APPENDIX A

School Certificate Grading System

Science Course Performance Descriptors (For Stage 5 Implementation in 1998)

E	D	C	B	A
ELEMENTARY ACHIEVEMENT	SATISFACTORY ACHIEVEMENT	SUBSTANTIAL ACHIEVEMENT	HIGH ACHIEVEMENT	EXCELLENT ACHIEVEMENT
The typical student:	*The typical student:*	*The typical student:*	*The typical student:*	*The typical student:*
recalls some basic scientific ideas (concepts, theories and laws) and facts from a body of knowledge	recalls relevant information and defines scientific terms and ideas (concepts, theories and laws)	describes and connects a range of scientific ideas (concepts, theories and laws)	applies scientific ideas (concepts, theories and laws) in a range of familiar situations	applies scientific ideas (concepts, theories and laws) to unfamiliar situations
recalls some relationships between science, society, technology and the environment	describes some effects of science and technology on society and the environment	describes ways in which society reacts to developments in science and technology	describes relationships between science, society, technology, and the environment in a range of situations	expresses informed opinions about relationships between science, society, technology, and the environment
follows sequences of basic instructions to perform simple experiments	designs and carries out simple experiments	formulates hypotheses, and identifies variables and controls in experimental design	designs controlled experiments makes generalisations from a set of observations	evaluates and modifies experimental designs and adapts them for further investigation
uses, with guidance, basic scientific equipment safely	demonstrates competence in the use of basic scientific equipment	uses scientific equipment competently for a range of tasks	selects and competently uses appropriate scientific equipment for a wide range of tasks	justifies the choice of scientific equipment
makes and records observations for a specified purpose	makes and records observations using specified measuring devices	makes and records accurate observations using a range of appropriate measuring devices	selects and uses accurately appropriate measuring devices	assesses the appropriateness of a range of measuring devices
asks questions relevant to specified phenomena and situations	recognises whether a problem can be solved using a scientific approach	identifies possible solutions to problems by considering cause and effect relationships	designs a procedure to test a solution to a problem based on cause and effect relationships	assesses solutions to problems by considering their limitations, assumptions, and consequences
locates resources with guidance reads and extracts relevant scientific information from a simple passage	researches information from a limited range of resources	selects and summarises relevant information from a variety of sources	integrates information from a variety of sources to produce appropriate texts for particular purposes	evaluates information and identifies issues for further research from a wide range of sources
constructs simple physical models with guidance	uses simple theoretical models to explain observable phenomena uses simple mathematical formulae with guidance	uses simple theoretical models to make predictions uses mathematical formulae to solve problems	develops simple theoretical models to explain observable phenomena manipulates mathematical formulae to solve problems	selects and uses appropriate, current theoretical and/or mathematical models to explain phenomena and to make predictions
extracts information from tables, graphs and diagrams	constructs tables, graphs and diagrams	identifies relationships in tables, graphs and diagrams	interprets relationships in tables, graphs and diagrams	integrates information in tables, graphs and diagrams to solve problems
constructs simple scientific oral, written and visual texts with guidance	independently constructs simple scientific oral, written and visual texts	independently uses appropriate media to communicate simple information, arguments and ideas in science	independently uses appropriate media to communicate complex information, arguments and ideas in science	explains the choice of media used to communicate complex information, arguments and ideas in science

(Board of Studies 1998b)

APPENDIX B

Patterns in Australian Senior High School Science Enrolments

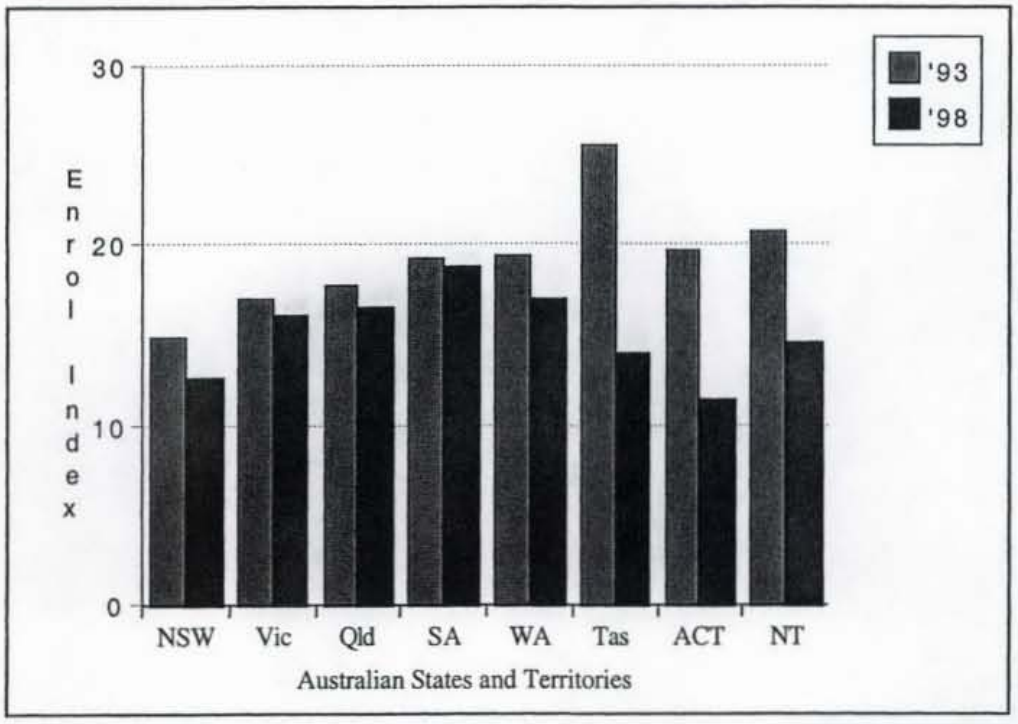


Figure B.1 Changes in Year 12 science enrolments[1] between 1993 and 1998, by state and territory (Ainley et al. 1994; Fullarton & Ainley 2000)

[1] 'The enrolment index can be thought of as a weighted percentage of enrolments, and for any group of students the sum of the values of the enrolment index over all subject areas will be 100. The index is defined as the sum of the equivalent full-year enrolments in a given subject area, divided by the total number of equivalent full-year enrolments in all subject areas. The use of equivalent full-year enrolments allows for subjects of different duration, so that, for example, an enrolment in a half-year subject contributes half, and an enrolment in a 3 unit subject in New South Wales contributes 1.5.' (Ainley et al. 1994, p. 5)

APPENDIX B

Patterns in Australian Senior High School Science Enrolments

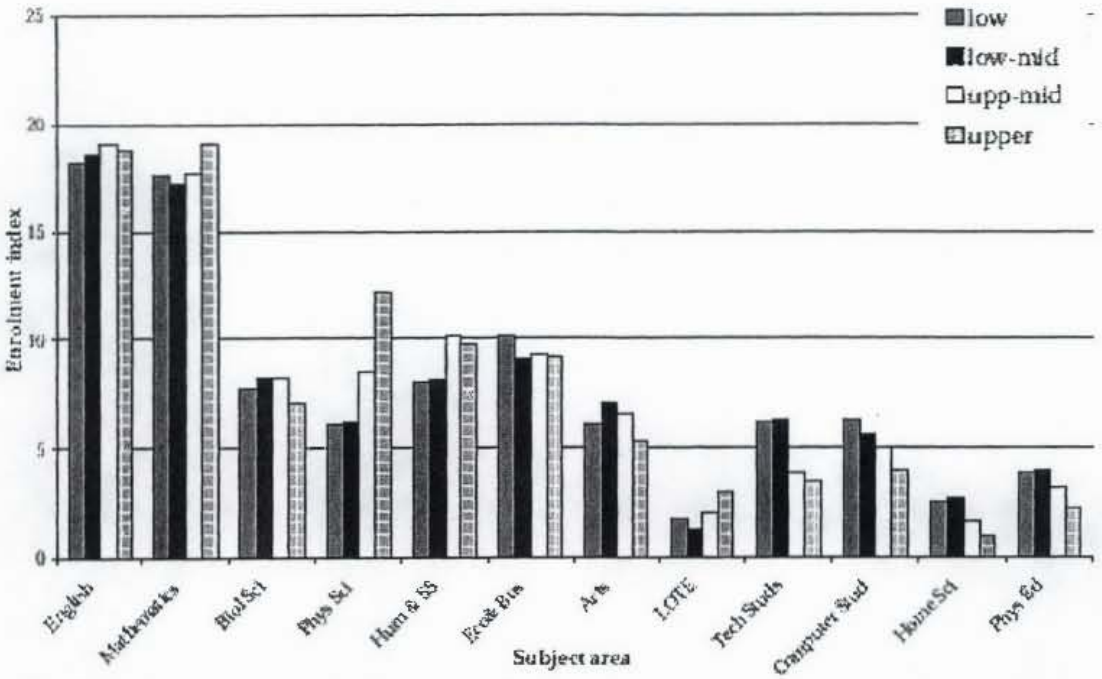


Figure B.2 Comparisons between parents' socioeconomic status and the subject areas chosen by Year 12 students in Australia in 1998. Decisions to enrol in physical science subjects had the strongest positive correlation with socioeconomic status (Fullarton & Ainley 2000)
Key: Hum & SS = Human and Social Studies; Eco & Bus = Economics and Business; LOTE = Languages other than English

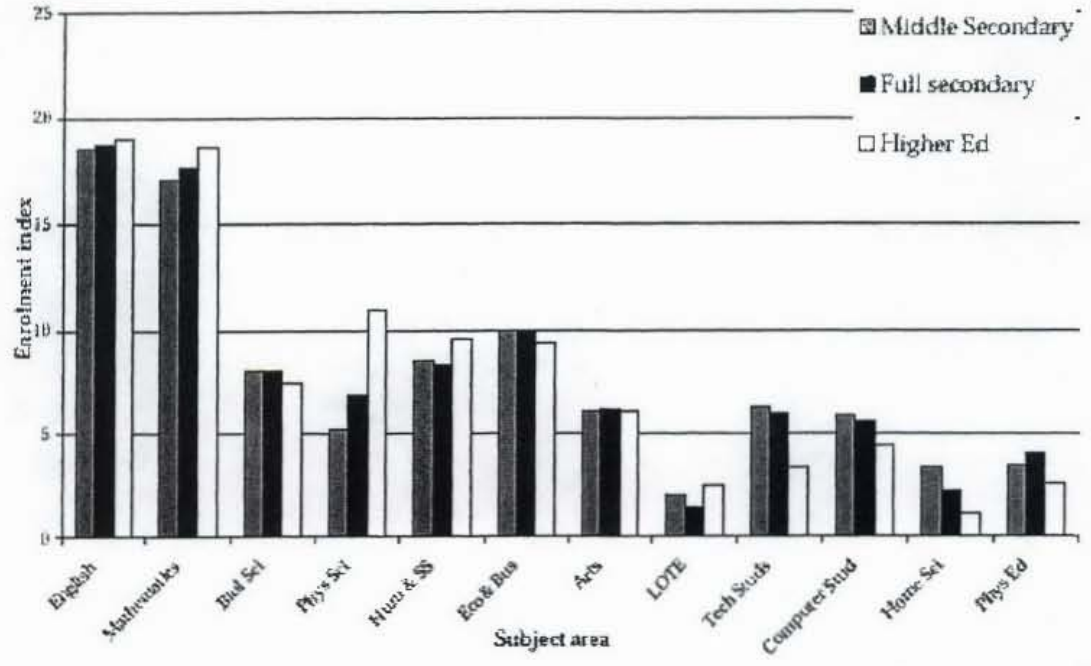


Figure B.3. Comparisons between parents' education levels, and the subject areas chosen by Year 12 students in Australia in 1998. Decisions to enrol in physical science subjects had the strongest positive correlation with levels of parental education (Fullarton & Ainley 2000).

APPENDIX C

SPQ Covering Letter to Science Coordinator

Dear [Head of Science],

Research into the science enrolment decisions of Year 10 students

Thank you for being so amenable to my conducting this research at your school. I will make every effort to inform you and your department of the results of the study when it is completed.

Please find enclosed *n* parental permission notes for distribution to your Year 10 students. All students who return signed notes are permitted to take part in the initial stage of the study, regardless of their abilities in science. I will forward the student questionnaires as soon as possible. If they could be completed and returned to me by November 25th I would be grateful.

As the study outline indicated, I need to also identify high achieving science students who are making contrasting decisions about senior science enrolment. High achieving science students are those who have been awarded grades 'A' or 'B' in the School Certificate this year. As a way of identifying the questionnaires of such students, I would appreciate it if you were able to provide me with a list of grade 'A' and 'B' students from your Year 10. The list can be sent to me with the questionnaire responses, or earlier if you prefer. The identities of the students will be coded and the original list destroyed.

I will be in [city] to conduct interviews from December 1st until the end of term. Could you please let me know if there are any particular days in this period which are suitable (or unsuitable) for conducting interviews at your school. Each interview should take about an hour.

Sorry to be adding to your workload at this stage of the year, I am thankful for the opportunity afforded me by your school. If you have any queries I can be contacted on [contact details].

yours faithfully,

Terry Lyons

APPENDIX C

SPQ Parental Permission Note

Dear Parent/Guardian,

The purpose of this note is to request your permission to include your daughter/son/ward in a study which investigates the motivations behind Year 10 students' subject choices for senior school.

This study aims to help teachers, parents and researchers understand some of the influences on the decisions which students make, particularly in relation to further science education. This study will also form part of a thesis to be submitted for PhD degree at the University of New England.

The study has the approval of the [N.S.W. Department of Education and Training/Catholic Education Office] and the Principal of the school. It will involve completion of a short (10 min.) questionnaire by all Year 10 students in class time. Interviews will be conducted at a later date with a small number of students who give consent, however these interviews will be held outside of class time and involve no disruption to lessons.

If you have any concerns or inquiries you may contact Dr. Peter Ninnes (02 6773 3087) or myself (02 6773 5081) at the University. If you are willing to allow your daughter/son/ward to participate could you please complete the form below and return it to the school by (date).

Yours faithfully,

Terry Lyons

I give permission for my daughter/son/ward _____
to be included in the research project being undertaken by Terry Lyons from the University of New England.

_____(Print Name)

_____(Signature)

APPENDIX C

SPQ Researcher copy

Office use only ☐☐☐☐☐

STUDENT PROFILE QUESTIONNAIRE
PLAIN LANGUAGE STATEMENT AND
CONSENT FORM

'Influences on Students' Year 11
Subject Choices'

Dear Student,

This questionnaire seeks your help in obtaining background information about things which may influence your subject choices for Year 11.

It is part of a larger study which aims to help teachers, parents and researchers understand the motivations students have for the subject choices they make, particularly in relation to science education. This study will also form part of a PhD thesis to be submitted at the University of New England.

Most of the questions can be answered by ticking a box, filling in a table or writing a short response. It need not take more than 10 minutes to complete. All of the information will be treated as strictly confidential and no student or school will be identified in any report. Please indicate your willingness to participate in this survey by completing the **two** consent forms provided.

Thank you for your time and help.

Terry Lyons

Should you have any complaints concerning the way in which this research is conducted, please contact the Ethics Committee at the following address:

The Secretary, Human Research Ethics Committee,
Research Services,
University of New England,
Armidale, NSW 2351

Consent Form 1 **STUDENT COPY**

I, _____*(print name in full)* have read the information above and agree to participate in this activity. I understand that I am under no obligation to complete this questionnaire and may withdraw my consent at any time without penalty. I agree that research data gathered for the study may be published, as long as my name is not used.

Signed: _____

School: _____

APPENDIX C

SPQ INSTRUCTIONS TO STUDENTS
(to be read out by teacher before students attempt the questionnaire)

1. 'You have been selected to participate in a university study which examines the different Year 11 subjects choices which students make. Your participation in this research is greatly appreciated.'

2. 'The information you give will be treated as strictly confidential and no student or school will be identified in any report.'

3. 'Check that you have a "PLAIN LANGUAGE STATEMENT"' .

4. 'Check that you have a bundle with a cover sheet marked "Quest. Researcher copy" This sheet should be attached to the three page questionnaire.'

WAIT

5. 'Read through the "PLAIN LANGUAGE STATEMENT". If you agree to do the questionnaire, complete the consent form at the bottom of the sheet and sign your name. This is *your* copy, so don't hand it up with the questionnaire.'

WAIT

6. 'The cover sheet on the questionnaire is the researcher's copy and stays attached to the questionnaire. The details are the same as in your copy. Please complete and sign the consent form at the bottom of the page.'

WAIT

7. 'You may now turn the page and begin the questionnaire. Take your time and answer the questions as honestly as you can. If you are not sure about a question, ask your teacher.'

WAIT UNTIL QUESTIONNAIRE IS COMPLETED

8. 'A number of students may be selected by the researcher for an interview. If you are willing to participate further it would be greatly appreciated. Please tick a box at the bottom of page 3.'

PLEASE COLLECT THE QUESTIONNAIRE FORMS. BUNDLE & RETURN
(Keep spare copies for absent students to complete later.)

APPENDIX C

Office use only ☐☐☐☐☐ 1-5

STUDENT PROFILE QUESTIONNAIRE

Instructions
Fill in the blanks and **TICK** the appropriate boxes.

1. Year of birth: _____ Month of birth: _____ 6-7

2. Gender: (tick a box) Male ☐ 1 8
   Female ☐ 2

3. a) In which country were you born? _____ 9

   b) If you were born overseas, in which year did you move to Australia? _____ 10

4. In which countries were your parents or guardians born?

   Mother: _____ 11-13

   Father: _____

   Guardian(s) if applicable: _____

5. How many brothers and sisters do you have?

   Number of brothers: _____ Ages of brothers (in years): _____ 14-17

   Number of sisters: _____ Ages of sisters (in years): _____

6. What languages can you speak well? _____ 18

   Which language is most often spoken at home? _____ 19

7. Do you belong to a religion? (tick a box) ☐ Yes ☐ No

   Which religion? _____ 20

8. In which Year level are you now? (tick a box): Year 10 ☐ 1 Year 11 ☐ 2 21

APPENDIX C

9. Please fill in the table below, listing all of your **Year 10** subjects and levels. 22- 32

	SUBJECT NAME	LEVEL (Advanced, Intermediate etc.)
1	SCIENCE	
2	MATHS	
3	ENGLISH	
4		
5		
6		
7		
8		
9		
10		
11		

10. Please complete the table below, listing all of your **Year 11** subject choices and levels.
33-41

	SUBJECT NAME	LEVEL (1 unit, 2 unit, 3 unit etc.)
1		
2		
3		
4		
5		
6		
7		
8		
9		

11. In making your subject choices for Year 11, how much did you rely upon the advice of the following people? (tick a box)
(Ignore those questions which do not apply to your own situation.)

Your mother: 42

☐5 Very much ☐4 Quite a lot ☐3 Some ☐2 Not very much ☐1 Not at all

Your father: 43

☐5 Very much ☐4 Quite a lot ☐3 Some ☐2 Not very much ☐1 Not at all

Your guardian: 44

☐5 Very much ☐4 Quite a lot ☐3 Some ☐2 Not very much ☐1 Not at all

Your best friend: 45

☐5 Very much ☐4 Quite a lot ☐3 Some ☐2 Not very much ☐1 Not at all

APPENDIX C

Senior student(s): 46

☐5	☐4	☐3	☐2	☐1
Very much	Quite a lot	Some	Not very much	Not at all

Careers counsellor: 47

☐5	☐4	☐3	☐2	☐1
Very much	Quite a lot	Some	Not very much	Not at all

Your science teacher 48

☐5	☐4	☐3	☐2	☐1
Very much	Quite a lot	Some	Not very much	Not at all

Other: (if relevant):_____ 49

☐5	☐4	☐3	☐2	☐1
Very much	Quite a lot	Some	Not very much	Not at all

50

12. How would *you* rate your academic ability in Year 10 science compared with other Year 10 students in your school? 51

☐5	☐4	☐3	☐2	☐1
Well above average	Above average	Average	Below average	Well below average

13. How do you think your Year 10 science teacher would rate your academic ability in science compared with other Year 10 students in your school? 52

☐5	☐4	☐3	☐2	☐1
Well above average	Above average	Average	Below average	Well below average

---

Thank you for completing this survey.

A number of students may be selected by the university researcher for an interview. If you are willing to participate further it would be greatly appreciated. Information from all interviews will be kept confidential.

I am willing to be interviewed. ☐1

I am not willing to be interviewed. ☐2 53

Home classroom:_____ 54

APPENDIX D

SCIENCE TEACHER SURVEY

PLAIN LANGUAGE STATEMENT AND CONSENT FORM

Dear Teacher,

'Influences on students' Year 11 science subject decisions'
Science Teacher Survey

This brief questionnaire seeks the opinions of school science teachers on issues relating to students' subject choices for Year 11.

It is part of a larger study which aims to help teachers, parents and researchers understand the motivations students have for the subject choices they make, particularly in relation to science education. This study will also form part of a PhD thesis to be submitted at the University of New England.

Most of the questions can be answered simply by ticking a box, though some require a short written response. Completion of the questionnaire should take you no more than 10 minutes. All of the information will be treated as strictly confidential and no teacher or school will be identified, either directly or indirectly, in any subsequent report.

It would be appreciated if survey forms could be completed and returned to the Head of Science by [date]. Please complete the consent forms over leaf and retain this page for your reference.

Thank you for your time and help.

Yours faithfully,

Terry Lyons

APPENDIX D

Consent Form 1 **TEACHER'S COPY**

I, _____ *(print name in full)* have read the information above and agree to participate in this survey. I understand that I am under no obligation to complete this questionnaire and may withdraw my consent at any time without penalty. I agree that research data gathered for the study may be published, as long as my name and that of my school are not used.

Signed: _____

Any further inquires regarding this survey are welcome and may be directed to Terry Lyons (02 6773 5081) or Dr. Peter Ninnes (02 6773 5087). Should you have any complaints concerning the way in which this research is conducted, please contact the Ethics Committee at the following address:

The Secretary, Human Research Ethics Committee,
Research Services,
University of New England,
Armidale, NSW 2351

Office use only ☐☐☐☐☐

APPENDIX D

Office use only ☐☐☐☐☐

SCIENCE TEACHER SURVEY

'Influences on students' Year 11 science subject decisions'

INSTRUCTIONS

Tick the appropriate boxes or write your responses in the spaces provided. Longer responses may be continued on the reverse of the questionnaire paper.

Completion of the questionnaire should take you approximately 10 minutes.

All of the information will be treated as strictly confidential and no teacher or school will be identified, either directly or indirectly, in any subsequent report.

Please complete the researcher's copy of the consent form below.

It would be appreciated if survey forms could be completed and returned to the Head of Science by _____.

Thank you for your time and help.

Terry Lyons

Consent Form 2 **RESEARCHER'S COPY**

I, _____*(print name in full)* have read the information above and agree to participate in this survey. I understand that I am under no obligation to complete this questionnaire and may withdraw my consent at any time without penalty. I agree that research data gathered for the study may be published, as long as my name and that of my school are not used.

signed: _____

APPENDIX D

Office use only ☐☐☐☐☐ 1-5

SCIENCE TEACHER SURVEY

1. (Optional): Surname: _____ 6

   First Names: _____ 7

2. Name of School: _____ 8

3. Name of Town or City: _____ 9

4. For how long have you been teaching science? 10

☐1	☐2	☐3	☐4
less than 5 years	between 5 and 10 yrs	between 10 and 15 yrs	more than 15 yrs

5. Which senior subjects have you taught in the last five years? 11-14

☐	☐	☐	☐	☐
Biology	Chemistry	Physics	Other (details below)	None

Other: _____

6. Which junior levels have you taught in the last five years? 15-18

☐	☐	☐	☐	☐
Year 7	Year 8	Year 9	Year 10	None

7. Which other subjects have you taught in the last 3 years? 19

_____

_____

APPENDIX D

This study is interested in the motivations of Year 10 students who are seen by their teachers as high achievers in science, and yet who decide *not* to choose a science subject in Year 11.

The term 'high achievers' may be taken to refer to students who have achieved a grade 'A' or 'B' in School Certificate science.

8. What do *you* consider to be the main motivations of high achieving students who choose *not* to take senior science? Please express your opinions as fully as you are able. You may continue your response on the reverse side of this page if you wish. 20

9. In your opinion, has the proportion of high achieving Year 10 students at your school who choose not to take Year 11 science, generally... 21

☐1	☐2	☐3	☐4
increased over the last 5 years?	decreased over the last 5 years?	stayed the same over the last 5 years	not sure

10. If you ticked box 1 or 2, do you have any ideas or explanations which may account for this perceived change at your school? Please express your opinions as fully as you are able. You may continue your response on the reverse side of this page if you wish. 22

Thank you for your time.

APPENDIX E

Table E.1 Profiles of the STS respondents

Teacher Pseudo.	Sch. No.	Years of Teaching	Senior Science Courses Taught	Jnr Science Classes Taught	Other Subjects Taught
Barry	1	15+	Science for Life (SFL)	8, 9, 10	Agriculture
Graham	1	15+	Biology, SFL, Gen. Sci.	7, 8, 9, 10	Math, Technics, Comput.
Bill	1	5+	Physics, Chemistry	7, 8, 9, 10	Maths, Religion
Mitchell	2	15+	Biology	7, 8, 9, 10	Physical Education (PE)
Adam	2	15+	Chem. Bio, Marine Stud.	7, 10	Design & Technology
Julie	2	10+	Chemistry, Biology	7, 8, 9, 10	None
Carol	2	10+	Chemistry	7, 8, 9, 10	Design & Technology
Bernard	2	10+	not stated	7, 8, 9, 10	Maths
Geoff	3	15+	Chemistry, General Sci.	7, 8, 9, 10	None
Karen	3	15+	Biology, General Sci.	7, 8, 9, 10	Health, Italian, French.
Nigel	3	15+	Physics	7, 8, 9, 10	Comput. Studies, Maths
Ted	3	15+	Biology, General Science	7, 8, 9, 10	None
Jack	4	15+	Physics	7, 8, 9, 10	Religion
Monica	4	10+	Biology	7, 8, 9, 10	None
Sam	4	10+	Biology, Env. Stud.	7, 8, 9, 10	None
Sally	5	5+	Chemistry	7, 8, 9, 10	PD/PE; Computing
Max	5	15+	Physics, Biology	7, 8, 9, 10	None
Wayne	5	15+	Physics, Chemistry	7, 9, 10	Yr 7 maths
Margaret	5	10+	Phy, Chem, Bio, Gen. Sci.	7, 8, 9, 10	Design &Technology
Celeste	7	15+	General Science	7, 8, 9, 10	Agriculture
Frank	7	15+	Chemistry	7, 8, 9, 10	Sport
Ned	7	15+	Phy, Chem, Bio	7, 8, 9, 10	Agriculture
Bob	7	15+	Physics, 3U Science	7, 8, 9, 10	Comput.Studies & Photo
John	7	10+	Phy, Bio, SFL	7, 8, 9, 10	Design & Technology

APPENDIX F

Profiles of Interview Respondents in the Three Choice Categories

ID	Pseudonym	Gender	Geo. Location	Schl Type	Choicecat	Phy.	Chem	Bio	Oth.sci	ESB/NESB	Father's Occupation	Mother's Occupation
11002	James	M	Regional	NG/coed	*physci*	Y	Y	N		Chinese-Australian	Chef	Restnt manager
15012	Roger	M	Regional	G/coed	*physci*	Y	Y	N	Aviation	ESB	Bricklayer	Medical recept
17021	Charlie	M	Regional	G/coed	*physci*	Y	Y	N		ESB	Lect. (biochem.)	Lect. (biochem.)
17024	Peter	M	Regional	G/coed	*physci*	N	N	N	3Unit	ESB	Clerk/student	Office manager
23017	Shane	M	Urban	G/coed	*physci*	Y	Y	N		ESB	Marketing	Schl tchr (primary)
24005	Michael	M	Urban	NG/coed	*physci*	Y	Y	N		ESB	Purchase officer	Schl tchr (science)
11005	Melinda	F	Regional	NG/coed	*physci*	Y	Y	Y		ESB	Psychologist	Schl tchr (primary)
11006	Kelly	F	Regional	NG/coed	*physci*	Y	Y	N		ESB	Financial advisor	Secretary
15002	Greta	F	Regional	G/coed	*physci*	Y	Y	Y		ESB	unknown	Vet. nurse (student)
15029	Hannan	F	Regional	G/coed	*physci*	Y	Y	N		Iranian-Australian	Carpenter	Nurse
15031	Jennifer	F	Regional	G/coed	*physci*	Y	N	N		ESB	Truck driver	Student (comput.)
17029	Renate	F	Regional	G/coed	*physci*	Y	Y	Y		ESB	Scientist	Teacher's aid
22041	Sylvia	F	Urban	NG/ss	*physci*	Y	Y	N		ESB	Env. scientist	Schl tchr (primary)
23020	Salma	F	Urban	G/coed	*physci*	Y	Y	N		Lebanese-Australian	Taxi driver	Home duties
11014	Robert	M	Regional	NG/coed	*biother*	N	N	Y		ESB	Purchase officer	Receptionist
11016	Mark	M	Regional	NG/coed	*biother*	N	N	Y		ESB	Real estate agent	Nurse
17019	Phillip	M	Regional	G/coed	*biother*	N	N	Y		ESB	Schl tchr (biology)	Schl tchr (primary)
23016	Uzlan	M	Urban	G/coed	*biother*	N	N	Y		Turkish- Australian	Crane operator	Cleaner
24001	Greg	M	Urban	NG/coed	*biother*	N	N	Y		ESB	Lect./Biologist	Home duties
24002	Bruno	M	Urban	NG/coed	*biother*	N	N	Y		Italian-Australian	Gardener	Teacher's aid
22040	Tracy	F	Urban	NG/ss	*biother*	N	N	Y		ESB	Metallurgist	Schl tchr (history)
22044	Beth	F	Urban	NG/ss	*biother*	N	N	Y		Italian-Australian	Electr. engineer	Home duties
24003	Theresa	F	Urban	NG/coed	*biother*	N	N	N	GS	Spanish-Australian	Salesperson	Home duties
15033	George	M	Regional	G/coed	*nosci*	N	N	N		ESB	Lect. (Mech. eng.)	Office clerk
15034	Richard	M	Regional	G/coed	*nosci*	N	N	N		ESB	Farm labourer	Nurse's aid
17031	Malcolm	M	Regional	G/coed	*nosci*	N	N	N		ESB	Indust. designer	Fash.design (retired)
23002	Stefan	M	Urban	G/coed	*nosci*	N	N	N		ESB	Indust. chemist	Indust. chemist
23004	Sean	M	Urban	G/coed	*nosci*	N	N	N		ESB	Artist	House painter
24004	Thomas	M	Urban	NG/coed	*nosci*	N	N	N		ESB	Schl tchr (music)	Home duties
11031	Joanne	F	Regional	NG/coed	*nosci*	N	N	N		ESB	Linesman	Home duties
11033	Helen	F	Regional	NG/coed	*nosci*	N	N	N		ESB	Newspaper editor	Newspaper editor
11034	Fiona	F	Regional	NG/coed	*nosci*	N	N	N		ESB	Fencer	Preschool teacher
15032	Madeline	F	Regional	G/coed	*nosci*	N	N	N		ESB	Electrical engineer	Accountant
17022	Kate	F	Regional	G/coed	*nosci*	N	N	N		ESB	Medical Doctor	Medical Doctor
17025	Yvonne	F	Regional	G/coed	*nosci*	N	N	N		ESB	Sch. tchr (maths)	Teacher's aid
22048	Daria	F	Urban	NG/ss	*nosci*	N	N	N		Italian-Australian	Elect. technician	Secretary
22049	Michelle	F	Urban	NG/ss	*nosci*	N	N	N		Macedonian-Australian	Travel agent	Travel agent

APPENDIX G

Interview - Student Permission Note

Inter. Student.

Dear Student,

PLAIN LANGUAGE STATEMENT AND
INTERVIEWCONSENT FORM

Thank you for agreeing to be interviewed as part of this study.

The purpose of this interview is to talk to you about the decisions you've made concerning your subject choices for Year 11. It is a follow up to the questionnaire which you completed earlier in the term. This study aims to help teachers, parents and researchers understand the motivations students have for the choices they make, particularly in relation to science education. This study will also form part of a PhD thesis to be submitted at the University of New England.

The interview should take about an hour and you are under no obligation to answer any questions about which you feel uncomfortable. All of the information will be treated as strictly confidential and no student or school will be identified in any report.

Unless you have an objection, I would like to tape this interview so that I can be sure that I am able to report accurately what you have said. All tapes will be destroyed after I have transcribed the interviews. Please indicate your willingness to participate in this interview by completing the consent forms provided.

Thank you for your time and help.

Terry Lyons

Should you have any complaints concerning the way in which this research is conducted, please contact the Ethics Committee at the following address:

The Secretary, Human Research Ethics Committee,
Research Services,
University of New England,
Armidale, NSW 2351

Consent Form **STUDENT COPY**

I, _____*(print name in full)* have read the information above and agree to participate in this interview. I understand that I am under no obligation to participate and may withdraw my consent at any time without penalty. I agree that research data gathered for the study may be published, as long as my name is not used.

signed: _____

APPENDIX G

☐☐☐☐☐

INTERVIEW SCHEDULE[1]

A. DEVELOPMENT OF PERSONAL PROFILE

1. **How long have you been at school X?**

   _____

   Which school(s) did you attend previously? _____

   _____

2. **How do you like school?** _____

   _____

   Are you looking forward to coming back to school in Yr 11? _____

   _____

   What do you like / dislike about school? _____

   _____

   _____

3. **What are your hobbies and interests?** _____

   Why do you do X? _____

   _____

   Does anyone encourage you in X? _____

   _____

4. **How often do you talk to your friends about your hobbies and interests?**

   _____

5. **How would you describe your social group(s)?**

   a) size? _____

   b) closeness? _____

   c) gender mix? _____

   d) cultural backgrounds? _____

   e) in / out of school? _____

6. **Who are the other members of your household?** (Relationships to respondent)

   _____

   _____

B. EXPLANATIONS FOR SUBJECT CHOICES

7. **In the questionnaire you mentioned your subject choices as being W, X, Y, and Z. Can you tell me:**

   a) why you chose X (non-science subject)**?**

   _____

   _____

   b) Why you chose Y (optional)**?**

   _____

   _____

[1] Prompts and follow up questions are in plain text. Lines are for researcher's notes

APPENDIX G

c) Why you decided (not) to choose Z (science subjects)**?**

8. **In the questionnaire, you wrote that you relied a lot upon X (Y, Z etc.) for advice regarding your subject choices. Was there anyone you relied upon for advice who was not included in the questionnaire?**
   Who? (Relationship to respondent?)

9. **Why was the advice of these people important to you?**
   Why do you think their advice was more important to you than that of others ? (probe for degrees of reliance, relevant knowledge, relationship with advisors etc.)

10. **What advice were you given by different people about whether to choose:** (Relationship of advisor to respondent, reasons given, response to advice)
    a) subject X?
    b) subject Y?
    c) a science subject?

11. **How difficult was it for you to make this decision?**
    Why?

12. **If you had been required by the Board of Studies to take at least one science subject, what would it have been?** (Non science students only)
    Why this subject?
    Why not other science subjects?

C. RESPONSES TO SCIENCE AND OTHER SUBJECTS

13. **Can you think of anyone *in school* who has encouraged you in learning or doing science over the last 4 years?** (Probe for friends, teachers etc. if not forthcoming)
    In what ways?

APPENDIX G

14. **Can you think of anyone *outside of school* who has encouraged you in learning or doing science?**(Probe for friends, family, mentors, media, etc. if not forthcoming)_____

    In what ways?_____

    When?_____

15. **Have you had any responses, positive or negative, from anyone because of your decision (not) to choose a science subject?**

    Positive, details, your response?_____

    Negative, details, your response?_____

16. **What are your favourite subjects?**[2] _____

    Why do you like them? How well do you do in them?_____

17. **Has your attitude to science classes changed over time?**_____

    How? Tell me about the changes (probe for levels of satisfaction, likes and dislikes, perceived changes in self and science classes) _____

18. **What subjects do you think will be most important for your future?**[3]

    Why? How well do you do in these subjects?_____

19. **Have you been involved in any activities, inside or outside of school, such as: model-making, electronics, chemistry experiments, collecting or identifying animals, plants, rocks, (other)**

    Yes: Details; with others? *(gender?);* How often?; Did you enjoy these activities?

    No: How do you think your close friends would respond if you suggested doing one or more of these activities?; (together?)

2 Ask only if not yet answered satisfactorily

3 as above

APPENDIX G

D. ENGAGEMENT WITH MASS MEDIA

20. a) What TV shows do you like to watch? _____

_____

b) Can you name any current television shows which focus on scientific ideas or nature? _____

Do you watch this/these shows? (attitude) _____

Who with? How often? _____

Do your friends (at school) ever mention watching any of these shows? _____

_____

21. How much time in a day would you normally spend looking at or listening to the following?

	0 hrs	<1hr	1-2hrs	2-3 hrs	>3hrs
i) television (daily)	☐	☐	☐	☐	☐
ii) radio (daily)	☐	☐	☐	☐	☐
iii) Internet (daily)	☐	☐	☐	☐	☐

	0 hrs	<30m	30-60m	60-90m	>90m
i) magazines	☐	☐	☐	☐	☐
ii) newspapers	☐	☐	☐	☐	☐

22. When did you most recently see or hear of a science issue mentioned... a) on TV? b) in a newspaper? c) on the radio? d) in a magazine? e) on the Internet? f) other? (Details)

_____

_____

_____

_____

_____

E.CAREER PATH AND IMAGES OF SCIENTISTS

23. Have you thought about what you would like to do when you leave school?[4] Yes: Career path direction? Reasons for choice? No: In what general areas would you be interested? Why? When/how did you become interested in this area?

_____

_____

_____

_____

24. Did you choose all of your subjects according to the career path you're considering? If this is not the case, then what other reasons?

_____

_____

_____

[4] Only if not developed earlier

APPENDIX G

25. **Have you at any stage considered a career path which might involve or require science?** _____ (even when much younger?)
    What influenced you? (Why did you change your mind?)

_____

_____

_____

26. **What are your (mother's, father's, guardian's) current occupations?**
    (level of interest/knowledge)

_____

_____

27. **How importantly do you regard each of the following career features:**

Security	☐ Very Important	☐ Important	☐ Somewhat Important	☐ Not very Important	☐ Unimportant
Personal Satisfaction	☐ Very Important	☐ Important	☐ Somewhat Important	☐ Not very Important	☐ Unimportant
High pay and benefits	☐ Very Important	☐ Important	☐ Somewhat Important	☐ Not very Important	☐ Unimportant
Personal Challenge	☐ Very Important	☐ Important	☐ Somewhat Important	☐ Not very Important	☐ Unimportant
Working in a team	☐ Very Important	☐ Important	☐ Somewhat Important	☐ Not very Important	☐ Unimportant

28. **I'd like to ask you about the images of science and scientists in the media. Can you tell me about any fictional scientists you've seen on TV or at the movies.**
    Details. Describe how they were portrayed? What were they doing? (Probe for gender; appearance; collaboration/independence; conservationist/interventionist; etc.)

_____

_____

_____

29. **How do you think real scientists are shown in the media?** (incl. radio, TV, magazines, newspapers)
    Any examples? What were they doing? How portrayed? *(Probe for gender, appearance collaboration/ independence, conservative/interventionist, etc.)*

_____

_____

_____

APPENDIX G

30. **a) Can you name any "science" careers?** (description, source, interest)

_____

_____

b) What do you think about the status of science careers in society? (pay?)

_____

_____

c) Have science careers been discussed much in your science classes?

_____

_____

F. SCIENCE TEACHING AND LEARNING

31.[5] **Do you think that your experience of science teachers has influenced your decision (not) to continue with science?** _____

In what way? _____

_____

_____

32.[6] **Did you know who the Yr 11 science teachers would be when you made your subject choices?** _____

To what extent did this knowledge affect your decision (not) to continue with science?

_____

_____

_____

33. **Think of a science teacher you've had in the last four years who you would describe as a good science teacher.** (don't name them)
Why do you consider them a good science teacher?
(probe personality, organisation, knowledge, teaching methods, gender, control etc.)

_____

_____

_____

34. **Think of a science teacher you've had in the last four years who you would *not* describe as a good science teacher.** (don't name them)
Why do you consider them not to be a good science teacher?
(probe personality, organisation, knowledge, teaching methods, gender, control etc.)

_____

_____

_____

35. **What do you think is the most effective way for you to work in science classes?**
(probe collaboration/independence, practical work, active/passive, gender of co-workers)

_____

_____

[5] If not already addressed

[6] ditto

APPENDIX G

36. **How are you most often expected to work in science classes?** *(probe collaboration/independence, practical work, active/passive, gender of coworkers)*

37. We have discussed a number of influences on your decision (not) to continue with science, including your **parents**, other **family members**, your **friends**, **teachers,** and your experiences of science outside of school and in the media. Are you able to say after our discussion which of these had the most influence on your decision?

G. PERSONAL SIGNIFICANCE OF SCIENCE

38. **Do you think science is important to our society?**
    Why? Why not?

39. **How important is science to you personally?** (personal impact, awareness)

40. **Do you think that science has an answer for everything?**
    (limitations? reliability? significance? power to predict/determine future? philosophy?)

APPENDIX H

Abridged Version of the NUD*IST Index Tree, showing the major subtrees and nodes

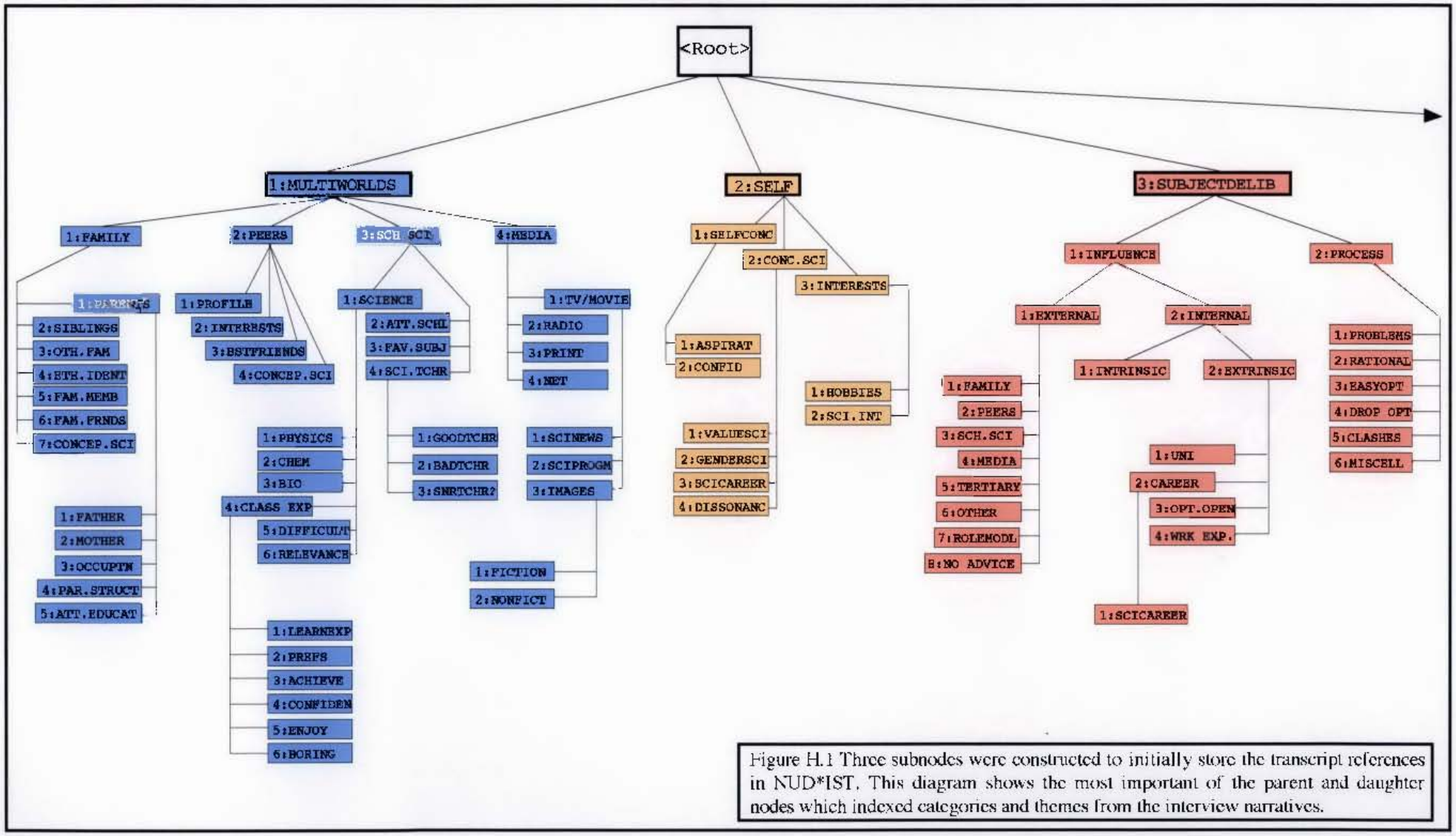


Figure H.1 Three subnodes were constructed to initially store the transcript references in NUD*IST. This diagram shows the most important of the parent and daughter nodes which indexed categories and themes from the interview narratives.

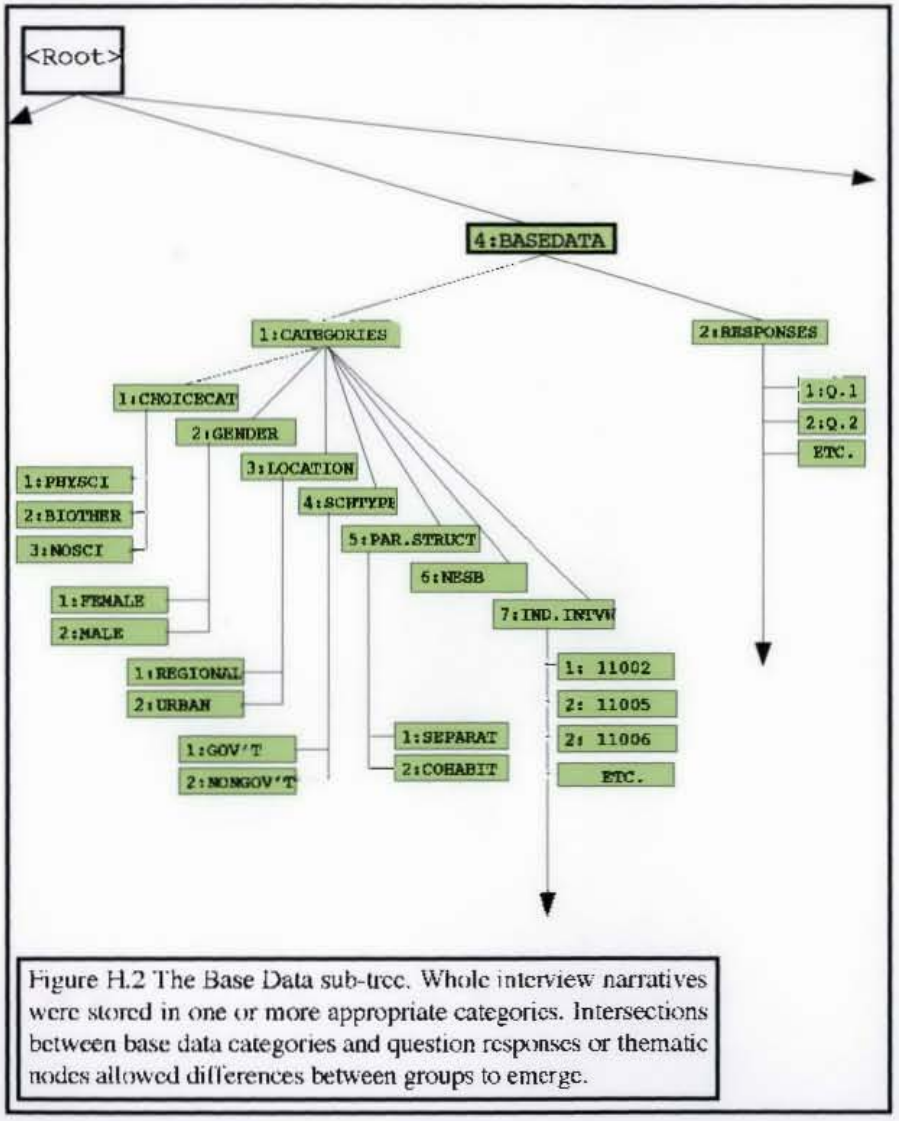


Figure H.2 The Base Data sub-tree. Whole interview narratives were stored in one or more appropriate categories. Intersections between base data categories and question responses or thematic nodes allowed differences between groups to emerge.

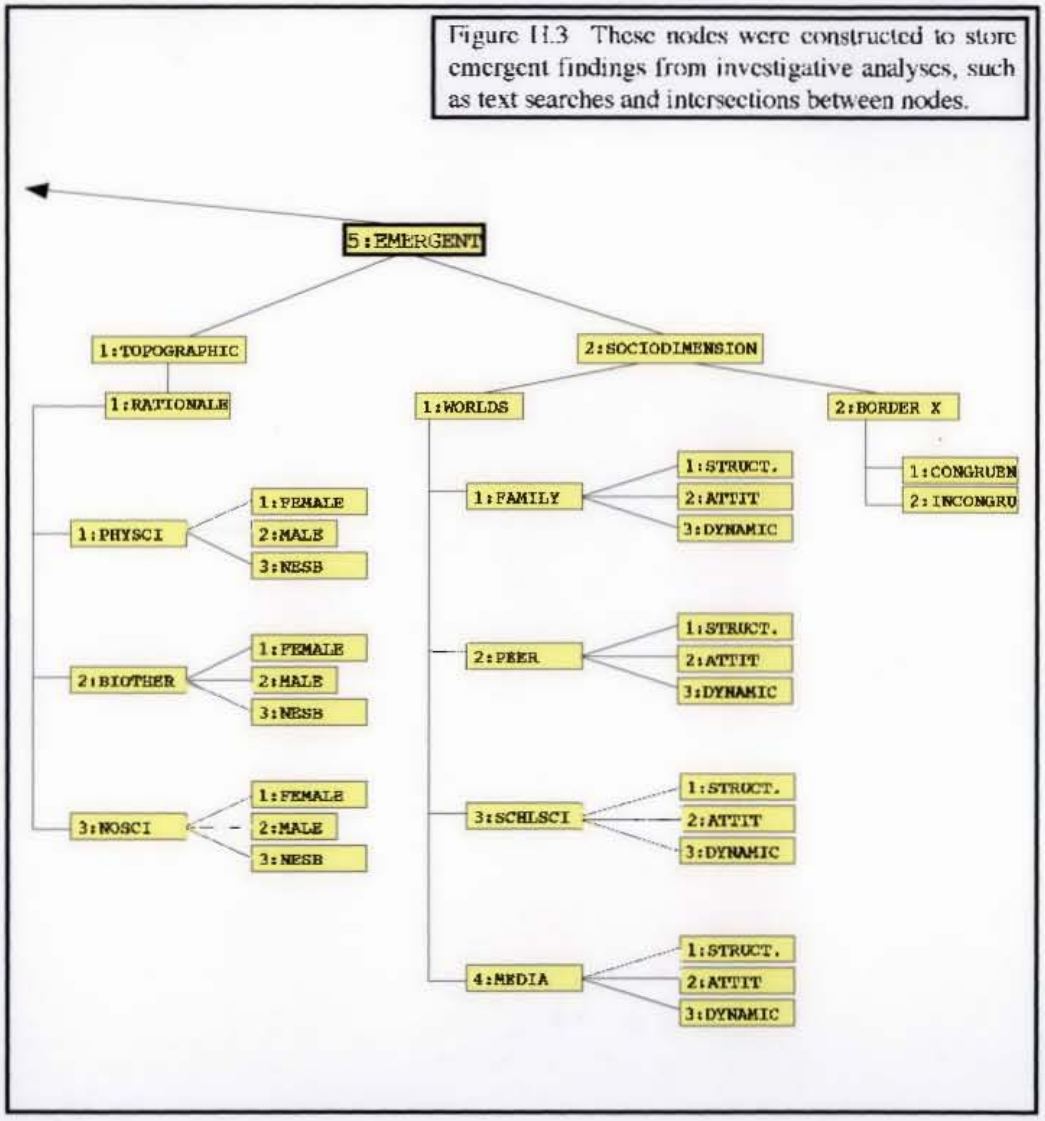


Figure H.3 These nodes were constructed to store emergent findings from investigative analyses, such as text searches and intersections between nodes.

APPENDIX I

Permission to Conduct Research

APPENDIX I

THE UNIVERSITY OF NEW ENGLAND

Human Research Ethics Committee

MEMORANDUM TO:	Dr P Nimmes/ Mr T Lyons Department of Curriculum Studies

This is to advise you that the Human Research Ethics Committee has approved the following:

TITLE OF EXPERIMENT:	An investigation of science avoidance in high achieving Yr 10 students.
COMMENCEMENT DATE:	1 October 1998
APPROVAL VALID TO:	31 May 1999
COMMITTEE APPROVAL N°:	HE 980186
COMMENTS:	The Committee approved this application subject to the researchers complying with its interim policy on research involving children, and adolescents under the age of 18 years. That is, interviews should be undertaken such that the interviewer and interviewee are in view of an appropriate additional adult.

The Committee normally grants approvals for a maximum period of twelve months. A Final Report should be submitted on completion of the project if this occurs within 12 months. If the research project is to continue beyond twelve months the person responsible is required to submit an application for renewal. In the case of routine class demonstrations, approval may be given for a period of up to five years. In this case an Annual Report is required indicating that (i) no ill effects were reported, (ii) no procedures were changed, and (iii) there were no staff changes.

A copy of the Annual/Final Report Form (Part II) is attached

[redacted]
Acting Secretary

21/09/98
TM:HA
23/1/97

APPENDIX I

STRATEGIC INFORMATION AND REPORTING

NEW SOUTH WALES DEPARTMENT OF EDUCATION AND TRAINING

Early Childhood and Primary Education
Secondary Education
Technical and Further Education
Vocational Education and Training
Higher Education
Adult and Community Education

Mr Terence Lyons
61 Beardy Street
ARMIDALE NSW 2350

Dear Mr Lyons

SERAP Number: 98170

I refer to your application to conduct a research project in NSW government schools entitled *An investigation of influences on high achieving Year 10 students' decisions to avoid senior science.* I am pleased to inform you that your application has been approved. You may now contact the principals of the nominated schools to seek their participation.

This approval will remain valid until 22/10/99.

You should include a copy of this letter with the documents you send to schools. I draw your attention to the following requirements for all researchers in NSW government schools:

- School principals have the right to withdraw the school from the study at any time. The approval of the principal for the specific method of gathering information for the school must also be sought.
- The privacy of the school and the students is to be protected.
- The participation of teachers and students must be voluntary and must be at the school's convenience.
- Any proposal to publish the outcomes of the study should be discussed with the Research Approvals Officer before publication proceeds.

When your study is completed please forward your report marked to the Research Approvals Officer, Department of Education and Training, Level 5, 35 Bridge Street, Sydney, NSW 2000.

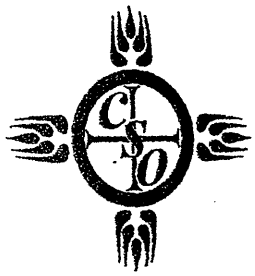
Yours sincerely

[redacted]

Michael Waterhouse
Director, Strategic Information and Reporting
27 October, 1998

• Level 3, 35 Bridge Street • Sydney NSW 2000 Australia • GPO Box 33 • Sydney NSW 2001 Australia •
• *telephone* 61 2 9561 1198 *facsimile* 6 2 9561 8552 • detwww.det.nsw.edu.au •

APPENDIX I



CATHOLIC SCHOOLS OFFICE

8 October, 1998

Mr Terence Lyons

Dear Mr Lyons,

Further to your request to conduct research in Diocesan systemic schools.

I am pleased to advise your request was approved by the Catholic Schools Office Research Approvals Committee.

The approval allows you to approach
and seek their involvement in your study, which is titled "An investigation of influences on high achieving Yr 10 students' decisions to avoid senior science".

It should be understood that it is the prerogative of the principal whom you might approach to decline your invitation in this study or to withdraw from involvement at any time.

The privacy of the school and that of any school personnel or students involved in your study must, of course, be preserved at all times.

When your research has been completed, please forward a summary report of the findings and/or recommendations to the school as soon as practicable after results are to hand.

It is necessary that you or your representative provide a copy of this letter to the principal when seeking their involvement in this study.

I wish you well in this undertaking.

Yours sincerely,

[redacted]

DIOCESAN DIRECTOR OF CATHOLIC SCHOOLS

cc Research Approvals Committee
Principal

APPENDIX J

SPSS CONTINGENCY TABLES AND SIGNIFICANCE LEVELS FROM CROSSTABULATIONS OF SPQ DATA

Table J.1 Male and female SPQ students enrolling in the three main science choice categories(n=169) (see Figure 4.1)

Count / Exp Val / Tot Pct / Std Res	Choice Categories *Physci*	*Biother*	*Nosci*	Row Total
Females	42	36	32	110
	52.1	32.5	25.4	65.1%
	24.9%	21.3%	18.9%	
	-1.4	.6	1.3	
Males	38	14	7	59
	27.9	17.5	13.6	34.9%
	22.5%	8.3%	4.1%	
	1.9	-.8	-1.8	
Column Total	80 47.3%	50 29.6%	39 23.1%	169 100.0%

Chi-Square	Value	DF	Significance
Pearson	11.56864	2	0.00308
Likelihood Ratio	11.94390	2	0.00255

Table J.2 The science enrolment decisions of male and female grade 'B' SPQ students (n=116) (see Figure 4.2)

Count / Exp Val / Tot Pct / Std Res	No Science	Science	Row Total
Females	28	52	80
	22.8	57.2	69.0%
	24.1%	44.8%	
	1.1	-.7	
Males	5	31	36
	10.2	25.8	31.0%
	4.3%	26.7%	
	-1.6	1.0	
Column Total	33 28.4%	83 71.6%	116 100.0%

Chi-Square	Value	DF	Significance
Pearson	5.43601	1	0.01973
Likelihood Ratio	5.93264	1	0.01486

APPENDIX J

Table J.3 Ratings for reliance on the advice of senior students, by male and female SPQ students choosing physical science students (n=80) (see Figure 6.2)

Count / Exp Val / Tot Pct / Std Res	Reliance on the Advice of Senior Students: Not at all	Not very Much	Some	Quite a lot	Very Much	Row Total
Females	10	14	11	6	1	42
	17.3	11.6	6.8	5.8	.5	52.5%
	12.5%	17.5%	13.8%	7.5%	1.3%	
	-1.8	.7	1.6	.1	.7	
Males	23	8	2	5	0	38
	15.7	10.5	6.2	5.2	.5	47.5%
	28.8%	10.0%	2.5%	6.3%	.0%	
	1.9	-.8	-1.7	-.1	-.7	
Column Total	33	22	13	11	1	80
	41.3%	27.5%	16.3%	13.8%	1.3%	100.0%

Chi-Square	Value	DF	Significance
Pearson	13.91404	4	0.00757
Likelihood Ratio	15.05660	4	0.00459

Note: This contingency table contains 2 cells which have expected values less than 1.0 (see Chapter Three)

Table J.4 Self rating of academic ability in science by male and female SPQ students choosing physical science subjects (n=80) (see Figure 4.3)

Count / Exp Val / Tot Pct / Std Res	Rating categories: Well above average	Above average	Average	Row Total
Females	13	21	8	42
	20.0	16.3	5.8	52.5%
	16.3%	26.3%	10.0%	
	-1.6	1.2	.9	
Males	25	10	3	38
	18.1	14.7	5.2	47.5%
	31.3%	12.5%	3.8%	
	1.6	-1.2	-1.0	
Column Total	38	31	11	80
	47.5%	38.8%	13.8%	100.0%

Chi-Square	Value	DF	Significance
Pearson	9.78990	2	0.00748
Likelihood Ratio	10.00287	2	0.00673

APPENDIX J

Table J.5 Students' perceptions of teachers' ratings of their academic ability in science, by male and female SPQ students choosing physical science subjects (n=80)

Count / Exp Val / Tot Pct / Std Res	Rating categories: Well above average	Above average	Average	Row Total
Females	12	24	6	42
	20.0	17.3	4.7	52.5%
	15.0%	30.0%	7.5%	
	-1.8	1.6	.6	
Males	26	9	3	38
	18.1	15.7	4.3	47.5%
	32.5%	11.3%	3.8%	
	1.9	-1.7	-.6	
Column Total	38	33	9	80
	47.5%	41.3%	11.3%	100.0%

Chi-Square	Value	DF	Significance
Pearson	12.80810	2	0.00165
Likelihood Ratio	13.17557	2	0.00138

Note: More than 20% of the cells in this contingency table have expected values less than 5.0 (see Chapter Three)

Table J.6 Self rating of academic ability in science, by all male and female SPQ students (n=196)

Count / Exp Val / Tot Pct / Std Res	Rating categories: Well above average	Above average	Average	Row Total
Females	17	71	41	129
	31.6	65.2	32.3	65.8%
	8.7%	36.2%	20.9%	
	-2.6	.7	1.5	
Males	31	28	8	67
	16.4	33.8	16.8	34.2%
	15.8%	14.3%	4.1%	
	3.6	-1.0	-2.1	
Column Total	48	99	49	196
	24.5%	50.5%	25.0%	100.0%

Chi-Square	Value	DF	Significance
Pearson	28.19345	2	0.00000
Likelihood Ratio	27.81755	2	0.00000

APPENDIX J

Table J.7 Ratings of reliance on the advice of best friends, by SPQ students in the three choice categories (n=169) (see Figure 6.1)

Count Exp Val Tot Pct Std Res	Rating categories Not at all	Not very Much	Some	Quite a lot	Row Total
physci	30 23.7 17.8% 1.3	25 30.8 14.8% -1.0	24 19.9 14.2% .9	1 5.7 .6% -2.0	80 47.3%
biother	9 14.8 5.3% -1.5	20 19.2 11.8% .2	13 12.4 7.7% .2	8 3.6 4.7% 2.4	50 29.6%
nosci	11 11.5 6.5% -.2	20 15.0 11.8% 1.3	5 9.7 3.0% -1.5	3 2.8 1.8% .1	39 23.1%
Column Total	50 29.6%	65 38.5%	42 24.9%	12 7.1%	169 100.0%

Chi-Square	Value	DF	Significance
Pearson	19.37041	6	0.00358
Likelihood Ratio	20.51708	6	0.00224

APPENDIX J

Table J.8 Ratings of reliance on the advice of fathers, by female SPQ students in the three choice categories (n=110) (see Figure 7.1)

Count / Exp Val / Tot Pct / Std Res	Rating categories: Not at all	Not very Much	Some	Quite a lot	Very Much	Row Total
physci	8 10.7 7.3% -.8	8 8.8 7.3% -.3	10 13.4 9.1% -.9	10 6.5 9.1% 1.4	6 2.7 5.5% 2.0	42 38.2%
biother	9 9.2 8.2% -.1	8 7.5 7.3% .2	15 11.5 13.6% 1.0	3 5.6 2.7% -1.1	1 2.3 .9% -.9	36 32.7%
nosci	11 8.1 10.0% 1.0	7 6.7 6.4% .1	10 10.2 9.1% -.1	4 4.9 3.6% -.4	0 2.0 .0% -1.4	32 29.1%
Column Total	28 25.5%	23 20.9%	35 31.8%	17 15.5%	7 6.4%	110 100.0%

Chi-Square	Value	DF	Significance
Pearson	13.90644	8	0.08424
Likelihood Ratio	14.97785	8	0.05958

Table J.9 Ratings of reliance on the advice of mothers, by male and female SPQ students choosing physical science subjects (n=80) (see Figure 7.2)

Count / Exp Val / Tot Pct / Std Res	Rating categories: Not at all	Not very Much	Some	Quite a lot	Very Much	Row Total
Females	2 4.7 2.5% -1.3	6 8.9 7.5% -1.0	19 16.8 23.8% .5	11 8.4 13.8% .9	4 3.2 5.0% .5	42 52.5%
Males	7 4.3 8.8% 1.3	11 8.1 13.8% 1.0	13 15.2 16.3% -.6	5 7.6 6.3% -.9	2 2.9 2.5% -.5	38 47.5%
Column Total	9 11.3%	17 21.3%	32 40.0%	16 20.0%	6 7.5%	80 100.0%

Chi-Square	Value	DF	Significance
Pearson	8.11031	4	0.08762
Likelihood Ratio	8.35164	4	0.07951

Note: More than 20% of the cells in this contingency table have expected values less than 5.0 (see Chapter Three)

APPENDIX K

Summaries of Students' Explanations for their Decisions About Enrolling in Science Courses

The tables in this appendix summarise students' explanations in a way which illustrates the patterns which were characteristic of each choice category. Distinctions were made in the tables between rationales and contributing influences, as explained in Chapter Four. It is recognised that attempts to summarise students' explanations in a graphic form could only result in imperfect representations. Nevertheless, this limitation was offset by the power of the tables to provide a visual comparison between different choice categories.

Table K.1 Rationales and contributing reasons provided by students choosing physical science subjects

STUDENTS' EXPLANATIONS FOR CHOOSING PHYSICAL SCIENCE SUBJECTS																
STUDENT	EXPERIENCE BASED REASONS						FUTURE BASED REASONS			ADVICE BASED REASONS						
	LIKING FOR SUBJECT				Qual. of teaching	Self efficacy	Max. UAI	Uni/ Career	Options open	Peer	Parent	Sibling	Senior student	Science teacher	Careers Advisor	Other
	Phy.	Chem.	Bio.	General												
James																
Roger																
Charlie																
Peter																
Shane																
Michael																
Melinda																
Kelly																
Greta																
Renate																
Sylvia																
Hannan																
Salma																
Jennifer																

Key:
- Primary rationale (Expressed as strongest reason for decision)
- Secondary rationale (Expressed as important reason for decision)
- Contributing reason (Was not expressed as rationale, but added later in interview)

Table K.2 Rationales and contributing reasons provided by students choosing biology/other science subjects

STUDENTS' EXPLANATIONS FOR CHOOSING BIOLOGY/OTHER SCIENCE SUBJECTS																
STUDENT	EXPERIENCE BASED REASONS						FUTURE BASED REASONS			ADVICE BASED REASONS						
	LIKING FOR SUBJECT				Qual. of teaching	Self efficacy	Max. UAI	Uni/ Career	Opt. open	Peer	Parent	Sibling	Senior student	Science teacher	Careers Advisor	Other
	Phy.	Chem.	Bio.	General												
Robert																
Mark																
Phillip																
Greg																
Bruno																
Uzlan																
Tracy																
Beth																
Theresa																

Key:
- Primary rationale (Expressed as strongest reason for decision)
- Secondary rationale (Expressed as important reason for decision)
- Contributing reason (Was not expressed as rationale, but added later in interview))

Table K.3 Rationales and contributing reasons provided by students choosing no science subjects

STUDENTS' EXPLANATIONS FOR CHOOSING NO SCIENCE SUBJECTS																
STUDENT	EXPERIENCE BASED REASONS						FUTURE BASED REASONS		TIME TABLE CLASH	ADVICE BASED REASONS						
	DISLIKING FOR SUBJECT				Poor qual teaching	Self efficacy	Max. UAI	Not Needed		Peer	Parent	Sibling	Senior student	Science teacher	Careers Advisor	Other
	Phy.	Chem.	Bio.	General												
George																
Richard									Bio							
Malcolm																
Stefan																
Sean									Bio							
Thomas									Chem.							
Joanne									Chem.							
Helen																
Fiona									SFL							
Jennifer[1]																
Madeline																
Kate																
Yvonne																
Daria									physics							
Michelle																

Key:
- Primary rationale (Expressed as strongest reason for decision)
- Secondary rationale (Expressed as important reason for decision)
- Contributing reason (Was not expressed as rationale, but added later in interview)

[1]Jennifer originally chose no science subjects, but later decided to take physics. She was therefore able to provide explanations for both decisions

APPENDIX L

Parents' Occupations reported by Interview Respondents in the Three Choice Categories.

Parents' occupations were categorised according to the Australian Standard Classification of Occupations (ASCO), which grouped occupations according to both skill level, as measured by formal education and experience, and specialisation, which considers the type of skill required (ABS 1997).

Tables L.1, L.2 and L.3. Parental occupations reported by interview respondents in the three choice categories. Occupations are categorised according to the Australian Standard Classification of Occupations (ABS 1997)

Name	*Sci. Cat.*	2. Professional	3.Assoc. Prof.	4. Trades	5. ACSW	6. ISCSW	7. IPTW	8. ECSSW	9. LRW	Home Duties	Study
James	*Physci*		M (Rest. manag.) F (chef)								
Roger	*Physci*			F (Bricklayer)	M (Receptionist)						
Charlie	*Physci*	F (Biochem.lect) M(Biochem.lect)									
Peter	*Physci*		M (Office manag.)					F (Clerk) PT			F (Ph.D) PT
Shane	*Physci*	F (Marketing)									
Michael	*Physci*	M (Second.tchr)				F (Purch.Officr)					
Melinda	*Physci*	F (Psychologist) M (Primary tchr)									F (M.A Psych.) PT
Kelly	*Physci*		F (Finance advsr)		M (Secretary)						
Greta	*Physci*					M (Vet. nurse)					M (Vet. Sci.) FT
Renate	*Physci*	F (Scientist)				M (Tchrs aid)					M (B.Ed) FT
Sylvia	*Physci*	F (Envir. scient.) M (Primary tchr)									
Hannan	*Physci*	M (Nurse)		F (Carpenter*)							M (B.Nursing)
Salma	*Physci*						F (Taxi drvr)			M (FT)	
Jennifer	*Physci*						F(Truck drvr)				M (Computing) FT

Major Occupational Groups: 1. Managers and Administrators (not applicable); 2. Professionals; 3. Associate Professionals; 4. Tradespersons; 5. Advanced Clerical and Service Workers; 6. Intermediate Sales, Clerical and Service Workers; 7. Intermediate Production & Transport Workers; 8. Elementary Sales, Clerical and Service Workers; 9. Labourers & Related Workers. Additional categories have been created for parents undertaking full time home duties and tertiary study. Key: Sci. cat. = science choice category; F = father; M = mother; FT = full time; PT = part time

* fomerly an air force pilot

Name	*Sci. Cat.*	2. Professional	3.Assoc. Prof.	4. Trades	5. ACSW	6. ISCSW	7. IPTW	8. ECSSW	9. LRW	Home Duties	Study
Robert	*Biother*					M (Recept.) F (Purch.Officr)					
Mark	*Biother*	M (Nurse)	F (Estate agent)								
Phillip	*Biother*	F (Dep. Principal) M (Prim.tchr)									
Greg	*Biother*	F(Biologist)								M (FT)	
Bruno	*Biother*					M (Tchrs aid)			F (Garden)		
Uzlan	*Biother*						F(Crane)		M (Cleaner)		
Tracy	*Biother*	F (Metallurgist) M (Second.tchr)									
Beth	*Biother*	F (Electrical eng.)								M (FT)	
Theresa	*Biother*					F (Sales)				M (FT)	

Name	*Sci. Cat.*	2. Professional	3.Assoc. Prof.	4. Trades	5. ACSW	6. ISCSW	7. IPTW	8. ECSSW	9. LRW	Home Duties	Study
George	*Nosci*	F (Engineer lect.)				M (Office clerk)					
Richard	*Nosci*		M (Nurses aid)						F (Labourer)		
Malcolm	*Nosci*	F (Indust.design) M (Fash. design)									
Stefan	*Nosci*	F (Indust. chem)									M (Paleoanth.) PT
Sean	*Nosci*	F (Artist)		M (Decorator)							
Thomas	*Nosci*	F (Second. tchr)								M (FT)	
Joanne	*Nosci*	M (Pre-schl tchr)							F (Fencer)		
Helen	*Nosci*	M/F (News editors)									
Fiona	*Nosci*			F (Linesperson)						M (FT)	
Madeline	*Nosci*	M (Accountant) F (Electrical eng.)									
Kate	*Nosci*	M/F (Doctors)									
Yvonne	*Nosci*	F (Second. tchr)				M (Tchrs aid)					
Daria	*Nosci*			F (Elect. techn)	M (Secretary)						
Michelle	*Nosci*		F/M (Travel agency manag.)								