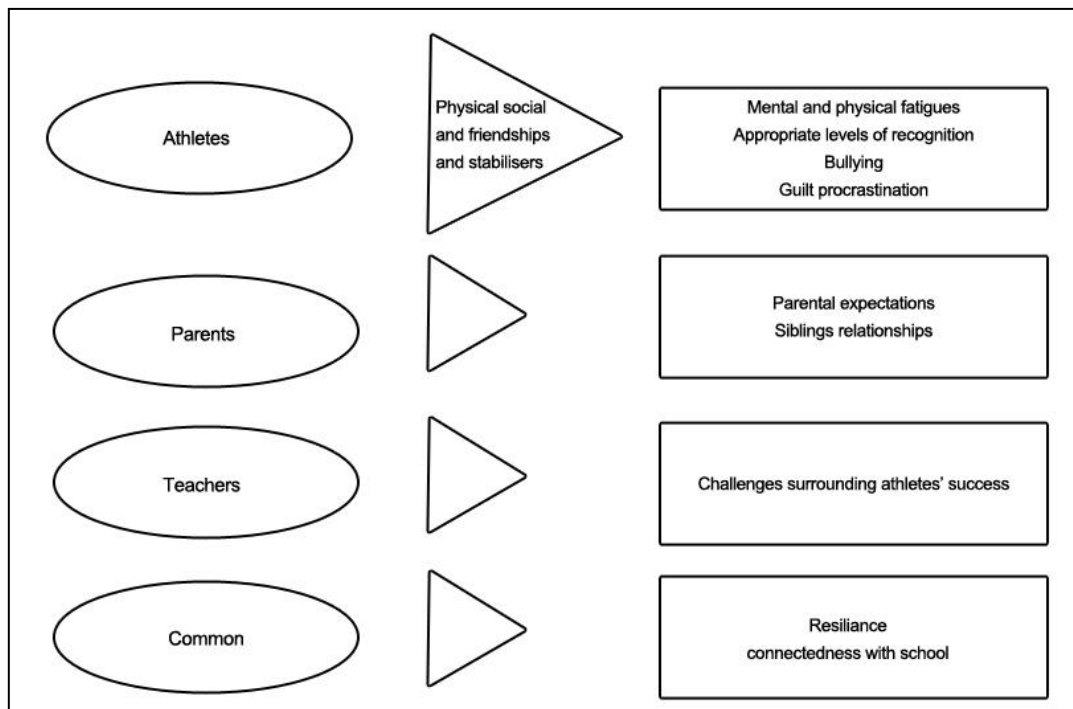


Figure 1.26 **Model** of higher order themes of the athletes, parents and teachers.

As shown in Figure 1.26, this visual model allowed the development of discussion around the main issues spoken about by the athletes, parents and teachers.

The **key word advanced finds** in NVivo permitted further extrapolation of aspects contained in the data sets. For example, the **advanced find** conducted on the keyword ‘guilt’ through the **sources** and **nodes** resulted in 390 results of similar content items. These were collated in **collections**. A sample of this result that the researcher viewed is available in Figure 1.27.

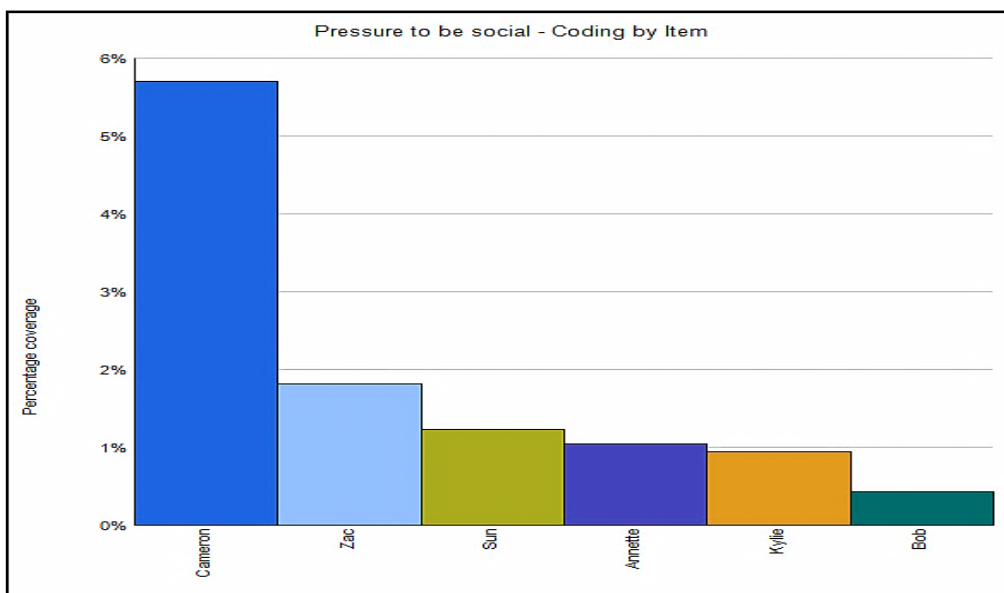
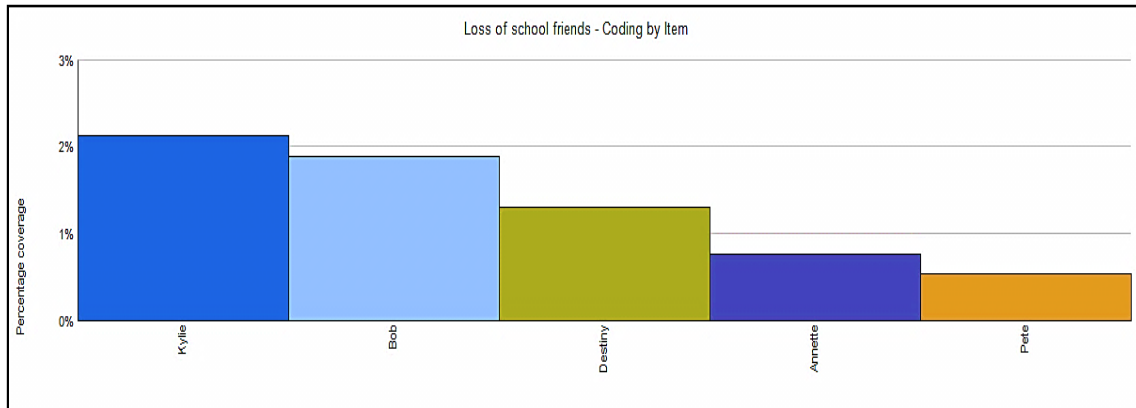
Name	In Folder	Created On	Created By	Modified On	Modified By
Who can help me	Nodes	10/10/2011 4:04 PM	M	26/08/2012 2:04 PM	M
Who can help me\Coach support	Nodes	26/11/2011 3:33 PM	M	13/02/2012 8:46 PM	M
Who can help me\Emotional support	Nodes	4/12/2011 7:24 PM	M	13/02/2012 8:47 PM	M
Who can help me\Parent support	Nodes	10/10/2011 4:05 PM	M	13/02/2012 8:47 PM	M
Who can help me\Parent support\Cultural identity	Nodes	4/12/2011 4:53 PM	M	13/02/2012 9:45 PM	M
Who can help me\Parent support\Friendship	Nodes	4/12/2011 4:50 PM	M	13/02/2012 9:45 PM	M
Who can help me\Parent support\Help and support of parents	Nodes	10/10/2011 4:17 PM	M	13/02/2012 9:45 PM	M
Who can help me\Parent support\Pressure to achieve	Nodes	24/11/2011 9:21 AM	M	14/02/2012 1:01 PM	M
Who can help me\Parent support\Reassurance	Nodes	3/12/2011 7:32 PM	M	13/02/2012 9:46 PM	M
Who can help me\Parent support\Time poor	Nodes	14/11/2011 2:27 PM	M	13/02/2012 9:46 PM	M
Who can help me\School support	Nodes	10/10/2011 4:04 PM	M	25/02/2012 7:31 PM	M
Who can help me\School support\Accreditation of teachers	Nodes	11/10/2011 11:00 AM	M	15/02/2012 1:44 PM	M
Who can help me\School support\Assistance	Nodes	10/10/2011 4:15 PM	M	25/02/2012 7:25 PM	M

Figure 1.27 **Advanced find** on higher order theme of ‘guilt’.

To tease out further aspects that related to this **higher order theme** of 'self-imposed guilt' as listed in Figure 1.27, a list was produced from the **sets** of the theme 'who can help me'. Figure 1.27 is only a snapshot of the list produced of the similar content in nodes concerning 'guilt'. **Tag clouds** were also used to illustrate the important terms or words used in relation to guilt found in the interview data and online newspaper articles, as shown in the **tag cloud** below.



Furthermore, using grouped visuals of **nodes** provided some clarification of the **higher order theme** and the issues it may incorporate. For example, the following visuals of the nodes - 'loss of school friends', 'pressure to be social', 'social fit', 'compromise' - were all charted to commence extrapolation of the higher order theme of 'self-imposed guilt' and its relation to time and family (Figure 1.28).



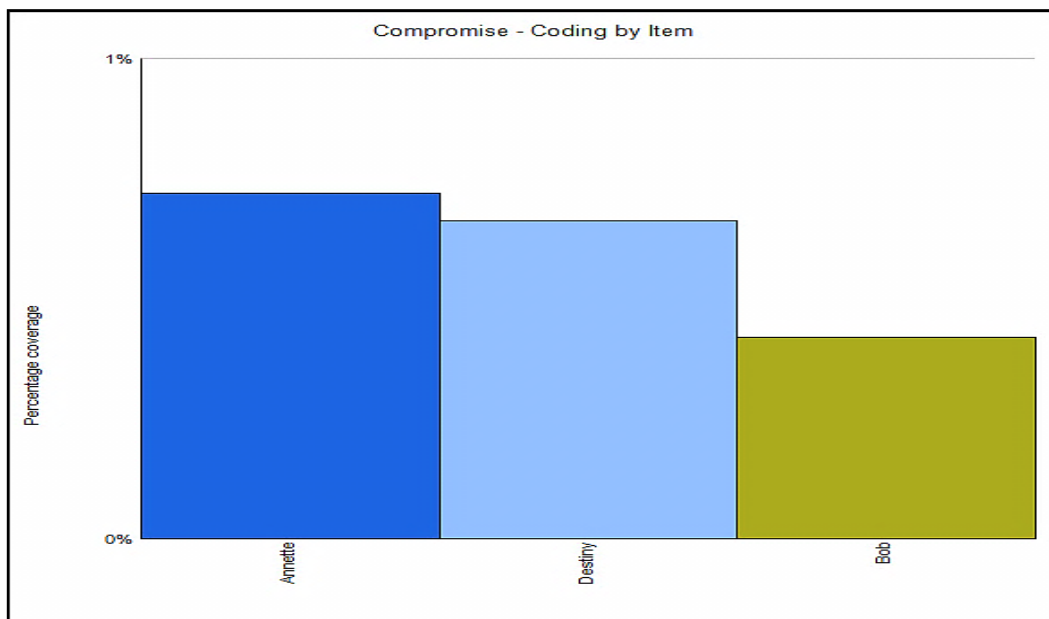
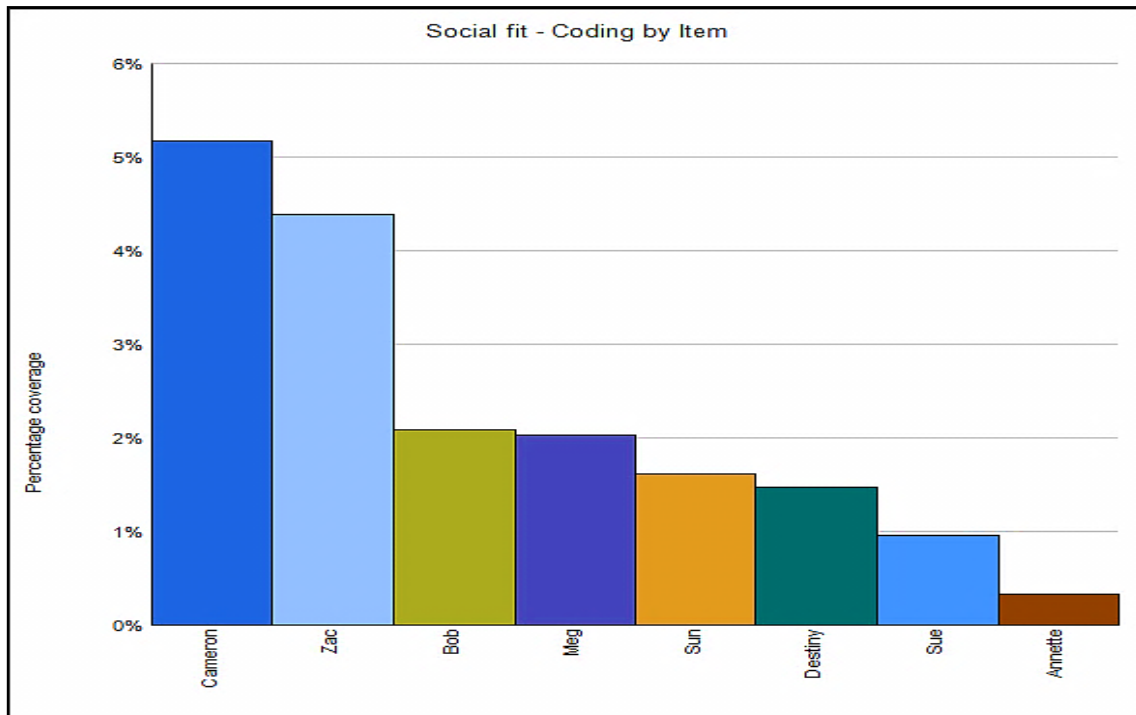


Figure 1.28 Charts of four **nodes** that **merged** into the **higher order** theme of 'guilt'.

Collectively, these four visual charts (Figure 1.28) assisted in extrapolating the highest order theme of 'self-imposed guilt' which was only spoken of by athletes. Again, the participant transcripts stored in the 'external' section of the project were re-examined to confirm this significant finding.

Another example of teasing out the significance of a higher order theme from interviewing the ten teachers was the delineation of the positive higher order teacher theme of 'empathy'. This commenced a comprehensive search of the school nodes incorporated in the node of 'school support' (Figure 1.29 on page 38).

School support	
	Accreditation of teachers
	Assistance
	Availability of help
	Convenience of help
	Culture of school
	Emailing teachers
	Empathetic teacher
	Empathy
	Enrolment
	Exemption of certain school activities
	Facilities
	Increase range of sports offered
	Learning difficulties
	Missed class time
	One on one tutoring
	Preferential treatment
	School being helpful
	School environment
	School policies
	Speicalised trainers at school
	Teacher's awareness
	Willingness

Figure 1.29 School **nodes** as listed in the project.

Referring to Figure 1.29, opening each of the nodes of ‘empathy’, ‘assistance’, ‘teacher’s awareness’, ‘emailing teachers’ and ‘willingness’, it appeared that common responses were made about aspects of teacher ‘empathy’. After **merging** and exporting the data from each of the previously mentioned five nodes, the higher order node ‘empathetic teacher’ was created. Once this node was formed, it allowed the visualisation, as presented in Figure 1.30.

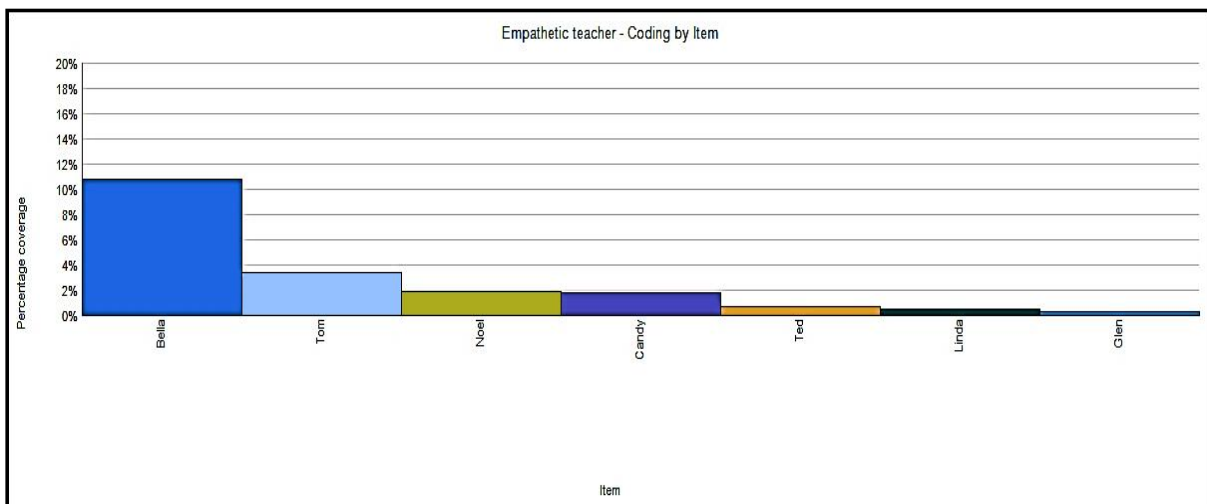
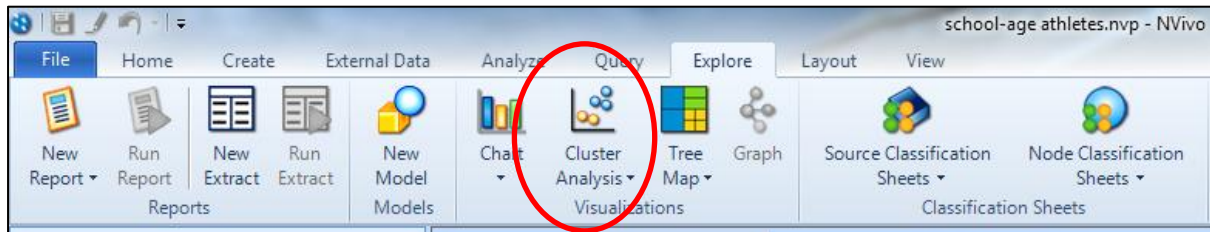


Figure 1.30 Teacher higher order theme of empathy.

Referring to Figure 1.30, seven teachers interviewed felt they were empathetic toward their student-athlete(s).

Greater clarity and commencement of the discussion of the higher order themes were made possible by using **cluster analysis** tools in NVivo with various **coefficients of correlation**.



In this case, the researcher chose **Jaccard's coefficient** as shown in Table 1.6.

Table 1.6

Cluster analysis using Jaccard's coefficient of two nodes in the theme of bullying.

Node A	Node B	Jaccard's coefficient
Nodes\Impact of double life\Social\No social life	Nodes\Impact of double life\Social\Bullying	0.1

Referring to Table 1.6, the resulting numeric coefficient provided a helpful guide concerning the similarity in content of coded references in both nodes. For example, in Table 1.6, the **Jaccard's coefficient** when run on the nodes of 'no social life' and 'bullying' identified a coefficient of 0.1, suggesting that both nodes contained coded references that closely related to the higher order theme of 'bullying'.

At this point, it was possible to return to the original transcripts and reflect on the significant findings and the meaning of each to the high performance school-age athletes. This allowed the extrapolation of an overall summary of the findings, presented in Table 1.7.

Table 1.7

Higher order findings of the discussion chapter in the thesis.

The findings of the Higher order themes					
Perspectives					
Athletes'			Parents'	Teachers'	Common
Physical	Social and friendships	Stabiliser	Siblings' relationships	Empathy	Resilience
Physical and psychological fatigue	Bullying	Procrastination	Parental expectations	Short term goal setting	Connectedness to school: missed class time and technological teaching aides
	Guilt		Misconstrued notions of fun and winning		
	Appropriate levels of recognition				

The formation of Table 1.7 allowed the researcher to reflect on the **meaning of the higher order themes**, thus facilitating further reflection and elaboration in the discussion chapter of the higher degree thesis, where the major emphasis was to extrapolate on the meaning of the findings that came from the above detailed data analysis.

1.2.4.2 Developing theories

To finalise and postulate a theoretical model, Bloomberg and Volpe (2008) suggest that the researcher had to be constantly “evaluating, analysing and synthesizing information” (p.156), and as Sinkovics & Alfoldi (2012) contend:

During this step, having a well-documented, searchable record of each step of the research process can be a vital tool for insightful discussion and thoughtful evaluation of the research findings (p.15).

The conclusions made from completing the procedures in each of the above four stages, as outlined in Table 1.1 (page 3), permitted the development of the ‘athlete friendly school’ model. It contains features around education, as well as, social, psychological, physical and economic areas that can, at any one time, assist the young athlete(s) in any given school type, to cope better with high level sport and school commitments, through using a developmental pastoral care approach with an element of personalised learning. This allows schools to cater for the needs of each athlete. Suggestions and practical applications, as discussed in the discussion chapter of O’Neill’s (2013) study, entitled the ‘athlete friendly school’ can be viewed in Appendix A – Athlete Friendly School.

1.3 Summary

By using NVivo, the analysis of the data from lower order to higher order themes emerged through each of the four stages. After completing the procedures in the four stages, as listed in Table 1.1, a researcher is able to move from the NVivo project to consider the meaning of higher order themes for the discussion chapter. In particular, using NVivo in the procedures as outlined commenced the conceptualisation of the five features of a schooling model that Australian schools could implement to better help the school-age athlete cope with dual endeavours of high level sport and schooling.

Miles and Huberman (1994) suggested that the qualitative researcher has very few guidelines for reliable and thorough findings. However, the choice of tools available to the researcher within NVivo provided the researcher with techniques to ensure the thoroughness and reliability of a higher degree study. Furthermore, it will enhance your publishing opportunities as highlighted by the recent publication of the author.

Glossary

Attribute	Attributes are used to describe a classified source or node. For example, a node may be classified as 'person' with attributes for 'age' and 'gender'.
Classifications	Classifications provide a way to record descriptive information about your sources, nodes and relationships in your project. Source classifications allow you to record information about your sources, for example, bibliographical data. Node classifications allow you to record information about people, places or other entities, for example, demographic data about people.
Dataset	A type of source that contains structured data arranged in rows and columns. You can create a dataset by importing data from a spreadsheet, a tab or comma-separated text file or a database table. You can also create a dataset by importing NCapture files that contain data from Facebook, LinkedIn or Twitter.
External	A type of source used to represent source material that cannot be imported into NVivo. This might include items such as physical books, or 8mm film. You can use the external to represent the item and summarize or describe the source material. You can code your summary or description, in the same way that you code text in a document source.
Memo	A type of source that you might use to record thoughts and observations. If a memo is related to a particular source or node you can create a 'memo link' and link the two together.
Model	A model can be a visual representation of your project. The shapes on the model are linked to the items in your project. You can also create models that are not linked to project items. For example, you could create a model to visually explore your initial ideas.
Node	A container that lets you gather source content relating to themes, people, places, organizations or other areas of interest. For example, you can create a node called 'pollution' and code all pollution-related data at it. When you open the node you can see all the pollution-related data gathered in one place. You can organize nodes into hierarchies, moving from general topics at the top (the parent node) to more specific topics (child nodes). Relationships and Matrices are special types of nodes. Relationships are nodes that show a relationship, for example, a relationship between two people. A matrix is a collection of nodes created by running a matrix coding query.
Query	A way of asking questions about your data. You can save a query and run it at regular intervals as your project progresses.
Source	In NVivo, 'sources' is the collective term for your research materials anything from hand-written diaries, video interviews, to survey

responses. You store sources in the Internals, Externals or Memos folders.









Glossary extracts courtesy The NVivo Workbook, QSR International, 2012.

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- Veal, A. J. (2005). *Business research methods: A managerial approach*. Frenchs Forest: Pearson Education Australia.
- Images:*
- Photos: Photos from the O'Neill (2012) NVivo project
- NVivo screenshots retrieved from the high performance school-age athletes project.



Appendices

Appendix A: Athlete friendly school



'Athlete friendly School' template		
Characteristics	Suggestions	Practical application examples
<p>Educational</p>	<ul style="list-style-type: none"> • A tutor/mentor is responsible for academic progress, discipline and personal development of the student-athlete. For example, a pastoral care program similar to Lines and Gallasch (2009) 'Rite of passage' • Resources that provide practical knowledge and advice on specific issues of sport that can be easily downloaded and made available to athletes, their parents, teachers, sporting associations and coaches. • For example, Calder (2010) Applied Sport knowledge Pty. Ltd website • Tutor/mentor(pastoral care) could be appointed to coordinate student-athletes in the school • One-on-one tutoring • The athletes, their parents, teachers and schools are educated about the available flexible schooling options for student-athletes • Constant contact from the school with parents and the recognition of compulsory meetings and continual communication. For example provide information and tips for athletes, their parents, teachers and coaches similar to those used by "Canadian Sport for life" as a tool for the long development of high performance athletes • Use of technological aides such as Skype, Live Scribe™ pens and student intranet for the recording of missed class time 	<div style="display: flex; flex-wrap: wrap; justify-content: space-around;">   http://www.ask.net.au/resources.html </div> <div style="display: flex; flex-wrap: wrap; justify-content: space-around; margin-top: 10px;">   </div> <div style="display: flex; flex-wrap: wrap; justify-content: space-around; margin-top: 10px;">     </div>



Social

- Communicate with athletes in empathetic language athlete(s) understand
- Encourage athletes in association with their school mentor to complete personal awareness
- Logs outlining the time spent on social media sites
- Positive parenting skills to encourage constructive support from parents to the achievements of athletes
- Encourage school and sporting associations to develop and promote a sport parents education program
- Family relationship programs to encourage and support siblings of high performance athletes

Day	How many hours / minutes were I logged onto Facebook / Twitter? 	How many hours / minutes did I devote to my school work? 	Was all my schoolwork completed?
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			

'Do your best and have fun doing so'.
The sport friendly way" parenting education tool

Step	Question	Green light 	Red light 
E (Encourage)	Have you encouraged your child to play by the rules?	Description:	Description:
S (Settle)	Have you settled any disagreements without yelling or being hostile?		
N (Non-Ridicule or yelling)	Have you avoided ridiculing or yelling at athletes for making a mistake or losing a competition?		
S (Support)	Have you supported the non-use of verbal or physical abuse at your sporting event?		

<p>Physical and psychological fatigue issues</p>	<ul style="list-style-type: none"> An 'athlete friendly' weekly monitoring tool is implemented by schools so the athlete, their parents, teachers and coaches could use to detect physical and mental fatigues Nap rooms that athletes may use at specific designated times 	<table border="1"> <thead> <tr> <th></th> <th>How tired are you?</th> <th>How sore are you?</th> <th>Have you had enough to drink?</th> </tr> </thead> <tbody> <tr> <td></td> <td>I was up and ready before my alarm 😊</td> <td>I work up with no pain 😊</td> <td>I had lots to drink today 😊</td> </tr> <tr> <td></td> <td>I work up with my alarm and felt good 😊</td> <td>My muscles hurt a little 😊</td> <td>Only had a little 😊</td> </tr> <tr> <td></td> <td>I woke with my alarm but I'm tired 😊</td> <td>I have pain all over my body 😞</td> <td>I didn't drink at all 😞</td> </tr> <tr> <td></td> <td>I slept through my alarm and didn't train 😞</td> <td></td> <td></td> </tr> <tr> <td>Monday</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Tuesday</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Wednesday</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Thursday</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Friday</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Saturday</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Sunday</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		How tired are you?	How sore are you?	Have you had enough to drink?		I was up and ready before my alarm 😊	I work up with no pain 😊	I had lots to drink today 😊		I work up with my alarm and felt good 😊	My muscles hurt a little 😊	Only had a little 😊		I woke with my alarm but I'm tired 😊	I have pain all over my body 😞	I didn't drink at all 😞		I slept through my alarm and didn't train 😞			Monday				Tuesday				Wednesday				Thursday				Friday				Saturday				Sunday			
	How tired are you?	How sore are you?	Have you had enough to drink?																																															
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	I work up with my alarm and felt good 😊	My muscles hurt a little 😊	Only had a little 😊																																															
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Saturday																																																		
Sunday																																																		
<p>Psychological and cognitive issues</p>	<ul style="list-style-type: none"> Tutors/mentors of pastoral care programs for students provide understanding and education for the parents and coaches concerning the amount of pressure that the young athletes may be under For female athletes: checks and monitors concerning bullying issues. Female athletes' resources. e.g. CD Rom "Growing up with Lycra" www.growingupinlycra.com Engage athletes in emotional intelligence strategies Supply resources to schools, teachers, athletes and their parents to access information on bullying and resilience intervention programs and tools. For example, Fuller (2012) "The Heart Masters" program and Foster (2012), Mytern™ and websites such as www.deewr.gov.au and www.inyahead.com.au 	<p>Mytern™</p>  <p>National Forum How schools and parents can work together to address bullying</p> <p>www.inyahead.com.au</p> 																																																
<p>Economic</p>	<ul style="list-style-type: none"> Provide guidance on the offer of any available: sport scholarships, subsidies and school fee instalment plans 	