HOW DO THEY COPE?
THE TRANSITION TO AN UNDERGRADUATE, CASE-BASED LEARNING MEDICAL PROGRAM AT THE UNIVERSITY OF ADELAIDE

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A thesis submitted in fulfilment of the requirements for a
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ABSTRACT

The transition to university has been described as a "battle" for students as their ways of learning are challenged and threatened. Most students transitioning into Medicine at the University of Adelaide encounter the Case-based Learning (CBL) approach, used across the whole curriculum, for the first time. The transition experiences of students across various university programs have been investigated but not for students entering medical programs. A Transition Pedagogy model which integrates co-curricular and curricular components provides a framework for investigating the complexities of the environment experienced by transitioning students. The framework designates key strategies in four dedicated areas that extend across six curriculum principles. The purpose of this study was to investigate strategies used in these four areas by transitioning students, academics and administrative staff in the specific context of a CBL medical program.

A mixed-methods research design was used. Students, academics and administrative staff completed questionnaires and participated in Focus Groups. Students completed the "First Year Experience Questionnaire" (FYEQ) for comparison with a general cohort of first year university students studying at nine Australian universities. Students' distress levels were measured two weeks before examinations in Semesters One and Two. Students and tutors completed questionnaires to investigate the alignment of their perceptions about the Case-based Learning approach. Tutors completed the "Approaches to Teaching Inventory" to investigate the relationship between a student's perceptions of the CBL approach and their tutor's approach to teaching. Focus Groups explored questionnaire findings to generate a deeper understanding of the strategies employed by students, academics and administrative staff involved in the transition process.

Although medical students scored significantly higher than the general cohort of first year university students in four domains of the FYEQ, namely sense of purpose, student identity, course satisfaction and being prepared and present, they scored significantly lower on the domain comprehending and coping. However, these results did not apply to international medical students. This provided an unanticipated avenue of investigation which established that international students were receiving more effective orientation and scaffolding for transition than domestic students in the four areas of the Transition Pedagogy model. Evidence highlighted the need for professional development for CBL tutors to include mentoring for new tutors, peer review of teaching and the principles and practice of appropriate orientation and scaffolding for transitioning students.

The Transition Pedagogy model provided an effective framework for investigating the first year experience for medical students, and the comparison between the learning experiences of international and domestic students demonstrates how a first year curriculum could be implemented in a way that improves the transition experience. To achieve a third generation approach that embraces co-curricular and curricular components, a transition pedagogy for medical students should be organised in a systematic manner that begins with policy changes at the level of governance and involves changes in practices of preparing students for the *process* of Case-based

Learning, through extended orientation and the provision of scaffolding to develop the skills essential for self-directed learning.

CERTIFICATE OF THESIS ORIGINALITY

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

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ABBREVIATIONS

AS.FG	Administrative Staff Focus Group
ATI	Approaches to Teaching Inventory
CBL	Case-based Learning
FYE	First Year Experience
FYEQ	First Year Experience Questionnaire
FYEQMed	First Year Experience Questionnaire (Medicine)
GC	General Cohort of transitioning students
IP	International Program
IS	International student
K10	Kessler Psychological Distress Scale
MBBS	Bachelor of Medicine, Bachelor of Science
MC	Medical Cohort of transitioning students
MLTU	Medicine Learning and Teaching Unit
MPPD	Medical Professional and Personal Development
MS.FG	Main Study Focus Group (students)
PBL	Problem-based Learning
PS.FG	Pilot Study Focus Group
SR	Student Representative
T.FG	Tutor (Case-based Learning) Focus Group
UOA	University of Adelaide

CHAPTER 1.

INTRODUCTION

1.1   BACKGROUND AND RATIONALE

From the time they begin pre-school until they begin their first job, students experience many changes in their learning environment and these changes often occur at critical developmental stages in their lives. The change from primary to secondary school is often associated with the development of the adolescent years whilst the change from secondary school either to work or to enter higher education is considered to mark the beginning of adulthood.

In discussions of the progress from primary school to secondary school to higher education, the terms "change" and "transition" are often used interchangeably, but in research there is a clear distinction between the terms. Transition has been broadly described as the psychological processes involved as people adapt to the changes that they encounter in life (Kralik, Visentin & Van Loon 2006). Changes are external but transition is an internal process that can be characterised by low stability, stress and conflict as a person moves from their past state into the state brought about by the change. The transition from secondary school into the first year of higher education occurs at a crucial time in a teenager's life and for many students it "....can be a significant battle in that it may constitute a conflict of values, a challenge to one's identity and a threat to familiar ways of knowing and doing". (Krause 2006).

Whilst it has been universally recognised that the transition from secondary school to university has an impact on "... the cognitive, social and moral development of students..." (McInnis 2001a, p. 105), the transition process has become more of a problem in Australia in the last twenty years. MacDonald (2000) attributes this to changes in the source of university funding, that have led to a shift of power away from the university to a student body that is larger and more diverse and upon which universities are now more dependent for their funding.

Other major changes for institutions in recent years are the increasing number of students attending university and the increasing diversity of the student body. With the Bradley Report (Bradley et al. 2008) recommending that by 2020, 40% of 25-34 year olds should have undergraduate qualifications and that 20% of all university enrolments should come from low socio-economic backgrounds, these two factors will continue to challenge universities for many years. Universities will also be challenged by the recommendation that funding is tied to the student, who can move from one university to another if they are not satisfied with their learning experience.

Therefore, since attrition is costly for both individual students and universities, retention of the increasing number of students from diverse backgrounds is vitally important. Institutions are now recognising the first year experience as a priority that can improve retention rates (McInnis 2001a).

A successful first year experience is vital for transitioning students because it is a time when they are "... at their most vulnerable .... in terms of their likelihood of academic failure and they are most at risk with respect to a wide range of potential social, emotional, health and financial problems", with "...a sizeable minority actually finding themselves in difficulties." (McInnis 2001a, p. 106).

There is a need to explore the process of transition to higher education because the first year experience is seen as critical "....not only for how much students learn, but also for laying the foundation on which their subsequent academic success and persistence rest." (Reason, Terenzini & Domingo 2006, p. 150). Harrison (2006) found that many students who withdrew from their courses did so due to lack of induction into the academic environment, lack of support from staff when they encountered difficulties and problems with independent learning. The transition to university can influence students' future approaches to learning as they encounter ways of learning and teaching that can differ greatly from those experienced in secondary school. If, during their transition to higher education, students experience teaching that helps them employ an active approach to their learning, then this can result in a deeper approach towards learning and a search for meaning that will benefit them as life-long learners (Biggs, J 1999).

The changing nature of the academic and social experiences of transitioning students and the changing nature of the students themselves also necessitate research into the transition process to higher education. Since 1989, and the introduction of the Higher Education Contributions Scheme (HECS), students have had to pay for their university education. Students are required to contribute a portion of their fees or they may be full-fee paying: they can pay their fees whilst studying or defer payment through the HECS loan scheme. However, by whatever means the fees are being paid, since the introduction of fees many students have to undertake part-time work and this, together with the ability to access lectures online, has resulted in many students spending less time on campus (James, Krause & Jennings 2010). Twenge (2009) described how the current generation of students entering university have grown up with a different culture from previous generations, with a big movement towards focussing on the individual. She labelled them as "Generation Me" and predicted that the changes seen in this generation could impact on their education. These changes include higher expectations of their university experience, higher levels of narcissism and entitlement, and an increase in the number of students with anxiety and mental health problems.

In recent years, research in Australia into the first year experience has consisted of "...reviews or evaluations by practitioners of specific and usually successful strategies to improve the teaching of first year students or to provide a diverse array of support programs." (McInnis 2001a, p. 109) However the context of research has changed not only because of the increasing number and diversity of students, and a population base that is constantly changing, but also because of the application of technology to teaching and learning and the resulting flexibility in course delivery. The challenge for researchers now is to improve their understanding of first year students and their transition experiences beyond their immediate context, and to investigate how "...diversity adds value to the first year experience for all students, and how it can change the nature of adjustment and transition issues." (McInnis 2001a, p. 110). With much research on transition having dealt with

program evaluation and institutional assessment, McInnis advocated the need for inquiry into what the students themselves find important about the transition process.

One of the first Australian reports on the first year experience, motivated by the impact of an increasingly diverse student population, was commissioned by the Committee for the Advancement of University Teaching (CAUT) (McInnis, James & McNaughton 1995). This resulted in the development of the First Year Experience Questionnaire (FYEQ) which was used to collect data for a series of reports on the first year experience of students transitioning to tertiary education. Reports have been released every five years since 1995 (Krause et al. 2005; McInnis & James 1999; McInnis, James & McNaughton 1995). Recent reports have been commissioned by the Department of Education, Employment and Workplace Relations (DEEWR) and the latest report, released in March 2010 (James, Krause & Jennings 2010) reflected the changing nature of students and their academic and social experiences over fifteen years from 1994 to 2009. More locally in South Australia, Brinkworth et al (2009) investigated student and teacher perspectives of the first year expectations and experiences of students at the University of Adelaide. The students in this investigation were transitioning into Humanities and Sciences programs and Brinkworth advocated the need "... to investigate and evaluate more widely the transition process ...... by expanding into other faculties and institutions." (Brinkworth et al. 2009, p. 171).

Whilst these reports investigated the first year experience of students across a variety of programs, there are very few recent studies investigating the transition into first year Medicine, which in many medical schools now involves learning and teaching through a Problem-based Learning (PBL) approach. This may be a new approach for many students transitioning from secondary school or from other university courses where more traditional methods of learning and teaching are used. It requires learners to become researchers, working in small groups to analyse problems, access additional knowledge and determine solutions. At the University of Adelaide, a student-centred Case-based Learning (CBL) approach, which developed from PBL, is used across the first three years of the medical program. Academic and administrative staff involved in the first year program anecdotally report many transitioning students seeking help with this new approach to learning, especially in first semester. In the 2010 cohort of first year medical students there were twelve students repeating first year and in the 2011 cohort, there were eleven students repeating in a cohort of 187 students. Although only a minority of students experience difficulties and repeat first year, this is costly for the institution in terms of students taking longer to compete the program and also costly for transitioning students, who as McInnis (2001a) described, are at a stage where they are most vulnerable in terms of the likelihood of academic failure.

In research into medical education and in particular into the PBL approach, there has been an increase in the use of qualitative methods: "...researchers in medical education have encouraged the community to turn away from the old questions of whether or not it works toward the new questions of what is really happening in PBL." (Svinicki 2007, p. 59). The purpose of this new avenue of

research is to generate richer understandings of the complex environments and problems associated with the implementation of the PBL approach.

Prideaux and Bligh (2002) expressed concerns in trying to bring together the findings from medical education research because many of the research questions have been lacking a theoretical framework. This has been attributed to researchers in medical and other professional fields not being aware of the learning processes that underlie new approaches to learning, such as PBL, that they may be using in their teaching (Svinicki 2007). Thus any future research needs "...to be firmly grounded in a literature which has been systematically derived and organised around major theoretical constructs." (Prideaux & Bligh 2002, p. 1114).

Now that the importance of a successful first year experience to both the university and its students has been established, many universities are trying to improve the transition process by offering a variety of orientation programs. In the past, orientation programs were mostly offered in the first few weeks of Semester One, or indeed mostly in the first week of semester, which was (and still is in many universities) called "O Week". It is now recognised however, that the transition process occurs throughout the whole of first semester and well into second semester, so many universities have developed extended orientation programs.

Transition into tertiary learning at the Queensland University of Technology in Australia has been transformed by implementation across the whole institution of a "Transition Pedagogy" model (Kift, Nelson & Clarke 2010), which will be discussed in detail in Section 2.3. The model involves the integration of curricular and co-curricular components by academic and professional staff, working in partnership to develop a transition program that provides a sense of engagement, support and belonging for students beginning their journey into tertiary education. It emphasises the need for support for the transition process to be embedded within the curriculum and provides a framework for examining the transition process either at the level of the institution, or the program or the units composing the program. The framework is composed of six generic First Year Curriculum Principles: Design, Transition, Engagement, Diversity, Assessment and Evaluation. These Principles can be implemented through key strategies in the following four dedicated areas, which extend across all six curriculum principles.

1. Curriculum that engages students in learning

2. Proactive and timely access to learning and life support

3. Intentionally fostering a sense of belonging

4. Sustainable academic-professional (administrative) partnerships

Implementation of the Transition Pedagogy model at the Queensland University of Technology began in 2002 and has resulted in an improved transition experience for their students through

"...achieving cross institutional integration, coordination and coherence of First Year Experience policy and practice." (Kift, Nelson & Clarke 2010, p. 1) .

In summary, transition into university is a process which is a major concern for both the tertiary institution and its students because of the changes in the nature and context of university study that have occurred. There is a call for research to improve understanding of the transition experience from the students' point of view in all programs, including medical programs where little research has been done on what it means for students to transition into a program using the PBL approach.

1.2   AIM, RESEARCH QUESTIONS AND ROLE OF THE RESEARCHER

The aim of the proposed study is to improve understanding of how students cope with the transition into an undergraduate medical program, where Case-Based Learning is used across the whole curriculum in the first three years of the program.

The research questions have been developed around the framework of the Transition Pedagogy model (Kift 2009) and relate to the four dedicated areas for strategies that extend across the first year curriculum principles in a First Year Experience Program. The model will be described in detail in Section 2.3. The research questions are:

1. How does the curriculum engage students in learning in the first year of the CBL medical program?

2. How proactive and timely is the access for students to learning and life support?

3. Has a sense of belonging been intentionally fostered amongst transitioning medical students?

4. Are there sustainable partnerships between academic and administrative staff who are involved in the first year medical program? (Although the term "professional staff" is used in the Transition Pedagogy model, the term, "administrative staff" has been used throughout this thesis.)

The topic for this proposed investigation was selected because, as the researcher, I have developed a deep interest and curiosity in transitions at various levels in education. Before I began research in this area, I had been teaching Year 12 students and several of these students entered undergraduate Medicine at the University of Adelaide. I had spoken with them about their first year experience and when they described the changes and challenges that they were facing, I was curious to investigate how these challenges and changes were experienced by other students in their cohort.

Prior to these years of teaching Year 12 students, I also worked with Interns and junior doctors in a hospital setting and with registrars in General Practice training. During the three years in which I was studying for my PhD, I undertook training for CBL tutoring and worked briefly as a CBL tutor, thus altogether experiencing a wide range of learning and teaching approaches.

To carry out this research, I needed to select a suitable research design and collect quantitative data to measure the phenomena being investigated, and qualitative data to explain why or how phenomena occur. Previous experiences of the researcher can affect the approach to the collection and analysis of this data (Burns 1997) and therefore, as I was investigating the transition process from the perspectives of students and their CBL tutors, I could not allow my previous experiences of learning and teaching with these groups to influence my data collection and analysis.

1.3   CONTEXT OF RESEARCH

1.3.1   The program context

The context for this research was the Bachelor of Medicine, Bachelor of Surgery (MBBS) program at the University of Adelaide. This program is a six-year, undergraduate entry course which is run within the School of Medicine by the Medicine Learning and Teaching Unit (MLTU). In Years One to Three of the program, a CBL approach is used across the whole curriculum, which is fully integrated both within and across the year levels.

As Medicine at this university is an undergraduate program, many students, both domestic and international, transition directly from their final year of secondary school with a minority of students transferring from another university program. These students have gained entry into Medicine in a very competitive environment, with between two and three thousand applicants for approximately 180 places in the first year MBBS program.

Before the introduction of the CBL approach, a PBL approach had been introduced into Years 1-3 in 1994, based on that used at the University of New Mexico (Kaufman, A et al. 1989), and by 2000 was used across the first three years of the integrated, undergraduate curriculum. It was evident, however, that there was a great variation in the ability of students to work in a PBL environment that was different to the more didactic, structured environment that they had experienced at school or in other university courses. Academic staff were concerned about the increasing number of students transitioning into first year Medicine who were being identified at the end of Semester One as "at risk" students (up to thirty five percent of the first year cohort: personal communication with the MLTU manager). These students were identified on the basis of their examination results and their performance during Semester One in PBL tutorials and Clinical Skills sessions. They were requested to attend an interview with an academic staff member early in Semester Two to discuss their progress and work out strategies to improve their learning experience. In 2009, PBL was replaced by a Case-based Learning (CBL) approach, with the main change being that the amount of support

provided for students was increased by giving them more information and direction when they were given a case to analyse and evaluate. Unlike PBL, the new CBL approach involved students being given information about the case and tasks to complete before their first tutorial. Specific references were provided for background reading and tasks were specified for each tutorial session. The amount of support was greatest for first year students in their first semester in an effort to introduce students gradually to the requirement to be self-directed in their learning. The amount of support was reduced towards the end of first semester with further reduction occurring in second semester.

In the new CBL approach, tutors could give the tutorial group more guidance than previously. For example during training, CBL tutors were advised to give more help to students to keep them focussed in their discussions, whilst progressively reducing this support throughout the semester. The main role of the tutor was still that of a facilitator and the manner in which students and tutors engaged in tutorials remained similar to the PBL approach.

1.3.2 The MBBS program structure

The medical curriculum for the first three years is structured into three main domains:

- The Scientific Basis of Medicine

- Clinical Skills

- Medical Professional and Personal Development (MPPD)

The curriculum is fully integrated across these three domains through the study of medical cases in CBL tutorials, which are thus pivotal to the CBL approach. During these tutorials, students integrate their learning from the three domains as they work through the cases they are studying. In first year, students participate in three, two-hour CBL tutorials per week and one case is usually allocated four tutorial sessions. The structure of the curriculum is shown in Figure 1 on page 23.
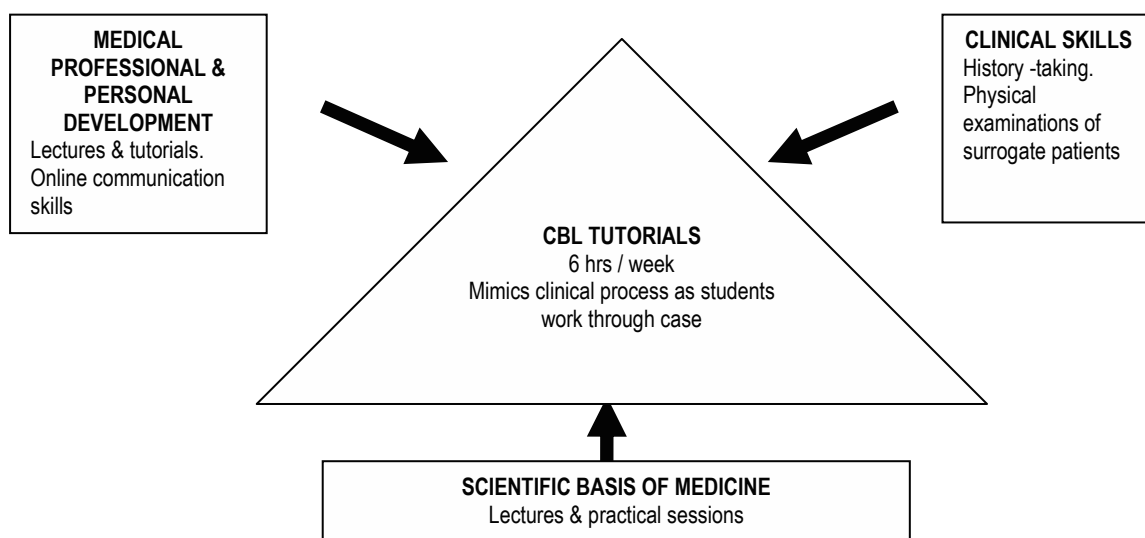
Figure 1. The structure of the MBBS curriculum in the pre-clinical years 1-3.

Oversight of the academic program is carried out by a Curriculum Committee with Management Committees at each year level. The role of the Curriculum Committee includes reviewing and developing the program with respect to teaching, learning and assessment. The coordination and implementation of the MBBS program is carried out by academic and administrative staff of the Medicine Learning and Teaching Unit (MLTU), which is based within the School of Medicine, in the Faculty of Health Sciences. This coordination includes curriculum planning, staffing and timetabling of lectures, tutorials and practicals, planning and implementation of formative and summative assessments, and ongoing monitoring and evaluation of the MBBS program. Coordination of all these aspects is very complex as it involves working with staff from different schools across the following two faculties:

- Faculty of Health Sciences
  - School of Medicine
  - School of Medical Sciences
  - School of Population Health
  - School of Paediatrics and Reproductive Health

- Faculty of Sciences
  - School of Molecular and Biomedical Sciences (teaching of Fundamentals of Biomedical Sciences to first year students.)

The website of the Medicine Learning and Teaching Unit provides an overview of the medical program (Medicine Learning and Teaching Unit 2013a) and further details about its structure (Medicine Learning and Teaching Unit 2013b).

1.3.3   The context of transitioning

All transitioning students at the University of Adelaide are provided with orientation that is non-specific and university-wide, and orientation that is specific to the program they have chosen to study. Orientation specifically for the cohort of students transitioning into the medical program included introductory lectures in the three curriculum areas of the medical program, and orientation to CBL through two introductory lectures that demonstrated how a case was worked through over four CBL tutorial sessions. Another introductory activity for all students was based on demonstrating the advantages of group-learning over individual learning and although the whole cohort was together in one lecture theatre for this activity, for the first time they worked in their CBL tutorial groups. Orientation to the CBL group also occurred in a "Meet and Greet" session where students met their tutor and other students in their group in an initial CBL tutorial, held before work on the first case began.

The assessment process can cause concern for first year medical students because it is entirely new and unfamiliar. The first assessment they encounter occurs in CBL tutorials in the first few weeks of Semester One, when they are assessed on their attendance and performance in CBL tutorials. The CBL tutor may give feedback on how the group is functioning and students may give feedback to each other on how they are performing. The CBL tutor may give individual feedback to students on their performance in the CBL tutorial and half way through Semester One, each student receives a

written assessment from their tutor. This assessment is mostly concerned with performance in the CBL tutorial group and includes feedback on the development of the student's knowledge base. The next opportunity for this occurs when, as part of the formative assessment, held midway through Semester 1, they are given the opportunity to undertake practice questions for the three written examinations at the end of Semester 1. The marking of these questions provides the first feedback on their written work and gives them an indication of whether they are studying at the right depth and generally "on track" with their learning.

The three written examinations that students are required to undertake at the end of each semester require the integration of knowledge and skills from the three curriculum domains shown in Figure 1, p. 23. This may be an entirely new format for students, because their examinations in Year 12 had been subject based rather than requiring integration of knowledge from different areas. The Semester 2 written examination has a higher weighting (70%) than the Semester 1 written examination (30%). Students also undertake an end-of-year Clinical Skills Examination in the form of an Objective, Structured Clinical Examination (OSCE).

For their overall assessment at the end of the year, students are awarded either a Non-Graded Pass or a Fail. The rationale for this is to try to reduce competitiveness within a group of high-achieving students and to promote cooperative, group-based learning in preparation for entering a profession where they will be required to work collaboratively with their own colleagues and with many other groups of people involved in patient care. For feedback purposes, students also receive a result that reflects their performance in relation to expectations at Year One level.

1.3.4   The International Program

The International Program (IP) assists students with their academic language and learning through the CBL curriculum. Participation in the program involves attending weekly sessions conducted by the IP Coordinator. This is compulsory for international students throughout Semesters One and Two, although approval may be given for students to discontinue in Semester Two if they have performed satisfactorily in the mid-year examinations and no longer need additional support. This usually only applies to one or two students. Domestic students, who are identified as needing help through the mid-Semester One report of their CBL tutor or through their mid-year examination results, are requested to meet with the IP Coordinator to determine whether they would benefit from the IP or from meeting with the Coordinator on an individual basis. Usually, between three and five domestic students join the IP in the second half of Semester 0ne, or Semester Two.

1.4   OUTCOMES AND SIGNIFICANCE

This research aims to improve understanding of the transition experience for students entering the first year of CBL-based Medicine at the University of Adelaide, using the framework of the Transition Pedagogy model. One advantage of employing the Transition Pedagogy model is that it necessitated

addressing the issues of transition from the dimensions of students, academic staff and administrative staff. By specifically addressing the key strategies in the four dedicated areas of the model, it was possible to identify successful strategies and strategies that could be improved, thus providing clear direction on what needs to be done to to provide a better first year experience for these students. The need to develop a transition pedagogy for a positive first year experience in medical programs will also be of interest to other Medical Schools using a PBL/CBL approach to learning.

1.5   SUMMARY

This chapter has introduced the research topic and the transitions experienced by students at different stages of their learning journey. It has explained the rationale for the research, described the context of the project and the development of the research questions, and outlined what was hoped to be achieved by the research. The structure of this thesis and the broad areas covered within each chapter are given in Figure 2, p.27. The following chapter will review the literature on transition to university both at the national and international level, including transition into medical programs and the academic and social changes experienced by students during this transition.

Current knowledge on the transition to university and areas needing further research.	Chapter 2. Review of the Literature,
How the methodology and theoretical framework were chosen. An introduction to research methods.	Chapter 3. Research Design and Methods • An overview of the sequential, mixed-methods research methodology • An overview of the research instruments, the qualitative approaches and how they informed the research questions • The theoretical framework: Transition pedagogy • Sampling and recruitment of participants • Ethical considerations
A detailed description of the quantitative instruments and methods for collecting data and for statistical analysis of the results.	Chapter 4. Quantitative instruments: methods • First Year Experience Questionnaire (FYEQ) • The FYEQ modified for this research (FYEQMed) • Kessler Psychological Distress Scale (K10+) • CBL Perceptions Questionnaire • Questionnaire for Year 1 CBL tutors

A detailed description of the qualitative approaches and methods for collecting data and analysing results.	Chapter 5. Qualitative approaches and methods
	• Rationale for the qualitative component of my research
	• Pilot study focus groups
	• Main study focus groups and interviews with:
	   o Students from the medical cohort
	   o Academic staff
	   o Administrative staff

Presentation of the quantitative results and their statistical analysis. How alternating the collection and analysis of results was informing subsequent stages of research.	Chapter 6. Quantitative results • Results from the questionnaires • Comparisons between the medical cohort and the general cohort • Comparisons between domestic and international medical students • The validity and reliability of the quantitative instruments
Presentation of the qualitative results from different sources. Consideration of the validity of these results, how they fit the Transition Pedagogy model and how they begin to answer the research questions.	Chapter 7. Qualitative results from the Pilot Study Chapter 8. Qualitative results from the Main Study
Triangulation of data from quantitative & qualitative results. Discussion of the findings & how they answer the research questions.	Chapter 9. Discussion • Linking the quantitative and qualitative results • Answering the research questions within the framework of the Transition Pedagogy model • Limitations of this research • Suggestions for further research • Conclusions

Figure 2. Thesis structure

CHAPTER 2.

LITERATURE REVIEW

2.1   INTRODUCTION

The purpose of the Literature Review is to provide a background for this study and to introduce the framework for presenting the results. This chapter reviews transitions in education, the first year experience at university, how the Transition Pedagogy model provides a framework for first year curriculum design, and the role of orientation and scaffolding during this first year. The topics are reviewed firstly in relation to the general transition to university, and then in relation to the transition into medical programs. The design of modern medical programs and the application of Problem-based Learning (PBL) and Case-based Learning (CBL) within medical programs are discussed to provide background for the learning context of this research on transition into the medical program at the University of Adelaide. Reviewing the literature in these areas provides the context for the research both at a national and international level and identifies gaps in previous knowledge about transition to university, and specifically into medical programs.

2.2   TRANSITION AND THE FIRST YEAR EXPERIENCE

In a general education context, "transition" is perceived as the processes of change experienced by students as they move from secondary school or other entry pathways to employment or higher education (MacDonald 2000). Within medical education, transition occurs at several different stages; the initial transition into a medical program is followed by transition to the clinical years, to the Intern year and to registrar training. Transition has been described as "... not a moment, but rather a dynamic process in which the individual moves from one set of circumstance to another" (Teunissen & Westerman 2011, p. 52). In medical education, although it can be associated with stress and negative emotions, "...transition periods may also present individuals with opportunities for rapid personal development" (Teunissen & Westerman 2011, p. 52).

The transition of students from secondary school into university or into undergraduate college is well documented in the literature and has been reviewed in Australia (James, Krause & Jennings 2010), and the United States (Schrader & Brown 2008). When compared with Australia and the United States, "The student experience has been remarkably under-researched in the UK at the level of the higher education sector" (Yorke & Longden 2008, p. 4), but the establishment of the Higher Education Academy in the UK has resulted in increased research in this area. Entry into tertiary education is often referred to as the "first year experience" (FYE) which is "a generic term used to describe students' experiences of and with their first year at university: how commencing students are supported, engaged, educated and retained" (Nelson et al. 2010, p. 4). Research into the FYE is seen to be increasingly important due to the changing nature of the university student cohort, as there is an increasing number of students transitioning to university with a broad range of academic

backgrounds and variation in their preparedness for university. Whilst much of the research is still centred around the issues of equity and the influence that universities can have on the lives of students, McInnis (2001a) describes the need for accountability, and the efficiency of institutions to address the problems of transitioning students, as the main driving force for research. Thus a successful transition is important both to individual students and to institutions for higher education. If first year students experience good teaching/learning contexts, then they will acquire generic and specific study skills and metacognitive skills that will help them to become self-directed learners and this can influence their future academic life (Biggs, J 1999). If, during transition, students encounter a teaching approach that helps them employ an active approach to their learning, the result can be a deeper approach towards learning together with a search for meaning that will benefit them as life-long learners (Hultberg et al. 2008). For institutions, the transition of students and their first year experience is important because it affects retention rates and consequently university funding that is tied to enrolment numbers (Brinkworth et al. 2009). It has been argued that first year should be a priority for all tertiary institutions because early attrition is very costly to both the institution and to the individual student (McInnis 2001a).

One of the key factors for a successful transition to university has been shown to be the engagement of students both at an academic and social level (Kift 2011; Krause & Coates 2008). Engagement has been described as "a broad phenomenon that encompasses academic as well as selected non-academic and social aspects of the student experience" (Krause & Coates 2008, p. 493). The involvement of students with their learning, with academic staff and with their peers can strongly influence the transition experience (Schrader & Brown 2008). Fostering engagement can establish foundations for successful learning in subsequent years at university but the changing nature of the student body has brought about changes in the ways that students are engaging in their learning and their social lives. Staff-student engagement is an area of particular concern as the increasing number of full-time students working in part-time jobs, as high as 61% in Australia (James, Krause & Jennings 2010), means that students spend less time on campus, resulting in fewer opportunities for engagement between staff and students. Staff-student interaction has been reported negatively by many students (James, Krause & Jennings 2010) leading to the recommendation that the opportunities for first year students to interact with academic staff should be increased, both in the areas of feedback given by staff and personal interest shown in the students. Krause and Coates (2008) demonstrated that of seven first-year engagement scales, the strongest correlation existed between the transition engagement scale and the staff-student engagement scale, confirming the importance of enhancing student engagement by the involvement of academic staff in the lives of first year students, both in the learning and social contexts.

There is evidence (Harrison 2006) that whilst students are engaging in learning less on campus and on a face-to-face basis with teaching staff, interaction with peers has increased as more students engage in group work both inside and outside the classroom. Engagement with online learning has also increased as more courses become available online.

Studies have been carried out world-wide to investigate the reasons for first year students withdrawing from university. Negative experiences of students related to their wrong choice of course (Harrison 2006), struggling academically with the nature of learning and the general demands of the course (Harrison 2006; Rhodes & Neville 2004; Tinto 2005), poor teaching (Rhodes & Neville 2004; Yorke & Longden 2008), integration of their social lives (James, Krause & Jennings 2010; Tinto 2005; Yorke & Longden 2008), a perceived lack of understanding from parents and excessive hours of paid work (James, Krause & Jennings 2010). Negative experiences that were within the control of the institution included lack of induction into the academic environment, with students needing more information on the amount of study time required, the standard of work expected and the different kind of engagement with learning needed by students for successful study at this higher level. Poor teaching and lack of support from staff when they encountered difficulties and problems with independent learning were also factors within the control of the institution (James, Krause & Jennings 2010). Research has also revealed that negative experiences resulted when a discrepancy existed between students' expectations of learning on entering university and their teachers' perceptions of learning (Brinkworth et al. 2009). Although students in this research expected that studying at university would be different from high school, a large percentage expected feedback on drafts of assignments, ready access to teaching staff and return of submitted work within one week and were concerned when these expectations were not met. Crisp and Palmer (2009) suggested that a closer alignment between staff and student expectations could be obtained from increased dialogue of students with staff, especially in the area of developing skills for self-directed learning that are needed for the transition from secondary school to university.

Tinto and Pusser (2006) emphasised that, whilst it is important to learn from other institutions' experiences, it is also important for each institution to investigate the attributes of students withdrawing from programs on its campus, and to use this evidence to develop an effective retention program. Professor Keithia Wilson (Wilson 2009) was appointed as "First Year Advisor" at Griffith University and recommended focussing "...on the development of strengths rather than the remediation of problems" (Wilson 2009 p. 2) so that a positive learning environment is created for staff and students. Her model for transition was based on the "Five Senses of Success" framework of Lizzio (2006), in which student success is conceptualised in terms of five domains, these being a sense of academic culture, a sense of connectedness, a sense of capability, a sense of purpose and a sense of resourcefulness. Strategies she employed to achieve a successful transition included the use of effective leadership, with one person in a School being acknowledged as the leader of the first year experience and liaising with relevant stakeholders to develop first year orientation and transition programs. Yorke and Longden (2008) also considered that effective leadership was important in enhancing the success of transitioning students, together with the commitment of the whole institution to student learning, engagement of students through the curriculum both academically and socially, and placing an emphasis on the FYE through provision of appropriate resources.

There seems to be very little literature on the process of transition into undergraduate medical programs. This can be partly attributed to the fact that in the United States, pre-medical programs

prepare students for medical programs and in other countries, including Australia, there has been a move to graduate entry into medical programs. A search of the online databases, Medline, Embase and the Informit Health Database, using the search terms shown in Table 1, p. 33, revealed no literature from the past ten years specifically on transition into medical programs. Research that was reported included factors predicting success in medical programs, attracting students to a career in Medicine, providing bridging into medical programs to help students with admission and enrolment processes and improving access to medical programs for students from socially disadvantaged backgrounds. Teunissen and Westerman (2011) described how most research on transition into medical education has investigated the state of being a first year medical student rather than the transition process itself. Students can enter medical programs by a variety of routes which can differ within and between countries and depend on whether the program requires undergraduate or postgraduate entry. Tutton and Wigg (1990) investigated whether the type of secondary school which a student had attended, the subjects they had chosen in their final year at secondary school and their gender had any influence on the results of students studying Medicine. Brinkworth et al (2009) suggested that Year 12 students at secondary school may receive increased assistance with studies from their teachers in order to achieve results that will enable selection into highly desirable courses. There was a perception that students in government schools may have received less of this increased assistance, which has been referred to as "spoon-feeding", by teachers in Year 12, than those in independent schools, thus enabling them to become self-directed learners more quickly in their first year of university. However, Tutton and Wigg (1990) showed that students who came from government schools to study Medicine did not perform any better in their pre-clinical years than those from independent schools. It was also shown that female and male students gained comparable results, and the performance of medical students was positively influenced by the choice of Physics, Biology or Mathematics as a fourth elective subject in Year 12.

One area that is reported in the medical education literature is the distress levels of students transitioning into Medicine, with 45.5 percent of first year medical students being reported as exhibiting some form of psychological distress (Leahy et al. 2010). "Distress" has been defined as "bad stress", as opposed to "good stress" or "eustress" (Burton & Hinton 2004) and although there is evidence that medical students experience more distress than non-students of a similar age, this distress is not necessarily more than occurs in other groups of university students (Leahy et al. 2010). Adams (2004) believes that the term "stress" should be clearly defined, and that some stress can be beneficial in preparing students for the stresses they will encounter in future medical practice if they can learn to cope with this stress. Teunissen (2011) described how although there is an association between transition and distress, times of transition can provide opportunities for growth and personal development. Factors contributing to distress in medical programs include the pressure of work, developing study skills, knowledge and professional attitudes and preparing for examinations (Moffat et al. 2004; Radcliffe & Lester 2003). Times of transition within the medical education continuum that are particularly stressful for students include the moves from secondary school to medical school, preclinical to clinical training and final year Medicine to the Intern year. (Radcliffe & Lester 2003; Teunissen & Westerman 2011).

Table 1. Databases and search terms used for literature on transition into medical programs

Database	Search terms
PubMed	*first year medical student* [all] OR first year medicine [all]* combined with *Transition*[all] OR orientation*[all] OR introduc*[all]*
Embase	*'first year medical' next/5 student* OR 'first year medicine'* combined with *Transition* OR orientation* OR introduc**
Informit Health Database	*(Transition* OR orientation* OR introduc*) AND "first year"*

Teunissen and Westerman (2011) reviewed the transitions to clinical training and to the Intern year, but not the transition into medical school. Radcliffe and Lester (2003) attributed stress during transition to medical school to students having to cope with lifestyle changes and less didactic methods of teaching. In contrast to this, students randomly assigned to a PBL curriculum at a medical school in Berlin reported feeling less stressed and better supported than those in the traditional curriculum (Kiessling et al. 2004). They found the new curriculum to be less demanding, less time-consuming and less competitive.

Thus the literature on transition to university emphasises how institutions need to be actively developing effective FYE programs with curricula that meet the needs of a changing student cohort. Engagement of students at both the academic and social levels is imperative for a positive transition experience and increased student-staff interaction has been recommended to improve student engagement. Several models for investigating the transition into a CBL medical program emerged from the literature, including Wilson's First Year Experience model (Wilson 2009) and the cognitive framework of the PBL approach, (Norman & Schmidt 2000). However, the Transition Pedagogy model was considered as the most comprehensive framework for investigating the complex educational environment of a medical program as it provides a framework for a curriculum that engages students at the academic and social levels. The model and the framework it provides will now be discussed.

2.3   TRANSITION PEDAGOGY: AN INSTITUTION-WIDE APPROACH TO TRANSITION

Transition pedagogy has been described as "a guiding philosophy for intentional first year curriculum design and support that carefully scaffolds and mediates the first year learning experience for contemporary heterogeneous cohorts" (Kift 2009, p. 40). In 2002, as part of a five year strategic plan at the Queensland University of Technology (QUT), a First Year Experience Program was instigated to improve the experience of transitioning students (Kift & Nelson 2005). This program aimed to reduce attrition and maximise learning and engagement of students. It is important for students to engage with learning within the academic curriculum and the first year curriculum can assist students on their journey to becoming self-directed learners. Three evidence-based issue papers

(Queensland University of Technology 2002a, 2002b, 2002c) were developed from the FYE research, leading to three principles that have guided the FYE Program at QUT: a curriculum that engages students in learning, awareness of and timely access to support services, and creation of a sense of belonging through involvement, engagement and connectedness with their university experiences.

As the FYE Program was being established at QUT, three themes were emerging that contributed to a whole of institution approach to the FYE of their students, with the first of these being the importance of curricular and co-curricular influences on the FYE. Wilson (2009) described how co-curricular design aspects of a program comprised a first generation approach to orientation and engagement, and consisted of non-compulsory activities that were closely associated with the curriculum and designed to support the learning provided by the formal curriculum. Kift (2009) gave examples of co-curricular activities as the professional development of first year part-time teaching staff and the production of an orientation package to assist faculties, schools or courses in developing orientation specific to their needs. Wilson distinguished this first generation approach from a second generation approach in which activities and strategies relate specifically to the curriculum, and gave examples of curricular activities as designing courses and assessments to engage students, providing formative assessment tasks and building communities within the classroom (Wilson 2009).

The second theme that emerged as the approach to the FYE at QUT developed and matured concerned a move away from an "add-on" approach to activities for the FYE, to an approach that embedded transition activities within a whole program. A link between the first and second generation approaches was missing from the FYE conceptualization and it was possible that this link could be a broad conception of the curriculum. The clue for this link came from McInnis (2001b) who had reported the need for the development of a well-designed curriculum that can act as an organising device for the whole student experience, beginning with the transition into higher education. He believes that transition has an important influence on the whole student experience and described how over the previous ten years there had been many changes in the ways in which students engaged with their university experience. With many students now spending less time on campus interacting with other students and academic and professional staff, there has been a decrease in the opportunities for development of communities of learning that promote student interaction and evolution of a sense of student identity. Whilst an institution cannot control the family or social lives of its students, it can control the curriculum developed by each of its faculties, and McInnis identified the curriculum as the "organising device" (McInnis 2001b, p. 9) and the "glue that holds together knowledge and the broader student experience and enables that knowledge to be used effectively by the student" (McInnis 2001b, p. 11). A well-designed curriculum can act as an organising device for the whole student experience, beginning with the transition into higher education. Kift (2009) used the link of the broad concept of curriculum to integrate the first and second generation approaches into one holistic approach that blends the curricular and co-curricular to "focus squarely on enhancing the student learning experience through pedagogy, curriculum design, and learning and teaching practice in the physical and virtual classroom" (Kift 2009, p. 1).

The integration of the co-curricular and curricular approaches into a third generation approach resulted in a curriculum that involved partnership of academic and professional staff across the whole institution (Kift, Nelson & Clarke 2010), and a theory of transition pedagogy for the FYE at QUT (Kift & Nelson 2005).

The third theme to emerge was that for a third generation approach to be successful through integration and implementation of co-curricular and curricular activities, then "professional-academic partnerships across all institutional aspects were essential" (Kift, Nelson & Clarke 2010, p. 5). Although individual efforts to improve transition are necessary and important, academic, administrative and support areas need to work together provide a seamless student experience. It is difficult to sustain a shared vision for the FYE across all these areas, but Kift (2009, p. 13) advocates that everybody must be involved in transition if there is to be a move away from a piecemeal approach towards one that is intentional, relevant and seamless for all students.

Kift used the theory of transition pedagogy to develop a framework for policy and practice at QUT that involved intentional first year curriculum design for an optimal FYE (Kift 2009). Six generic First Year Curriculum Principles (see Figure 3) that provide a framework for a sound first year curriculum were defined (Kift 2009). These principles act as a framework for developing a transition pedagogy that can be mapped across a whole institution, a program and the units comprising that program. The emphasis of Transition Pedagogy is on undergraduate first year curriculum and co-curriculum design, and the model defines four dedicated areas where the design must ensure that students are being supported by key strategies that extend across the six curriculum principles. Transition pedagogy, the six principles and the four key strategies which provide a framework for its implementation were developed through action-based research with the emphasis on moving from theory to practice, as evidenced by the production of the "Transition Pedagogy Handbook: A Good Practice Guide for Policy and Practice in the First Year Experience" (Nelson et al. 2010). This handbook provides resources and checklists to assist academic and administrative staff in developing a FYE Program for their students that is appropriate to the context of their institution, school or program. Transition pedagogy and the six principles have been "rigorously evaluated by the higher education community" (Kift, Nelson & Clarke 2010, p. 12).

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Figure 3. The six curriculum principles and dedicated areas for four key strategies in the Transition Pedagogy model (Kift, Nelson & Clarke 2010, p. 11).

In the final report on articulating a transition pedagogy (Kift 2009), Professor Vincent Tinto evaluated the work of Kift and Nelson. He identified the principles of effective practice for student success in higher education systems espoused in transition pedagogy at QUT, as similar to those in higher education systems in the United States. He proposed that "the theoretical foundation and the institutional framework that arise from it (transition pedagogy) offer a context-sensitive approach that can be applied to many other national settings" (Kift 2009, p. 58).

Applications of good first year curriculum design recommended for a sound transition pedagogy were presented at the "First Year Experience Curriculum Design Symposium" in 2009. Within Australia, Melbourne University has produced a kit for new academic staff and staff new to teaching first year students, containing examples of first year teaching practices that support the transition to university (Baird & Boin 2010). This resource was based on Kift's final ALTC Fellowship Report. Programs based on the transition pedagogy framework have also been developed at Newcastle School of Law (Lindsay 2009), and in the Faculty of Arts, Education and Human Development at Victoria University, Melbourne (Funston, Hughes & Zammit 2009). At the University of Hong Kong, research is being undertaken to improve the first year undergraduate experience by moving away from traditional academic orientation to an orientation that addresses both co-curricular and curricular issues (Webster 2009).

In summary, transition pedagogy and the framework provided by the six curriculum principles were based on action research, have been evaluated and are evidence-based, and provide a framework for the renewal of first year curriculum within the context of other institutions, both nationally and internationally. In addition, through its impact on student retention, "it seems reasonable to assume that transition pedagogy in action would be of considerable economic benefit to an institution" (Kift, Nelson & Clarke 2010, p. 13).

2.4   ORIENTATION TO THE FIRST YEAR EXPERIENCE

Students transitioning to university encounter a new social and academic environment and whilst not all institutions have developed a transition pedagogy to facilitate the first year experience of their students, most institutions provide orientation programs to assist them in the transition process. Orientation has been described as "... a process in which the learner engages, facilitated by structured learning opportunities" and a process that "prepares the learner for an approach to learning which may be new to him/her and which may involve changes to established habits and expectations of learning" (Taylor, I & Burgess 1995, p. 2). As the context of this research is an undergraduate program in an Australian university, a range of orientation programs offered at universities within Australia will be reviewed before considering the literature on orientation to medical programs.

2.4.1 Non-specialised and specialised orientation programs

The orientation provided by Australian universities for their students range from programs in the first days or weeks of the academic year, to ongoing programs that provide continued support for the First Year Experience. These programs may be preceded by bridging programs, often conducted during the holidays between the end of school and the commencement of university, with the aim of updating students' knowledge and skills in certain areas or to "prepare adult and other non-traditional students for undergraduate study" (Ellis, Cooper & Sawyer, p. 1). At the beginning of the university year, non-specialised programs provide orientation for all students to university in general, and specialised programs are designed to meet the needs of certain groups of students such as international and Indigenous students. Faculties and Schools within universities also run specialised orientation programs to provide students with information about the courses they have chosen to study.

James et al (2010) reported that 44% of students who participated in their "First Year Experience" survey were provided with a good introduction to university by the orientation program they had attended, but no distinction was made between non-specialised or specialised programs in the survey question. However, 24% of these students disagreed that the orientation programs helped them feel they belonged at university, yet this feeling of belonging and engaging with the academic learning community has been shown to be important in the promotion of high-quality learning (Krause & Coates 2008).

The need for "non-specialised transition programs to meet the needs of first year students and facilitate the transition from secondary to tertiary education" has been identified by Brinkworth et al (2009, p. 157). They researched student expectations and experiences, and teacher views from degree programs in Science and Humanities at the University of Adelaide, and found that many similarities existed between the needs of students from quite different areas of study. It was found that, although students expected to find differences between studying in secondary school and at university, they were not prepared for the slower return of marked work, lack of feedback on drafts and limited access to teachers that they experienced in their first year of higher education. Other research showed that the expectations of first year students were not being addressed by orientation programs which "involve a didactic process in which those in-the-know teach the uninitiated" (Hunt, Kershaw & Sneddon 2002, p. 345). There is a need for strategies which are proactive, applied early and address current issues in transition including social, cultural and academic issues.

In a move away from didactic orientation, many universities provide orientation for first year students through their websites. This can be in the form of "stand-alone" information in a question-and-answer format provided by the University of Queensland for their international students (http://www.sss.uq.edu.au/isweb/offers), or "stand-alone" information about orientation for all students as provided for those transitioning to Monash University (http://www.adm.monash.edu.au/transition). Many websites also provide information regarding study

skills and academic writing skills and this may be presented in a generic way or within the context of specific disciplines.

2.4.2   Orientation for medical programs

The literature is scant on the topic of orientation for medical students, and little research seems to have been done on a comprehensive orientation for medical students under a transition pedagogy that facilitates "...a sense of engagement, support and belonging" (Kift, Nelson & Clarke 2010, p. 1) and provides a curriculum that engages students in their new academic and social environment. Although not designed for medical students, an innovative orientation program was developed at Goteborg University in Sweden for students transitioning into other Health Science programs (Hultberg et al. 2008). It involved a ten-week course where students learned research skills, tools for learning and communication, and ethical and personal values in the health sciences area. Students were required to work in groups of six to ten students with a teacher who was also undertaking a parallel course in pedagogy and teaching in higher education. They were required to reflect on the group process and their own learning and most students reported positively on this orientation to higher education. Important outcomes from this project were that students "...started reflective thinking on their own learning..." (Hultberg et al. 2008 p. 54), and it also gave them the opportunity to begin reflecting on their professional identity.

Students entering courses such as Medicine, where a PBL curriculum is used, not only need general orientation to the academic, social and administrative aspects of a university environment, but also to a new way of engaging with learning. Moust, van Berkel and Schmidt (2005) reported that students entering a problem-based curriculum vary in their ability to perform the required activities, and they considered it vital for students to receive instructions in the processes of PBL, so that "learners are taught to employ suitable learning and thinking activities to construct, change and utilise their knowledge of a particular subject domain." (Moust, van Berkel & Schmidt 2005 p. 678). They described how during orientation, students may be given training in the skills required for PBL, such as working in groups and giving feedback, but they also advocated regular presentation to students of the theoretical ideas underlying PBL. This will help students engage more willingly in PBL through a deeper understanding of the process and ensure that they understand the "...constructivist, contextualist and cooperative aspects of PBL" (Moust, van Berkel & Schmidt 2005 p. 677).

Several years earlier, Peterson (1997) described how in a PBL curriculum, interpersonal skills such as dialogue and discussion, conflict resolution, team maintenance through giving effective feedback and team leadership were essential for successful group work. He suggested that students could be trained in these skills during orientation as a prerequisite to PBL based courses. Alternatively, they could be trained whilst they work in PBL groups by their tutor or other staff who have been trained in the teaching of these skills. Peterson's ideas were similar to those proposed seven years later by Moust, van Berkel and Schmidt (2005) in that they believed that students need continual training in these skills, and that the transition process is not completed by orientation programs occurring in the

first few weeks of the year, but should be ongoing throughout the first year in order to successfully engage students in learning at university.

In summary, it can be seen that the orientation programs offered to students transitioning to higher education vary greatly between different universities and within each university, and that there is very little literature on orientation for students entering medical programs. Reports in the literature indicate that many universities are moving towards a combination of a non-specialised orientation program that meets the general needs of all transitioning students, (e.g. information about information technology, library access, and extracurricular matters such as sporting and cultural activities) together with specialised programs for orientation to each program and course area. This combination of programs may be the answer to providing an orientation that Hultberg (2008) described as "... a well-planned and stimulating introduction to higher education .... a natural part of the transition process, which can help students develop better prerequisites to manage their transition to higher education." Within the current research, orientation provided for transitioning students was be investigated to determine how effective it has been in helping students manage the processes of adjusting to the new social, administrative and academic environment of the CBL medical curriculum.

The concepts of transition, the first year experience and orientation to university have been introduced to set the scene for the experiences students encounter as they enter university. The literature relating to the changes that students encounter in learning and teacher in a higher education institution will be now discussed in detail, including the development of skills for self-directed and small-group learning. These are both important topics for this research as self-directed learning is essential for students learning through a small-group, CBL approach, which is the learning context for this research.

2.5   BECOMING AN ADULT LEARNER

On commencing tertiary education, students encounter approaches to learning and teaching that differ from those they have experienced in secondary school. Constructivist viewpoints of teaching and learning underpin both secondary and tertiary education. Most students currently transitioning to university have been taught at secondary school by teachers who have an understanding of the role of constructivism in the processes of learning and teaching (Matthews 2002), but this has not always been the case. Twenty years ago Wheatley (1991) identified two views of mathematical and scientific knowledge, one that it is a body of knowledge to be taught and the other, from a constructivist's viewpoint, that knowledge is a learner's activity. Constructivists see that learning in mathematics and science occurs in the activity of constructing relationships and patterns, thus meaning that knowledge in these areas does not exist independently of a person. Wheatley saw these subjects taught at schools as a "disembodied set of facts and principles independent of the learner" and not "contextualized, presented in a meaningful setting" (Wheatley 1991, p. 13). He

proposed a model of problem-centred learning because he believed that the presentation of a task for which there is no known solution, created a favourable learning environment. He also described how this model could even be used in the teaching of mathematics where there were strong beliefs that facts and skills must be taught before problem solving can take place.

Matthews saw constructivism as "...undoubtedly a major theoretical influence in contemporary science and mathematical education" (Matthews 2002 p. 121). He argued that constructivism has given teachers an understanding of the function of prior learning in the process of learning new information and made them aware of the importance of understanding in the learning process, and need for students to be actively engaged in their own learning. He distinguished between the personal variety of educational constructivism that focuses on "the individual creation of knowledge and construction of concepts" (Matthews 2002, p. 7) and the social variety where "the importance of the group for the development and validation of ideas" is emphasised. (Matthews 2002 p. 7).

Many students have been exposed at secondary school to teaching methods that help them to actively construct their own knowledge through working in groups. Often the constructivist approach is hampered by teachers having to engage with large groups of students, lack of time and resources and pressure to teach a curriculum that may be content oriented. Brinkworth et al (2009) argued that teachers provide Year 12 students at secondary school with increased assistance with their studies in order to achieve results that will enable selection into highly desirable courses, such as Medicine, at university. This could set up unrealistic student expectations about the nature of learning and teaching that they will encounter at university and indeed this was found to be the case in their recent study (Brinkworth et al. 2009). Year 1 students at university were disillusioned with the lack of feedback on drafts (teachers of Year 12 subjects are required to give students frequent feedback on drafts), the longer time taken for the marking and return of submitted work (many assignments at secondary school would be returned within a week of submission compared with four weeks at university) and the lack of access to teaching staff (readily accessible in Year 12 through daily contact with teachers or simply by knocking on the staffroom door).

In tertiary institutions a constructivist view of learning can focus the approaches to learning and teaching in order to create an environment for students where "..... Learning is an active process of constructing rather than acquiring knowledge and ..... instruction is a process of supporting that construction rather than communicating knowledge" (Kift & Nelson 2005, p. 228). Kift and Nelson (2005) described how a transition pedagogy that coordinates and integrates institutional practices and course and curriculum design is situated within a constructivist view of learning, and can therefore create an environment for a positive first year experience.

Krause and Coates (2008) discussed how the change from subject-based study at school to discipline-based study at university "represents a diminution of instructivist structures present in school contexts and demands more self-directed and independent approaches to academic work" (Krause & Coates 2008, p. 500). In secondary school, students are instructed by their subject

teachers and most work is done individually rather than as group work. However, at university, lecturers and tutors have a very different role and group work is required in many areas especially where the PBL approach to teaching and learning is used, whether in particular modules or across the whole curriculum, as in many medical programs. Collaboration with peers has been shown to have many benefits for learning, including helping individual students in their knowledge construction and building networks that are centred on learning (Krause & Coates 2008).

The concept that adults may learn differently from children was introduced to educators of adults in the 1960s by Malcolm Knowles (1970) in his model of andragogy. The term "pedagogy" defines a set of beliefs about the art and science of teaching children whereas the term "andragogy" defines an alternative model of instruction for adult learners (Hiemstra & Sisco 1990). The pedagogical model contains assumptions about child learners who undertake teacher-directed education and the andragogical model contains these assumptions from the perspective of adult learners, who have undergone developmental changes in their approaches to learning, making them more motivated and self-directed in their learning. These assumptions are compared in Table 2 below, adapted from Chapter 4 of Knowles, Holton and Swanson (2005).

Whilst initially pedagogy and andragogy may have been considered as two separate models of learning, as people applied the concepts of each of these models to their teaching situation, it was found that in some contexts of adult education some of the andragogical principles did not seem to hold as well as the pedagogical ones and vice-versa.

Table 2. A comparison of Knowle's assumptions for pedagogy and andragogy

Assumptions	Assumptions about child learners in the pedagogy model	Assumptions about adult learners in the andragogy model
The need to know.	Learners only need to know what the teacher is teaching them so they can pass to the next grade	Learners need to know why they need to learn something and possible applications for it. They have a raised level of awareness of this and can identify gaps in their learning.
The learner's self-concept	Self-concept of being dependent on the teacher	Self-concept of being responsible for their own decisions and a self-directing human being
The role of experience	The learner's experience is not considered but it is rather the experience of the teacher and resource providers that is valued	Adults have accumulated a variety of experiences which can provide rich resources for learning but also necessitates the use of a variety of teaching techniques to meet the needs of learners with different experiences
Readiness to learn	Learners are ready to learn in accordance with what the teacher tells them.	Adults are ready to learn those things they need to know especially relating to the developmental tasks of their social roles at the time of learning.
Orientation to learning	Learners see learning as acquiring subject-matter and so their learning is subject-centred	Adults' learning is more problem-centred and they learn things that they need to know to solve immediate problems or that apply to their life situation.
Motivation	Learners are motivated by external factors such as passing exams or parents' and teachers' approval	Adults are more motivated by internal motivation such as personal growth and development

In 1980, Knowles described how the models were best used alongside each other because "...they are probably most useful when not seen as dichotomous but rather as two ends of the spectrum, with a realistic assumption (about learners) in a given situation falling in between the two ends (Knowles 1970, p. 43). In practice this means that educators must be aware of which of the assumptions in the two models fits the context of their teaching. This involves having a sound understanding of the desired learning outcomes and the developmental stages of the students so that the appropriate assumptions from each of the models can be applied to the particular learning context (Merriam, Caffarella & Baumgartner 2007).

The development of a more self-directed approach is required of students during their first year at university, as part of the transition to adult learning. Moust, van Berkel and Schmidt (2005) described how students leaving secondary school and entering university have different amounts of experience with self-directed learning because "Most students are educated in high schools in which teacher-directed education is the most prevalent way of managing the teaching-learning process." (Moust, van Berkel & Schmidt 2005 p. 677). Self-directed learning is one of the key characteristics of adult learning and has been defined as "... a process of learning in which people take the primary initiative for planning, carrying out and evaluating their own learning experiences" (Merriam, Caffarella & Baumgartner 2007, p. 110). Knowles (1975) had described the following essential components of self-directed learning: the educator should be a facilitator of learning and not a source of content and learners should be involved in identifying their learning needs, objectives and resources, in implementing the learning process and in the ultimate evaluation of that process.

Candy (1991) distinguished self-direction as an *outcome or goal of learning*, from self-direction as a *process* of learning and argues that the term "self-direction" refers to the following four phenomena:

- a personal attribute

- the desire and ability to conduct one's own education

- a mode of instruction in formal settings where the learner has control

- the individual pursuit of education outside an institution in a natural setting

Candy also explored the relationship between self-directed learning and two other important concepts of adult learning, those of independent study and life-long learning:

- Independent study has been used to describe a process of teaching and learning that focuses on the individual rather than on a group or class of students. He described how independent study may be "... a situationally variable construct, depending on an individual's capability to act independently in a particular situation" (Candy 1991, p. 12), Because the student may not be always working independently of teachers or the set curriculum, but may simply be working on his/her own, it was posited that independent study may be more realistically called "individualized' study. Independent study is similar to self-directed learning that occurs outside institutions in that the learner has a high degree of control over aspects of the learning such as setting of objectives, content and assessment of learning outcomes.

- Self-directed learning is connected with life-long learning because it is both a means and an end of life-long education. As a means, self-direction is one of the most common ways in which people pursue life-long learning and as an end, one of the main aims of life-long learning is to equip people with the skills to be self-directed after they leave their educational institution.

The process of self-directed learning has been investigated from several aspects but Taylor (1986) was one of the first researchers to investigate self-directed learning in the classroom from the perspective of the learner. She found that learners went through a transition process as they experienced learning in a course that was structured around self-directed learning and she was able to discern a common pattern in how these learners underwent a "...major re-orientation of their perspective on learning, knowledge, authority and themselves..." (Taylor, M 1986, p. 56). The process pattern consisted of four phases which the learner experienced:

- equilibrium with the current mode of learning

- disorientation, when the learner experiences a new and unfamiliar mode of learning

- exploration, when the learner grapples with the new way of learning in an accepting and relaxed manner

- re-orientation, when the learner reflects on the new learning experience with insight into how the new experiences and ideas have been synthesised to give an understanding of the new learning process.

Transition between these phases involved the learner assuming greater responsibility and self-direction in their learning. The findings were significant in that they revealed previously unacknowledged demands on both the learner and the teacher guiding the students in self-directed learning, and suggested that "... the capabilities of instructors promoting self-direction include special social and psychological understanding and expertise" (Taylor, M 1986, p. 70).

In a subsequent paper, Taylor & Burgess (1995) described how, in view of the demands of self-directed learning, it was important for students to be prepared for this way of learning in higher education through orientation towards the processes involved. In support of this orientation, they firstly referred back to Taylor's first paper to posit that students may be at different stages of their learning development when they are introduced to self-directed learning. Secondly, they believed there was an ethical reason for orientation as described by Candy: "To force learners into a self-directed or learner controlled mode for which they may feel unprepared seems, to me, every bit as unethical as denying freedom when it is demanded" (Candy 1987, p. 163). To develop self-directed learning in their Social Work course, Taylor and Burgess used an approach to learning called "Enquiry and Action Learning". Their orientation of students to this new approach began as early as the selection procedure, when they showed students a video about the new way of learning during their interview process. Intensive orientation to self-directed learning then occurred within the first few days of the course that addressed lecturers' expectations of self-directed learning, the role of the facilitator, learning in groups and issues of time management.

The role of the small-group facilitator, or tutor, as they guide students in self-directed learning, and the preparation that students receive for self-directed learning during orientation, are extremely relevant to this research where the context of learning is the CBL approach. The CBL tutor is one of the main instructors for transitioning students and findings concerning the role and capabilities of these instructors will be considered in Section 2.6.4. An important consideration in future chapters will be the link between the guidance of the tutors and the effectiveness of preparation of students for self-directed learning through a CBL curriculum.

A concept that is related to self-directed learning but was developed much later, in only the last two decades, is that of self-regulated learning. Pilling-Cormack and Garrison (2007) described how in self-directed learning, external factors, such as the classroom setting and the characteristics of the student and the teacher, influence the amount of control that students can have over their learning. The concept of self-regulated learning focused more on the control of features internal to the learner such as their cognition, motivation and behaviour (Pilling-Cormack & Garrison 2007). Zimmerman (1989) described self-regulated learning as "... a specific form of learning that can be distinguished from learning that is externally regulated .... learners have control over their own learning and they can direct cognition and motivation to achieve a specific learning goal." (Zimmerman 1989, p. 416). The main distinction between self-directed learning and self-regulated learning seems to be that the concept of self-directed learning is broader than that of self-regulated learning, because it pertains to both the design features of the learning environment and the characteristics of the learner, whereas SRL pertains to a positive feature of the learner (Loyens, Magda & Rikers 2008) .

In the health professions, self-directed learning has been advocated as a desirable method of learning for many professionals ranging from medical students to practising doctors, nurses and other health care professionals. It promotes the development of life-long learning skills which are essential in these professions where the bodies of skills and knowledge are constantly expanding. Murad et al (2010) reviewed the literature to investigate the effectiveness of self-directed learning, compared with traditional teaching methods, in improving outcomes in the education of health professionals. They found that, although self-directed learning was associated with a moderate improvement in the knowledge domain, the increases in the skills and attitudes domains were not statistically significant. They also found that self-directed learning was more effective when learners were involved in the choice of resources and that the benefit of self-directed learning to more advanced learners seemed greater than the benefit to young learners.

It has been proposed that the quality of education in the health professions could be improved with the development of a "theoretical model unique to self-directed learning" (Mazmanian & Feldman 2011, p. 324), because such a model would clarify the overlap with other models and enable educators to define policy and process needed to maintain the quality of education and patient care in the health professions.

The PBL approach to teaching and learning, used in many health and medical programs, requires the implementation of both self-directed learning and self-regulated learning. The four dimensions of self-directed learning, defined by Candy (1991) as personal autonomy, self-management in learning, the independent pursuit of learning and the learner control of instruction, all play a role in PBL. A review by Loyens, Magda and Rikers (2008) showed that PBL helps students to develop skills in both self-directed learning and self-regulated learning and that this development can be enhanced by "... conceptual clarity of what self-directed learning entails and guidance for both teachers and students" (Loyens, Magda & Rikers 2008, p. 424). Researchers have emphasised how important it is that the concepts of self-directed learning and self-regulated learning are better understood in medical education. They advocate firstly, the need for the development of research tools that can identify self-regulated learning processes, thereby informing academic and clinical teaching (Sandars 2012) and secondly, the design of learning environments that will support medical students in their self-regulated learning process (Corrigan 2012).

In summary, students transitioning to university are required to develop the skills of adult-learners, including self-directed, independent and self-regulated learning. The design of curricula in universities has been changing to meet the needs of a changing society and a changing student population, and modern curricula both require and enhance these learning skills. One area in which curriculum design has undergone significant transformation in the past forty years is in the design of medical programs, and the design of a modern medical curriculum will now be reviewed in order to provide the context for transitioning students and their tutors.

2.6   THE DESIGN OF A MODERN MEDICAL CURRICULUM

2.6.1   Introduction and brief history

In the early 1970s in the Medical Faculty at McMaster University in Canada, there was concern over the decreasing effectiveness of the traditional basic science lectures and clinical teaching program (Boud & Feletti 1997). This was a time when the amount of medical information was rapidly increasing, the demands of clinical practice were changing and new technologies were emerging. In response to this concern, problem-based learning (PBL) was introduced by staff for students in the pre-clinical years (Barrows & Tamblyn 1980). Key features of this new approach were that students worked in small groups, and were engaged in learning through a problem that stimulated a student-centred inquiry process. They worked collaboratively with a tutor, who was more of a group facilitator rather than a provider of knowledge, to explore what they already knew and to determine what they needed to learn. They formulated hypotheses about the problem, tested and revised these hypotheses as they applied new knowledge, and finally they reflected on the individual and group-learning process (Mennin et al. 2003). The development of a PBL approach provided a move away from a subject-based, traditional curriculum to one that could be fully integrated across all areas of the program. The use of a medical problem to stimulate learning required the integration of knowledge and skills application and collaborative learning. It provided learning in context, and

developed learners who were more self-directed and equipped with skills that they needed for their future professional lives (Maudsley, G. 1999a).

In the late 1970s, the University of New Mexico School of Medicine experimented with a similar curriculum approach in which the learning was clinical problem-based, student-centred and community oriented in order to "equip graduates with skills in self-directed, lifelong learning...." (Kaufman, A et al. 1989 p. 285). They ran this curriculum parallel with a more conventional curriculum and found that students from the new curriculum scored lower in the Part I examination in basic sciences, but higher in Part II clinical sciences, received higher grades in clinical placements and experienced less distress than students from the conventional curriculum.

In the 1980s and 1990s, the PBL approach was introduced into medical courses in North America and Europe. In Australia, Newcastle University was the pioneer of PBL in medical schools. Following a review of their curriculum in 1983 which had included some aspects of PBL, a revised curriculum was introduced in 1985, incorporating all the key features of PBL (Henry, Byrne & Engel 1997).The University of Melbourne, with a dual program that allowed undergraduate entry, and postgraduate entry for one-third of its students, introduced PBL in the late 1990s (Grković 2005), and the University of Adelaide introduced it as part of the medical course in the early 1990s and as the major learning approach across the whole curriculum from first to third year in 2000.

2.6.2   *The nature of a variety of small-group learning approaches*
Whilst Barrows and Tamblyn (1980) originally developed the PBL approach for use across their whole curriculum in pre-clinical medicine, Mennin (2007) reported that there are now many variations of PBL being used. The PBL approach has been used in a single subject of a traditional curriculum, or as "central to philosophy for structuring an entire curriculum promoting student-centred, multi-disciplinary education and lifelong learning in professional practice" (Barrows & Tamblyn 1980). However, the different uses of the PBL approach are all grounded in current educational theory in that the learning is constructive, self-directed, collaborative and contextual and the main principles of PBL, as described in the previous section, are adhered to.

Confusion has arisen in the literature caused by the different uses of the term PBL, (Maudsley, G. 1999a) and by attempts to define the term "PBL" for consistent use (Savery 2006). In medical programs there are two different contexts for implementing PBL: firstly, where students enter straight from secondary school as in Australian undergraduate courses, and secondly in medical schools where students enter as graduates, such as in the United States and graduate entry medical schools in Australia (Taylor, D & Miflin 2008). This has led to different PBL curricula evolving because they are designed for different cohorts. PBL is also used as an add-on to the more traditional lectures and laboratory classes, or in combination with information-based learning. This variety of uses of PBL has led to doubts as to whether comparison of outcomes from these different uses is valid.

Revisiting Barrows' definition and description of PBL helps to clarify the meaning of this term. Barrows (1980) defined PBL as "the learning that results from the process of working towards the understanding or resolution of a problem. The problem is encountered first in the learning process and serves as a focus or stimulus for application of problem-solving or reasoning skills as well as for the search for or study of information or knowledge needed to understand the mechanisms responsible for the problem and how it might be resolved." (Barrows & Tamblyn 1980 p. 18). This differs from approaches to problem solving that students experience at secondary school where it is usually assumed that students need the knowledge required to approach a problem before they can start working on the problem. Hamdy (2008) described the PBL approach well when he stated that "The main aim of PBL is to develop learning around a problem. It is not to develop problem solving." (Hamdy 2008 p. 740). Therefore in a PBL session, solving the problem or reaching a diagnosis is not as important as the learning of knowledge and skills, and the ability to apply the new knowledge and skills in other clinical contexts.

Taylor and Mifflin described Barrows' PBL approach as designed for the pre-clinical stage of the curriculum and to be used across the whole curriculum and not with other methods. They described Barrows' objectives for PBL as:

- Students acquire a body of knowledge that they can retrieve and use across all domains required to address clinical problems

- Students develop cognitive skills for clinical reasoning so that they can use their knowledge to evaluate patient's problems and provide effective care

- Students develop self-directed learning skills

- Students are motivated to extend, update and improve their knowledge as adult learners in their professional lives.

To achieve these objectives, the PBL tutor facilitates a first tutorial session in which students in a small group (ideally no more than eight) are presented with a problem that can be "Ill-structured and messy, reflecting the nature of problems in practice" (Taylor, D & Miflin 2008 p. 744). They analyse the problem, identify significant aspects and from the activation of prior knowledge they may have, they generate and constantly refine hypotheses to explain the presenting symptom. They develop diagrams for mechanisms of the pathological process, and identify learning issues in terms of the knowledge they need to understand the problem, questions they need to ask the patient and possible tests that are needed. Important aspects of the problem are recorded as they are worked through by the group. Between sessions, students engage in self-directed study where they individually follow up learning issues by identifying and accessing resources and then considering how this information relates to the patient's problem. In the second session, the group applies what they have learned from following up the learning issues, reviews and tests hypotheses with reference to the relevant knowledge that has been learned and generates new hypotheses or modifies previous ones. Existing knowledge and skills are integrated with what has been learned individually

and as a group, and upon completion of each case, the learning process that has occurred is evaluated both from the point of view of the group and its individual members.

Dolmans et al (2005) described how PBL is an approach to learning that is constructive, self-directed, collaborative and contextual. They believed that although it may differ in the way it is implemented in different institutions and programs, it will always possess the following characteristics: the problems act as a stimulus for learning, tutors are group facilitators and group work provides the stimulus for interaction.

Several decades after the introduction of PBL, the importance has been emphasised of reviewing the PBL approach and making re-adjustments to the curriculum in response to the concerns of staff and students (Moust, van Berkel & Schmidt 2005). Changes in student behaviour over the last decades in which PBL has been evolving, "...have brought in changes to the process of PBL that interfere with their learning process." (Moust, van Berkel & Schmidt 2005 p. 669). One change observed in student behaviour in the medical school at Maastricht University was a decrease in the amount of time they were spending on self-study and literature searching. In response to this change, staff believed that "...informing students more about the ideas underlying PBL and ...helping students more extensively to become self-directed learners" (Moust, van Berkel & Schmidt 2005 p. 677) would help students to adapt to the PBL approach.

Another small-group learning approach that is similar to PBL but involves the provision of additional scaffolding for students is Case-based Learning (CBL). Unlike PBL, a CBL curriculum provides students with information about the case, tasks to complete before their first tutorial, specific references for background reading and specific tasks for each tutorial session. A CBL approach was introduced at the Medical School in the University of California, Los Angeles, in an effort to improve their approach to learning and teaching (Slavin, Wilkes & Usatine 1995). A small group, CBL approach was introduced to their "Doctoring III" course, and involved students being given specific references to read in preparation for the first tutorial, the provision of guidance by tutors during tutorials when students begin to explore tangents, and a focus on creative problem solving. Srinivasan et al (2007) reported on subsequent, similar changes in the first, second and third year "Doctoring" courses of the medical programs at both the University of California, Los Angeles and the University of California, Davis, when they moved from a PBL to a CBL approach. At both locations there were positive outcomes from the change, with the majority of students and teachers preferring the new, CBL approach, the strengths of which were identified as being "...that it made better use of time, had fewer unfocussed tangents and decreased outside and busy work (required work without perceived benefit)." (Srinivasan et al. 2007 p. 78).

The change from a PBL to a CBL curriculum in the medical program at the University of Adelaide has been discussed in Section1.3.1, p. 22. The CBL approach used at the University of Adelaide differs from the approach in the United States described in the previous paragraph. In the US, CBL was used in only one area, the "Doctoring Course", across the three pre-clinical years, whereas at

the University of Adelaide, CBL, supported by carefully scheduled didactic lectures, is used across all three domains comprising the whole curriculum.

2.6.3   Outcomes of PBL

Over the last twenty years, research on the outcomes of PBL approaches have focussed on comparing student performances in written and clinical examinations under the traditional curriculum and the new PBL curriculum. Two major problems have emerged with this research, the first being that in institutions where there has been a change from a traditional curriculum to a PBL curriculum, often there has not been a corresponding change in the way students have been assessed. Institutions use student results to measure the outcomes of the new PBL curriculum, but these results are based on assessment methods used for the previous traditional curriculum, which may not be aligned with a PBL approach. For example, Mennin et al. (1993) questioned the appropriateness of using standardised examinations such as the National Board of Medical Examiners (NBME) examinations for assessing students in a PBL curriculum. This also questions the meaningfulness of comparing results from PBL and traditional curriculum where identical methods have been used to assess different learning and teaching approaches. The second problem lies in the comparison of data on the outcomes of PBL from a wide variety of contexts, and this difficulty has arisen because there are "wide differences in conditions, settings, practices at different institutions, and small number of participants. In addition, variances in assessment methodologies and differences of opinion as to the objectives of medical school curricula make obtaining data as to the effectiveness of curriculum, inherently difficult." (Mennin et al. 2003, p. 103).

There are numerous reviews of the literature on the different outcomes of PBL. Many reviews in the 1990s reported positively on the outcomes (Albanese & Mitchell 1993; Vernon & Blake 1993), finding that students enjoyed the approach, which they found challenging and engaging, and staff enjoyed teaching using the PBL approach. Negative reports claimed that the graduates of PBL were not distinguishable from traditional graduates (Berkson 1993), and that outcomes for students in PBL groups were less favourable than the control group or that there was no increase in knowledge of students in PBL curricula (Colliver 2000). Dochy et al (2003) showed that the tendency for the PBL approach to have a negative effect on students' knowledge disappeared after Years 1 and 2, and although students gained slightly less knowledge under PBL, they retained more of their acquired knowledge. Students in a PBL curriculum were also shown to develop better clinical skills (knowledge application) than those in traditional curricula (Dochy et al. 2003; Mennin et al. 2003).

Hoffman et al (2006) reported that a PBL curriculum "better prepare(s) graduates with the knowledge and skills needed to practise within a complex health care system." (Hoffman et al. 2006 p. 617). A systematic review of thirteen studies showed that PBL-based courses had positive effects on the competency of physicians, for example, in the dimensions of the ethical aspects of health care, communication skills and self-directed learning (Koh et al. 2008). A review of the effects on knowledge and clinical performance after forty years of PBL, agreed with Koh's findings for medical graduates of PBL-based courses (Neville 2009). A summary of these findings on the outcomes of the PBL approach is given in Table 3, p. 51.

Thus the literature includes extensive research on the outcomes of a PBL curriculum on the knowledge and clinical skills of students at various levels within a medical program and after graduation. However, no research is reported on the impact of a PBL curriculum on students when they transition into a medical program. These outcomes are important because a PBL curriculum provides a way of learning and teaching for transitioning students that differs greatly from their previous experiences and from the curricula of many other university programs. This research has investigated these outcomes and provides evidence of their importance for students transitioning into medical programs.

2.6.4   The role of the tutor in PBL

It is important to explore the literature on the role of the PBL tutor because as discussed in Section 2.3, p. 33, for a sound transition pedagogy based on the constructivist viewpoint, "... instruction is a process of supporting that construction rather than communicating knowledge" (Kift & Nelson 2005). PBL tutors are instrumental in instructing transitioning students in the PBL approach and guiding them in their development as adult learners. PBL tutors have a large number of contact hours with students; for example, students in the Adelaide medical program meet with their CBL tutor for six hours per week. A PBL based curriculum thus promotes the engagement of students in their learning by providing opportunities for staff-student contact, as recommended for a successful First Year Experience (previously discussed in Section 2.2, p. 29).

The role of the tutor in PBL or CBL is very different from most students' experience of the role of their teachers at secondary school, as it is that of a group facilitator who can guide students as they develop skills in scientific reasoning, self-directed learning and self-evaluation (Barrows & Tamblyn 1980). Whereas the role of the tutor in traditional curricula has been described as that of teaching facts, the role of the PBL tutor is "to facilitate collaborative knowledge construction" (Hmelo-Silver & Barrows 2006 p. 21). There was initially debate as to whether tutors needed to be content experts, with Barrows and Tamblyn (1980) concluding that it was better for tutors to be experts in the field as this would enable them to know when students were heading down the wrong track, help students discover this mistake for themselves and provide students with better feedback on their learning. Significant research in the 1990s (De Grave et al. 1999; Maudsley, G. 1999b; Schmidt & Moust 1995) led to further debate and no definitive answers to this complex issue have emerged, as the role of the PBL tutor seems to depends on the individual medical program under consideration.

Table 3. A summary of the literature on the outcomes of problem-based learning

YEAR	AUTHOR/S	Type of Report	Findings
1993	Albanese, MA & Mitchell, S	Meta-analysis of English language literature from 1972-1992	PBL was nurturing and enjoyable. PBL students: • Scored lower on basic science examinations • Performed as well and sometimes better on clinical examinations
1993	Vernon, DTA & Blake, RL	Meta-analyses on 35 studies (1970-1992) comparing PBL with more traditional methods of medical education.	PBL students performed significantly lower than traditional students on NBME I examination. Value and superiority of PBL supported by staff attitudes, student mood and attendance.
1993	Berkson, L	Review of literature published before 1992. Examines PBL's theoretical foundations as well as relevant empirical and experimental data	Graduates of PBL were not distinguishable from traditional graduates. The experience of PBL could be stressful for students and faculty. Implementation of PBL may be unrealistically costly.
2000	Colliver, JA	Review of literature from 1992-1998.	No convincing evidence that PBL improves knowledge or clinical performance. Only loose ties between educational theory and research into PBL
2000	Norman, GR & Schmidt, HG	Paper challenging Colliver's claims	Randomized controlled trials cannot be used to measure outcomes of PBL because it is impossible to isolate one variable in educational environment. Called for research investigating the PBL process rather than its outcomes.
2003	Dochy, F et al	Meta-analysis of 43 articles that were empirical studies of PBL in tertiary education in real-life classrooms.	Negative effects on knowledge outcomes disappear after Year 2. Results for skills outcomes are consistently positive.
2003	Mennin, S et al	Position paper on PBL looking at the literature on outcomes from 1992.	PBL students • score lower on the USMLE Step 1 Examination • appear to have better clinical skills
2006	Hoffman KP et al	Paper comparing several features of graduates from PBL curricula and traditional curricula.	All authors reported that PBL graduates were displaying equivalent or superior competencies to graduates of traditional curricula.
2008	Koh, GCH et al	A systematic review of evidence of the effects of PBL learning during medical school on physician competencies after graduation	
2009	Neville, AJ	A review of articles on PBL methodology cited by most reviews and published since the last systematic review.	

The qualities of PBL tutors originally espoused by Barrows (1980) have been endorsed in later reviews. Three qualities of a tutor that help effective facilitation have been described as "a suitable knowledge base regarding the topic under study, a willingness to become involved with students in an authentic way and the skill to express oneself in a language understood by students." (Schmidt & Moust 2000). It is also desirable for tutors to be "skilled in facilitation, active listening, motivating learning and critical reflection" (Maudsley, G. 1999b p. 658).

Barrows (1980) described how tutors also learn in the process, not by becoming a member of the group themselves, but by remaining a guide who is constantly being exposed to new information and new ways of looking at a problem. Tutors have the responsibility of helping the students to learn and they do this by challenging them to explain or defend their thinking, gently guiding them when they are not on the right track, encouraging them to make causal links between their hypotheses and the information they are presented with in the case, and helping them to work through self and group-evaluation at the end of the process. Tutors should only be providing factual information to students when they are "sure they (students) have exhausted their own logic or information base and feel that the information provided will facilitate further work with the problem at the time without sacrificing the value of self-study." (Barrows & Tamblyn 1980 p. 108).

PBL tutors can be challenged by the change from their traditional role of purveyors of information and facts, to that of a skilled group facilitator. Many institutions provide training for their PBL tutors but tutors have requested further training in "group facilitating, questioning, handling difficult situations and evaluating students" (Kaufman, D & Holmes 1996, p. 371). When PBL was introduced into the medical curriculum at the University of New Mexico from approximately 1979 until 1989, Kaufman and Mennin (1989) reported that PBL did not increase the demands on tutor time, as had been expected. Due to the greater amount of time for students' self-directed study, there was actually a decrease in time spent preparing for tutorials and an increase in the time spent with students, compared with tutors in the traditional curriculum. They considered that the training of tutors for their new roles as PBL group facilitators was a "key element" in the introduction of PBL, as it brought together staff from different departments and backgrounds and for many was "the first time they had received instruction in how to be educators" (Kaufman, A & Mennin 1989 p.289).

Reflective practice is important for all participants in a PBL curriculum, but it has been found that some PBL tutors lack skills in this area (Maudsley, G & Strivens 2000). It has been recommended that "In the future more attention should be paid to faculty-development strategies in which tutors learn to reflect on their conceptions of the role of tutor, on their conceptions about student learning and on their actual behaviour as tutors." (Dolmans, D. H. et al. 2002 p. 178). Although tutors perceived PBL to be student-centred and involving small-group work, they often ignored the reflective component of PBL and thus were not modelling the process of reflective practice for the students in their PBL groups (Maudsley, G. 2002). Bowden (inTrigwell & Prosser 2004) proposed that the use of phenomenograhic pedagogy (reflecting on variations in the way people experience the role of teaching) could assist teachers to reflect on the variations in their thinking and practice, and how these variations could relate to differences in their students' approaches to learning. He showed that learning for understanding with conceptual change, in addition to transmission of information, was a better type of learning than information transmission alone.

It has been shown that at tertiary levels there is a relationship between approaches to teaching and students' approaches to learning (Trigwell, Prosser & Ginns 2005). In an "Approaches to Teaching Inventory", five different approaches to science teaching were described. It was shown that the

approach to teaching which brought about a conceptual change in students and was student-focussed (CC/SF) was associated with a deep approach to learning in students that resulted in meaningful understanding for them. Use of The "Approaches to Teaching Inventory" could therefore act "…as a stimulant for discussion among groups of teachers to raise awareness of the variation in qualitatively different ways of approaching teaching". (Trigwell, Prosser & Ginns 2005 p. 349).

There is still a great deal of confusion about the role of the tutor in PBL, but there is agreement that it is no longer that of the "traditional, knowledge-imparting teaching" (Taylor, D & Miflin 2008 p. 748). The amount and quality of guidance or direction given by PBL tutors seems to vary due to the great variety of approaches to PBL used at different institutions, and may not necessarily imply that one way is superior to another. However Taylor and Mifflin (Taylor, D & Miflin 2008) warned that the inability of some basic science teachers to become skilled PBL group facilitators, where the required characteristics may be the opposite from those of traditional teaching, could contribute to the failure of PBL to become established as a new approach to learning and teaching.

Thus it can be seen that the tutor plays a vital role in a transition pedagogy for a PBL curriculum. Returning to the Transition Pedagogy model (Figure 3 on p. 35) , it can be seen that effective strategies from a PBL tutor can engage students in learning through the PBL curriculum and provide learning support for transitioning students. The support provided to students by their instructors is referred to as "scaffolding" and this concept will now be reviewed with specific relevance to scaffolding in small-group learning.

2.6.5   *Scaffolding and its role in a PBL curriculum*
Scaffolding is the provision of sufficient support to students so that learning is maximized when new concepts and skills are being introduced. Vygotsky (1978) demonstrated that the way we interact with our social, cultural and historical background influences the way we think, and identified the "zone of proximal development" as the difference between what a child can do unaided and what it can do with assistance from a more experienced person. Scaffolding can bring learning within a student's zone of proximal development by making difficult tasks easier to tackle. It is therefore an important part of transition pedagogy and Kift and Nelson (2005) described how a design for the First Year Experience "…..which provides the necessary scaffolding inside and outside the classroom, to assist students in transition to adjust to a more independent style of learning, would seem to be the obvious way to inspire, excite and motivate new students" (Kift & Nelson 2005 p. 229).

Hogan and Pressley (1997) defined a good scaffolder as "... one who is supportive without being overly directive ..... and looks for the point where a student can go it alone" (Hogan & Pressley 1997, p. 2). They described how teachers undertake instructional scaffolding both with individual students and in a classroom setting. Good scaffolders are aware that because students differ greatly in their paces of learning, they differ in the amount of scaffolding they need and they also differ in the type of scaffolding they need with different tasks.

Although all staff involved in teaching a PBL curriculum must understand the concept of scaffolding, the PBL tutor provides the majority of scaffolding for students by guiding them though the problems or cases they are studying. Ideally, scaffolding by PBL tutors should provide students with guidance in the process of learning and in the provision of new knowledge, once students have explained the need for this knowledge and exhausted all other sources of this knowledge. Savery (2006) emphasised how important scaffolding is for learners who are new to PBL and he advocated significant instructional scaffolding to enable new students to develop skills in problem-solving, self-directed learning, teamwork and collaboration "to a level of proficiency where the scaffolds can be removed" (Savery 2006 p.15).

Whilst PBL has been described as a minimally guided instructional approach that is inefficient and ineffective (Kirschner, Sweller & Clark 2006), this description has been refuted by Hmelo-Silver, Duncan and Chin (2007) who believe that "Scaffolded inquiry and problem-based environments present learners with opportunities to engage in complex tasks that would otherwise be beyond their current abilities" (Hmelo-Silver, Duncan & Chinn 2007 p. 100). They described how there are many forms of scaffolding in PBL that promote the construction of knowledge, and only provide direct instruction to students once they have a need for it and on a just-in-time basis. Tutors ask questions that "scaffold student learning by modelling, coaching and eventually fading their support" (Hmelo-Silver, Duncan & Chinn 2007 p. 102). In response to the claim that the approach to PBL is inefficient and ineffective, Hmelo-Silver, Duncan and Chinn (2007) discussed several studies showing that Inquiry-based learning results in significant benefits for students compared with traditional instruction.

A PBL curriculum can provide the scaffolding necessary for a transition pedagogy that assists students as they adjust to a more independent style of learning (Kift & Nelson 2005). Peterson (1997) described how students entering medical courses can be scaffolded in the development of skills essential for participating in PBL, such as the skills to work effectively as a member of a small group, including dialogue, discussion, conflict resolution and understanding the roles of different members of the group. He suggested that scaffolding for students to learn these interpersonal skills could be provided either as a prerequisite to commencing PBL sessions, or whilst they work on a problem during PBL sessions. This scaffolding would be gradually withdrawn as the students developed interpersonal skills and the learning of the individual and the group was enhanced.

Koschman, Glenn and Conlee (1997) described how the tutor plays an important role in providing scaffolding when students in a PBL group are generating a learning issue. They referred to the tutor as a "coach" who could "provide implicit endorsement for (this) topic as worthy of further exploration, facilitate the students' reflection on the nature and sources of their knowledge and show by example how to think about one's thinking" (Koschman, Glenn & Conlee 1997 p. 7).

Scaffolding is important in helping students to become autonomous in the integration of their knowledge, which involves differentiating new ideas from what they already know, integrating new information with current knowledge and restructuring their ideas to include this new information. Davis (2000) showed that scaffolding to promote self-monitoring can encourage students to plan for and reflect on their learning. This reinforces the view that to bring about effective learning in PBL, scaffolding should "support students' learning of both how to do the tasks as well as why the task should be done that way" (Hmelo-Silver, Duncan & Chinn 2007 p. 100).

As described above, scaffolding in medical programs using a PBL curriculum has been well documented in the literature, but very little reference is made to scaffolding for the transition into the first year of a PBL medical program. In the current study involving a medical program based on CBL, scaffolding provided by CBL tutors is a potentially important component of a curriculum that engages transitioning students in learning. Consequently it forms an important part of this research in the first of the four key strategy areas vital to a successful transition pedagogy for the First Year Experience (see Figure 3, p. 23).

The review of the literature concerning modern medical curricula has provided the context for learning in many medical programs. Kift, Nelson and Clarke (2010) emphasised the importance of context in a transition pedagogy, and in this study, Case-based Learning underpins the learning context for students (see Section 1.3.1, p. 22). The review has also shown the complexity of the transition process for students entering medical programs, because the PBL/CBL approach used in medical programs is very different from the traditional curricula of many other university programs. This highlights the importance of the current research because of the paucity of research into aspects of a PBL/CBL curriculum that are important for an effective transition pedagogy. These aspects, including the roles of scaffolding and the tutor in providing a positive first year experience, are areas that were investigated in this research.

2.7   IMPLICATIONS FROM THE LITERATURE FOR THIS RESEARCH

The literature contains many implications for research regarding the nature of the transition process for students entering university, and the nature of learning and teaching in PBL/CBL approaches that are employed in many medical programs. Especially evident is the scant amount of literature on the transition into medical programs, and the model of Transition Pedagogy provides a framework for investigating this transition. Transition into medical programs has been shown to be especially complex for students who encounter a PBL/CBL approach to learning and teaching, and this research aimed to investigate this complexity through four research questions designed around the Transition Pedagogy framework.

The lack of research and evidence on the transition into medical education suggests that this research is vital to investigate a transition pedagogy for an optimal first year experience for medical

students. The literature has shown that, for a successful first year experience, a transition pedagogy based on a constructivist viewpoint must address the issues of learning for the students and instruction for the teachers. This research addressed both learning and instruction issues by investigating the perceptions of both students and their CBL tutors about transitioning into a medical program. As long as nine years ago, the research on transition was criticised for being too concerned ".…. about aspects of the first year experience that are of little consequence to the students themselves" (McInnis 2001a p. 112). Institutions focussed on the development of curricula that were substantial and comprehensive rather than asking students about what they found important in the transition process. This research sought students' perceptions through surveys, focus groups and interviews that investigated the transition into learning and teaching via a CBL curriculum.

This study focussed on the first year experience for students transitioning specifically into a CBL medical program within the School of Medicine, in the Faculty of Health Sciences, at the University of Adelaide. In their study of the first year expectations and experiences of students and teachers across science and humanities courses, Brinkworth et al (2009) called for more investigations of the transition process by individual faculties and institutions. The knowledge and understanding gained should then be used to design transition programs that meet the needs of the students and staff in that institution. Evans (2000) had also called for research and planning by each faculty as the type of orientation needed varies with the nature of the course and the student body: "Individual institutions will need to identify which factors are relevant to their students and to plan appropriate strategies." (Evans 2000 p. 8). The current study investigated the orientation provided by faculty staff, specifically tailored to meet the needs of students transitioning into the undergraduate medical program, and collected data from academic and administrative staff, in order to identify factors relevant to the transition for these medical students.

This research delved into the complexities of a PBL/CBL curriculum by seeking evidence from transitioning students and their CBL tutors about the processes of scaffolding, and the tutor's role in producing collaboration and self-directed learning. The literature advocates further investigations into the processes involved in a PBL/CBL curriculum, including research into the deliberate scaffolding of the collaborative process and the collaborative nature of the group work in PBL (Hmelo-Silver, Duncan & Chinn 2007; Svinicki 2007). In their defence of PBL as a successful approach to learning and teaching, Hmelo-Silver, Duncan and Chin argued that there were more important questions to be asked than "Does it work?" and that research questions should address the goals of PBL, such as reflection, self-directed learning and collaboration. They advocated the need for research to answer the question, "What kinds of support and scaffolding are needed for different populations and learning goals?" (Hmelo-Silver, Duncan & Chin 2007, p. 105). In the current study, the Transition Pedagogy model (see Figure 3, p. 35) provided a framework, through its strategies in four dedicated areas, for investigating the support for transitioning medical students and the scaffolding provided by their CBL tutors. The following research questions were designed around the framework of this model to provide evidence about the complexities, including support and scaffolding, of transitioning into a CBL medical program:

1. How does the curriculum engage students in learning in the first year of the CBL medical program?

2. How proactive and timely is the access for students to learning and life support?

3. Has a sense of belonging been intentionally fostered amongst transitioning medical students?

4. Are there sustainable partnerships between academic and administrative staff who are involved in the first year medical program?

A mixed methods research design was chosen for the proposed study. In the past, quantitative methods have been employed for much of the research into both the first year experience and how students learn via a PBL curriculum, but Krause & Coates (2008) called for the addition of qualitative techniques to complement quantitative techniques for studying the first year experience. They advocated that "There should also be a focus on both behavioural and attitudinal dimensions of the student experience if institutions are to truly understand the nature of student engagement and how to foster it in the first year. This may be achieved by adding to the existing use of snapshot survey data by incorporating qualitative elements to the data collection through the course of the first year." (Krause & Coates 2008 p. 503). In order to gain the best evidence from research in medical education, a move away from the belief that controlled experiments are the only worthwhile studies has been recommended (Dolmans, D H 2003; Norman & Schmidt 2000; Stacy & Spencer 2000). Controlled experiments have been criticised as often the results from such research cannot be generalised to other settings, and the "....many intervening variables mitigate against observing sizeable effects" (Norman & Schmidt 2000 p. 725). Dolmans (2003) recommended carrying out process-oriented studies in addition to outcome oriented studies. She called for narrative reviews that would provide more detail about the context of the studies and an improvement in the methodology of studies, including the triangulation of data from different sources, and proposed that "....we should use different methodological perspectives and promote debate, because this is more likely to improve education than is evidence from randomised studies" (Dolmans, D H 2003 p. 1129). In this research, "Snapshot survey data" (Krause & Coates 2008, p. 503) of the cohort were obtained from questionnaires that students and tutors completed, and complemented by qualitative data from focus groups and interviews. Data from students were triangulated with data from academic and administrative staff to give a comprehensive picture of the educational environment of the medical cohort in the context of the research.

2.8   SUMMARY

The literature review has revealed a shortage of research on transition to university from the student's perspective of the process of transition. Information is also lacking on the transition into medical programs with the added complexity of introducing a PBL/CBL approach to learning and teaching to the students. More qualitative research is recommended to improve understanding of how the process of transition engages students both socially and academically, and this research should be informed by the literature, based on a theoretical framework and complement quantitative

data. Research within a PBL/CBL approach is needed to understand the roles of reflection, self-directed learning, collaboration and scaffolding. The current research was informed by the literature on transition to higher education, and based on an evidence-based Transition Pedagogy model. The research questions were developed within the framework of this model and the investigation triangulated quantitative and qualitative data to provide evidence on the processes that are important for medical students transitioning into a CBL curriculum, including the role of scaffolding provided by the CBL tutor and the development of the skills of reflection, self-directed learning and collaboration within this curriculum.

In Chapter Three, the research design, methods and rationale for their use are introduced. Chapters Four and Five will then describe in detail the research methods for the quantitative instruments and the qualitative approaches, respectively.

CHAPTER 3.

RESEARCH DESIGN AND METHODS

3.1   INTRODUCTION

This chapter discusses the research design for this study and describes the rationale for its choice. It introduces the methods by describing the quantitative instruments and qualitative approaches employed in the investigations, and how these instruments and approaches informed the research questions. The framework for the research questions is considered and the participants and their recruitment into the study are described. The last two sections report on how the Pilot Study contributed to the research and the obtaining of ethics approval for the project.

3.2   RESEARCH DESIGN

Three components need to be considered when formulating a research design: the philosophical worldview assumptions that the researcher brings to the study, the strategy of inquiry that relates to their worldview and the specific research methods that will be used to implement the study (Cresswell 2009).

The philosophical world view of the researcher in this project is one of pragmatism because of encounters with the experiences of students transitioning into the different stages of their journey in medical education: from Year 12 into first year Medicine, into their hospital Internship and into Registrar training. The experiences of first year medical students were of particular interest to the researcher as many students are transitioning from a very competitive and supportive environment in Year 12 to an environment of Case-based Learning, where they are required to work cooperatively and be self-directed in their learning. Also of interest were the experiences of their CBL tutors as they guided students through this transition process.

The strategy of inquiry or methodology used in this research involved a mixed methods strategy (Cresswell & Plano Clark 2011) using a case study approach. A type of mixed methods strategy was first used in the late 1980s when it was considered to be a mixing of two existing methods, quantitative and qualitative methods, to give the most complete analysis of research problems. Over the next ten years it evolved into a methodological orientation in its own right, with its own philosophy and interpretation of results. Many definitions of mixed methods research have emerged, ranging from a single study in which both quantitative and qualitative data are collected and analysed (Cresswell & Plano Clark 2011) to a method that provides multiple ways of seeing, hearing and thus making sense of the social world (Greene 2007). However the common element to each definition is that "Its central premise is that the use of quantitative and qualitative approaches, in combination, provides a better understanding of research problems than either approach alone" (Cresswell & Plano Clark 2011, p. 5).

Case studies differ from other qualitative research because they involve the description and analyses of a single unit which is bounded by the activity of the unit and the time-span of the research (Cresswell 2009). They are used when process rather than outcome is being investigated and the design of a case study can elicit a deep understanding of the situation and meaning for its subjects (Merriam 1998).

When considering a research design, it seemed that employing a mixed methods strategy involving a case study approach was the best way to provide answers for the research questions formulated (Teddlie & Yu 2007). The case study approach suited this research where the single unit could be defined as the cohort of first year medical students, the activity of the unit defined as the transition into first year Medicine and the time span defined as the first year of their university experience. The mixed methods strategy provided quantitative data about the demographic nature of the cohort of students and the changes they were experiencing in their way of learning during transition. The quantitative data also enabled exploration of the relationship between CBL tutors' and students' perceptions about a way of learning that was new to most students and also to many CBL tutors. Qualitative data from focus groups with students and academic and professional staff provided insight into the quantitative results and a more detailed understanding of the process that students were experiencing during their transition into Medicine. Meaning is constructed through dialogue and the focus groups provided an opportunity for shared meaning-making amongst the students, amongst their CBL tutors and amongst administrative staff, of the transition process that the students were experiencing. Individual interviews conducted with several students and key administrative staff enabled me to obtain data from a wide variety of sources about the transition process.

To establish the rigour of mixed methods research, the reliability and validity of the instruments used needs to be established for the quantitative component of the research. In the qualitative components of research, there is more focus on validity than reliability to check the quality of the data and the interpretation of results (Cresswell & Plano Clark 2011). To determine the rigour of qualitative research, four criteria need to be met: credibility or authenticity, which is how well what the participants say is represented by the researchers, transferability or the degree to which the findings can be generalised and transferred from their settings to other contexts, dependability, which is whether the research findings fit the data from which they have been derived and confirmability in that the findings clearly link to the data (Lincoln & Guba 1989).

In this research, statistical tests were used in the analysis of the quantitative data to determine the reliability and validity of the results from the instruments used. The qualitative component of the mixed methods research design provided a rich and thick description about the context of the research, the participants and the methods used in carrying out the collection and analysis of data. This enhanced the credibility and dependability of the research and enables other researchers to decide if the findings could be transferred to their context. The focus groups and interviews were a source of quotes that enhanced the confirmability of the findings.

Triangulation has been described as "...one of the most powerful means for strengthening credibility" (Liamputtong 2009, p. 26) and several methods can be used for triangulation. In this research the choice of a mixed methods design enabled triangulation through the use of multiple methods as a variety of data collection procedures, including questionnaires, databases of student results, focus group discussions and individual interviews were used. Triangulation of multiple data sources also occurred as data was collected from students, academic and administrative staff. This helped to establish the credibility and authenticity of the research.

3.3 QUANTITATIVE INSTRUMENTS, QUALITATIVE APPROACHES & THE SEQUENTIAL NATURE OF THE RESEARCH DESIGN

A variety of quantitative instruments and qualitative approaches were used in the research and these are summarised in Table 4, page 62, which also shows how they informed the research questions which were introduced in Chapter 1 (see Section 1.2, p. 21). These instruments and approaches will be discussed in detail in Chapters 4 and 5. Copies of the instruments and formats of the focus groups and interviews can be found in the Appendices.

It is important that the research design allows the researcher to "be responsive to new insights (which is) an essential aspect of conducting mixed methods research" (Cresswell & Plano Clark 2011, p. 61). This can be achieved by carrying out the different components of the research within a timeframe that allows the researcher to develop new insights and to be responsive to them. In this project two strategies were used to allow the development of new insights, the first being the use of a pilot study to trial the First Year Experience Questionnaire (FYEQ) and student focus groups. The FYEQ was one of the main instruments used to provide quantitative data about the cohort under investigation. Trialling this instrument enabled it to be adapted to a medical student context improving the validity of data collected in this context. Trialling student focus groups allowed the development, for the main study, of questions that were relevant to a medical context, and therefore provided the best insights into the research questions. The second strategy was that through the use of a mixed methods design, the initial quantitative results were complemented by a subsequent qualitative strand and this design has been referred to as an explanatory sequential design (Cresswell & Plano Clark 2011). The sequential nature of this design allowed insights from the quantitative results of the questionnaires to inform the development of questions for focus groups, and is summarised in Figure 4, page 61.
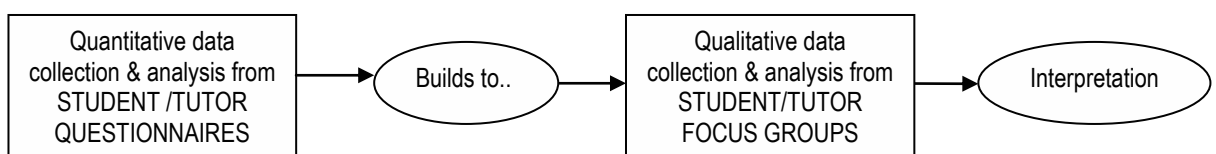
Figure 4. Explanatory sequential design used in this research

Table 4. Summary of instruments and approaches and how they informed the research questions

RESEARCH QUESTIONS	1. How do students engage in learning in 1st year CBL-based Medicine?	2. How proactive & timely is access for students to learning & life support?	3. How do 1st yr medical students perceive their sense of belonging/identity	4. Are academic-administrative partnerships sustainable & effective in the transition into 1st year Medicine?
QUANTITATIVE RESEARCH INSTRUMENTS				
First Year Experience Questionnaire	√	√	√	
Students' CBL perception Questionnaire	√			
Kessler Psychological Distress Scale: to measure stress experienced by transitioning students	√	√		
Students' examination results, Semester 1.	√	√		
Questionnaire for Yr 1 CBL tutors, Section 1: Approaches to teaching Inventory Section 2: Tutors' CBL Perceptions Questionnaire Section 3: Tutors' backgrounds Section 4: Written comments about the CBL approach.	√	√		
QUALITATIVE APPROACHES				
Focus Group with students from whole first year medical cohort	√	√	√	√
Focus Group with international students from first year medical cohort	√	√		√
Interview with Yr 1 student representatives on Curriculum Committee:	√	√	√	
Interview with representative from Adelaide Medical Students' Society		√	√	
Focus Groups with CBL tutors	√	√		
Focus Groups & interviews with administrative staff involved in the first year medical program.		√		√

The sequential nature of the research was planned so that the different components could be carried out within a time frame that would allow the collection and analysis of data to inform subsequent steps. The different components were carried out in the following sequence:

- A pilot study was carried out in 2010, the year before the main study to allow sufficient time for analysis of the data from the First year Experience Questionnaire and student focus groups, and for reflection on how these could best be adapted to a medical student context.

- In the main study in 2011:

- The First Year Experience Questionnaire and "Students' CBL perceptions" were administered at the beginning of Semester 2 so that students had sufficient experience of the CBL approach to enable them to answer questions meaningfully.

- The Kessler Psychological Distress Scale was used to measure the stress students were experiencing in engaging in the new learning process. It was administered three weeks before examinations in both Semesters 1 and 2 because this allowed time in Semester One for students to engage with the CBL approach and it was a reasonable time before examinations. By administering it at the same time in each semester, comparison of the distress levels of individual students could be made to determine whether there had been any changes between Semesters One and Two, and the impact of approaching examinations would be similar in both semesters.

- Student focus groups were held in late August and early September, because this allowed time for analysis of data from the First Year Experience Questionnaire to be completed. Focus groups were also not too close to any assessment tasks or end-of-year examinations which could have lowered student participation rates.

- The Questionnaire for Yr 1 CBL Tutors was completed in the last 2 weeks of May because this allowed time for analysis of the quantitative data so that they could inform the questions for the focus groups with the tutors, which were held in June.

- Focus groups and interviews for administrative staff were conducted approximately half-way through Semester 1, because by this time initial orientation activities were completed but staff could still remember and accurately discuss what their roles had been during the key transition period.

3.4   TRANSITION PEDAGOGY AS THE FRAMEWORK FOR THIS RESEARCH

Although the model of a transition pedagogy has been comprehensively discussed in the Literature Review (Section 2.3, page 33), it will be briefly revisited to set the scene for how it has provided the theoretical basis for this research. The concept of Transition Pedagogy can act as a "guiding philosophy" (Kift 2009, p. 40) when designing a curriculum that provides both academic and social support for transitioning students. The organising framework of its six, first year curriculum principles together with strategies in four dedicated areas, provide an optimal first year experience for students.

Transition Pedagogy places more emphasis on the first year curriculum and co-curriculum design than on the experiences of transitioning students, and the framework has been used to develop curricula that provide engagement, support and a sense of belonging for students (Kift 2009). This research has taken a different approach by using the learning and teaching experiences of students, academic and administrative staff to focus on existing conditions and strategies in the four dedicated areas of the first year experience, in order to identify how they impact on the learning experience of transitioning students.

The medical program at the University of Adelaide differs from other undergraduate university programs in the following ways;

- Whereas many university programs have undergone changes often resulting in students spending less time engaging with other students and teachers (James, Krause & Jennings 2010), medical programs still have an unusually large number of contact hours. In the cohort involved in this research, students are required on campus for up to twenty-five contact hours per week. The CBL approach used in their program provides students with many small group learning activities requiring face-to-face interaction with peers and academic tutors on a regular basis. This includes meeting for six hours each week with their CBL tutor and eight to nine other students in their CBL tutorial group.

- The first three years of the medical program provides a completely integrated curriculum (described in Section 1.3, page 22) and assessment is integrated over the three curriculum areas, whereas many other university programs are course-based with students studying individual courses which are assessed independently of each other.

- Medical students all study the same course or subjects within the medical program, meaning they spend a great deal of time together as a cohort compared with students in other programs who may be given a choice of subjects within a particular program.

This research has used the Transition Pedagogy framework in a reverse order, by starting with an investigation of the strategies currently used in the medical program in the four dedicated areas of the approach to the first year experience. By investigating the strategies used by students and academic and administrative staff, an understanding of how these strategies impact on the curriculum principles already in place was able to be developed. A deeper understanding of the strategies and how they relate to the curriculum could improve the first year experience for students transitioning into the medical program. The research questions were based on the four dedicated areas of Transition Pedagogy, with each question relating to one of these four areas (see Table 5 below).

Table 5. How the research questions relate to the four dedicated areas of Transition Pedagogy

Four dedicated areas of Transition Pedagogy	How each research question relates to a dedicated area
1. Curriculum that engages students in learning	How does the curriculum engage students in learning in the first year of the CBL medical program?
2. Proactive and timely access to learning and life support	How proactive and timely is the access for students to learning and life support?
3. Intentionally fostering a sense of belonging.	Has a sense of belonging been fostered amongst transitioning medical students?
4. Sustainable academic and professional partnerships	Are there sustainable partnerships between academic & administrative staff in the first year medical program?

3.5   SAMPLING

In quantitative research, probabilistic sampling is used to select a large number of participants who are representative of the population being investigated (Cresswell & Plano Clark 2011). However in qualitative research, non-probabilistic sampling involves selecting participants who can provide rich information on the topic being researched. This sampling may be convenience sampling which allows researchers easy access to willing and available participants or it may be purposeful sampling of participants who are experiencing the phenomenon under investigation (Liamputtong 2009).

The selection of the sample for the case study of transitioning medical students was purposeful in that investigation of the research questions required the study of a cohort of first year medical students who were currently experiencing the transition process and the academic and administrative staff who were involved with these students. The sample for the pilot study was the 2010 cohort of first year medical students, numbering 170 students, and for the main study it was the 2011 cohort of first medical students, numbering 187 students of whom 108 (58%) were female and 79 (42%) were male.

Within the student cohort for the main study, there were two subgroups, the domestic students (172 or 92%) and international students (15 or 8%), the latter being the main diversity group of the cohort. For international students, the transition into first year Medicine presented some additional challenges such as relocating from overseas and studying in English, which may not have been their first language. Therefore it was decided that in addition to comparing the cohort of transitioning medical students with a general cohort of transitioning students, this research would also compare the transition experiences of domestic and international students within the medical cohort.

Thus the case study comprised first year medical students, academic staff (CBL tutors) and administrative staff associated with the first year medical program as participants, and its context was the first year medical program at the University of Adelaide.   Students and CBL tutors self-selected to undertake the questionnaires or to be involved in the focus groups as participation was entirely voluntary. Administrative staff were purposefully selected in that staff invited to participate in the focus group or interviews were those involved most directly with transitioning students.

The purposeful sampling of the cohort and the self-selection of participants needed careful consideration because the purposeful sampling had implications for the generalisability of results, and the self-selection of participants could have introduced bias into the results if staff or student participants had a particular agenda for being involved in the research.

3.6   RECRUITMENT OF PARTICIPANTS

In the first week of Semester 1 in both 2010 and 2011, this research was introduced to the cohort of first year students by the Director of the MLTU during orientation lectures, so that they would be familiar with the research and interested in participating. In 2011, posters explaining the project were also displayed in CBL tutorial rooms and on the Year 1 Noticeboard, and information was also posted on the Year 1 website. A session was then held a few weeks into first semester for both the pilot and main studies, where the purpose of the research was explained to first year medical students, who received copies of the following documents:

- Information Sheet, including "Contacts for Information on Project and Independent Complaints Procedure" (see Appendix 5, p. 221)

- Student Consent Form (see Appendix 6, p. 225)

Students were invited to volunteer as participants in the Focus Groups. In the pilot study students were invited to complete the FYEQ at the end of the introductory session. In the main study it was explained to students that they would be completing the FYEQ in their CBL tutorial groups. They were asked to volunteer to participate in the Kessler Psychological Distress Scale which was also completed in their CBL tutorial groups.

In the main study, the ongoing analysis of data revealed some interesting differences between the main diversity group in the medical cohort, the international students, and domestic students. It was therefore decided to conduct a focus group consisting only of international students (participants in other student focus groups were from across the whole cohort) in order to explore the meaning of these differences for international students. It was considered that this subgroup of students would be able to share their experiences more openly in a group with other international students. Participation in this focus group, as with other student focus groups, was voluntary.

Academic staff involved in the first year program included lecturers and tutors in the three curriculum areas of the program. Lecturers were mostly clinicians who were giving one-off lectures in the area of their speciality. CBL tutors, on the other hand, spent six contact hours per week with the students in their tutorial groups and their role in facilitating CBL tutorials was pivotal in integrating the curriculum areas. As they spent more time with transitioning students than any other staff, it seemed that CBL tutors could contribute significantly to investigations on the learning and teaching experiences of transitioning medical students. The research was introduced to the sixteen CBL tutors at a weekly case-briefing meeting early in Semester 1 and each tutor received the following documents:

- Tutor Information Sheets (see Appendix 7, p. 227)

- Tutor Consent Forms (see Appendix 8, p. 231)

- Questionnaire for CBL tutors (see Appendix 4, p.217)

Tutors were invited to complete the Questionnaire for CBL tutors in their own time during the following week.

Administrative staff who were recruited to participate in focus groups included the Manager of the unit, two staff who worked on curriculum planning, three staff members who worked in the MLTU office, which was the initial contact point for students, and two staff members who organized the Clinical Skills program. Participation of students, academic and administrative staff was entirely voluntary in both the pilot study and the main study of the research.

3.7   PILOT STUDY

Results from the pilot study of the First Year Experience Questionnaire were used to compare the 2010 cohort of first year medical students at the University of Adelaide with a general cohort of first year university students from all courses across nine universities across Australia (James, Krause & Jennings 2010) and to identify areas where there were significant differences between the two cohorts. These areas of learning were explored in pilot focus group discussions and from these, the major areas of change encountered by students in the transition into first year Medicine were identified. These major areas of change were then explored in the main study by investigating the strategies that were employed to help students cope with these changes.

An improved strategy for the recruitment of students also emerged from the pilot study. For this study, students were recruited in a lecture session with the whole cohort, producing a response rate of 78%, so for the main study, the help of CBL tutors was enlisted to recruit students in their smaller, CBL tutorial groups to improve the response rate.

3.8   ETHICS APPROVAL

Application to the Human Research Ethics Committee for approval for this research was made early in 2010. There was negligible risk for humans participating in this research as it only involved completing questionnaires or taking part in focus group interviews. Approval by the Committee was initially granted on 3 June 2010 for twelve months for the pilot study and was subsequently granted for the main study until 30 June 2012 (see Appendix 9, p. 233).

3.9   SUMMARY

This chapter has given an overview of the mixed methods research design, the quantitative instruments, the qualitative approaches and has introduced the theoretical framework of the

Transition pedagogy model. Sample cohorts have been introduced, methods for recruiting participants for the research have been described and the role of the Pilot Study has been discussed. Chapters 4 and 5 will now describe the instruments and approaches in detail, explaining the rationale for their use and the methods used.

CHAPTER 4.

QUANTITATIVE INSTRUMENTS: METHODS

4.1   INTRODUCTION

Chapter Four describes the development and implementation of the questionnaires that were used with students and their CBL tutors. The statistical analysis of data from these questionnaires, using the Statistical Package for the Social Sciences (SPSS), is reported for each of the instruments. In the previous chapters, the scene was set for the research with a discussion of the process of transition to university and in particular the transition into Medicine. The case to be studied was introduced, the context and rationale for the research described and an overview of the research design presented. Chapters Four and Five will now describe how the research was carried out, with this chapter giving details of the quantitative methods and Chapter 5 describing the qualitative approaches used.

4.2   THE FIRST YEAR EXPERIENCE QUESTIONNAIRE (FYEQ)

4.2.1   Most recent FYEQ

It is important to have a good understanding of students' backgrounds and their prior learning experiences before considering their first year experience at university (Wilson 2012), and the FYEQ provided a valid and reliable instrument that is currently used for this purpose. The background and development of the FYEQ has been discussed in Section 1.1, page 8. The most recent FYEQ (see Appendix 1, p.199) reported data on the transition experiences of a cohort of 2422 students, entering into a variety of courses at nine universities throughout Australia in 2009 (James, Krause & Jennings 2010). This version of the FYEQ was adapted to the context of transitioning medical students in this research, and used for comparisons between the cohort of transitioning medical students and a general cohort of transitioning students. The adapted version of the FYEQ is referred to as the FYEQMed.

The FYEQ asks students about their transition experience in six sections as shown in Table 6. During fifteen years of reporting the First Year Experience, several scales have been identified by grouping together items from the six sections of the FYEQ that described underlying constructs of the students' transition experiences. In the most recent report (James, Krause & Jennings 2010), a total of nine scales (see Table 7) were identified. Students were asked to rate their agreement with items in each section on a range of 1 (strongly agree) to 5 (strongly disagree). Calculation of the scores for these scales for individual students involved recoding responses to items so that the highest ratings were given to the most positive responses (rated 5) and the lowest to the most negative responses (rated 1). The score for each scale was obtained by taking the average of the item scores for that scale, so that even though the nine scales were made up of a different number of items, the range of scores for each scale was one to five.

Table 6. Sections of the First Year Experience Questionnaire (FYEQ)

Section	Section heading
A	About you and your study
B	Expectations, goals, study habits
C	Your university experience in your first year at university
D	Managing your commitments in your first year at university
E	Your views of courses and teaching
F	Transition from school to university

Wilson (2012) emphasised the importance of detailed background information about the cohort whose transition experience is being investigated, firstly because it defines the context of the research and secondly because it provides information about the prior learning experiences of students. Section A of the questionnaire provided demographic data about the relevant cohort, Section F provided data about their learning experiences in Year 12 and Sections B-E provided data about their learning and teaching experiences during their transition year. The nine scales of the FYEQ provided a quantitative measure of students' experiences of teaching and learning in their first semester at university and of their resultant sense of purpose and identity as a university student.

4.2.2   Modifications to the FYEQ

A pilot study was conducted with the 2010 cohort of first year medical students, which involved trialling the FYEQ with the aim of adapting this instrument to a medical context. The FYEQ used in the pilot study had one additional item at the end of Section F, Item F4, which asked students to indicate whether they had studied Biology, Chemistry, Physics, Basic Mathematics or Advanced Mathematics in Year 12. The rationale for including this question was to investigate factors that could predict the performance of the cohort of transitioning medical students in the research cohort. Tutton and Wigg (1990) investigated how the performance of medical students in the early years was influenced by three factors: their gender, the type of school they had attended (government or independent) and the subjects they had studied in Year 12. It was a requirement at Monash University, where this study was conducted, for students entering the medical program to have studied English Expression, Chemistry, one of Physics, Biology or a branch of Mathematics and an elective subject from other "Group 1" subjects. Physics, Biology and Mathematics were all included in Group 1 together with other, un-named subjects. Their results showed that students' performances in medical school were not influenced by their gender or the type of school they attended. However they found that students who had studied an elective subject at school other than Physics, Biology or Mathematics, and used this as a fourth subject in their selection score, did not fare as well in their first three years of studying Medicine as those who had not. Data from the FYEQ(Med) on gender, type of secondary school attended, subjects studied in Year 12 and students' Semester One examination results were used to investigate whether the relationships that Tutton and Wigg had explored over twenty years ago still held for students transitioning into Medicine.

Table 7. Items of the nine scales in the FYE Questionnaire (James, Krause & Jennings 2010)

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Results from the pilot study indicated that certain items in the FYEQ needed to be adapted or removed to ensure the items were more applicable to a cohort of first year medical students and these modifications are summarised in Table 8. An example of the modifications can be found in Section C1 where students in the general cohort were asked questions about their 'choice of subjects'. This was adapted to refer to 'choice of program' as the integrated curriculum approach in the medical program at the University of Adelaide does not offer subject choices for first year students. Care was taken to ensure that any modifications did not alter the meaning or relevance of the questions, and that none of the items comprising the nine scales were modified. The statistician who was advising on the analysis of quantitative results confirmed that the modifications did not alter the validity or reliability of the items.

The only other modification to the FYEQ was the addition of Section G where students were invited to complete questions comprising the CBL Perceptions Questionnaire and the rationale for this questionnaire is discussed in Section 4.4.1. The resultant questionnaire was labelled the FYEQMed and used in the main study with the 2011 cohort of first year medical students (see Appendix 2, p.207). The FYEQMed consisted of the most recent version of the FYEQ from James, Krause & Jennings (2010) with the following modifications:

- one additional item at the end of Section F, Item F4, which asked students to indicate whether they had studied Biology, Chemistry, Physics, Basic Mathematics or Advanced Mathematics in Year 12

- adaptations of questions to ensure relevance to the medical context as in Table 8

- addition of Section G, the CBL Perceptions Questionnaire.

In summary, the FYEQMed provided comparative information for the second and third research questions: how does the curriculum engage students in learning in the first year of the CBL medical program and has a sense of belonging been fostered amongst transitioning medical students? In keeping with the research design of alternate collection and analysis of data, the FYEQMed also provided data which informed the development of questions for the focus groups and interviews that would enable the findings from the questionnaire to be explored.

4.2.3   Method

In the pilot study, volunteer students from the 2010 cohort of first year medical students completed the FYEQ in a session following a lecture to the whole cohort. In the main study, volunteer students from the 2011 cohort of first year medical students completed the FYEQMed at the end of a CBL tutorial session. As the FYEQ for the GC had been conducted in August of the students' first year (James, Krause & Jennings 2010), in both the pilot and main studies of this research, the surveys were also conducted in August to allow valid comparisons of results. The questionnaire took students twenty minutes to complete.

4.2.4 Statistical analysis of data from the FYEQMed

Data from FYEQMed were analysed to investigate the similarities and differences between the transition experiences of the cohort of first year medical students at the University of Adelaide and the published results from a general cohort of first year university students (James, Krause & Jennings 2010). For a valid comparison between the two cohorts, it was important that both the similarities and the differences between the two groups were considered.

4.2.4.1 Analysis of answers to individual questions

Answers to all questions in the FYEQMed provided nominal data except in Section D, Question 1 where calculation of the mean number of hours per week produced interval data. Suitable tests for the nominal data were the Chi-square test where the frequencies of all categories of response were greater than 5, and Fisher's Exact Test to make allowances for distributions containing a frequency less than 5 (Burns 1997, p. 183). Where interval data were involved in Section D, the independent t-test for difference between groups was appropriate to use to analyse differences between the mean number of hours per week for the general cohort and the medical cohort (Burns 1997, p. 153). Results of the analyses using the Chi-square test, Fisher's Exact Test and the independent t-test are given in Chapter 6.

4.2.4.2 Analysis of the nine scales of the FYEQMed

The nine scales of FYEQMed had a range of scores from one to five (see Section 4.2.1). To analyse differences between the mean scores of scales for the general cohort and the medical cohort, the independent t-test for difference between groups was appropriate to use because interval data were involved (Burns 1997, p. 153). In order to compare the scales for domestic and international students the mean scores for each group were compared separately with the GC thus using a consistent data source for calibration of the groups. A direct comparison of the mean scores of scales for domestic and international students was also performed. The independent t-test was also used for these analyses. Pearson's Correlation Coefficient was calculated to determine if there was any correlation between students' scores on each of the nine scales and their average mark for the Semester One examination.

Table 8. Summary of modifications to items in the FYEQ

Item section and number	Original question	Removal or adaptation of question
A12.	Which broad field below best describes the main area of your studies?	Removed because all students in MC studying medical program
A13	Your enrolment type: Full-time ☐ Part-time ☐	Removed because all students are full-time
A15	Have you commenced or completed a university or VET course before this academic year?	Adapted as follows because Medicine is an undergraduate program: a) Did you complete a VET subject in secondary school?　　　　Yes　　　　　　No b) Have you transferred into medicine from another university course?　　Yes　　　　　　No c) If you have transferred from another university course please give the name of the course:

Item section and number	Original question	Removal or adaptation of question
A20	Have you withdrawn from any subjects/units this year?	Removed because not relevant to medical program
A21	Please tick if you are enrolled in any: - external subjects/units delivered totally online ☐ - external or distance subjects/units not delivered online ☐ - online subjects/units offered by Open Universities Australia ☐ - subjects/units in another institution ☐	Removed because not relevant to medical program
A27	Please indicate to what extent each of the following sources of financial support for expenses (including fees) contributes to your income while at university	Removed because results from the Pilot Study indicated the medical cohort was fairly uniform in receiving support from parents or from part-time work.
C1	The university orientation programs helped get me off to a good start	Adapted to the following two questions to differentiate between general and program specific orientation: • The university orientation programs for all first year students helped get me off to a good start • The university orientation programs specifically for first year Medicine students helped get me off to a good start (intro to CBL, anatomy, MPPD etc)
	I was given helpful advice when choosing my subjects/units	Removed because not relevant to medical program where all students study the same curriculum
	My university offered me a good range of subject choices	Removed because not relevant to medical program
	I am studying, or plan to study, a language as part of my course	Removed because not relevant to medical program
	I am satisfied with the subject choices I made this year	Adapted to: I am satisfied with the program I chose this year
	My subjects this year are providing a good base for my future studies	Removed because all students study the same curriculum at all year levels.
	The subjects I am studying are relevant to my interests	Adapted to: The program I am studying is relevant to my interests
	Overall, the subjects I am studying fit together well	Adapted to: Overall, the curriculum areas I am studying (MPPD, Scientific Basis of Med. and Clinical Skills) fit together well
E2	*How useful have you found the following aspects of your course or program?*	Each item in this section was adapted to be relevant to the medical program as follows:
	Online learning management system (e.g. Blackboard)	Learning materials posted on the curriculum website or MyUni
	Internet-based resources and information designed specifically for the course	Internet-based resources for learning about the cases
	Podcasts of lectures	Removed because not relevant
	Social networking technologies (e.g. Face book, Twitter) for study purposes	Social networking technologies (e.g. Facebook, Twitter, YouTube) for study purposes
	SMS alerts or reminders from my university	Removed because not relevant
	Subjects offered online with no face-to-face classes	Removed because not relevant
	Online discussion groups	Removed because not relevant
	Getting together with other students to discuss subjects /units face-to-face	Getting together informally with other students (outside my CBL group) to discuss cases or lectures face-to-face
	Working with other students face-to-face on course areas with which I have experienced problems	Informally (outside my CBL group) working with other students face-to-face on areas with which I have experienced problems

Item section and number	Original question	Removal or adaptation of question
F4.		Additional item: Please indicate which of the following subjects you studied in Year 12: (or Year 11 if counted in your tertiary entrance rank) Biology ☐ Chemistry ☐ Physics ☐ Standard Mathematics ☐ Advanced Mathematics ☐
G.	This section was added to the FYEQ and contained the 19 questions about students' CBL perceptions.	

4.2.4.3 Analysis of other data from the FYEQMed

To investigate the relationship between gender and students' examination results at the end of Semester One, the Mann Whitney Test was used. To investigate the relationship between students' examination results at the end of Semester One and whether or not they studied Biology, Chemistry, Physics, Standard and Advanced Mathematics in Year 12, separate analyses using the Mann Whitney Test were carried out for each subject. This was the appropriate test for these ordinal data of examination results and compared the distributions of the results of students who had studied that subject with those who had not studied it (Burns 1997, p. 163). To investigate relationships between students' examination results at the end of Semester One and the type of secondary school they attended, the Kruskal Wallis one way analysis of variance test was used because ordinal data were being analysed across the four categories of schools being investigated (Burns 1997, p. 254).

4.3   KESSLER PSYCHOLOGICAL DISTRESS SCALE (K10)

4.3.1   Background to the Kessler Psychological Distress Scale and scoring method

The K10 scale was developed to report levels of psychological distress among general populations (Andrews & Slade 2001). It was used by the Australian Bureau of Statistics in their 1997 National Survey of Mental Health and Wellbeing (SMHWB) and it has been shown to have a strong association with medical diagnoses of anxiety and depression based on the Composite International Diagnostics Interview (Australian Bureau of Statistics 2003).

The questionnaire contains ten items (Table 9) which are based on symptoms of anxiety and depression that the participants could have experienced in the previous four weeks and participants are required to respond on a five point scale (from 1: none of the time, to 5: all of the time). The scores from the 10 items are added to give a summary score (range 10-50), which is then interpreted for levels of distress, based on defined cut-off levels. As it contains only ten items the K10 scale can be quickly answered by participants and a summary score can be easily calculated. The K10 scale has been used by the South Australian Government for several population surveys (Avery et al. 2004), and in a study of "Peer Response to Psychologically Distressed Tertiary Students" (Leahy 2009), which included medical students.

Table 9. Items in the Kessler Psychological Distress Scale (K10)

Item	During the last month, how often did you feel …
a.	… tired out for no good reason?
b.	…nervous?
c.	…so nervous that nothing could calm you down?
d.	…hopeless?
e.	…restless or fidgety?
f.	…so restless that you could not sit still?
g.	…depressed?
h.	… so depressed that nothing could cheer you up?
i.	…that everything was an effort?
j.	…worthless?

4.3.2 Rationale and use of Kessler Psychological Distress Scale

The Kessler Psychological Distress Scale (K10) provided an instrument to measure the distress levels of students as they coped with the transition into the first year medical program. The distress levels of first year students were compared at the same time in Semesters One and Two of their transition year, three weeks before examinations at the end of each semester, to determine whether students were experiencing any changes in their levels of distress as they became more familiar with learning via the CBL approach. Students completed the surveys in five minutes during CBL tutorials.

The scoring method and cut-off levels used in this research were those set down by the National Survey for Health and Well Being (Australian Bureau of Statistics 2007-2008). They were also used by the South Australian Government for several population surveys (Avery et al. 2004) and in the study of "Peer Response to Psychologically Distressed Tertiary Students" (Leahy 2009), enabling comparisons to be made between the distress levels of the medical cohort and an age-matched, local population, and other cohorts of university students, as previously reported by Leahy (2009). Investigations into the distress levels of domestic and international students within the medical cohort enabled separate comparisons of each group to be made with an age-matched, local population, and other cohorts of university students. Calculations of distress levels in Semesters One and Two were also made for domestic and international students separately.

Data from the K10 questionnaire provided a measure of the distress experienced by students as the curriculum engaged them in Case-based learning, and comparing the distress levels of students at approximately the same time in Semesters One and Two enabled any changes in distress levels to be identified. This data assisted investigations into the first and second research questions: how does the curriculum engage students in learning in the first year of the CBL medical program and how proactive and timely is the access for students to learning and life support? Comparing the distress levels of students in Semesters One and Two provided data for the second research question, as identifying changes in distress levels could indicate the timeliness of the access to support provided to students.

Table 10. Scoring method for The Kessler Psychological Distress Scale (K10)

K10 Score	Level of Psychological Distress	
10-15	Low	No psychological distress
16-21	Moderate	
22-29	High	Psychological distress
30-50	Very high	

4.3.3 Statistical Analysis of Data from the K10 questionnaire

4.3.3.1 Investigating distress levels for the cohort of first year medical students

Distribution of distress levels (see Table 10, p. 77) were calculated for the whole cohort of first year medical students in each semester. These were compared with the distributions of an age-matched norm (Avery et al. 2004) and of another cohort of first year medical students at the University of Adelaide (Leahy 2009). As nominal data were being investigated, the Chi-square test was used to investigate the significance of any differences. To investigate any changes in K10 scores that may have occurred from Semester 1 to Semester 2, the distributions of first year medical students across the four distress levels in each semester were analysed. As matched pair samples were involved, McNemars' Test (McNemar 1947) rather than the Chi-square test was used.

4.3.3.2 Comparing distress levels of domestic and international students

Mean K10 scores were calculated for domestic and international students in Semesters 1 and 2. The independent t-test (Burns 1997, p. 153) was then used to determine the significance of differences between the mean K10 scores for these two groups of students in each semester. To compare Semester 1 and 2 distributions across the four distress levels for domestic and international students, Fisher's Exact Test was used to make allowances for distributions containing a frequency less than 5.

4.4 CBL PERCEPTIONS QUESTIONNAIRE

4.4.1 Rationale for development

The CBL Perceptions Questionnaire was developed for two main reasons:

- Analysis of data from the pilot study student focus groups in 2010 showed that many students had concerns about learning and teaching via the CBL approach and found participating in CBL tutorials very stressful. The CBL tutorial is pivotal to students' learning as this is where students integrate their learning from the three curriculum areas (see Figure 1 page 23). CBL tutorials run for six hours per week, with three 2-hour sessions giving students more contact time with their CBL tutors than with any other individual academics. Students develop their learning around the cases provided, as they consider the information

given, form and reform hypotheses, identify learning issues and bring information back to each session to contribute to group learning about the case. This CBL approach to learning provides students with one of their greatest challenges during the transition process because, for many, this approach is very different from the didactic teaching and rote learning they have encountered in secondary school, or in other university courses from which they have transferred.

- It has been shown (Crisp & Palmer 2009) that more effective learning occurs when teachers' and students' expectations and understanding of the learning and teaching processes are closely aligned.

The CBL Perceptions Questionnaire provided an instrument to investigate students' and CBL tutors' perceptions of learning and teaching via the CBL approach, and to measure the alignment of students' and tutors' expectations and understandings of this approach.

4.4.2   Development of the CBL Perceptions Questionnaire

The CBL Perceptions Questionnaire was developed from a questionnaire which Srinivasan et al (2007) had used to compare students' and tutors' perceptions of traditional PBL with the new CBL curriculum, introduced at two medical schools in North America. His questionnaire contained 10 items about the PBL approach and 10 items about the CBL approach and all of these items were very relevant to the CBL approach used across the first year medical curriculum at the University of Adelaide.

The questionnaire used in this research contained nineteen items as shown in Table 11, p. 79. Items 1-15 were based on items in Srinivasan's questionnaire. Adaptations were made for this study, with the consent of the original author, including the addition of descriptions of independent learning and self-directed learning (items 6 and 8 respectively), as focus group discussions had shown that many students thought these terms were identical in meaning. Items 11 and 15 were used as a check for answers to students' perception of their workload, with both of these items referring to workload, but Item 11 being negatively stated and Item 15 being positively stated. Items 16-19 were developed to investigate areas of learning that students had expressed specific concerns about in the pilot study focus groups and to explore how prevalent these concerns were across the whole cohort in the main study of this research.

Items could be classified into three groups as shown in the second column. Items 1-9 investigated concepts about student learning, items 10-15 investigated concepts about learning via the CBL approach and items 16-19 investigated the scaffolding students received during CBL tutorials.

Participants were asked to rate their agreement with the statements about the CBL process on a scale of 1 (strongly disagree) to 6 (strongly agree). After consultation with the advising statistician, a six-point Likert scale was chosen rather than a five-point scale, so that participants would be

encouraged to seriously consider their responses and not take a neutral stance. A response of 1-3 indicated disagreement with the statement and a response of 4-6 indicated agreement with the statement.

To obtain a CBL perception score all items were coded so that the most positive response was rated 6 and the least positive response was rated 1. The 3 items which could be regarded as negative perceptions of CBL (Items 7, 10 and 11) were re-coded to be consistent with other items (the most positive responses received the highest score (6) and the least positive response received the lowest score (1).) This re-coding meant that the total score out of 114 (possible range = 19 to 114), obtained by adding the scores for the nineteen items, reflected each participant's level of positivity about the CBL approach.

4.4.3   Method

The CBL Perceptions Questionnaire for students was included as the final section (Section G) in the FYEQMed (see Appendix 2, p. 207). CBL tutors answered the CBL Perceptions Questionnaire in Section 2 of the Questionnaire for CBL Tutors (see Appendix 4, page 217).

Table 11. Items in the questionnaire used to investigate students' and tutors' perceptions of CBL.

Item No	Concept Item is investigating	The CBL process results in.....
1	Student learning	productive work that enhances learning
2		an environment that enhances learning
3		opportunities for the application of clinical reasoning skills
4		opportunities to explore a single case in depth
5		opportunities to explore topics related to the case
6		an emphasis on students being able to work on their own (independent learning)
7		unrealistic demands on students in developing understanding of the concepts and principles associated with the case, outside tutorials
8		students being encouraged to decide what is most appropriate to learn for the next session and how they will learn it (self-directed learning)
9		the efficient use of time during CBL tutorials
10	Learning via the CBL approach	the group being side-tracked unproductively down blind alleys
11		unrealistic quantity of work outside tutorials
12		small group tutors asking direct questions
13		quiet students being encouraged to participate
14		opportunities to use knowledge / skills from Resource Sessions
15		a manageable workload between sessions
16	Scaffolding	students being given helpful suggestions about resources
17		students being helped with answers to questions for which they have been unable to find satisfactory answers
18		tutors and other staff helping students to understand what the process of CBL involves
19		students being helped to work out the depth of learning that they need for different concepts

4.4.4   Statistical Analysis of Data

CBL perception scores (possible range: 19 to 114) were calculated for individual students and CBL tutors. The mean "CBL perception score" was calculated for the student cohort and for the tutor cohort. When testing the significance of any differences between the mean "CBL perception scores" for the student cohort and for the tutor cohort, because students were clustered within the CBL tutorial groups, the variation related to these groups needed to be estimated. A linear mixed model (Bryk & Raudenbush 1992) was therefore used to test the differences between the means, and the variances for the tutors and students were separately estimated as well as the group variance.

To investigate how each of the individual 19 items making up the CBL perception score were perceived by students and tutors, the mean scores out of 6 for each item were calculated for the students (n=183) and the tutors (n=16). It was not necessary to recode the three negative items for this analysis as items were being considered separately. The significance of any differences between the item means was tested using a linear mixed model (Bryk & Raudenbush 1992), once again taking into account the fact that students were clustered within CBL tutorial groups.

4.5   QUESTIONNAIRE FOR YEAR 1 CBL TUTORS

4.5.1   The four sections of the Questionnaire

The Questionnaire (see Appendix 4, p. 217) consisted of the following four sections:

Section 1: The Approaches to Teaching Inventory

The ATI was first used as a tool for the professional development of teaching staff in a tertiary institution, (Trigwell, Prosser & Ginns 2005) and then developed to investigate how variations in science teaching relate to variations in science learning (Trigwell & Prosser 2004) in secondary schools. It was based on qualitative data from phenomenographic pedagogy which is a process designed to raise teachers' awareness of how they think about teaching, how they practise it, and how this is related to their students' learning. The instrument is based on the premise that teachers need to understand that they are aiming for learning that brings about conceptual changes in their students rather than learning of information. This understanding can be helped by reflecting on how their teaching approaches are related to the aspects of learning that can bring about conceptual changes. Trigwell & Prosser (2004) believed that reflecting on their teaching practice can also help teachers to realize that using student-centred approaches (such as questioning of students in ways that elicits responses which facilitate learning) is more likely to result in conceptual changes than using teacher-centred approaches.

The original ATI consisted of 16 items but it was later developed to contain 22 items (see Table 12, page 83) for use with university teachers across a wide range of disciplines (Trigwell & Prosser 2004). It differs from other approaches to studying university teaching in that it consists of a phenomenographic approach: the outcomes of the ATI do not describe an approach that is characteristic of an individual but rather an approach to teaching in a particular context. Participants

are asked how often each of the statements are true for them in their teaching context and to respond to each item on a scale of 1 (rarely or never true) to 5 (almost always or always true). Two scores are then calculated which define different approaches to teaching: a conceptual change/student focussed CC/SF score is obtained by summing the responses to the eleven items which reflect the first approach to teaching: an information transfer/teacher focussed (IT/TF) score is obtained by summing the responses to the other eleven items which reflect the second approach to teaching. The range for both scores is 11-55. Trigwell and Prosser (2004) did not publish norms for the scores derived from their ATI because they intended them to be used as a tool to help teachers reflect on their teaching and learning within a specific context. The relationship between ATI items and student learning has been found to be a useful tool for focusing the reflections of academic staff who have a "....universal desire ....to have their students learn for meaning" (Trigwell, Prosser & Ginns 2005, p. 358).

Students' approaches to learning (Marton & Saljo 1976) have been indentified qualitatively as ranging from a deep approach where students seek for understanding and meaning in their learning, to a surface approach where students may be perceive learning to be externally imposed and the emphasis is on learning information in order to meet the requirements, such as learning for assessment. Individual students cannot be characterized by one particular approach to learning as they may adopt different approaches in different learning contexts and according to whether the learning is internally motivated or externally imposed. The "Study process questionnaire" (Biggs, JB 1987) was developed to identify the variations in students' approaches to their learning. Together with the ATI, this was used to show that in secondary schools, the deep approach to learning was associated with a conceptual change/student focussed (CC/SF) approach to teaching and the surface approach to learning was associated with an information transfer/teacher focussed (IT/TF) approach (Trigwell, Prosser & Ginns 2005). A deep approach to learning is considered to be desirable for medical students in that it "...will promote the development of a reflective, adaptable medical practitioner rather than one with a mainly surface approach" (Reid, Duvall & Evans 2005, p. 401). In order to encourage this approach it is desirable for their CBL tutors to have a CC/SF approach to teaching.

Although the ATI was developed primarily as a tool for teachers to reflect on the variations in their approaches to teaching in different contexts, for this research it provided a quantitative measure of CBL tutor's approaches to teaching via the CBL approach. This enabled investigation of relationships between how tutors viewed their teaching and the outcomes for the students in their tutorial group, including the perceptions of CBL that students developed and their examination results at the end of Semester 1. The fact that the outcomes of the ATI describe an approach that is characteristic of teaching in a particular context rather than the characteristics of an individual made it a very suitable tool for this research where learning and teaching was being investigated in the context of the CBL approach.

Section 2: CBL perceptions of tutors

Tutors were asked to complete the same CBL Perceptions questionnaire as the students. The rationale for development of this questionnaire, the method used to employ it in this study and the statistical analyses of the results have been discussed in Section 4.4, page 77. Calculation of a mean CBL perceptions score for the group of CBL tutors enabled comparison with a mean CBL perceptions score of the cohort of medical students they were tutoring. Scores for the individual items comprising the questionnaire were also compared to investigate any differences in perception between the students and their CBL tutors.

Section 3: Tutors' backgrounds

Questions in this section asked CBL tutors about their qualifications, their current work, whether this was their first year of CBL tutoring, the type of teaching that they had experienced and how useful they found the training for CBL tutoring.

Section 4: Written comments

CBL tutors were invited to give written comments on what their transitioning students enjoyed most and what they found most difficult about participating in CBL tutorials, to list two strategies that they had used to help students with the transition to learning via the CBL approach, and to list two difficulties that they had encountered as CBL tutors in helping students with the transition (see Table 13, p. 83).

4.5.2 Method and analysis of results

CBL tutors completed the Questionnaire for Year 1 CBL Tutors in their own time in Semester One 2011 and the resulting data from each of the four sections were analysed or summarised as follows:

- Section 1: the scores for the Approaches to Teaching Inventory were calculated according to Trigwell and Prosser (2004):
    - the IT/TF score for each of the 16 tutors was calculated by adding the responses for items 1,2,4,6,9,10,11,12,16,19 and 22
    - the CC/SF scores were calculated by adding the responses for items 3,5,7,8,13,14,15,17,18,20 and 21.

- Section 2: the scores for tutors' perceptions of the CBL approach were calculated as described in Section 4.4.3, page 17.

- Section 3: data about the tutors' backgrounds were summarised to give an overview of their previous academic and professional experiences

- Section 4: data from tutors' written comments about transitioning students and strategies that the tutors used to help them were analysed and used to guide the development of questions for the focus groups with CBL tutors.

Table 12. Items of the Approaches to Teaching Inventory

	Item	*Item included in CC/SF score or IT/TF score
1.	In this subject students should focus their study on what I provide them.	IT/TF
2.	It is important that this subject should be completely described in terms of specific objectives that relate to formal assessment items.	IT/TF
3.	In my interactions with students in this subject I try to develop a conversation with them about the topics we are studying.	CC/SF
4.	It is important to present a lot of facts to students so that they know what they have to learn for this subject.	IT/TF
5.	I set aside some teaching time so that the students can discuss, among themselves, key concepts and ideas in this subject.	CC/SF
6.	In this subject I concentrate on covering the information that might be available from key texts and readings.	IT/TF
7.	I encourage students to restructure their existing knowledge in terms of the new way of thinking about the subject that they will develop.	CC/SF
8.	In teaching sessions for this subject, I deliberately provoke debate and discussion.	CC/SF
9.	I structure my teaching in this subject to help students to pass the formal assessment items.	IT/TF
10.	I think an important reason for running teaching sessions in this subject is to give students a good set of notes.	IT/TF
11.	In this subject, I provide the students with the information they will need to pass the formal assessments.	IT/TF
12.	I should know the answers to any questions that students may put to me during this subject.	IT/TF
13.	I make available opportunities for students in this subject to discuss their changing understanding of the subject.	CC/SF
14.	It is better for students in this subject to generate their own notes rather than copy mine.	CC/SF
15.	A lot of teaching time in this subject should be used to question students' ideas.	CC/SF
16.	In this subject my teaching focuses on the good presentation of information to students.	IT/TF
17.	I see teaching as helping students develop new ways of thinking in this subject.	CC/SF
18.	In teaching this subject it is important for me to monitor students' changed understanding of the subject matter.	CC/SF
19.	My teaching in this subject focuses on delivering what I know to the students.	IT/TF
20.	Teaching in this subject should help students question their own understanding of the subject matter.	CC/SF
21.	Teaching in this subject should include helping students find their own learning resources.	CC/SF
22.	I present material to enable students to build up an information base in this subject.	IT/TF

*CC/SF= conceptual change/student focussed approach, IT/TF= information transfer/teacher focussed approach

Table 13. Questions for Year 1 CBL tutors about their students and their facilitation experiences

Qu 1	**In thinking about the transition to CBL for students, please list two items for each of the following:**
1a.	What do your students enjoy most about CBL tutorials?
1b.	What do your students find most difficult during CBL tutorials?
Qu 2	**In thinking about tutoring students during their transition to CBL, please list two items for each of the**
2a.	**following**:
2b.	What strategies have you used to help students with their transition to CBL?
	What do you as a CBL tutor find most difficult about helping students with their transition to CBL?

4.6   INVESTIGATION OF RELATIONSHIPS BETWEEN STUDENT OUTCOMES AND CBL PERCEPTIONS WITH CBL TUTORS' PERCEPTIONS AND APPROACHES TO TEACHING

The relationships between student outcomes, their CBL perceptions and their CBL tutors' perceptions and approaches to teaching were investigated to provide further information for answering the first two of the research questions (Qu.1. How does the curriculum engage students in learning in the first year of the CBL medical program? Qu.2. How proactive and timely is the access for students to learning and life support?).

At the beginning of second semester of the transitioning year, one of the outcomes of student learning that is readily available is the results of students' written examinations. For the cohort of first year medical students in this research, Semester One examination results provided feedback for students and their CBL tutors on how the students were coping with transition. Results consisted of marks for each of 3 written examinations (Multiple Choice and Short Answer Questions, Modified Essay Question and Clinical Reasoning) and an average of these marks. As relationships between student outcomes and qualities of their CBL tutor were being investigated, only the Clinical Reasoning Examination mark was used as this best reflected the nature of the learning and teaching that occurred in CBL tutorials.

The students' CBL Perceptions Questionnaire, the tutors' CBL Perceptions Questionnaire, the Approaches to Teaching Inventory and students' Semester One Clinical Reasoning Examination results provided data to investigate the relationships between:

- student results (Clinical Reasoning Examination) and their tutor's score for the ATI

- student results (Clinical Reasoning Examination) and their tutor's perceptions of CBL

- student results (Clinical Reasoning Examination) and student perceptions of CBL

- student perceptions of CBL and their tutor's score on the ATI

- student perceptions of CBL and their tutor's perceptions of CBL

The correlation between the two factors in each relationship was investigated. The fact that students were clustered within their CBL tutorial group could have meant that students' data within a particular tutorial group were likely to be more similar to each other than between students from different tutorial groups. This needed to be accounted for in the analysis and therefore, unadjusted (Pearson's correlation coefficient) and adjusted correlations were calculated following the procedure presented in Hamlet et al (2004). It was hypothesised that students' Clinical Reasoning Examination results and perceptions of CBL would be positively correlated with each other, and with their tutors' perceptions of CBL and CC/SF score on the Approaches to Teaching Inventory.

4.7   VALIDITY AND RELIABILITY OF THE INSTRUMENTS

The following instruments used in this research were existing research instruments with reports in the literature establishing their validity and reliability:

- The First Year Experience Questionnaire: This questionnaire has been used to conduct national studies of the first year experience in Australian universities at five year intervals since 1994. During that time it has been modified and updated to include new questions on the influence of information technology and changes in student engagement, and additional universities were included in sampling to improve the geographic representation of students (James, Krause & Jennings 2010). Modifications to the FYEQ have maintained its high face validity and the reliability of the scales in the FYEQ has been monitored. Correlation coefficients were calculated for Scales 3 and 4 where there were only two items making up the scales, and Cronbach alphas for the other scales which had three or more items making up the scale (see Table 7, page 71). For good reliability, Cronbach alphas should be between 0.70 and 0.95 (Tavakol & Dennick 2011) and the statistical reliability of the scales in FYEQ were reported as fair to good (James, Krause & Jennings 2010). The FYEQ has been used as a valid and reliable tool for investigating the experiences of students transitioning to university since 1995 (James, Krause & Jennings 2010). In order to establish the reliability in this research of the results for the nine scales, Cronbach Alphas were calculated for the results from the FYEQMed and compared with James' (2010) results.

- The Kessler Psychological Scale: a report from Andrews and Slade (2001) on the sensitivity and specificity of the Kessler Psychological Scale concluded that it was an appropriate tool for screening for anxiety and depression in general populations. Their results also supported the validity of this questionnaire as a measure of psychological distress and its use in preference to other tools such as the General Health Questionnaire (GHQ-12), because it has better discriminatory power both to detect depressive and anxiety disorders and to discriminate cases of mental disorders from non-cases. The Kessler Psychological Scale has been described as being useful for general health surveys because of "... its brevity, strong psychometric properties and ability to discriminate DSM-IV (mental disorder) cases from non-cases" (Australian Bureau of Statistics 2003, p. 4).

- The CBL Perceptions Questionnaire was developed specifically for this research into the experiences of students transitioning into a CBL medical program. It contained nineteen items, the first fifteen of which were adapted from a 24-item survey instrument developed by Srinivasan et al (2007). There was no report on the validity and reliability of this instrument, but it was reported that "the instrument was piloted with ten fourth-year students.' (Srinivasan et al. 2007, p. 77). Items 16-19 were developed in consultation with an academic from the MLTU who was closely involved in organising the CBL tutorials and in the recruitment and training of CBL tutors. The purpose of these items was to investigate students' and tutors' perceptions of the nature of the scaffolding provided to students. The questionnaire was trialled with a small group of six, second year, medical students who had

experienced the CBL approach for the whole of the previous year. These students reported favourably on the clarity of the questions and their relevance to the experiences of a cohort of transitioning medical students. The face validity of the questionnaire was therefore high and the reliability was shown to be good as Cronbach alphas for students' and tutors' results were $\alpha = 0.737$, and $\alpha = 0.795$ respectively.

- Questionnaire for Year 1 CBL Tutors: The following instruments were used in this questionnaire:

    o Section 1: The Approaches to Teaching Inventory

    o Section 2: The CBL Perceptions Questionnaire (for tutors)

Sections 3 and 4 provided data about the backgrounds of the CBL tutors and their experiences with students in CBL tutorials. The Approaches to Teaching Inventory has been used over the last decade to assist teachers to reflect on their own teaching and learning within a specific context (Trigwell & Prosser 2004) (Trigwell, Prosser & Ginns 2005), and was therefore an ideal instrument for providing data on the approaches to teaching of the tutors within the context of CBL tutorials. The validity and reliability and of the CBL Perceptions Questionnaire has been discussed above.

4.8   SUMMARY

Chapter Four has described in detail the following quantitative instruments used in the research:

- questionnaires involving medical students:
    o the FYEQMed,
    o the CBL Perceptions Questionnaire,
    o the Kessler Psychological Distress Scale

- questionnaires involving CBL tutors
    o the CBL Perceptions Questionnaire,
    o the Approaches to Teaching Inventory

The rationale for using of each of the instruments has been described, details about their implementation and the statistical analysis of the data obtained have been given and the validity and reliability of the instruments have been considered. In keeping with the exploratory, sequential nature of the research design, collection and analysis of data was carried out alternately to allow for reflection on the data to inform the next stage of the research. Data from the FYEQMed, about the changes that students were experiencing during transition, informed the development of questions about those changes for use in student focus groups. Data about the different transition experiences of domestic and international students suggested the need for a focus group solely for international students. Chapter 5 will now describe in detail the development and implementation of the qualitative approaches.

CHAPTER 5.

QUALITATIVE APPROACHES: METHODS

5.1   INTRODUCTION

This chapter presents the rationale for the qualitative approaches using focus groups and interviews, which have been introduced in Chapter 3. The development of the questions used in the focus groups and interviews are explained, including how the framework of the Transition Pedagogy model informed the development of questions for the main study. The conduct of the focus groups and interviews and the analysis of the qualitative data are also described.

Focus groups provide an approach for generating qualitative data of a different nature and richness from data collected from interviews. Data are generated by interaction between the participants in the group and this synergistic interaction is important for developing the flow of discussion (Ritchie & Lewis 2003). The researcher guides this flow by ensuring that all group members are participating and by harnessing the group process to encourage members to explore the emerging issues more deeply. Noting the non-verbal responses of participants also helps to determine how the discussion should develop and helps later in analysis of the verbal data. Although participants in the group need to share the common ground of having some experience of the research topic, diversity amongst participants can add breadth to the discussion as focus groups "stimulate talk from multiple perspectives from group participants so that the researcher can learn what the range of views are" (Bogdan & Biklen 2007, p. 109).

Table 14. Summary of focus groups and interviews

Year	Type	Number of groups/interviews	Number of participants
Pilot Study 2010	Student focus groups (PS.FG)	2 with students from the whole cohort, domestic & international	19 students (groups of 8 & 11)
Main Study 2011	Student focus groups (MS.FG) (IS)	4 with students from the whole cohort, domestic & international	24 students (groups of 10, 6, 4 & 4)(15 females, 9 males)
		1 with international students only	8 students
	Interviews with student representatives (SR)	1 with first year Curriculum Committee representatives	2 student reps
		1 with Adelaide Medical Students' Soc. representative	1 student rep
	Academic staff focus groups (T.FG)	2 with CBL tutors	12 tutors (2 groups of 6)
	Academic staff interview	1 with the Coordinator of the International Program.	1 staff
	Administrative staff focus groups (AS.FG)	1 with staff working in the main MLTU office	5 staff
		1 with staff working on curriculum and assessment	3 staff
	Administrative staff interview	1 with the MLTU Manager	1 staff

Interviews provide a different quality of data because individuals may reveal certain experiences that a participant may not wish to share in a group situation. For participants, interviews give "more power and control over what and how they will speak" (Liamputtong 2009, p. 61) and for researchers, interviews "provide opportunities ... to probe and explore in great depth" (Liamputtong 2009, p. 61).

In this research, a combination of focus groups and interviews was used in order to obtain a range of views on the transition process and to explore, in depth, certain issues about transition (see Table 14, p. 87). Focus groups with students, their CBL tutors and administrative staff involved in the medical program were conducted to explore the quantitative data that emerged from the questionnaires from the student cohort and from the CBL tutors. Interviews were conducted with first year student representatives on the Curriculum Committee, with a representative from the Adelaide Students' Medical Society, with the Coordinator of the international program and with the Manager of Medicine Learning and Teaching Unit.

In the focus groups, issues emerging from the questionnaires from students and CBL tutors were explored by using a format that was semi-structured in that the questions used were open-ended. This allowed the discussions in each group to take different directions in order to maximise the variation in responses from students and their CBL tutors. It was not the frequency of responses that was being investigated, but rather the breadth of responses in order to improve the understanding of the different ways in which students experienced their transition into Medicine and in which tutors experienced their role of teaching via the CBL approach. Interviews were also semi-structured.

At the same time as qualitative data was being collected from focus groups and interviews, it was also being analysed. Strauss and Corbin (1998, p. 47) described how "Through these alternating process of data collection and analysis, meanings that often are elusive at first become clearer". Carrying out these alternating processes in this research allowed consideration of whether further investigations of emerging issues were needed.

5.2 GENERAL METHODS USED FOR CONDUCTING FOCUS GROUPS AND INTERVIEWS AND ANALYSING RESULTS

Details specific to each of the focus groups and interviews are given in the following sections. Focus groups and interviews were conducted in a quiet location that was familiar to participants and would encourage them to be relaxed as they considered their responses to the questions. The length of the focus groups and interviews was between one and two hours, depending on the amount of information-sharing and discussion that took place with focus group members or interviewees. All focus groups and interviews were recorded using a digital voice recorder. Immediately after each session, the researcher wrote a summary of the main points emerging from the discussion and these records provided another source of data for analysis of the discussions.

To prepare the data for analysis, recordings were transcribed by a professional transcriber. The researcher became familiar with the transcripts before analysis of the data began by reading them whilst listening to the recordings. Analysis of data was carried out with the aid of NVivo 9 software.

The method used to analyse data was that of thematic analysis, as distinct from that of grounded theory, as the theoretical framework of the Transition Pedagogy model provided the categories for the themes (the four areas for effective strategies during transition, see Figure 3, p. 35) (Liamputtong 2009).

The following coding process was used:

- Initial analysis involved a line-by-line analysis of each transcript to determine the significant and analytically interesting concepts that emerged from each discussion (Strauss & Corbin 1998).

- Concepts describing a particular phenomenon were then grouped into the categories or themes defined by the Transition Pedagogy model.

- In on-going analysis, further concepts emerged that enabled the development of sub-categories that helped to provide meaning and understanding of the major categories.

- Links between the sub-categories and their major category, and between the major categories themselves, were then investigated. This marked the beginning of theory building and the explanation of results, and is discussed in the final chapter.

5.3   STUDENT FOCUS GROUPS AND INTERVIEWS

5.3.1   Pilot study focus groups

Two focus groups were held with eight and eleven students participating. The protocol used consisted of an introduction and welcome, the nine questions to be discussed and a final thank you to the participants. Questions for the Focus Groups (see Table 15, p. 90) were generated from reading the literature about the First Year Experience, Problem-Based Learning and Case-Based Learning. The order of the questions was changed if necessary to promote a better flow-on between the topics covered in each question.

Table 15. Questions asked in pilot study focus groups

1.	What were some of your expectations about how you would study/learn as a student in first year Medicine ?
2.	What do you understand is meant by the "CBL approach" to learning and teaching in Medicine?
3.	How are you having to change your approach to learning and studying to work in this CBL approach?
4.	What do you think is your tutor's role in your CBL tutorial?
5.	How are you adapting to the differences between the role of a CBL tutor and the role of your teachers at Year 12?
6.	What are the best things about the CBL approach for you?
7.	Are there any aspects of the CBL approach that you find difficult?
8.	What do you remember about the introductory sessions (e.g. the two for CBL?) to the Medical curriculum at the start of the year? a. Were they useful? / If yes, how were they useful? b. How could they be improved?
9.	How well are you able to bring together what you have learned in other areas of your curriculum, in your CBL tutorials?

5.3.2   Main study focus groups with volunteers from the whole cohort

In the main study, the cohort of transitioning medical students comprised 172 domestic students (92%), and 15 international students (8%). Four focus groups included a mix of volunteers from both domestic and international students and one was conducted with volunteers from the international students.

Outcomes of discussions with students in the pilot study focus groups identified the changes that students experienced during transition. These outcomes were explored in the focus groups in the main study to investigate how students were supported to cope with the changes they were experiencing in the four dedicated areas of the Transition Pedagogy model. This was investigated not only from the students' viewpoint but also from the viewpoint of academic and administrative staff involved in the first year medical program.

Four student focus groups were used to investigate the first three areas of the model. For each of these four focus groups, a set of questions was developed that would enable investigation of one of the four key areas. Questions with Focus Group 1 explored how students engaged with their learning through asking them to discuss the changes that had emerged from the pilot study focus groups, and a list of these changes (see Table 44, p. 144) was supplied to each student. Questions were similar for Focus Group 2 but a question was introduced to begin investigating the second area. Focus Group 3 completed investigations for the second area and introduced questions for the third area. Focus Group 4 completed investigations for the third area and provided the opportunity to return to questions from previous focus groups that needed further discussion. This sequencing of questions to investigate the first three strategies is given in Table 16, p. 91.

Whilst the analysis of results from these focus groups followed the general method outlined in Section 5.2, the categories used for grouping the data here were provided by the first three key strategies of Transition Pedagogy; strategies that engaged students with their learning, strategies that created a sense of belonging among students and strategies that provide awareness of and access to timely support services.

Table 16. Questions for student focus groups in the main study

Focus group	Questions	Area being investigated	Area being introduced
1	You have a list in front of you of the changes in the nature of learning which students in 2010 described that they experienced during the transition into year 1 Medicine. • Do you agree that these are the major changes and how do you cope /what strategies do you use to cope with these changes? • Do you have any other changes in the nature of learning that you or your friends are experiencing, to add to this list? • How do your tutors help/what sort of strategies do they use to help you as you make the transition from year 12 into year 1 Medicine?	engaging students with learning	
2	• How do you make the change from rote learning to learning more for understanding? • How do mechanistic diagrams help you to understand concepts? What else do you do to help you understand difficult concepts? • You are given feedback far less regularly than you were in year 12. What do you mean by feedback and what sort of feedback would help you in this course? • First year medical students have a very strong sense of identity and enjoy being university students. What sorts of things have happened so far this year to make you feel that you belong to the medical student group?	engaging students with learning	creating a sense of belonging

3	• First year medical students have a very strong sense of identity and enjoy being university students. What sorts of things have happened so far this year to make you feel that you belong to the medical student group?
	• How do you get support when you are having difficulties?
	   ○ With academic work
	   ○ With administration type requirements
	• Who do you go to for help? Where do you go for help? What sort of support is available?
		creating a sense of belonging	awareness of and access to timely support services

4	• How do you get support when you are having difficulties?
	   ○ With academic work
	   ○ With administration type requirements
	• Who do you go to for help? Where do you go for help? What sort of support is available?
	Any other questions needing further discussion from previous FGs.
		awareness of and access to timely support services	

5.3.3 Main study focus group with volunteers from the international students

The main diversity group within the medical cohort was international students who had relocated to Adelaide from overseas to study Medicine, with many of these students having to live independently from their parents for the first time. The difference in the first year medical program for domestic students compared with international students was the support offered to the overseas students by the International Program (IP) (see https://curriculum.adelaide.edu.au/medical_course.asp). It was run by the MLTU to provide academic language and learning support and was compulsory for international students in first semester. The full extent of the support provided by this program will be evident from the focus group discussion reported in Section 8.6, page 172. In the weekly sessions conducted by the IP Coordinator, students worked through the cases they were currently studying in CBL tutorials. They were given advice on which resources to use and opportunities to practise hypothesis generation, mechanistic diagrams and case presentations in a group situation. The students were given feedback on how they were performing in this group and the opportunity to discuss feedback from their CBL tutors. The Coordinator also provided students with advice on any problems they were experiencing with living away from home in an overseas location.

To investigate the transition experiences for this main diversity group, a focus group was held with volunteers from the group and an interview was conducted with the Coordinator of the International Program. As the Coordinator was an academic member of staff, details of this interview are given in Section 5.4.2, page 95.

Eight international students volunteered to participate in the focus group, which was conducted in a similar manner to other focus groups, in that the questions (see Table 17, p. 93) were open-ended and sessions were held in a place that was familiar to participants. As English was a second language for these students, in order to improve their understanding of the questions, they were provided with a copy of the questions and invited to spend the first five minutes of the session writing a few points for each question so that they would be prepared for the discussion. As one of the main differences between the domestic and international students in first semester was the requirement for international students to participate in the International Program, focus group questions investigated students' perceptions of this program and how it had helped them during the transition process.

The comments written by the eight students for each question were summarised and this summary, together with the transcript of the focus group, provided qualitative data for answering research questions one and two ("How do students engage in learning in the first year of the CBL medical program?" and "How proactive and timely is the access for students to learning and life support?") from the perspective of the international students.

Table 17. Questions for international students' focus group

With regards to the International program:	
1	How has this program helped you in your transition from where you were last year, into first year Medicine?
2	What would the transition have been like for you if this program didn't exist?
3	What other sorts of things would you like to see included in the program to help you with the transition into Medicine?
4	Are there any other comments you would like to make regarding your transition in to year 1 Medicine?
5	In addition to thinking about transition, what other aspects of the program have benefitted you this year and how? (e.g. in doctor-patient communication, history-taking and MPPD role plays, case presentations, study skills etc)

5.3.4   Main study interviews with students

Through the alternating collection and analysis of data throughout this research, it was identified that an important source of support for first year students was from their peers in the same year and from older medical students. To investigate the nature of this support, the following students from the medical cohort, who were involved in providing peer support for transitioning students, were interviewed:

- Two first year student representatives (SRs) on the Year 1 Curriculum Committee, whose role was to present important issues from the MC to academic staff on the Committee, for discussion. Comments from the SRs provided an overview of the problems experienced by transitioning students because they were presenting the concerns of the whole cohort of first year students to the Curriculum Committee. This was different from comments made in the focus groups where students would often raise individual issues.

- A third year medical student who was a representative from the Adelaide Medical Students' Society (AMSS). The two peer-mediated programs conducted by the AMSS to help students during transition were discussed. The first of these programs was the MedTransit Program which involved second year students meeting with groups of eight to ten first year students in Semester One and early in Semester Two, to discuss curricular and co-curricular processes that were causing concern for students (see http://www.amss.org.au/content/medtransit). The second program was the "Peer-to-Peer" program in which mainly fourth, fifth and sixth year students provided help for first year students with matters relating to the curriculum, including cases that students may be experiencing difficulties with and the format of the written and practical examinations (see http://www.amss.org.au/content/peer-2-peer). The interview with the AMSS representative was an informal interview during which the representative was asked to describe the two programs and the help they provide for transitioning students.

Table 18. Questions for interview with first year student representatives on the Curriculum
Committee

1.	What are the main problems / struggles / concerns for students transitioning into Medicine? • Academic • Administrative / other types
2.	How are you, as student representatives, able to help students with their concerns? • Where / who do you go to for help apart from the year 1 Curriculum Committee? • Are you able to help students with their concerns? How effective do you think your role is?
3.	What do you see as the main things that could be done to improve transition and the first year experience for medical students?

These two interviews with students produced another source of data for triangulation to provide
answers for the first two research questions on the transition experiences of medical students.

5.4   ACADEMIC STAFF FOCUS GROUPS AND INTERVIEW

5.4.1   Focus groups with CBL tutors

The purpose of the focus groups with the CBL tutors was to investigate the first two research
questions: how do students engage in learning in the first year of the CBL medical program and how
proactive and timely is the access for students to learning and life support? Data from these focus
groups could then be triangulated with data from other sources that also informed these two
research questions (see Table 4, page 62), to give a comprehensive picture of how students engage
in learning and the access they have to learning and life support.

Six CBL tutors took part in each of the two focus groups, giving an overall participation rate of 75%
(12/16). The questions for these focus groups were informed by the responses of the CBL tutors in
Section 4 of the Questionnaire for CBL Tutors, where tutors were asked to list strategies that they
had used during CBL tutorials to help students with the transition to the CBL approach to learning
and teaching (see Section 4.5, p. 82). Analysis of data from the answers to these questions showed
that the strategies employed fell into the following five categories: improving group dynamics,
creating a safe learning environment, guiding students in the CBL process, keeping students
focussed and on time, and providing feedback. The questions developed for the focus groups were
designed to investigate these strategies in greater depth and also to investigate what strategies the
tutors had noted their students using to help them cope during transition. The categories of
strategies and the questions for the focus group are shown in Table 19.

Table 19. Protocol and questions for CBL tutors' focus groups

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Introduction:
Below is a summary from your written comments, of the categories of strategies that you have used in your CBL tutorials to help students with their transition to the CBL approach to teaching and learning:

- Improving group dynamics
- Creating a safe learning environment
- Guiding students in the CBL Process
- Keeping students focussed and on time
- Providing feedback

Question 1
a). Which two strategies do you think are most important in helping students with the transition?
b). How do you actually get these strategies to work?
c). In what ways do you think that the other strategies which we haven't yet discussed, are important?
d). Do you all agree that these strategies work for you?

Question 2
a). What are some of the things you have noticed/heard/seen, that students do outside of CBL tutorials that help them cope with the transition into first year, CBL based Medicine?
b). What are some of the things you have noticed/heard/seen, that students do who are struggling with the transition?

Question 3
You have mentioned how important you think it is for tutors to help students with the transition process by several different strategies. What sort of additional training would help you to develop strategies to better assist students in their transition into Year 1, CBL based Medicine?

5.4.2   *Interview with the Coordinator of the International Program*

The Coordinator of the IP was interviewed to provide data on the transition experiences of students from the perspective of the academic staff member teaching the program and to complement data from international students themselves. The Coordinator was asked to describe how the International Program was conducted and how it assisted international students with their transition into the medical program. Data from the interview was collected in a rigorous manner in that notes were recorded during the interview and a summary prepared immediately after the interview.

5.5   ADMINISTRATIVE STAFF FOCUS GROUPS AND INTERVIEWS

Focus groups with administrative staff consisted of one focus group with five staff who worked in administrative roles in the MLTU Office and in the Clinical Skills program and another focus group with three staff who were involved in the development of curriculum, timetabling and assessment in the first year MBBS program. The Manager of the MLTU was also interviewed separately from the staff she supervised. The focus groups and interview enabled exploration of the role of administrative staff and their relationship with academic staff during the transition process, thus providing qualitative data to investigate research questions 2 and 4.

Administrative staff are often the first point of contact for students with problems because they are readily available at any time of the day, and far more accessible than lecturers and tutors who may only be on-site for their particular sessions. This applied to MLTU office staff and to administrative

staff in the Clinical Skills Unit, both of whom were available at all times if students needed advice or help. Focus groups and interviews with these staff therefore provided an important source of information for the second and fourth research questions (How proactive and timely is the access for students to learning and life support, and, Are the partnerships between academic staff and administrative staff sustainable and effective in the transition into the first year medical program?).

5.5.1 Focus group with MLTU office staff and Clinical Skills Unit administrative staff

Three administrative staff from the MLTU office and two from the Clinical Skills Unit participated in the focus group. Participants were asked to consider firstly how they saw their role in helping students in their transition into Medicine and secondly, what sort of a relationship they had with academic staff as they went about their daily work. The different groups of academic staff with whom administrative staff interacted on a daily basis were identified as tutors of Case-based Learning tutorials, tutors in Medical Professional and Personal Development, tutors in Clinical Skills, and lecturers in the first year medical program. This helped to clarify for the participants the nature of academic staff that would be referred to during discussions. Questions for the focus group are summarised in Table 20. The first column shows three of the six First Year Curriculum Principles from the Transition Pedagogy model, to which the questions related, and a final section asks questions on the general role of administrative staff in the transition process.

5.5.2 Interview with staff working on assessment and curriculum

These administrative staff members only had direct contact with students through Curriculum Committees where two student representatives from each year level attended the meetings. These staff influence the transition experience of students through their involvement in curriculum design, and the timetabling of lectures, tutorials and practical sessions. All three staff involved in this area of work participated in the focus group. The questions discussed related more to the Curriculum Principles of Transition and Design than to Diversity, and are summarised in Table 21.

Table 20. Questions for focus groups with administrative staff in MLTU office & Clinical Skills office

First Year Curriculum Principle (FYCP) (from Transition Pedagogy model)	Questions relating to each FYCP
Transition	• At the start of the year do you have students coming to you for orientation information? • What sort of information are they asking for? • Do you think you are kept informed by academic staff with enough information to answer these questions?
Diversity	We have several different groups transitioning into Med (international, interstate, mature age, transfer students). • Do you think you can provide adequate information to these groups if asked? • What programs could you tell them about that could help them, either within the MBBS or in the university? • Are you kept in the loop about individuals from diversity groups so you can be effective in helping them?
Engagement	• Do students come to see you first up if they are struggling academically in the first few months? • How do you help these students?
General	• What sort of support are you able to provide to students struggling in the first semester? • Who do you seek advice from if you want to know how to help a student? • Are you invited to sessions when students are told where/how to seek help if they are struggling? • Would you like to have a greater role in supporting struggling students and how could this happen?

Table 21. Questions for interview with administrative staff working on curriculum design, implementation and assessment.

Curriculum Principle (FYCP) (from Transition Pedagogy model)	Questions relating to each FYCP
Transition	• Could we discuss generally what you see as your role in partnership with academic staff, in helping students transition into Medicine? • From your perspective, does the program do enough to help students transitioning into Med? Do we do enough for students from diverse backgrounds, students who are struggling academically etc?
Design	• How is the transition taken into account in your work e.g. when designing curriculum or when supporting staff who set assessment questions?
General	• Do academics accept your advice about changes that could be made or how things could be done, or is your role more implementation of the curriculum and assessment as decided by academics? • How much interaction do you have with students in the first few months and do you think your role in transition would be improved if you had more interaction? • How would you see academic/ professional partnerships being improved so we can strengthen the transition process?

5.5.3 *Interview with Manager of the Medicine Learning and Teaching Unit*

The Manager of the MLTU worked with all administrative and academic staff in the Unit, but most closely with administrative staff in the MLTU Office. The Manager was interviewed separately from office staff for two reasons. The first reason was that the Manager's role was at a different level from office staff in that office staff referred students with problems to the Manager to discern the nature of the problem. She would then decide if it was a non-academic problem that she could solve, or an academic problem that required help from an academic staff member. The second reason was that office staff could possibly speak more freely without the presence of the Manager to whom they reported and vice-versa. Therefore it was possible, by conducting separate interviews, to collect data of a different nature from the Manager and the office staff. As the Manager and office staff performed similar roles with transitioning students even though the roles were at a different level, the same questions were used for interviewing the Manager as for the administrative staff focus group (see Table 20).

5.6   SUMMARY

This chapter has described the methods used to collect and analyse qualitative data from focus groups and interviews with participating students, academic and administrative staff. It has explained how some questions developed from alternating the collection and analysis of data, an example being that the analysis of data from the FYEQ of the pilot study pointed to changes experienced by transitioning medical students, and informed the development of questions for the pilot study focus groups. Questions for the main study were framed around the four key strategies of the Transition Pedagogy model. Whilst results of these qualitative approaches will be explored in Chapter 7, the following chapter will return to the quantitative aspects of the research and results from the questionnaires will be used to build a picture of the demographics and transition experiences of the cohort of medical students.

CHAPTER 6.

QUANTITATIVE RESULTS

6.1 INTRODUCTION

This chapter brings together the data generated from the questionnaires answered by the medical cohort (MC) and their CBL tutors to build a picture of the MC and how their backgrounds and transition experiences compared with the general cohort of university students (GC). The quantitative instruments used and the rationale for their use have been described in detail in Chapter 4. Data from the six sections and the nine scales of the FYEQMed are analysed, allowing comparisons to be made between the MC and the GC of transitioning students. The alignment between students' and their CBL tutors' perceptions of the CBL approach is determined, relationships between tutors' approach to teaching and student outcomes are investigated and data is presented on the backgrounds of the CBL tutors. Whilst this chapter presents the data for these quantitative results, a detailed discussion of the results will occur in Chapter Nine when the quantitative and qualitative data are linked to provide information relating to the first three dedicated areas of the Transition Pedagogy model: curriculum that engages students in learning, proactive and timely access to learning and life support and fostering a sense of belonging amongst students.

6.2 RESPONSE RATES AND SIGNIFICANCE LEVELS

For the pilot study in which volunteer students completed the FYEQ, the response rate was 43% (73/170). For the main study, the response rate for each of the student questionnaires (the FYEQMed including CBL Perceptions Questionnaire) and the Kessler Psychological Distress Scale, was 98% (183/187).

Throughout the analysis of quantitative results the level of significance was set to $p=0.05$. All p values are reported to three decimal places , except when less than 0.001 in which case they are reported as <0.001, and p values indicating statistical significance are bolded. No adjustments were made to the level of significance even though a large number of comparisons were made between various sets of data, because the mixed methods research was observational and searching for meaning and understanding of the case being studied, and not experimental as in a randomized controlled trial in a quantitative study.

6.3 RESULTS OF FYEQMED

The results of the FYEQMed from the main study of the research are presented in two sections, with the first section comparing answers to individual questions in Sections A-F and the second section presenting data on the nine scales. The results from the pilot study have not been presented as this study was carried out mainly with the purpose of adapting the questionnaire to a medical context. It also had a much lower response rate than the main study making these results statistically less reliable. For the MC both the frequency and percentages of responses (to one decimal place) are given, but for the GC, which is based on published data (James, Krause & Jennings 2010) and personal communication (Malcolm Anderson, personal communication 23 November 2010), only integer values of percentages were available.

6.3.1 Comparison between answers to individual questions for the general cohort and the medical cohort

For consistency in reporting, whenever comparisons are made between the MC and the GC, the first figure in brackets will always be for the MC and the second figure for the GC.

6.3.1.1 About students and their studies: student demographics

Data about student demographics and the backgrounds of their families (Table 22, p.101) showed that the MC was a significantly younger group of students than the GC, with only one student over 24 years of age (Item 1). In both cohorts there were more females than males, but the proportion of males in the MC was significantly higher than the proportion of males in the GC (42.1% vs. 31%, p=0.002, Item 2). There were no differences between the proportions of indigenous and international students in each cohort (Item 3) and the proportions of international students in each cohort were also similar (Item 4).

Data from Item 5, which asked for the postcode of students' permanent home address, are not presented. This question attempted to identify students who had attended a rural or regional secondary school and those who had relocated from country areas or interstate to study Medicine. However many students interpreted this question as requesting the post code of their address since they had begun studying at university, and therefore these data did not reflect where students had completed Year 12. Even if students had given the postcode of their permanent home with their parents, this may not have indicated whether they attended a rural or city secondary school as many rural students attend city or regional schools as boarders. In addition, when the socio-economic status (SES) of the GC of students was calculated, firstly using postcode and then using parents' occupation, very little correlation was found between the results (James, Krause & Jennings 2010). The data of interest for the cohort of medical students were whether students had relocated from overseas, interstate or country areas during their transition into Medicine and these data were obtained from Table 23, Item 22.

Table 22. About students and their studies: student demographics

*The Chi-square test was used unless there is a category with frequency <5, in which case the Fisher's Exact test was used.

ITEM	Medical Cohort (n=183)		General Cohort (n=2422)	Statistical test	
	N	%	%	*Chi-square or Fisher's Exact	p value
1. Year of Birth				Fisher's Exact **p<0.001**	
19 years & under	119	65.0	67		
20 -24 yrs	63	34.4	22		
25-29 yrs	1	0.5	7		
30 years and over	0	0.0	4		
2. Sex				9.99	**p=0.002**
female	106	58.0	69		
male	77	42.1	31		
3. ATSI	1	0.5	2	1.3	p=0.254
4. International student	15	6.6	11	1.65	p=0.199
5. Postcode					
6a. Country of birth					
Student born overseas	50	27.3	26	0.11	p=0.738
mother born overseas	97	53.0	45	4.4	**p=0.036**
father born overseas	100	54.6	46	5.12	**p=0.024**
6b.Years lived in Aus.				77.09	**p<0.001**
< 2 years	15	28.3	4.		
2-10 years	16	30.2	47		
> 10 years	22	41.5	49		
7. LOTE spoken at home	59	32.6	29	1.23	p=0.267
8a. Education level parents					
Mother's highest education level				76.93	**p<0.001**
primary school	12	6.7	8		
secondary school	25	13.9	39		
diploma	21	11.7	16		
degree	86	47.8	25		
postgraduate degree	36	20.0	12		
Father's highest education level				73.8	**p<0.001**
primary school	8	4.4	8		
secondary school	23	12.7	37		
diploma	17	9.4	13		
degree	79	43.6	25		
postgraduate degree	54	29.8	17		
8b. First person in family to attend uni	22	12.4	32	28.95	**p<0.001**
10. Any dependants?	8	4.5	13	11.08	**p<0.001**
11. School attended in Yr 12				88.57	**p<0.001**
Catholic	30	16.4	21		
Govt	49	26.8	49		
Independent/private	102	55.7	26		
Overseas	2	1.1	4		

A review of the country of birth for students and their parents (Item 6a) indicated that there were no differences between the proportions of students born overseas in the MC and the GC (27.3% vs. 26%). However the MC had a significantly higher proportion of students whose mother was born overseas (53.0% vs. 45%, p=0.036) or whose father was born overseas (54.6% vs. 46%, p=0.024). In the MC, significantly more students from immigrant families had lived in Australia for less than two years than in the GC (28.3% vs. 4%, p<0.001, Item 6b), but there was no difference between the proportions of families in the MC who spoke a language other than English at home (32.6% vs. 29%, Item 7).

Concerning the educational background of the families of transitioning students (Item 8a), a significantly higher proportion of students in the MC had mothers and fathers with degrees (47.8% vs. 25%, p<0.001) and postgraduate degrees (20.0% vs. 12%, p<0.001) and a significantly smaller proportion of the MC (12.4% vs. 32%) were the first in their family to attend university (Item 8b). The distribution of schools attended by students in each cohort (Item 11) was significantly different (p<0.001) with a higher proportion of the MC having attended independent schools (55.7% vs. 26%) and a smaller proportion having attended Catholic schools (16.4% vs. 21%) and government schools (26.8% vs. 49%).

6.3.1.2   About students and their studies generally

This section moves from describing the demographics of the two cohorts of students to their general experiences during their transition year (see Table 23, p.103). With regard to payment of university fees (Item 12), a significantly higher proportion (p<0.001) of the MC was in Commonwealth Supported Places (CSPs) with fees paid upfront (24.9% vs. 14%) or deferred payment (67.4% vs. 64%).

Concerning previous vocational training (Item 13a), few medical students (4.9%) had completed a Vocational Educational Training (VET) course in secondary school and figures for comparison with the GC were unavailable. Thirty three students transferred into Medicine at the University of Adelaide from another university program (Item 13b). (Of these students, 16 or 48.5% transferred from a Bachelor of Health Science with the rest transferring from a variety of programs including Biomedical Science (8), Nursing (1), Law (2) and Science (2)). Similar numbers of students from the MC and the GC had deferred their studies in the previous year (Item 14) but significantly more students from the MC were in their course of first preference compared with the GC (95.6% vs. 75%, p<0.001, Item 15). The MC and GC had similar proportions of students changing either their course (10.4% vs. 7%, Item 16a) or institution (5.0% vs. 3%, Item 16b) after their first enrolment. There were no medical students hoping to change course next year (Item 17a) compared with 16% of the GC, and only one medical student planned to change their institution next year (Item 17b), which was significantly fewer (p<0.001) than students from the GC (8%).

Table 23. About students and their studies generally

*The Chi-square test was used unless there is a category with frequency <5, in which case the Fisher's Exact test was used.

ITEM	Medical Cohort (n=183)		General Cohort (n=2422)	Statistical test	
	N	%	%	*Chi-square or Fisher's Exact	p value
12. How paying uni fees				32.32	**p<0.001**
CSP & paid upfront	45	24.9	14		
CSP deferred payments (HECS)	122	67.4	64		
Other: Aust fee-paying, paid up front, Aust fee-paying FEE-HELP loan, International fee-paying	14	7.7	22		
13a. Did you complete a VET course in secondary school?	9	4.9			
13b. Did you transfer into Med from another uni course	33	18.1			
14. Defer uni enrolment last year?	27	14.8	13	0.65	p=0.420
15. Current course preference				40.69	**p<0.001**
first	174	95.6	75		
second, third or fourth	8	4.4	25		
16a. Change course after first enrol	19	10.4	7	3.49	p=0.062
16b. Change institution after first enrol	9	5.0	3	3.58	p=0.059
17a. Hope to change course next year	0	0.0	16	32.85	**p<0.001**
17b. Hope to change institution next year	1	0.6	8	11.86	**p<0.001**
18a. Average overall mark for Sem1				49.03	**p<0.001**
<50%	6	3.3	2		
50-60%	31	16.9	14		
61-70%	98	53.6	33		
71-100%	48	26.2	51		
18b. Comparison with expected mark				8.76	**p=0.013**
higher	43	23.6	17		
lower	45	24.7	32		
same	94	51.6	51		
19. No of days/week spent on campus				Fisher's Exact p<0.001	
1-4 days	3	1.6	65		
5 days	175	96.2	31		
6-7 days	4	2.2	4		
20. Changed accommodation since starting uni				Fisher's Exact p=0.015	
never	145	79.2	74		
once	36	19.7	20		
two or more times	2	1.0	6		
21.Type of accommodation for Semester 1				24.7	**p<0.001**
family/ guardians/private board	129	70.5	67		
college/hall of residence	32	17.5	9		
renting with friends/co-tenants	14	7.7	14		
other, e.g. own house/unit/flat	8	4.3	10		
22. Moved to start university				73.59	**p<0.001**
within state	13	7.1	20		
interstate	28	15.3	4		
overseas	15	8.2	6		
did not move	127	69.4	70		

In Semester One examinations, significantly fewer of the MC gained an average overall mark between 71 and 100 percent, (26.2% vs. 51%,) than the GC, but significantly more of the MC gained a mark between 61 and 70 percent (53.6% vs. 33%), (Item 18a, p<0.001). Looking at the amount of time that students spent on campus, it can be seen that significantly more of the MC spent five or more days a week on campus than the GC (98.4% vs. 35%, p<0.001, Item 19), with 65% of the GC spending four or less days on campus. In both cohorts, the majority of students had not changed accommodation since starting university (79.2% and 74% respectively, Item 20) but significantly more of the MC were living with family, boarding privately or in residential colleges (88.0% vs. 76%) and significantly fewer were renting with friends or living in their own accommodation than the GC (12.0% vs.24%, Item 21, p<0.001).

6.3.1.3   Student expectations, goals and study habits

This section reports on experiences of the cohorts within the curriculum of their chosen program, factors that were important in deciding to go to university, their expectations of university, what they hoped to achieve through their study and how they went about their study (Table 24, p. 105).

When considering whether to go to university (Item 1), similar numbers of students in the MC and GC thought it was important to study in a field that really interested them. Significantly fewer medical students considered it important to develop their talents and creative skills at university (70.5% vs. 77%, p=0.023), but similar proportions in each cohort thought university was important for providing training for a specific job (82.0% vs. 75%) and for improving their job prospects (80.1% vs. 86%). Significantly fewer students in the MC thought that the expectations of parents or family were important in deciding to go to university (25.3% vs. 35%, p=0.030).

Once university had begun (Item 2), more of the MC than the GC were clear about the reasons they came to university (94.0% vs. 88%, p=0.051), knew the type of occupation they wanted (78.7% vs. 66%, p<0.001) and disagreed that university study was marking time whilst they decided their future (86.3% vs. 66%, p<0.001). A similar number of the MC and GC regularly sought help from teaching staff (26.0% and 29%), found it difficult to understand a lot of the study material (19.7% and 19%) and had a quiet place to study (79.7% and 74%). However significantly more of the MC felt comfortable participating in group discussions (72.0% vs. 56%, p<0.001), gained satisfaction from studying (63.3% vs. 49%, p<0.001), enjoyed the challenge of the subjects they were studying (88.5% vs. 62%, p<0.001), were strategic about managing their academic workload (50.0% vs. 40%, p=0.009) and worked consistently throughout first semester (62.1% vs. 43%, p<0.001). Significantly fewer of the MC found that lectures stimulated their interest (29.5% vs. 47%, p<0.001).

Significant differences were found between the MC and GC in the frequency of certain study habits (Item 3). More of the MC frequently studied with other students (31.1% vs. 17%, p<0.001), asked questions or contributed to discussions in class (56.3% vs. 31%, p<0.001), and made class presentations (21.9% vs. 16%, p<0.001). Significantly fewer of the MC frequently came to class without completing assignments (4.4% vs. 13%, p=0.001), but similar numbers of students from both

cohorts never skipped classes (40.1% vs. 40%). It was also interesting to note that less than half of students from both cohorts frequently felt overwhelmed by all they had to do (39.3% and 33%) and this finding will be further discussed when results of Scale 8. Comprehending and Coping, are considered. Significantly fewer of the MC worked frequently with classmates outside class on group assignments than the GC (13.8% vs. 29%), but a similar proportion of students from both cohorts worked frequently with other students during class (22.0% vs. 27%). The first of these results was expected as the first year medical program has no group assignments outside class, but all CBL tutorials, Medical Professional and Personal Development tutorials and Clinical Skills sessions require group work. However, this group work is not referred to as "projects" so there may have been some confusion for medical students about the meaning of the term "projects" causing fewer students to answer "frequently" for this item.

Table 24. Student expectations, goals and study habits

*The Chi-square test has been used unless there is a category with frequency <5, in which case the Fisher's Exact test has been used.

ITEM	Medical Cohort (n=183)		General Cohort (n=2422)	Statistical test	
	N	%	%	*Chi-square or Fisher's Exact	p value
1. In deciding to go to university, how important was each of the following for you?					
Studying in a field that really interests me				Fisher's Exact p=0.844	
important	178	97.3	96		
neutral	4	2.2	3		
not important	1	0.5	1		
Developing my talents and creative abilities				7.57	**p=0.023**
important	129	70.5	77		
neutral	49	26.8	19		
not important	5	2.7	5		
Getting training for a specific job				4.66	p=0.097
important	150	82.0	75		
neutral	26	14.2	17		
not important	7	3.8	7		
Improving my job prospects				3.61	p=0.165
important	145	80.1	86		
neutral	24	13.3	10		
not important	12	6.6	5		
Expectations of my parents or family				7.02	**p=0.030**
important	46	25.3	35		
neutral	58	31.9	28		
not important	78	42.9	38		
2. Please indicate the extent to which you agree with the following statements:					
I am clear about the reasons I came to university				Fisher's Exact p=0.051	
Agree	172	94.0	88		
neutral	9	4.9	9		
disagree	2	1.1	3		

ITEM	Medical Cohort (n=183)		General Cohort (n=2422)	Statistical test	
	N	%	%	*Chi-square or Fisher's Exact	p value
I regularly seek advice and help from teaching staff				1.7	p=0.557
Agree	47	26.0	29		
Neutral	77	42.5	39		
Disagree	57	31.5	32		
Studying at university is just marking time while I decide my future				33.9	**p<0.001**
Agree	8	4.4	15		
Neutral	17	9.3	19		
Disagree	157	86.3	66		
I find it difficult to get myself motivated to study				9.99	**p=0.007**
Agree	48	26.2	36		
Neutral	57	31.1	31		
Disagree	78	42.6	33		
I know the type of occupation I want				17.52	**P<0.001**
Agree	144	78.7	66		
Neutral	30	16.4	19		
Disagree	9	4.9	15		
I find it quite difficult to understand a lot of the material I am supposed to study				0.16	p=0.923
Agree	36	19.7	19		
Neutral	51	27.9	27		
Disagree	96	52.5	54		
I feel very uncomfortable participating in group discussions (e.g. tutorials)				18.33	**P<0.001**
Agree	23	12.6	21		
Neutral	28	15.4	23		
Disagree	131	72.0	56		
I have a quiet place where I can do my study				4.03	p=0.133
Agree	145	79.7	74		
Neutral	19	10.4	16		
Disagree	18	9.9	10		
I get a lot of satisfaction from studying				15.2	**p=0.001**
Agree	116	63.3	49		
Neutral	47	26.7	33		
Disagree	20	10.9	18		
I enjoy the intellectual challenge of subjects I am studying				53.23	**p<0.001**
Agree	162	88.5	62.		
Neutral	15	8.2	27		
Disagree	6	3.3	11		
The lectures often stimulate my interest in the subjects				25.46	**p<0.001**
Agree	54	29.5	47		
Neutral	85	46.4	32		
Disagree	44	24.0	21		
I am strategic about the way I manage my academic workload				9.43	**p=0.009**
Agree	91	50.0	40		
Neutral	59	32.4	35		
Disagree	32	17.6	25		

ITEM	Medical Cohort (n=183)		General Cohort (n=2422)	Statistical test	
	N	%	%	*Chi-square or Fisher's Exact	p value
I worked consistently throughout first semester				28.39	**p<0.001**
Agree	113	62.1	43		
neutral	38	20.9	28		
disagree	31	17.0	29		
3. During Semester One, about how often did you do the following?					
Study with other students				50.07	**p<0.001**
frequently	57	31.1	17		
sometimes	117	63.9	59		
Never	9	4.9	24		
Feel overwhelmed by all you had to do				3.3	**p=0.192**
frequently	72	39.3	33		
sometimes	96	52.5	58		
Never	15	8.2	9		
Skip classes				2.68	p=0.262
frequently	9	4.9	8		
sometimes	100	54.9	51		
Never	73	40.1	40		
Ask questions in class or contribute to class discussion				Fisher's Exact **p<0.001**	
frequently	103	56.3	31		
sometimes	78	42.6	58		
Never	2	1.1	11		
Make class presentations				35.91	**p<0.001**
frequently	40	21.9	16		
sometimes	128	69.9	56		
Never	15	8.2	28		
Come to class without completing readings or assignments				13.71	**p=0.001**
frequently	8	4.4	13		
sometimes	109	59.6	58		
Never	66	36.1	29		
Work with other students on projects during class				2.49	p=0.288
frequently	40	22.0	27		
sometimes	103	56.6	54		
Never	39	21.4	19		
Work with classmates outside of class on a group assignment				53.25	**p<0.001**
frequently	25	13.8	29		
sometimes	75	41.4	48		
Never	81	44.8	23		

6.3.1.4 Students' university experiences

Results in this section (see Table 25, p.109) relate to students' general perceptions of their first year at university, their life on campus, and the program they were studying. Together with data from the previous section on students' study habits, these data begin to provide insight into the teaching and learning experiences of transitioning students. Items asked for responses on a five point Likert scale (1 = strongly disagree to 5 = strongly agree), but this produced results with many categories containing a response frequency less than five where these categories were not relevant to the medical cohort. To facilitate statistical analysis of the data, responses with a frequency less than five were recoded into three categories, agree, neutral, disagree.

Less than half of the MC and the GC cohort agreed that university orientation programs gave them a good start to university (37.1% and 44%, Item 1). Similarly, only 42.6% of the MC agreed that the orientation program specifically for Medicine gave them a good start, 35.8% were neutral and 21.6% disagreed that it gave them a good start (Item 2).

Significantly more of the MC felt that they were part of a group of students and staff committed to learning (81.3% vs. 53%, p<0.001, Item 3), felt suited to university life (80.1% vs. 63%, p<0.001, Item 4) and liked being a university student (84.2% vs. 74%, p=0.018, Item 5). Similar proportions of each cohort believed that academic staff were approachable (64.6% vs. 73%, Item 6) and enjoyed being on campus (61.6% vs. 63%, Item 8), but significantly more of the MC were interested in extra-curricular activities (48.6% vs. 34%, p<0.001, Item 7). Significantly fewer of the MC kept to themselves at university (8.5% vs. 43%, p<0.001, Item 9), were planning international study (39.3% vs. 52%, p<0.001, Item 10) and found that staff were available to discuss their work (31.6% vs. 48%, p<0.001, Item 11). However, significantly more of the MC also found that most academic staff took an interest in their progress (33.3% vs. 26%, p<0.001, Item 18).

Adjusting to the style of teaching at university was difficult for a similar number of students in the MC and GC (36.7% and 46%, Item 12). There was no significant difference between cohorts with regards to their study giving them an awareness of the latest research (38.4% vs. 50%, Item 13). This is not an expectation of first year students in the medical program, and in both cohorts only a minority of students agreed that their studies were helping them to learn about research being done by their own university (24.9% vs. 31% Item 19). Significantly fewer of the MC found that worrying about money made it difficult for them to concentrate on study (22.6% vs. 34%, p<0.001, Item 14), significantly more had made close friends at university (93.8% vs. 74%, p<0.001, Item 15) and were involved in extra-curricular activities (29.4% vs. 17%, p<0.001, Item 16). The university experience had met the expectations of significantly more of the MC (74.0% vs. 59%, p=0.002, Item 17).

Significantly more of the MC (93.8% vs. 68%, p<0.001, Item 20) were satisfied with their choice of program at university and felt that they belonged to the university community (66.7% vs. 50%, p<0.001, Item 21). A similar number of students in both the MC and the GC found it stressful managing their study with other life commitments (65.0% vs. 57%, Item 22) and were excited to be at

university (70.1% vs. 62%, Item 23). However, significantly more of the MC found the program they were studying related to their interests (94.9% vs. 75%, p<0.001, Item 24), could see the connections between their study and career prospects (96.0% vs. 75%, p<0.001, Item 25) and found that their curriculum areas fitted well together (85.3% vs. 78%, p=0.019, Item 26). It was therefore not surprising to find that significantly fewer medical students had seriously considered dropping out of university or deferring in first semester (13.4% vs. 23%, p-0.005, Item 27). Data relating to reasons for discontinuing or deferring their studies have not been included for two reasons. Firstly, many students who had answered that they did not intend to discontinue their studies mistakenly answered questions about the reasons for wanting to discontinue. Secondly, the focus of this research was not on students experiencing difficulties that were serious enough to consider discontinuing their studies, but more on the positive and negative experiences of the "average" student.

Table 25. Students' university experiences

*The Chi-square test has been used unless there is a category with frequency <5, in which case the Fisher's Exact test has been used.

ITEM	Medical Cohort (n=183)		General Cohort (n=2422)	Statistical test	
	N	%	%	*Chi-square / Fisher's Exact	p value
1.The university orientation programs helped get me off to a good start				3.07	p=0.080
agree	65	37.1	44		
neutral	63	36.0	32		
disagree	47	26.9	24		
2. Orientation programs specifically for Med helped me get off to a good start					
agree	75	42.6	0		
neutral	63	35.8	0		
disagree	38	21.6	0		
3. I feel part of a group of students and staff committed to learning				Fisher's Exact **p<0.001**	
agree	143	81.3	53		
neutral	30	17.0	33		
disagree	3	1.7	14		
4. I think university life really suits me				Fisher's Exact **p<0.001**	
agree	141	80.1	63		
neutral	33	18.8	26		
disagree	2	1.1	11		
5. I really like being a university student				Fisher's Exact **p=0.018**	
agree	149	84.2	74		
neutral	26	14.7	19		
disagree	2	1.1	7		
6. Most of the academic staff are approachable				5.83	p=0.054
agree	113	64.6	73		
neutral	44	25.1	21		
disagree	18	10.3	7		

ITEM	Medical Cohort (n=183)		General Cohort (n=2422)	Statistical test	
	N	%	%	*Chi-square / Fisher's Exact	p value
7. I am not particularly interested in the extra-curricular activities or facilities provided				32.36	**p<0.001**
agree	26	14.7	34		
neutral	65	36.7	31		
disagree	86	48.6	34		
8. I really like being on my university campus				9.35	**p=0.009**
agree	109	61.6	63		
neutral	59	33.3	26		
disagree	9	5.1	11		
9. I generally keep to myself at university				42.61	**p<0.001**
agree	15	8.5	43		
neutral	36	20.5	25		
disagree	125	71.0	32		
10. I am planning an international study experience as part of my course				15.3	**p<0.001**
agree	72	39.3	52		
neutral	55	30.1	21		
disagree	50	27.3	27		
11. Staff are usually available to discuss my work				22.45	**p<0.001**
agree	56	31.6	48		
neutral	78	44.1	37		
disagree	43	24.3	15		
12. I have had difficulty adjusting to the style of teaching at university				0.87	p=0.351
agree	65	36.7	46		
neutral	50	28.2	24		
disagree	82	35.0	30		
13. My subjects are giving me an awareness of the latest research				10.38	p=0.0056
agree	68	38.4	50		
neutral	70	39.5	34		
disagree	39	22.0	16		
14. Worrying about money has made it difficult for me to concentrate on study				11.45	**P<0.001**
agree	40	22.6	34		
neutral	37	20.9	19		
disagree	100	56.5	47		
15. I have made at least one or two close friends at university				Fisher's Exact **p<0.001**	
agree	166	93.8	74		
neutral	8	4.5	11		
disagree	3	1.7	15		
16. I am actively involved in university extra-curricular activities (e.g. cultural, sporting)				17.59	**p<0.001**
agree	52	29.4	17		
neutral	49	27.7	15		
disagree	76	42.9	68		
17. University just hasn't lived up to my expectations				10.65	**p=0.002**
agree	13	7.3	17		
neutral	33	18.6	24		
disagree	131	74.0	59		

ITEM	Medical Cohort (n=183)		General Cohort (n=2422)	Statistical test	
	N	%	%	*Chi-square / Fisher's Exact	p value
18. Most academic staff take an interest in my progress				15.08	**p<0.001**
agree	59	33.3	26		
neutral	74	41.8	35		
disagree	44	24.9	39		
19. In my studies, I'm getting a chance to learn about research being done in my university				4.03	p=0.133
agree	44	24.9	31		
neutral	65	36.7	31		
disagree	68	38.4	38		
20. I am satisfied with the program I chose this year				Fisher's Exact **p<0.001**	
agree	166	93.8	68		
neutral	9	5.1	23		
disagree	2	1.1	9		
21. I feel I belong to the university community				25.86	**p<0.001**
agree	118	66.7	50		
neutral	49	27.7	32		
disagree	10	5.6	18		
22. I often find it stressful managing my study with other commitments in my life				5.15	p=0.076
agree	115	65.0	57		
neutral	41	23.2	26		
disagree	21	11.9	17		
23. It is exciting to be at university				5.84	p=0.054
agree	124	70.1	62		
neutral	40	22.6	26		
disagree	13	7.3	12		
24. The program I am studying is relevant to my interests				Fisher's Exact **p<0.001**	
agree	168	94.9	75		
neutral	5	2.8	18		
disagree	4	2.3	7		
25. I can see the connection between my subjects and future career prospects				Fisher's Exact **p<0.001**	
agree	169	96.0	75		
neutral	4	2.3	16		
disagree	3	1.7	9		
26. Overall, the subjects(curriculum areas) I am studying fit together well				7.96	**p=0.019**
agree	151	85.3	78		
neutral	16	9.0	17		
disagree	10	5.7	5		
27. Thought seriously about discontinuing/deferring at any stage in first semester				7.97	**p=0.005**
	24	13.4	23		

6.3.1.5   Managing commitments

In this section, a picture of how students managed their commitments begins to emerge, from looking at the time they spent each week on curricular, co-curricular (non-compulsory activities closely associated with the curriculum and designed to support the formal curriculum) and extra-curricular (social, cultural and sporting activities not associated with formal curriculum) activities (Table 26). The MC spent significantly more hours per week than the GC (Item 1) on contact time in lectures, tutorials and practicals (25.8 vs. 15.3, p<0.001), private study (20.2 vs. 10.6, p<0.001), sporting activities (5.9 vs. 3.7, p<0.001), using the internet for study (13.5 vs. 6.5, p<0.001) and for recreation (12.1 vs. 9.1, p<0.001), and on socialising (16.3 vs. 13.3, p=0.001). For both cohorts only a small number of hours (1.5 vs. 0.94) were spent on community work as part of their program. With regard to students undertaking paid work, significantly fewer of the MC worked (45.0% vs. 61%, p<0.001, Item 3) and those who did work, worked significantly fewer hours than the GC (3.6 vs. 8.6 hours for the whole sample, and 8.0 vs. 13.7 hours for working students only, p<0.001, Item 1). Significantly fewer of the MC worked more than ten hours per week compared with the GC (16.0% vs. 51%, p<0.001, Item 2). Data on the reasons for doing paid work are not included because many students in both the MC and GC who were not doing paid work, mistakenly answered the items on reasons, intended only for students who did paid work.

Table 26. Managing Commitments

ITEM	Number of hours spent				Statistical test	
	Medical Cohort (n=183)		General Cohort (n=2422)			
1. Hours spent during a typical week on:	Mean	S.D.	Mean	S.D	Independent t-test: value of t	p value
course contact	25.8	4.16	15.3	6.46	21.26	**p<0.001**
private study	20.2	12.27	10.6	8.47	14.12	**p<0.001**
paid work	3.6	6.10	8.6	10.07	6.71	**p<0.001**
paid work (those working only)	8.0	5.40	13.7	9.56	5.37	**p<0.001**
sporting activities/exercise	5.9	9.40	3.7	3.71	6.67	**p<0.001**
internet study research hrs	13.5	14.40	6.5	6.32	12.50	**p<0.001**
internet recreation hrs	12.1	15.02	9.1	9.14	4.00	**p<0.001**
socialising hrs	16.3	16.05	13.3	11.47	3.37	**p=0.001**
community work part of course	1.5	2.31	0.94	3.69	2.10	p=0.361
2. Students doing paid work for the following number of hours:	Medical Cohort		General Cohort		**Fisher's Exact test**	**p<0.001**
	N	%	%			
1-5 hrs	35	42.0	18			
6-10 hrs	34	42.0	32			
11-15 hrs	12	14.8	25			
>15 hrs	1	1.2	26			
3. Full time students and paid work	Medical Cohort		General Cohort		**Chi-square=19.49**	**p<0.001**
	N	%	%			
students doing paid work	82	45.0	61			
students not doing paid work	101	55.0	39			

6.3.1.6   Student's views of courses and teaching

This section provided a great deal of data on students' perceptions of their course, and adds to previous data on their learning and teaching experiences by generating data specifically about the experiences of each of the cohorts within their chosen program (see Table 27).

Significantly more of the MC agreed that they had been encouraged to be independent learners (92.9% vs. 82%, Item 1), found their course intellectually stimulating (95.1% vs. 76%, p<0.001, Item 2), and that teaching staff were good at explaining things (63.9% vs. 62%, p<0.001,Item 4), but significantly fewer agreed that their course was well organised (45.9% vs. 70%, p<0.001, Item 3). Significantly more of the MC found their workload too heavy (52.5% vs. 32%, p<0.001, Item 5) and found it hard to keep up with the volume of work (41.5% vs. 32%, p=0.011, Item 7). Significantly fewer of the MC agreed that staff made their expectations of students clear (54.1% vs. 62%, p<0.001, Item 6), or that they could miss classes because course work was available online (12.0% vs. 34%, p<0.001, Item 8). However, significantly more of the MC than the GC found that teaching staff usually gave helpful feedback on their progress (44.8% vs. 35%, p<0.001, Item 9) and that staff tried hard to make subjects interesting (64.5% vs. 58%, p<0.001, Item 10). Significantly fewer of the MC found that lecturers made good use of the internet to support student learning (37.2% vs. 65%, p<0.001, Item 11).

Significantly more of the MC than the GC found a positive attitude to learning among their fellow students (84.7% vs. 57%, p<0.001, Item 12), and were confident that at least one of their teachers knew their name (83.1% vs. 58%, p<0.001, Item 14), but fewer agreed that lecturers captured their imagination through their teaching (23.5% vs. 35%, p=0.001, Item 13). A similar number of students in both cohorts found that staff made an effort to understand the difficulties they were having with their work (41.0% and 45%, Item 15) and were enthusiastic about the subjects they taught (74.9% and 75%, Item 16). A significantly greater proportion of the MC than the GC found the quality of teaching to be good (95.1% vs. 77%, p<0.001, Item 17), were really enjoying their course (89.6% vs. 72%, p<0.001, Item 18) and were so far satisfied with their university experience (82.9% vs. 70%, p<0.001, Item 19).

Table 27. Students' views of courses and teaching

*Chi-square test used, unless there is a category with n <5, in which case the Fisher's Exact test has been used.

ITEM	Medical Cohort (n=183)		General Cohort (n=2422)	Statistical test	
	N	%	%	*Chi-square or Fisher's Exact	p value
Please indicate your agreement with the following statements:					
1. I have been encouraged to be an independent learner				Fisher's Exact **p<0.001**	
strongly agree	107	58.5	41		
agree	63	34.4	41		
neutral	9	4.9	14		
disagree	2	1.1	3		
strongly disagree	2	1.1	1		

ITEM	Medical Cohort (n=183)		General Cohort (n=2422)	Statistical test	
	N	%	%	*Chi-square or Fisher's Exact	p value
2. I am finding my course intellectually stimulating				Fisher's Exact **p<0.001**	
strongly agree	108	59.0	31		
agree	66	36.1	45		
neutral	8	4.4	19		
disagree	1	0.0	4		
strongly disagree	0	1.1	1		
3. Generally my course is well organised				78.33	**p<0.001**
strongly agree	20	10.9	22		
agree	64	35.0	48		
neutral	50	27.3	20		
disagree	37	20.2	7		
strongly disagree	12	6.6	3		
4. The teaching staff are good at explaining things				Fisher's Exact **p<0.001**	
strongly agree	15	8.2	17		
agree	102	55.7	45		
neutral	49	26.8	28		
disagree	16	8.7	8		
strongly disagree	0	0.0	2		
5. My course workload is too heavy				Fisher's Exact **p<0.001**	
strongly agree	30	16.4	9		
agree	66	36.1	23		
neutral	68	37.2	38		
disagree	18	9.5	24		
strongly disagree	1	0.5	6		
6. Staff made it clear from the start what they expect from students				19.41	**p<0.001**
strongly agree	27	14.8	22		
agree	72	39.3	40		
neutral	46	25.1	27		
disagree	32	17.5	9		
strongly disagree	6	3.3	2.		
7. I find it really hard to keep up with the volume of work in this course				Fisher's Exact **p=0.011**	
strongly agree	19	10.4	9		
agree	57	31.1	23		
neutral	65	35.5	37		
disagree	39	20.8	26		
strongly disagree	3	1.6	5		
8. You can miss a lot of classes in this course because most notes and materials are online				Fisher's Exact **p<0.001**	
strongly agree	4	2.2	11		
agree	18	9.8	23		
neutral	36	19.7	26		
disagree	69	37.7	24		
strongly disagree	56	30.6	16		

ITEM	Medical Cohort (n=183)		General Cohort (n=2422)	Statistical test	
	N	%	%	*Chi-square or Fisher's Exact	p value
9. Teaching staff usually give helpful feedback on my progress				Fisher's Exact **p<0.001**	
strongly agree	10	5.5	7		
agree	72	39.3	28		
neutral	70	38.3	36		
disagree	26	14.2	22		
strongly disagree	4	2.2	7		
10. Staff try hard to make the subjects interesting				Fisher's Exact **p<0.001**	
strongly agree	12	6.6	16		
agree	106	57.9	42		
neutral	53	29.0	30		
disagree	11	6.0	9		
strongly disagree	1	0.5	3		
11. Lecturers make good use of the internet to support my learning				91.66	**p<0.001**
strongly agree	6	3.3	24		
agree	62	33.9	41		
neutral	66	36.1	24		
disagree	36	19.7	8		
strongly disagree	13	7.1	3		
12. There is a positive attitude towards learning among my fellow students				Fisher's Exact **p<0.001**	
strongly agree	49	26.8	15		
agree	106	57.9	42		
neutral	26	14.2	32		
disagree	2	1.1	9		
strongly disagree	0	0.0	2		
13. Lecturers often capture my imagination through their teaching				18.01	**p=0.001**
strongly agree	5	2.7	9		
agree	38	20.8	26		
neutral	81	44.3	38		
disagree	50	27.3	20		
strongly disagree	9	4.9	7		
14. I feel confident that at least one of my teachers knows my name				52.21	**p<0.001**
strongly agree	97	53.0	34		
agree	55	30.1	24		
neutral	13	7.1	14		
disagree	10	5.5	13		
strongly disagree	7	3.8	15		
15. Staff make a real effort to understand difficulties students may be having with their work				5.36	p=0.252
strongly agree	12	6.6	12		
agree	63	34.4	33		
neutral	68	37.2	35		
disagree	30	16.4	15		
strongly disagree	10	5.5	5		

ITEM	Medical Cohort (n=183)		General Cohort (n=2422)	Statistical test	
	N	%	%	*Chi-square or Fisher's Exact	p value
16. Staff are enthusiastic about the subjects they teach				Fisher's Exact **p=0.003**	
strongly agree	34	18.6	30		
agree	103	56.3	45		
neutral	40	21.8	19		
disagree	6	3.3	4		
strongly disagree	0	9.0	2		
17. The quality of teaching in my course is generally good				Fisher's Exact **p<0.001**	
strongly agree	27	14.8	27		
agree	120	80.3	50		
neutral	33	18.0	18		
disagree	3	1.6	4		
strongly disagree	0	0.0	1		
18. Overall, I am really enjoying my course				Fisher's Exact **p<0.001**	
strongly agree	75	41.0	31		
agree	89	48.6	41		
neutral	15	8.2	21		
disagree	4	2.2	5		
strongly disagree	0	0.0	2		
19. Overall, I am very satisfied with my university experience so far				Fisher's Exact **p<0.001**	
strongly agree	63	34.4	30		
agree	89	48.5	40		
neutral	28	15.3	20.		
disagree	3	1.6	6		
strongly disagree	0	0.0	4		

Different aspects of their program were rated by students for their usefulness (Table 28, p.117) and this gave an indication of how students were supported in their learning during the transition experience. The curriculum website refers to the website run by the MLTU specifically for providing information to students about the day-to-day events of the medical program. MyUni was the website of the university learning management system and lecturers had access to place their lectures online through this system. Significantly fewer students in the MC found that learning materials posted on the curriculum website or MyUni were useful (74.3% vs. 87%, p<0.001, Item 1) and that internet–based resources were useful for their learning (65.0% vs. 78%, p<0.001, Item 2). However, significantly more students from the MC found social networking useful for study purposes (66.6% vs. 34%, p<0.001, Item 3) and this finding will be discussed further in Chapter 7 when discussions from focus groups reveal how this social networking can be an important strategy used by students to help them engage in their learning. Whilst the majority of both cohorts found that getting together informally with other students to discuss lectures (and cases for the MC) was useful (Item 4), a significantly higher proportion of the MC found it useful to work informally with other students on problem areas (75.4% vs. 67%, p=0.012, Item 5).

Table 28. How useful students found certain aspects of their program

*The Chi-square test has been used unless there is a category with frequency <5, in which case the Fisher's Exact test has been used.

ITEM	Medical Cohort (n=183)		General Cohort (n=2422)	Statistical test	
	N	%	%	*Chi-square or Fisher's Exact	p value
How useful have you found the following aspects of your course or program?					
1. Learning materials posted on the curriculum website or MyUni.				Fisher's Exact **p<0.001**	
1 Very useful	46	25.1	60		
2 Useful	90	49.2	27		
3 Neutral	29	15.8	9		
4 Not useful	14	7.7	3		
5 Not at all useful	4	2.2	1		
2. Internet resources for learning about the cases.				35.88	**p<0.001**
1 Very useful	41	22.4	40		
2 Useful	78	42.6	38		
3 Neutral	45	24.6	17		
4 Not useful	14	7.7	4		
5 Not at all useful	5	2.7	1		
3. Social networking technologies (e.g. Face book, Twitter) for study purposes				139.66	**p<0.001**
1 Very useful	35	19.1	17		
2 Useful	87	47.5	17		
3 Neutral	35	19.1	27		
4 Not useful	12	6.6	19		
5 Not at all useful	11	6.0	20		
4. Getting together informally with other students (outside my CBL group) to discuss cases or lectures face-to-face				Fisher's Exact p=0.088	
1 Very useful	53	29.0	32		
2 Useful	74	40.4	36		
3 Neutral	47	25.7	23		
4 Not useful	9	4.9	7		
5 Not at all useful	0	0.0	2		
5. Informally (outside my CBL group) working with other students face-to-face on areas with which I have experienced problems				Fisher's Exact p=0.012	
1 Very useful	52	28.4	32		
2 Useful	86	47.0	35		
3 Neutral	36	19.7	23		
4 Not useful	8	4.4	7		
5 Not at all useful	1	0.5	3		

6.3.1.7   Transition from school to university

Data from this section complemented the demographic data on students' backgrounds in Section 6.3.1.1 by providing information specifically about their final year of secondary school (Table 29, Item 1). For the MC, 55.1% of students had transitioned into Medicine directly from Year 12, with 61.7% having completed the South Australian Certificate of Education (SACE) and 16.9% the International Baccalaureate (IB) program. Of the 73 students from the MC who provided their Year 12 score, 35.9% had achieved in the very top range of 99-100 and 52.8% in the next range of 95-99.

Table 29. Final year of secondary school

1. Please give details of your final secondary school year	Medical Cohort (n=183)	
	N	%
Year of completing Year 12		
2011	97	55.1
2009	54	30.6
2008	20	11.4
2007	2	1.1
other	3	1.7
Type or name of certificate		
SACE	113	61.7
VCE	12	6.6
HSC	9	4.9
IB	31	16.9
Other	18	9.8
Score received (scores out of 100, only)		
99-100	51	35.9
95-99	75	52.8
90-95	12	8.5
85-90	4	2.8

2. Students having paid work in their final year of school.	Medical Cohort (n=183)		General cohort	Chi-square	p value
	N	%	%		
	70	38.5	48	5.99	p=0.014

Whilst data from the GC were not available for comparison with these figures, they were available for a comparison of how many students from each cohort had undertaken paid work in year 12 and showed that significantly fewer of the MC had undertaken paid work than the GC (38.5% vs. 48%, p=0.014, Item 2).

Data from Table 30 revealed students' perceptions of their first year at university by considering aspects of their final year at secondary school and exploring how they related to their actual transition experience. A similar number of students from the MC and the GC agreed that at school there was a lot of pressure to go to university (Item 1), and they were given good advice from school teachers about which course to choose (Item 2). However significantly fewer of the MC agreed that they were repeating things they had done at school (23.7% vs. 42%, p<0.001, Item 3). Similar numbers of each cohort disagreed that they felt pressured by the financial commitment of their parents to send them to university (Item 4) and that they would have preferred to have started a general first year at university before choosing a specific course (Item 5). Concerning the standard of work at university, significantly fewer of the MC found the standard higher than expected (37.2% vs. 50%, p=0.004, Item 6) and significantly more believed that they were ready to choose a university course on leaving school (72.6% vs. 58%, p=0.002, Item 7). However reflecting back on their last year of secondary school, significantly fewer of the MC had been well prepared for university (43.2% vs. 51%, , p=0.039, Item 8) and fewer also saw their subjects at university as building on their study

at school (36.6% vs. 51%, p<0.001, Item 10). Regarding their parents' understanding, significantly more of the MC than the GC believed their parents understood their university experience (56.3% vs. 42%, p<0.001, Item 9) and this could be related to the finding that more of the MC had parents with undergraduate or postgraduate degrees (See Section 6.3.1.1, page 100).

Consideration of the science subjects studied at Year 12 showed that 84.7% of medical students had studied Chemistry, 81.4% had studied Advanced Mathematics and 61.2% had studied Biology.

Table 30. Transition from school to university

Item	Medical cohort (n=183)		General cohort (n=2422)	Statistical test	
	N	%	%	Chi square	p value
Please indicate your agreement with the following statements :					
1. At my school there was a lot of pressure to go to university				7.17	p=0.127
strongly agree	52	28.4	22		
agree	55	30.1	27		
neutral	43	23.5	26		
disagree	21	11.5	16		
strongly disagree	12	6.6	9		
2. I received good advice from teachers at my school about choosing my course				4.65	p=0.325
strongly agree	51	27.9	25		
agree	65	35.5	33		
neutral	41	22.4	23		
disagree	20	10.9	12		
strongly disagree	6	3.3	7		
3. I find I am repeating things done at school				31.40	**p<0.001**
strongly agree	12	6.6	15		
agree	31	17.1	27		
neutral	52	28.7	27		
disagree	55	30.4	19		
strongly disagree	31	17.1	12		
4. I feel pressured by the financial commitment made by my parents to send me to university				6.59	p=0.160
strongly agree	9	4.9	7		
agree	28	15.4	13		
neutral	26	14.3	18		
disagree	58	31.9	26		
strongly disagree	61	33.5	36		
5. I would have preferred starting with a general first year at university before choosing a specific course or program				8.04	p=0.090
strongly agree	8	4.4	10		
agree	18	9.8	10		
neutral	30	16.4	17		
disagree	45	24.6	26		
strongly disagree	82	44.8	37		

Item	Medical cohort (n=183)		General cohort (n=2422)	Statistical test	
	N	%	%	Chi square	p value
6. The standard of work required at university is much higher than I expected				15.30	**p=0.004**
strongly agree	14	7.7	16		
agree	54	29.5	24		
neutral	65	35.5	29		
disagree	43	23.5	24		
strongly disagree	7	3.8	7		
7. I was not really ready to choose a university course on leaving secondary school				17.52	**p=0.002**
strongly agree	10	5.5	11		
agree	18	9.8	14		
neutral	22	12.0	17		
disagree	59	32.2	27		
strongly disagree	74	40.4	31		
8. My final school year was very good preparation for the study I am now doing				10.09	**p=0.039**
strongly agree	23	12.6	19		
agree	56	30.6	32		
neutral	45	24.6	24		
disagree	44	24.0	17		
strongly disagree	15	8.2	8		
9. My parents have little understanding of what I do at university				18.70	**p<0.001**
strongly agree	9	4.9	13		
agree	30	16.4	20		
neutral	41	22.4	25		
disagree	63	34.4	26		
strongly disagree	40	21.9	16		
10. The subjects at university clearly build on my study at school				26.61	**p<0.001**
strongly agree	10	5.5	19		
agree	57	31.1	32		
neutral	60	32.8	27		
disagree	42	23.0	15		
strongly disagree	14	7.7	7		
Percentage of students studying the following subjects in Year 12: (Figures not available for GC)					
Biology	112	61.2			
Chemistry	155	84.7			
Physics	89	48.6			
Standard Mathematics	149	81.4			
Advanced Mathematics	86	47.0			

6.3.2 Scales for the MC and the GC

Identification of the nine scales of the FYEQMed has been discussed in Section 4.2.1 and the items comprising the scales are given in Table 7, page 71. By bringing together items that describe particular aspects of the cohorts' transition experiences, the scales provide valuable data about strategies relating to the Transition Pedagogy model as they cover aspects of learning and teaching that help students to engage in the curriculum and to develop a sense of student identity and purpose. One of the outcomes of their transition experiences is also indicated by Scale 6 which

measures the course satisfaction of the cohorts. For comparisons between the mean scores of scales for the MC and the GC, the independent t-test was used (see Table 31). To compare the internal validity of the scales for the MC, Cronbach alphas were calculated for scales with more than two items and correlation coefficients for Scales 3 and 4, consisting of only two items (see Table 31). Full details of these calculations are given in Section 6.3.5. For four of the nine scales, the MC scored a significantly higher mean score out of a total of 5, than the GC. These scales and their mean scores for the MC and the GC were:

Scale 2. Sense of purpose (4.42 vs. 4.04, p<0.001)

Scale 3. Student Identity (4.08 vs. 3.82, p=0.001)

Scale 6. Course satisfaction (4.33 vs. 3.94, p<0.001)

Scale 9. Prepared & Present (3.73 vs. 3.36, p<0.001)

However for Scale 8, Comprehending and Coping, the mean score for the MC was significantly lower than the GC (2.77 vs. 3.01, p<0.001). Careful consideration will be given in later discussions to the fact that the MC scored significantly higher than the GC in four of the scales and significantly lower in only one scale.

Cohen's d was calculated to measure effect sizes for the five scales where there were significant differences between the MC and the GC (Table 31). The effect sizes were large for Scale 2. Sense of purpose, Scale 6. Course satisfaction, and Scale 9. Prepared & Present, and moderate for Scale 3, Student Identity and Scale 8, Comprehending and Coping. This shows that the difference between the MC and the GC in these areas is not only statistically significant but is also of a considerable magnitude and therefore important in the context of the transition experiences of the MC.

For the five scales where there were significant differences between the MC and the GC, analysis of the items comprising these scales revealed further details about the differences between these cohorts (see Table 32, p.123). The items showed that compared with general first year students, significantly more medical students:

- had a clear sense of purpose about why they were studying at university, were not marking time while they decided their future, and knew the type of occupation they wanted (Scale 2. Sense of purpose)

- enjoyed being university students and found that university met their expectations (Scale 3. Student identity)

- enjoyed their course, found it intellectually stimulating and were satisfied with their university experience (Scale 6. Course satisfaction)

- never attended tutorials unprepared and never missed classes because they were online (Scale 9: "Prepared and Present")

Table 31. Mean scores of scales of the GC and the MC

SCALES	Medical Cohort (n=183)				General Cohort (n=2422)				Indep. t -test	Effect Size Cohen's d
	Mean Score	N	SD	Cronbach α or Correl Coeff.(r)	Mean Score	N.	SD	Cronbach α or Correl Coeff.(r)		
Scale 1. Academic Orientation	3.63	183	0.62	α =0.589	3.51	2432	0.87	α =0.781	p=0.672	0.159
Scale 2. Sense of purpose	4.42	183	0.6	α =0.602	4.04	2432	0.81	α =0.652	**p<0.001**	0.533
Scale 3. Student Identity	4.08	177	0.72	r=0.576	3.82	2425	0.93	r=0.506	**p=0.001**	0.313
Scale 4. Academic Application	3.06	183	0.84	r=0.247	2.95	2432	0.90	r=0.276	p=0.585	0.126
Scale 5. Teaching	3.50	183	0.52	α =0.818	3.52	2429	0.70	α =0.887	p=0.344	0.032
Scale 6. Course satisfaction	4.33	183	0.57	α =0.786	3.94	2421	0.84	α =0.854	**p<0.001**	0.543
Scale 7. Peer Engagement	2.97	183	0.96	α =0.616	3.05	2427	1.07	α =0.697	p=0.326	0.079
Scale 8. Comprehending and Coping	2.77	183	0.73	α =0.755	3.01	2437	0.79	α =0.768	**p<0.001**	0.316
Scale 9. Prepared & Present	3.73	183	0.73	α =0.391	3.36	2437	0.89	α =0.494	**p<0.001**	0.455

Scale 8, Comprehending and Coping, for which the MC scored significantly lower than the GC, comprised five items. Analysis of these items showed that there were no significant differences between the two cohorts in the number of students who found it difficult to understand the material they were studying, in how often they felt overwhelmed by all they had to do, nor in finding it difficult adjusting to the style of teaching at university. However, significantly more of the MC found the workload too heavy (52.5% vs. 33%, p<0.001), and found it really hard to keep up with the volume of work (41.5% vs. 32%, p=0.009).

Table 32. Items of scales with significant differences between the MC and GC

*The Chi-square test was used unless there is a category with frequency <5, in which case the Fisher's Exact test was used.

Scales and items	Medical cohort (n=183)		General Cohort (n=2422)	*Chi-square or Fisher's Exact	p value
	N	%	%		
SCALE 2. SENSE OF PURPOSE					
B2.1 I am clear about the reasons I came to university				6.35	**p=0.042**
agree	172	94.0	88		
neutral	9	4.9	9		
disagree	2	1.1	3		
B2.3 Studying at university is just marking time while I decide my future				33.9	**p<0.001**
agree	8	4.4	15		
neutral	17	9.3	19		
disagree	157	86.3	66		
B2.5 I know the type of occupation I want				17.52	**p<0.001**
agree	144	78.7	66		
neutral	30	16.4	19		
disagree	9	4.9	15		
SCALE 3. STUDENT IDENTITY					
C1.6 I really like being a university student				12.92	**p=0.002**
agree	149	84.2	74		
neutral	26	14.7	19		
disagree	2	1.1	7		
C1.18 University just hasn't lived up to my expectations				10.65	**p=0.002**
agree	13	7.3	17		
neutral	33	18.6	24		
disagree	131	74.0	59		
SCALE 6. COURSE SATISFACTION					
E1.2 I am finding my course intellectually stimulating				Fisher's Exact **p<0.001**	
agree	174	95.1	76		
neutral	8	4.4	18		
disagree	1	0.5	6		
E1.18 Overall, I am really enjoying my course				Fisher's Exact **p<0.001**	
agree	164	89.6	72		
neutral	15	8.2	21		
disagree	4	2.2	7		
E1.19 Overall, I am very satisfied with my university experience so far				Fisher's Exact **p<0.001**	
agree	152	82.9	71		
neutral	28	15.3	20		
disagree	3	1.6	9		
SCALE 8. COMPREHENDING AND COPING					
B2.6 I find it quite difficult to understand a lot of the material I am supposed to study				0.16	p=0.923
agree	36	19.7	19		
neutral	51	27.9	27		
disagree	96	52.5	54		
B3.2 During Semester 1, how often did you feel overwhelmed by all you had to do				3.3	p=0.192
frequently	72	39.3	33		
sometimes	96	52.5	58		
never	15	8.2	9		

Scales and items	Medical cohort (n=183)		General Cohort (n=2422)	*Chi-square or Fisher's Exact	p value
	N	%	%		
SCALE 8. COMPREHENDING AND COPING ctd.					
C1.13 I have had difficulty adjusting to the style of teaching at university				0.87	p=0.351
Agree	65	36.7	46		
Neutral	50	28.2	24		
Disagree	82	35.0	30		
E1.5 My course workload is too heavy				43.93	**p<0.001**
Agree	96	52.5	33		
Neutral	68	37.2	38		
Disagree	19	10.3	29		
E1.7 I find it really hard to keep up with the volume of work in this course				9.49	**p=0.009**
Agree	76	41.5	32		
Neutral	65	35.5	36		
Disagree	42	23.0	32		
SCALE 9 PREPARED AND PRESENT					
B3.3 During Semester 1, how often did you skip classes				2.68	p=0.262
Frequently	9	4.9	8		
Sometimes	100	54.9	51		
Never	73	40.1	40		
B3.6 During Semester 1, how often did you Come to class without completing readings or assignments				13.71	**p=0.001**
Frequently	8	4.4	13		
Sometimes	109	59.6	58		
Never	66	36.1	29		
E1.8 You can miss a lot of classes in this course because most notes and materials are online				69.33	**p<0.001**
strongly agree	4	2.2	11		
Agree	18	9.8	23		
Neutral	36	19.7	26		
Disagree	69	37.7	24		
strongly disagree	56	30.6	16		

Table 33. Correlation between students' scores (n=183) on the nine scales and their average Semester One examination mark

Scale	Pearson Correlation Coefficient	p value
Scale 1. Academic orientation	0.132	p=0.076
Scale 2. Sense of purpose	0.055	p=0.462
Scale 3. Student Identity	0.098	p=0.195
Scale 4. Academic application	0.250	**p=0.001**
Scale 5. Teaching	0.132	p=0.082
Scale 6. Course satisfaction	0.157	**p=0.033**
Scale 7. Peer engagement	0.111	p=0.136
Scale 8. Comprehending & coping	0.247	**p=0.001**
Scale 9. Prepared & present	0.092	p=0.196

6.3.3   Correlation between students' scores on the nine scales and their average Semester One examination mark

Calculation of Pearson's Correlation Coefficient (see Table 33, p.124) showed that there was low, but statistically significant correlation between students' average Semester One Examination results and Scale 4 (Academic application), Scale 5 (Course satisfaction) and Scale 8 (Comprehending and coping). For each of the three scales, the correlation was positive, showing that students who were likely to achieve a sound average mark for their Semester One Examination were those who applied themselves well academically, were satisfied with their decision to study Medicine and were comprehending and coping with their studies. The positive correlation between comprehending and coping and examination results also shows that for some students, the perceived heavy work load and keeping up with the volume of work detracted from their Semester One results.

On the basis of Semester One results, thirty seven per cent of this first year cohort (70/187 students) were identified at the end of Semester One as being at risk with their academic learning (personal communication with Medicine Learning and Teaching Unit Manager), and were required to meet with an academic staff member to discuss their results.

6.3.4   Scales for domestic and international students

As discussed previously in Section 1.3.3, p. 24, international students were the main diversity group and were provided with support through the International Program. To investigate the transition experience for these students and whether the extra support they were receiving was influencing their experience, mean scores for the nine scales for domestic and international students were compared separately with the GC. As previously explained (Section 4.2.1, page 69) the range of these scores was from 1-5, with 1 being a least favourable and 5 being the most favourable scores. The independent t-test was used to analyse differences between the mean scores of scales for the general cohort and the two subgroups of domestic and international medical students (see Table 34, p. 126). When domestic students alone were compared with the GC, the results were identical with the comparison of the whole MC with the GC (domestic medical students scored significantly higher than general students on scales regarding sense of purpose, student identity, course satisfaction and being prepared and present, but significantly lower on the scale for comprehending and coping). This was not unexpected given that domestic students make up 93.4% of the MC. However, quite different results were obtained when international students alone were compared with the GC, as there were no differences between these two groups for any of the scales except for Scale 4, Academic Application. For this scale, international students scored significantly higher than the GC (3.68 vs. 2.95, p=0.003). International students from the MC were therefore no different from the GC with regards to sense of purpose, student identity, teaching experiences, course satisfaction, peer engagement, being prepared and present, or comprehending and coping.

Direct comparison of the mean scores of scales of domestic and international students, using the independent t-test (see final column in Table 34, p. 126), confirmed results from the indirect comparison for all but two of the scales, Scales 2 and 8, as follows:

Scales 1 and 7: There was no significant difference between the domestic and international students either when compared indirectly, with the GC, or directly with each other.

Scale 2: Domestic students, but not international students, scored significantly higher than the GC. However, the direct comparison showed no significant difference between domestic and international students.

Scales 3, 6 and 9: Domestic students, but not international students, scored significantly higher than the GC. However, the direct comparison showed no significant difference between domestic and international students.

Scale 4: Results of the indirect comparison were supported by results of the direct comparison with international students (3.68) scoring significantly higher than both the GC (3.01) and domestic students (2.95).

Scale 5: There was no significant difference between domestic and international students when compared indirectly with the GC, but in the direct comparison, international students scored significantly higher than domestic students on this scale (3.79 vs. 3.48).

Table 34. Mean scores of scales of domestic & international students in the MC compared separately with the GC and directly with each other

Scale	GC (n=2422)		Domestic students (n=168)		Independ. t-test	International students (n=15)		Indepen. t-test	Indep t-test. Direct comparison
	Mean score /5	SD	Mean score /5	SD	GC vs. domestic	Mean score /5	SD	GC vs. internat.	domestic vs. international students
Scale 1. Academic orientation	3.51	0.87	3.62	0.63	p=0.109	3.86	0.53	p=0.133	p=0.168
Scale 2. Sense of purpose	4.04	0.81	4.42	0.61	**p<0.0001**	4.45	0.52	p=0.059	p=0.825
Scale 3. Student identity	3.82	0.93	4.12	0.70	**p<0.0001**	3.82	0.75	p=0.999	p=0.127
Scale 4. Academic application	2.95	0.90	3.01	0.81	p=0.403	3.68	0.64	**p=0.003**	**p=0.003**
Scale 5. Teaching	3.52	0.70	3.48	0.54	p=0.480	3.79	0.32	p=0.149	**p=0.033**
Scale 6. Course satisfaction	3.94	0.84	4.34	0.58	**p<0.0001**	4.26	0.44	p=0.154	p=0.608
Scale 7. Peer engagement	3.05	1.07	2.98	0.97	p=0.412	3.00	0.83	p=0.862	p=0.940
Scale 8. Comprehending & coping	3.01	0.79	2.75	0.73	**p<0.0001**	3.11	0.68	p=0.637	p=0.076
Scale 9. Prepared & present	3.36	0.89	3.76	0.75	**p<0.0001**	3.48	0.50	p=0.614	p=0.175

Scale 8: The indirect comparison had shown that domestic students scored significantly lower than the GC (2.75 vs. 3.01) and international students' scores were not significantly different from the GC. However, the direct comparison showed no significant difference (p=0.076) between domestic and international students for Scale 8.

It is likely that the anomalies occurring between indirect and direct comparisons of domestic and international students in Scales 2 and 8 were due to the small number of international students (n=15) resulting in inadequate statistical power. Therefore, in the subsequent research, this did not deter investigations into the differences between domestic and international students in Scale 8, Comprehending and Coping.

From the indirect comparison of domestic and international students with a general cohort of students, and the direct comparison of the two groups of students in the medical cohort, the following was inferred:

Scale 1. Academic Orientation: Domestic and international students were similar in their academic orientation.

Scale 2. Sense of purpose: Both domestic and international students had a strong sense of purpose.

Scale 3. Student Identity: Domestic students had a trend to a stronger sense of student identity than international students, not an unexpected finding considering that the international students had only recently begun studying at university in a new country with a new group of students.

Scale 4. Academic Application: International students had a stronger academic application than domestic students.

Scale 5. Teaching: International students had a more positive perception than domestic students of the teaching they received.

Scale 6. Course satisfaction: Both domestic and international students experienced strong course satisfaction.

Scale 7. Peer Engagement: Domestic and international students were similar in their peer engagement.

Scale 8. Comprehending & Coping: Domestic students were experiencing more problems with comprehending and coping than international students

Scale 9. Prepared & Present: There was a trend for domestic students to be more prepared and present for learning than international students.

6.3.5 Reliability of the results of the scales of the FYEQ and FYEQMed

The reliability of the scales in the FYEQ has been previously discussed (see Section 4.7, page 85). Cronbach alphas and correlation coefficients were calculated for the results of the scales in the FYEQMed in order to compare their reliability with the scales in the FYEQ (James, Krause & Jennings 2010, p. 80). Results (Table 31, p. 122) show that the reliability of scales from the two sets of data was very similar. For Scales 3 (Student Identity) and 4 (Academic Application) there was low correlation between the 2 items making up each scale, in both the FYEQMed and the FYEQ (for Scale3, r=0.576 vs. 0.506 and for Scale 4, r=0.247 vs. 0.276). For the other scales comprising more than two items, Cronbach alpha values (α) in the FYEQMed and the FYEQ respectively, were:

- well below 0.70 for Scale 9: Prepared and Present: (α=0.391 vs. 0.494)

- marginally below 0.70 for Scale 1: Academic Orientation (α=0.589 vs. 0.781), Scale 2: Sense of Purpose (α=0.602 vs. 0.652) and Scale 7: Peer Engagement (α=0.616 vs. 0.697)

- above 0.70 for Scale 5: Teaching (α=0.818 vs. 0.887), Scale 6: Course Satisfaction: (α=0.786 vs. 0.854) and Scale 8: Comprehending & Coping α=0.755 vs. 0.768)

For good reliability, Cronbach alphas should be 0.70 or above and the statistical reliability of the scales in FYEQ were reported as fair to good (James, Krause & Jennings 2010). Where there are low values of alpha (as for Scale 9) or low values of r (as for scales 3 and 4), the reliability of that scale is insufficient to allow generalisations to be made to other samples or cohorts of students. However, results from FYEQMed were not intended to be transferable to other, dissimilar contexts but rather to be used for comparison of the transitioning experiences of the MC with the GC.

An investigation of the statistical validity of these scales for the MC using confirmatory factor analysis, which looks at the correlation between all factors and each scale, could not be carried out because the correlation matrix for this data did not meet the requirements for analysis, partly due to the ordinal nature of the data and partly due to the small sample size of the medical cohort.

6.3.6 The influence of gender, school attended and subjects studied on the performance of transitioning medical students

Factors that could predict the performance of medical students at university, as investigated by Tutton and Wigg (1990) have been discussed in Section 4.3.1. They found that the performance of medical students at Monash University in written examinations was not affected by gender nor by the type of secondary school attended, but students who had studied Physics, Biology or Mathematics as an elective in Year 12 had significantly better results in their first three years of Medicine than those who had studied other electives.

Table 35. Influence of three factors on the performance of medical students in their preclinical years:

Factors under investigation to see influence on students' results	Results for Medical Cohort Overall % Semester 1 (n=183)					Tutton and Wigg's (1990) results
	N	Mean	S.D.	Statistical test	P value	
Gender				The Mann Whitney U test	p=0.870	NSD between results of males & females.
male	77	65.3	8.67			
female	106	65.6	6.83			
The type of school attended				The Kruskal Wallis one way analysis of variance test	p=0.771	NSD between results and type of school attended.
Catholic	30	64.6	7.72			
Government	49	65.8	8.36			
Independent	102	65.6	7.33			
Overseas	2	65.6	8.06			
Subjects studied in Year 12				The Mann Whitney U test		Students who had studied Physics, Biology or Mathematics in Year 12 had significantly better results in their first three years of Medicine.
Chemistry: yes	155	66.0	7.44		**P=0.026**	
no	28	62.6	8.22			
Studied Biology: yes	112	65.3	7.68		P=0.625	
no	71	65.8	7.60			
Studied Physics: yes	89	66.6	7.23		P=0.076	
no	94	64.5	7.90			
Studied Standard Mathematics: yes	149	65.7	7.19		P=0.541	
no	34	64.4	9.41			
Studied Advanced Mathematics : yes	86	66.5	7.63		P=0.068	
no	97	64.6	7.57			

Results (see Table 35 p.129) using the Mann Whitney U test to analyse the relationship between medical students' results and their gender, showed there was no significant relationship. Results from the Kruskal Wallis one way analysis of variance test to analyse the relationship between students' results and the school they attended showed that attendance at a Catholic, government, independent or overseas school did not influence students' results (p=0.771) and these results were similar to those of Tutton and Wigg. However, when the subjects students had studied at Year 12 were considered, the results were different from those of Tutton and Wigg. Use of the Kruskal Wallace one way variance of analysis test showed that for the cohort of transitioning students there was a significant impact of studying Chemistry (p=0.026), but not Biology (p=0.625), Physics (p=0.076) or Standard or Advanced Mathematics (p=0.541, p=0.068). Those students who had studied Chemistry in Year 12 had an average mark for Semester 1 of 66.0% compared with 62.6%

for those who had not studied Chemistry. The results for Physics and mathematics were close to statistical significance, and the negative outcome may be due to low statistical power.

When the analysis was repeated to investigate whether there was any difference for these results for domestic vs. international students, the distribution of results for international students was not affected by gender, school attended or subjects studied in Year 12, but for domestic students there was a significant difference in the distribution of results according to whether they had studied Chemistry (p=0.036) and Physics (p=0.025). The average mark for Semester 1 was higher for domestic students who had studied Chemistry than those who had not (66.2% vs. 63.1%), and for those who had studied Physics than for those who had not (67% vs. 64.3%).

The findings from the research at Monash in 1990 and from this study, conducted over twenty years later, both contradict a "popular notion that students from government schools perform better at university than do their peers from independent schools with similar ..... results." (Tutton & Wigg 1990, p. 172).

There are limitations to the comparison between results from this study and results from the study at Monash University because of the different ways in which students' performances at medical school have been measured. The Monash study used a measure of the change of rank of the student between their Higher School Certificate (HSC) results and their final third year Medicine results, whereas this study used the students' average mark from the written examinations at the end of Semester One of their first year in the medical program.

6.4   RESULTS OF THE KESSLER PSYCHOLOGICAL DISTRESS SCALE (K10)

The Kessler Psychological Distress Scale (K10) was used to measure the distress levels of students during their transitioning year and these levels were compared at approximately the same stage of Semesters One and Two to investigate any changes in their levels of distress. These changes in distress will be discussed in future sections in relation to the four key strategies of Transition Pedagogy as increases or decrease in distress can indicate whether these strategies have provided a successful transition experience for students. The response rate for the K10 scale was 97.3% (178/187) but because of missing data where students failed to answer all items in the questionnaire, this rate fell to 90.9% (170/187) for Semester 1 and 87.2% for Semester 2 (163/187).

6.4.1   *Distress levels of the whole cohort of year 1 medical students*
The scoring method and cut off scores for the distress levels have been described in Section 4.3.1 and summarised in Table 10, p. 77. Table 36, p.131 presents the results for the distress levels for the whole MC in Semesters One and Two and for an age matched norm (Avery et al. 2004). Data from an earlier cohort of first year medical students at the University of Adelaide (Leahy 2009) are

also presented but, as these data were collected during second semester, these results will only be compared with results that were also obtained from the MC in Semester Two.

Results of the statistical tests for comparing distress levels of the groups (see Table 36, p. 131) show that a little more than half of the MC (52.4%) exhibited psychological distress in Semester One, but this decreased considerably to 35.6% in Semester Two. However, for both semesters, the number of medical students exhibiting distress was significantly more than the number for the age-matched norm (first semester: 52.4% vs. 11.1%: X^2 =339.18, p<0.0001, second semester: 35.6% vs. 11.1%, X^2 =126.83, p<0.0001). Compared with Leahy's cohort of first year medical students, there were significantly fewer students from the MC in this research exhibiting distress than from Leahy's cohort (35.6% vs. 48.5%, X^2 = 16.556, p=0.0009). However, results from Leahy's cohort and the MC in this research both showed that medical students exhibit significantly more distress than an age-matched norm. Consideration needs to be given to the fact that unlike the MC and Leahy's cohort, the age-matched norm did not consist entirely of students, and it has been shown that university students in other programs also demonstrate higher distress scores than age-matched norms (Leahy 2009).

The change in distress levels between the two semesters was able to be investigated as there was a high response rate (80.2%) of students completing all items of the Kessler Psychological Distress Scale in both Semesters 1 and 2. The frequencies of students who moved up vs. down the distress levels from Semester 1 to Semester 2 were analysed by McNemar's test and the statistic was significant (S=21.53, p=0.0015). The majority of students moved to a lower distress level from Semester 1 to Semester 2, with very few students moving to a higher distress level. The commonest change was to move down one distress level rather than moving down two or three levels.

Table 36. K10 Distress levels

	K10 Score	Level of Psych. Distress*	Percentage of cohort at that level			
			Age matched norm	Leahy's medical cohort	Medical Cohort (n=180)	
					Semester 1 N=170 %(n)	Semester 2 N=163 %(n)
No psychological distress	10-15	Low	56.5	18.9	14.1 (24)	22.7 (37)
	16-21	Moderate	32.4	32.7	33.5 (57)	41.7 (68)
Psychological distress	22-29	High	9.0	32.9	36.5 (62)	27.6 (45)
	30-50	Very high	2.1	15.6	15.9 (27)	8.0 (13)

*Health Outcomes Assessment Unit, 2001

Table 37. Distress levels of domestic and international students

MEAN K10 SCORE /50								
Semester 1				Semester 2				
Domestic students (n=154)		International students (n=16).		Independent t-test	Domestic students (n=160).		International students (n=15).		Independent t-test
Mean score/50	S.D.	Mean score/50	S.D	p=0.334	Mean score/50	S.D	Mean score/50	S.D	p=0.956
21.94	8.01	20.38	5.82		20.45	6.15	20.33	7.83	

Table 38. The distribution of domestic and international students across K10 distress levels

	Semester 1			Semester 2		
Level of K10 score	Domestic students (n=154)	International students (n=16)	Fisher's Exact Test	Domestic students (n=160)	International students (n=15)	Fisher's Exact Test
10-15	21 (13.6%)	3 (18.8%)	p=0.741	33 (22.4%)	4 (26.7%)	p=0.695
16-21	51 (33.1%)	6 (37.5%)		61 (41.5%)	6 (40.0%)	
22-29	56 (36.4%)	6 (37.5%)		42 (28.6%)	3 (20.0%)	
30-50	26 (16.9%)	1 (6.3%)		11 (7.5%)	2 (13.3%)	

6.4.2   *Distress levels of domestic and international students*

When significant differences emerged from the scales of the FYEQMed questionnaire about the ways in which domestic and international and medical students were experiencing transition, it was decided to compare the distress levels of international students with domestic students in the same cohort. The results (Table 37, p. 132) showed that international and domestic students had very similar mean K10 scores in both Semester One (20.38 vs. 21.94) and Semester Two (20.33 vs. 20.45). The difference was not statistically significant (p=0.334 and p=0.956). There was also no significant difference in the distribution of international and domestic students across the K10 distress levels in either Semester One (p=0.741) or Semester Two (p=0.695) (Table 38, p. 132).

6.5   RESULTS OF CBL PERCEPTIONS QUESTIONNAIRE

The CBL Perceptions Questionnaire was developed as an instrument to investigate the alignment between the MC's and their CBL tutors' perceptions of the CBL approach to teaching and learning. The response rate to the CBL Perceptions Questionnaire for students was 98% (83/187) and for CBL tutors was 100% (16/16).The scoring method used has been described in Section 4.4.3. CBL perception scores (possible range: 19 -114) were calculated for individual students of the MC and for CBL tutors, and differences between the mean scores were analysed using a linear mixed model (Bryk & Raudenbush 1992). To further investigate differences between the mean CBL perception scores, the means for each of the items comprising the CBL perception score were tested for the

significance of differences between the MC and their CBL tutors, taking into account the fact that students were clustered within CBL tutorial groups.

6.5.1 Mean CBL perception scores

A linear mixed model was used to test the significance of any difference between the mean CBL perceptions scores for the MC and their CBL tutors. The mean score out of a total of 114 was significantly higher for CBL tutors than for the MC (91.4 vs. 83.9, mean difference = 7.48, 95% CI = 1.69-13.28, p = 0.012) (see Table 39, p. 133). This showed that overall, CBL tutors were generally more positive about the CBL approach than their students, but to understand the differences between the perceptions of CBL tutors and their students, the response of tutors and students to the individual items comprising the total score were investigated.

6.5.2 Mean scores of each of the nineteen items comprising the CBL Perceptions Questionnaire

As responses to the items were on a scale of one to six, with one being strongly disagree and six being strongly agree, a mean score for an item of less than 3.5 has been taken to indicate disagreement with that item, and a mean score of greater than 3.5 to indicate agreement. When the mean scores for the individual items were compared (see Table 40, p. 134) it could be seen that the CBL tutor mean score, out of a total of 6, was significantly higher than the student mean score for Items 1 (5.50 vs. 5.02), 3 (5.37 vs. 4.84), 13 (5.06 vs. 4.49), 14 (5.13 vs. 4.44), 15 (4.50 vs. 3.87), 16 (4.56 vs. 3.98) and 18 (5.06 vs. 4.48). However, in all cases the mean score was greater than 3.5, indicating overall agreement.

Analysis of individual items revealed that CBL tutors showed a significantly higher level of agreement than students that the CBL process resulted in productive work that enhances learning, and resulted in opportunities for the application of clinical reasoning skills. They also showed a significantly higher level of agreement that the CBL process resulted in quiet students being encouraged to participate, opportunities to use knowledge and skills for resource sessions and a manageable workload between sessions. Regarding scaffolding, CBL tutors showed a higher level of agreement that the CBL process resulted in students being given helpful suggestions about resources, and tutors and other staff helping students to understand what the process of CBL involved.

Table 39. Total CBL Perception Scores for the MC and their CBL tutors

CBL perception scores /114							
MC (n=178)		CBL tutors (n=16)		Statistics			
Mean	S.D.	Mean	S.D.	Mean difference	S.E.M	95% CI	p value
83.9	10.33	91.4	11.22	7.48	2.937	1.69-13.28	p=0.012

Table 40. Comparing the items of the CBL Perception Score for the MC and their CBL tutors

(*A mean score of <3.5 implies disagreement with the statement: a mean score of >3.5 implies agreement)

Items	Mean score out of 6*				
	MC (n=183)		CBL tutors (n=16)		
The CBL process results in: (strongly disagree=1 to strongly agree=6)*	Mean	S.D	Mean	S.D	Wilcoxon p
1. ... productive work that enhances learning	5.02	0.78	5.50	0.63	**p = 0.010**
2. ...an environment that enhances learning	5.05	0.71	5.37	0.62	p = 0.070
3. ...opportunities for the application of clinical reasoning skills	4.84	0.87	5.37	0.62	**p = 0.012**
4. ....opportunities to explore a single case in depth	5.19	0.77	5.38	0.50	p = 0.489
5. ....opportunities to explore topics related to the case	4.97	0.78	5.13	0.62	p = 0.537
6. ....an emphasis on students being able to work on their own (independent learning)	5.12	0.84	5.25	0.86	p = 0.487
7.... unrealistic demands on students in developing understanding of concepts and principles associated with the case, outside tutorials	3.35	1.21	2.19	0.91	**p <0.001**
8. ...students being encouraged to decide what is most appropriate to learn for the next session, how they will learn it (self-directed learning)	4.80	0.93	5.07	0.46	p = 0.384
9. ....the efficient use of time during CBL tutorials	4.43	0.99	4.62	1.03	p = 0.240
10. ...the group being side-tracked unproductively down blind alleys	3.39	1.10	2.69	1.01	**p = 0.020**
11. ...unrealistic quantity of work outside tutorials	3.57	1.26	2.75	1.07	**p = 0.013**
12. ...small group tutors asking direct questions	4.05	1.08	4.31	1.37	p = 0.169
13. ...quiet students being encouraged to participate	4.49	1.09	5.06	0.77	**p = 0.047**
14. ...opportunities to use knowledge/skills from Resource Sessions	4.44	0.92	5.13	0.50	**p = 0.002**
15. ...a manageable workload between sessions	3.87	1.06	4.50	1.10	**p = 0.018**
16. ...students being given helpful suggestions about resources	3.98	1.07	4.56	0.96	**p = 0.036**
17. ...students being helped with answers to questions for which they have been unable to find satisfactory answers	4.34	1.00	4.00	1.46	p = 0.442
18. ...tutors and other staff helping students to understand what the process of CBL involves	4.48	1.10	5.06	1.00	**p = 0.009**
19. ...students being helped to work out the depth of learning that they need for different concepts	4.18	1.24	4.62	1.20	p = 0.144

The CBL tutor mean score was significantly lower than the student mean score for items 7 (2.19 vs. 3.35), 10 (2.69 vs. 3.39) and 11 (2.75 vs. 3.57), which express negative perceptions of the CBL process. For these three negative items, the tutor mean scores were all less than 3.5, showing disagreement with the statements that the CBL process resulted in unrealistic demands on students in developing understanding of concepts and principles associated with the case outside tutorials, the CBL group being side-tracked unproductively down blind alleys and an unrealistic quantity of work outside tutorials. The student mean scores were around 3.5, showing neutrality with respect to negative statements.

Items 11 and 15 both investigated the perceptions of the workload for students outside the CBL tutorial. Item 11 was expressed as negative perception and tutors disagreed (mean score=2.75) that there was an unrealistic quantity of work outside tutorials whilst students were neutral (mean =3.57). Item 15 was expressed as a positive perception and showed that the agreement of tutors to there being a manageable workload between sessions was significantly higher than the agreement of students, (mean score of 4.50 vs. 3.87, p=0.0197) thus confirming the results of Item 11. When the results of scores of both the positive items and the negative items of the CBL Perception Questionnaire were considered, it confirmed that CBL tutors had a more positive perception of the CBL approach to teaching and learning than their students.

It was interesting to note that even though the mean CBL perceptions score for CBL tutors was significantly higher than for students, students and tutors were in general agreement for all the positive items (i.e. both groups with scores >3.5), and it was only the degree of agreement of the tutors that was higher than students for these items. For the three negative items (items 7, 10, and 11), tutors showed disagreement (scores <3.5) and students were close to neutrality (scores close to 3.5). Items 7 and 11 were both related to the nature and quantity of the work for students outside CBL tutorials.

6.5.3   The reliability of results from the CBL Perceptions Questionnaire
The validity and reliability of the CBL Perceptions Questionnaire as an instrument for investigating students and CBL tutors' experiences with the CBL approach has been discussed in Section 4.7, page 85. The reliability of the results using this instrument was shown to be good as Cronbach alphas for students' and tutor's results were both greater than 0.7 (students' results: α = 0.737, tutor's results: α = 0.795). The Cronbach alphas were calculated separately for students' and tutor's results to allow for the differences between the two groups and showed the CBL Perceptions Questionnaire to be a reliable instrument for measuring CBL perceptions (Tavakol & Dennick 2011).

6.6   RESULTS OF THE QUESTIONNAIRE FOR YEAR 1 CBL TUTORS
The Questionnaire for Year 1 CBL Tutors investigated the approach to teaching of the tutors within the context of the CBL tutorials, their perceptions of the CBL approach to teaching and learning and

provided data about the their academic backgrounds. All CBL tutors completed this questionnaire giving a response rate of 100% (16/16).

Table 41. Conceptual change/Student focused (CC/SF) scores and Information Transfer/Teacher focused (IT/TF) scores for CBL tutors.

Tutor Number	CC/SF SCORE / 55	IT/TF SCORE / 55
1.	39	20
2.	39	48
3.	41	22
4.	53	20
5.	49	23
6.	47	35
7.	45	36
8.	55	36
9.	43	22
10.	53	18
11.	51	27
12.	39	30
13.	48	26
14.	41	23
15.	37	19
16.	40	26
Mean scores	45.0 (S.D. = 5.92)	27.0 (S.D. = 8.14)

Table 42. Relationships between features of CBL tutors and student outcomes.

Relationship	Estimated Correlation adjusted for clustering	p-value
1. A student's results (Clinical Reasoning) and their tutor's CC/SF score on the ATI	-0.021	p = 0.780
2. A student's results (Clinical Reasoning) and their tutor's IT/TF score on the ATI	0.043	p = 0.567
3. A student's results (Clinical Reasoning) and their tutor's perceptions of CBL	0.053	p = 0.475
4. A student's results (Clinical Reasoning) and their perceptions of CBL	-0.029	p = 0.699
5. A student's perceptions of CBL and their tutor's CC/SF score on the ATI	0.115	p = 0.127
6. A student's perceptions of CBL and their tutor's IT/TF score on the ATI	0.214	p = 0.004
7. A student's perceptions of CBL and their tutor's perceptions of CBL	-0.028	p = 0.705

6.6.1 Results of Section 1: the Approaches to Teaching Inventory (ATI)

The method for obtaining the two scores for each tutor participating in the ATI has been given in Section 4.5.1, p 80. The Conceptual Change/Student Focussed (CC/SF) scores and the Information Transfer/Teacher Focussed (IT/TF) scores are each out of a total of 65 and the scores for each of the 16 tutors are given in Table 41, p. 136. All tutors except Tutor 2 had a higher CC/SF score than IT/TF score. This result was confirmed by the means of the two scores for all tutors, with the CC/SF mean score (45.0) being higher than the IT/TF means score (26.9). This showed that, except for Tutor 2, it was more important for all tutors in their facilitation of CBL tutorials to bring about conceptual change in students rather than to transfer information to the students, and to be more student focussed than teacher focussed.

Investigations into relationships between features of CBL tutors and student outcomes, allowing for the clustering of students within tutorial groups, were described in Section 4.6. Analysis of these data showed that there was no significant correlation between the two factors in any of the relationships except for Relationship 6 (see Table 42, p.136). Thus there was no relationship between student results in the Clinical Reasoning Examination at the end of Semester One and their CBL tutor's scores on the ATI ($p=0.780$ for CC/SF score and $p=0.567$ for the IT/TF score), their CBL tutors' perceptions of the CBL approach ($p=0.475$), nor their own perceptions of the CBL approach ($p=0.699$). There was no relationship between student perceptions of the CBL approach and their tutors' CC/SF score on the ATI ($p=0.127$), nor their CBL tutor's perceptions of the CBL approach ($p=0.705$). However, there was a weak correlation between students' perceptions of CBL and their tutors' IT/TF score on the ATI (Pearson's correlation = 0.214, $p=0.004$). This correlation was unexpected as it is considered that the IT/TF approach produces less desirable learning outcomes than the CC/SF approach in the CBL context. One possible reason for this is that students with tutors adopting the IT/TF approach were being taught in a way more similar to that of year 12, thus making their CBL perceptions higher.

6.6.2 Results of Section 2: CBL Perceptions of tutors

These results have been discussed previously in this chapter (see Section 6.5, p.132) where both students' and CBL tutors' perceptions of the CBL approach were shown to be generally positive, with tutors' perceptions being significantly more positive than those of the students.

Table 43. The backgrounds of CBL Tutors

(n=16/16 participants)

Questions	n	
Tutors' Backgrounds		
MBBS	1	
Science	12	
Health	3	
Current work: In addition to your CBL tutoring, please specify which of the following apply to you:		
currently working in a professional practice	2	
no longer working in a professional practice	4	
a postgraduate student	6	
Other	5	
Is this your first year of CBL tutoring?		
Yes	3	
No	13	
Teaching background		
Please indicate which areas you have taught in and the number of years' experience in that area (may have background in >one area)	**n**	**Mean No. years**	**SD**
CBL tutoring	13	5.00	3.03
University lecturing	5	11.80	14.91
University tutoring other than CBL tutoring	10	9.22*	12.17
Clinical teaching	4	9.40	8.47
Secondary school teaching	3	1.67	1.15
Individual tutoring	5	5.40	5.64
Other	2	2.50	0.71
Training for CBL tutors: Please rate the usefulness of training you received (1= not at all useful, 10=extremely useful)	**Mean rating /10**		
Training for new tutors:	8		
Refresher training	6.8		

*One tutor had 40 years of tutoring experience. The mean without this tutor decreased to 5.4

6.6.3   Results of Section 3: Tutors' backgrounds

A summary of the responses from CBL tutors to questions investigating their academic backgrounds is shown in Table 43, p.138. Because there was only a small sample number for CBL tutors (n=16), results are given as numbers rather than being converted to percentages. The results showed that only one of the CBL tutors was a clinician and the other fifteen tutors had qualifications in Science or Health. Six of the tutors were postgraduate students and only two were currently working in a professional practice although four had previously worked in professional practice. Only three of the tutors were in their first year of tutoring with the other thirteen tutors averaging 4.9 years of CBL tutoring. Tutors had a variety of teaching experiences, five with university lecturing, ten with tutoring other than CBL tutoring, four with clinical teaching, and three tutors with secondary school teaching. They highly rated the training for new tutors but rated the refresher training for experienced tutors less highly (average ratings = 8.0 and 6.8 respectively, on a scale of 1-10).

6.6.4   Results of Section 3: Written Comments

CBL tutors were asked to write comments about what their transitioning students enjoyed most and what they found most difficult about participating in CBL tutorials. They were also asked to list two strategies they used to help students with the transition to learning via the CBL approach, and finally to list two difficulties they have encountered in helping students with transition. Answers to these questions were analysed manually. Analysis of the list of strategies used by CBL tutors produced five themes which encompassed the areas in which strategies were used by the all the tutors. These themes were: helping to improve group dynamics, creating a safe learning environment, guiding students in the CBL process, keeping students focussed and on time, and providing feedback to students. These categories informed the development of questions for the focus groups with CBL tutors as previously discussed in Section 5.4.1 and shown in Table 19, p. 95.

6.6.5   Validity and reliability of results from the instruments used in the Questionnaire for Year 1 CBL tutors

The Approaches to Teaching Inventory (in Section 1 of the Questionnaire for Year 1 CBL tutors) was useful in providing data on the approaches to teaching of the tutors within the context of the CBL tutorial, but it had little correlation with student outcomes such as Clinical Reasoning Examination results and students' perceptions of CBL. This could be either because there was no relationship between these factors, or because the primary aim of the Approaches to Teaching Inventory is to help teachers reflect on their own teaching and learning within a specific context (Trigwell, Prosser & Ginns 2005) and therefore it was not a suitable instrument for investigating the above relationships.

The reliability of the results of the CBL Perceptions Questionnaire for tutors was sound (Cronbach alpha = 0.795). The high response rate to the Questionnaire for Year 1 CBL Tutors (100%, from 16/16 tutors) contributed to the reliability of data from all three sections (the ATI, the CBL Perceptions Questionnaire and Written Comments) of the questionnaire.

6.7   SUMMARY

Chapter Six has presented data from the three questionnaires answered by the MC and the questionnaire answered by their CBL tutors. These questionnaires were responded to by over ninety per cent of the sample of the MC and CBL tutors, and have provided a large quantity of data on the learning experiences of students transitioning into Medicine and the teaching experiences of a group of academics closely involved in the first year medical program.

Rather surprising and unexpected results from the FYEQMed showed that firstly, whilst the transition experiences of medical students compared favourably with those of general students, in the area of comprehending and coping, medical students were not faring as well as general students. Further analysis showed that a perceived heavy workload and keeping up with the volume of work were two of the main factors contributing to this result. The second important finding was that international students were not encountering the same difficulties with comprehending and coping as domestic students.

There was a good alignment between the perceptions of medical students and their CBL tutors about the CBL approach to learning and teaching, except in one area. Whist tutors disagreed that there were unrealistic demands on students outside CBL tutorials, firstly to develop understanding of the concepts and principles associated with the case, and secondly with regards to the quantity of work required of them, students were neutral about these statements. This finding supports the results from the FYEQMed, of students experiencing difficulties coping with a heavy workload and keeping up with the volume of work, and suggests a link between the work needing to be done outside CBL tutorials and the heavy workload, which will be further discussed in Chapter 9. Investigations into the relationships between student outcomes, their perceptions of the CBL approach, their tutors' perceptions of the CBL approach and their tutors' approaches to teaching in the CBL context, showed little or no relationship between these factors.

Findings that there were certain aspects of the medical program that promoted a successful transition experience for students and other aspects that were less positive, warranted further exploration to gain an understanding of how these different aspects were affecting the transition experience for medical students. The four dedicated areas of the Transition Pedagogy model provided an expert framework for this exploration, because appropriate strategies
in these areas can provide a positive experience for students in their first year at university (Nelson et al. 2010). Results from this exploration will be described in the following two chapters.

CHAPTER 7.

QUALITATIVE RESULTS FROM THE PILOT STUDY

7.1   INTRODUCTION

Chapter Seven marks the beginning of the consideration of the qualitative results. It reports findings from the pilot study focus groups which identified the changes confronting medical students in their first year at university. The quantitative results in Chapter Six revealed that, whilst the MC was having a significantly more positive transition experience than the GC in several areas, they were having significantly more difficulties in comprehending and coping with their learning in the medical program. There was also evidence that within the MC, domestic students were encountering more difficulties in comprehending and coping with their learning than international students. Findings from the main study focus groups and interviews will be reported in Chapter 8 together with a description of how the results from the pilot study informed the direction for further investigations.

7.2   RESULTS FROM PILOT STUDY FOCUS GROUPS

As described in Section 5.3.1, in the two pilot study focus groups, medical students were asked general questions about their transition year, including questions about orientation, the CBL approach and the role of their CBL tutor. Analysis of the qualitative data from these focus groups revealed four main themes about medical students' experiences of the transition year and these themes defined the stages of their experience as the year progressed: students began their transition with expectations of learning in first year Medicine, had certain experiences with the orientation program, encountered major changes in the nature of learning and formed views of the overall transition experience, which changed their expectations of learning in the medical program. Investigations of the links between these stages resulted in the model shown in Figure 5, p. 142, which provides the framework for discussion of results from the pilot study focus groups, in that results will be discussed for each of the stages in the model. The sources of quotes are indicated after each quote e.g. (PS. FG1) indicates that the quote is from the pilot study, Focus Group 1.

7.2.1   *Students' initial expectations of first year Medicine*
Students' expectations of their first year experience came from conversations with parents, older siblings and friends who were already at university. Some students had spoken to other medical students or had done research on the Medicine program before their oral assessment which was part of the selection procedure. Teachers and career advisors at school advised students that their first year at university would be very different from school.
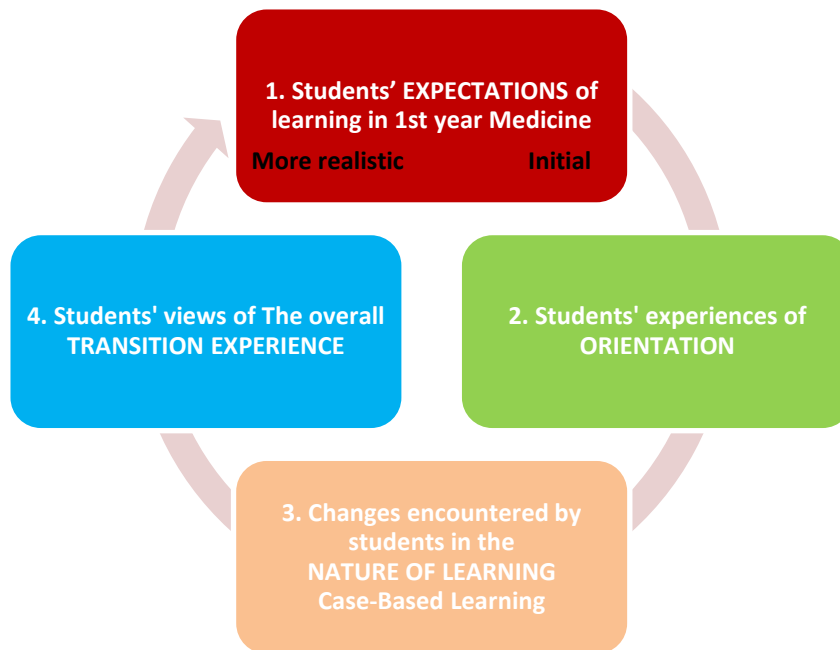
Figure 5. Stages experienced by students during their transition year.

Students' expectations that were met included:

- a bigger workload and longer hours of study than in Year 12, which as one student commented, was different from the expectation of students not studying medicine: "we usually say that at uni you have a lot less work and you have a lot more free time: except for Medicine that is completely not true" (PS. FG1).

- a large amount of group work

- the need to become self-directed in their learning. Many students believed that as part of self-directed learning they would be required to do study more on their own but did not fully understand that self-directed learning also required them to plan, implement and evaluate their own learning: "I knew that Medicine would be very self-directed and that university in general was no more spoon-feeding. It's pick things up by yourself and work through it by yourself" (PS.FG2).

- less contact with their teachers at university. Students expected that their lecturers and tutors at university would have a much different role from their teachers in Year 12. They expected to be given much less scaffolding and many students felt that in Year 12 they had been spoon fed by their teachers: "I expected less contact with like teachers and mentors, so yeah, in high school I guess we were spoon-fed, if we had any problems you go straight to a teacher" (PS.FG2).

Although they expected less contact with their teachers at university, many students felt that insufficient scaffolding was provided for the transition into Medicine. One example given was that they found it difficult to get advice on resources or answers to questions that they themselves had been unable to find.

There were two areas where students' expectations were not met. These were:

- the structure of the course. They were expecting to be working from a set syllabus with set sources of information and set texts and some students were "... a little bit disappointed to find when I first got into the Medical program, the lack of any syllabus and the lack of a sense of direction and structure" (PS. FG1).

- the standards of the course. Students expected uniform standards throughout the course similar to what they had experienced in Year 12, but they felt these standards kept changing: "we expected to be learning from a set standard as we were in school, we expected it to be a static standard that didn't change, that we could rely on and that's been completely removed" (PS. FG1).

7.2.2 Students' views of the orientation programs

Orientation to the CBL process consisted of two lectures using a practice case, one survival exercise on group learning and a Meet and Greet session for tutors and students in their group. These were held in the first three weeks of Semester One, before CBL tutorials had actually begun. The group survival exercise helped students to understand the advantages of group learning over individual learning and the Meet and Greet session was useful for coming to know and bond with their tutor and other students in their CBL group.

Students felt that the lectures did not reflect the reality of the CBL tutorial, in that they made everything sound very simple and did not convey to them how confused and pressured they could feel in a tutorial situation. One student commented "you think that this is quite straight forward, I've done the pre reading, I could do everything fine in the lecture' and it's nothing like that in reality" (PS.FG2). "The lectures seemed to teach students very little about the CBL process itself, or about case presentations which 'was a source of confusion for at least four weeks in our group" (PS.FG2). They also gave students little indication about the type of work that they needed to do on each case between the tutorial sessions. Consequently, as one student described, when the time arrived to participate in CBL tutorials, they were not well prepared for participation: "I remember sitting in my first CBL session ever, like stunned silence...I don't think I said one word" (PS. FG1).

Students made several suggestions about improving the orientation process by giving them more first-hand experience of the CBL process, because, as one student commented, "for me CBL was something you just had to learn by practising, and the first few sessions were just like, horrible and awkward" (PS.FG2). Suggestions included sitting in on a tutorial of year 2 or 3 students, watching a video of a tutorial in action and conducting "practice tutorials" for the first 3 weeks, on cases not examinable.

### 7.2.3 Students' experiences of CBL: changes in the nature of learning from Year 12.

Students experienced major changes in the nature of learning when they transitioned from mainly teacher-directed learning at Year 12 to the CBL approach (see Table 44, p.144).

Students felt that the CBL approach required them to work "in reverse" in that whereas in Year 12, they were taught the knowledge base and would have to apply this to a problem, now they were presented with a problem or case, and would have to determine the knowledge needed to solve this problem and how and where to find this knowledge, for themselves. In Year 12 a lot of time was spent revising the basics that had been learned, but now they were required to anticipate information they needed for the next CBL tutorial. One student described the differences: "CBL, you go to the session, then you guess what you are going to do in the next session, so it's more like looking into the future, whereas Year 12 was sort of recapping what you just did" (PS.FG2). Thus the requirement for forward planning was helping them to develop good skills in self-directed learning.

The emphasis for many students had changed from rote learning in Year 12, to a requirement for understanding what they were learning in first year Medicine: "it was quite surprising for me how much understanding is required in the program, rather than just 'Oh this is this, I am going to memorise this and recall it at a later date'" (PS. FG1). Changes in the way they were learning via the CBL approach and the fact they were required to learn things at a much deeper level were both leading to a better overall understanding of their work: "but you can't get by in Medicine just like learning stuff, writing your notes, it's like all about mechanism and knowing how it works and fitting it all in, which I think is really good" (PS. FG1). Students felt that it was an advantage to have studied the International Baccalaureate course at Year 12 as the understanding of work was emphasised far more in this course than in other state run courses, such as SACE.

Table 44. Changes in the nature of learning

LEARNING IN YR 12 – often involves		LEARNING IN YR 1 MEDICINE involves
Learning the facts then applying them to a problem	⟹	Learning "in reverse": given the problem (case), asking what do I need to learn?
Rote learning	⟹	Learning for understanding (clinical reasoning)
Preparing work at the last minute (can result in surface learning)	⟹	Needing to be well prepared otherwise very obvious in tutorials
Depth of work being defined by syllabus	⟹	Discerning the depth of work themselves
The teacher giving lots of help about what to learn	⟹	Students determining what they need to know (learning issues)
The teacher providing most of the information	⟹	Finding information for themselves because the tutor is a group facilitator rather than a provider of information
The teacher helping with resources: which ones and where to find them	⟹	Students identifying resources for themselves
Regular assessment and constant feedback from teachers (e.g. reading draft copies)	⟹	Infrequent assessment, amount of feedback depending on tutor
Fiercely competing against other students	⟹	Collaborating, cooperating and sharing work with other students

Participation in CBL tutorials required changes in how much preparation of work needed to be done outside the classroom. Preparation in Year 12 could be done at the last minute and the amount of preparation was not critical because most teachers could be relied on to provide all the required knowledge in class next day. However students were required to spend much more time preparing for CBL tutorials and gaining some understanding of the work:

> I found that back in Year 12 I didn't really need to prepare much. Like you'll go to school and the teachers would tell you everything you need to know. Now in CBL you have to do it all yourself and yeah if you're not prepared for the sessions, it's very obvious that you don't know what you are talking about (PS. FG1).

This finding from the focus groups was confirmed by data from the FYEQ, which showed that the MC scored significantly higher than the GC for Scale 9, "Prepared and Present".

The necessity to be well-prepared motivated students to work more consistently throughout the year, as they realised how difficult it was to catch up if they worked spasmodically. This was different from Year 12 where it was possible to leave tasks until the last minute and also to cram for examinations and still do well.

> Best thing about CBL is kind of like the motivation to work. I am the kind of person that if I have an assignment I will pretty much try to leave it to like the last day, and the whole idea that we have to prep for each case means that I'm consistently doing work throughout the entire year, and that kind of helps with whole self-directed learning (PS.FG2).

One of the most difficult challenges facing students when they began studying Medicine was discerning the depth at which to learn a certain topic and for many students: "that's the most ambiguous thing of the whole CBL process is the level, I think, of depth" (PS. FG1). To help them discern this depth, students were advised by CBL tutors to consider case objectives and whether they needed to be learning at the system, organ, cellular or molecular level. However, they found case objectives very broad and they often felt that to have a good understanding of a topic they needed to explore it in depth: "that's what I find the hardest thing, just because we are learning stuff we are going to be repeating in say second or third year, but it's hard to just go and do it superficially and build on it next year" (PS.FG2). In Year 12 students were studying from a set syllabus that stated specific topics and their content, thus making explicit the depth and breadth of learning. Students found it difficult to make the transition to Year 1 Medicine where discerning the depth and breadth of learning was part of becoming a self-directed learner. Some students found it overwhelming trying to discern the breadth of learning from the large amount of information available: "I just feel like there is so much information that I could possibly look at and I could read all the time if I wanted to. It never ends, to the amount of knowledge that you could have" (PS. FG1). However, they learned to accept that they could no longer be sure they had covered all the necessary areas in their learning: "but like, you do get better at just thinking like 'Well okay, I can't know everything' "(PS. FG1).

Students realized within a very short time that their CBL tutor had a vastly different role from their teachers at Year 12. They understood that the role of the CBL tutor was not to provide information but to guide the group as they work through each case, facilitating the group process and not allowing them to wander too far off track as they learn to apply their problem-solving skills: "for me I didn't ever really even make the connection between my Year 12 teachers and my tutors, because to me they are just so obviously different things" (PS.FG2). However students were concerned about the large variation between CBL tutors in the standards that they set (for example for case presentations), whether they gave satisfactory answers to students' questions and the environment that they created for their group to work in. Some tutors motivated students to work hard but others seemed overly critical and inhibited students from contributing to group discussions. Whilst they realized that tutors were not meant to be content experts, students questioned the knowledge base of some tutors as shown by the following comments:

> Your tutor wouldn't even know if you said something wrong. And it doesn't happen with all the tutors (PS.FG2).

> It would be good to sometimes have a tutor who knows their stuff or to know things that are at least somewhat relevant to your case (PS.FG2).

 A very important source of help for many first year students was from medical students in higher years who would advise them on the best textbooks to buy and which resources to use. Year 6 medical students, who were undertaking an elective in Medical Education, received very positive feedback when they took on the role of CBL tutors for first year students, who even suggested that older students would also make excellent mentors to introduce them to the CBL process, because they had recent experience of the transition process.

Students spoke positively about the change from a very competitive environment at Year 12 to one of collaboration and cooperation in the CBL process. They enjoyed CBL tutorials where the tutor and students were all contributing to the learning process and the sharing of information and resources. The CBL process helped students in forming friendships and when they were finding it difficult to understand a concept, a friend would often explain it to them. This was in direct contrast to Year 12 where work was not shared because there was such intense competition to do well in the examinations as this would determine which course they would be admitted to at university. One student described the difference as "year 12 was really competitive, well I found at least, and now everyone's kind of just like, you know you help each other and you explain things to each other, and that's probably the good thing about CBL" (PS. FG1).

The change in assessment from Year 12 to first year Medicine was seen as positive in that the non-graded passes promoted collaboration and cooperation necessary for the group work in the CBL process. However, students missed the regular assessments that they received in Year 12 at the end of each topic. There seemed to be few opportunities to consolidate learning on each case as often they moved on to a new case before they completely understood the current case. In Year 12, the regular feedback students were receiving helped them to gauge their level of achievement.

However in first year Medicine, lack of feedback, especially from their CBL tutor, often meant some students would reach the examinations at the end of Semester One, very unsure about their progress: "we didn't receive any feedback from our tutor...... and particularly for our first semester of Medicine that was quite hard. It was hard to gauge where you were sitting and what you were meant to be doing better" (PS.FG2). This finding is further discussed in Chapter Nine (see Section 9.2, p.179,) and linked to how the provision of feedback is pivotal to the role of the CBL tutor.

7.2.4   *Student's views of the overall transition experience:*

When students reflected on the overall transition process, many felt they had been "thrown in at the deep end" (PS. FG1) and for some this was a beneficial and necessary experience. It helped them to adapt quickly to the changes they were now encountering, and they could appreciate that it would also prepare them for other major changes they would encounter in their profession, especially at the next transition stages such as final year medical student to Intern, junior doctor to registrar and registrar to consultant. However students also felt that they would have benefitted if the transition had been more gradual:

> I feel that from day one, you're sort of immediately transitioned into this purely self-directed learning approach..... if the approach was a bit more gradual ...then that would be beneficial for the students, because I personally found it very difficult to transition from high school to like CBL" (PS. FG1).

The fact that several students expressed the need for a gentler transition process warrants consideration of the current orientation process and this will be further discussed in the following chapters.

7.2.5   *Students' more realistic expectations of first year Medicine*

The overall transition experience resulted in students developing more realistic expectations of learning in first year Medicine. During second semester they no longer expected to be able learn "everything" about a topic as they did in Year 12, they expected that they themselves would have to determine what they needed to learn to understand a case, to identify the resources and find the information they needed. Students realized that they were no longer learning mainly for examinations, but were now required to learn at a deeper level that would result in an understanding of their learning that was needed for practising in their future profession. They did not expect to fully understand all aspects of to the CBL approach to teaching and learning immediately and realized that this would develop over time as they practised the skills required. It can therefore be seen that many students were beginning to experience what it really meant to be a self-directed learner.

7.3   SUMMARY

Findings from the pilot study focus groups have led to the development of a model of the four stages experienced by medical students in their transition to university. One of these stages was shown to be students' encounters with changes in the nature of their learning at university. These changes

involved the development of skills that were needed for self-directed learning, including determining the breadth and depth of study, discovering that rote learning was not sufficient for developing good understanding and adapting to the CBL process and the role of their CBL tutor. Identification of these changes was important because they were then used as a starting point for discussions in the main study described in the following chapter, to gain a perspective of how the strategies employed not only by the students themselves, but also by the academic and administrative staff, were helping the MC to cope with these changes during transition. The pilot study provided a means of testing the approach that has been taken to this research by showing that the alternate collection and analysis of data was providing direction for further investigations. It also affirmed the use of the Transition Pedagogy model because the four dedicated areas of the model provide a framework for further investigating the supporting strategies that emerged. The results showed that it was the strategies of students themselves and the support of peers, academic staff and administrative staff that were all involved in determining a successful transition experience. The following chapter will report results of further investigations into these supporting strategies within the four dedicated areas of the Transition Pedagogy model.

CHAPTER 8.

QUALITATIVE RESULTS FROM THE MAIN STUDY

8.1   INTRODUCTION

This chapter describes the use of qualitative approaches to explore the unanticipated outcomes from the quantitative data, in order to provide a comprehensive understanding of how and why these outcomes arose. The unanticipated outcomes were firstly that during transition, medical students were not faring as well as general students in the area of coping with a perceived heavy workload and keeping up with the volume of work, and secondly, international students were not encountering the same difficulties. The Transition Pedagogy model provides a framework for investigating these outcomes as it proposes that if strategies within four dedicated areas that extend across the curriculum are effective, then a positive transition experience can be provided. The dedicated areas are:

- Curriculum that engages students in learning

- Proactive and timely access to learning and life support

- Intentionally fostering a sense of belonging

- Sustainable academic-administrative partnerships

Results are presented from investigations into how these four dedicated areas applied to domestic and international students. Evidence about this comes not only from the students but also from people who were closely involved with students during transition: CBL tutors and administrative staff who worked in the office of the MLTU or were involved in the planning and development of curriculum and assessment. Table 45, p.150 summarises how the various focus groups and interviews informed the four dedicated areas of the Transition Pedagogy model.

The first section describes results from domestic students, their CBL tutors and administrative staff, and results from international students and the International Program Coordinator are described separately. The aim of this separate description is to highlight any differences that existed in the experiences across the four areas for domestic and international students, so that in the final chapter, linking of the quantitative and qualitative data can develop possible connections between the different experiences of domestic and international students, and the nature of their transition.

The rationale for each of the focus groups and interviews has been described in Chapter 5, and is briefly revisited to set the scene for reporting the qualitative data. Focus groups with the medical students and interviews with the two student representatives (SRs) on the Curriculum Committee and a representative from the Adelaide Medical Students' Society (AMSS) provided the students' perspectives in the four key areas.

Table 45. How the qualitative approaches informed the four dedicated areas of the Transition Pedagogy model

QUALITATIVE APPROACHES	AREAS			
	Curriculum that engages students in learning	Proactive & timely access to learning and life support	Intentionally fostering a sense of belonging	Sustainable academic-administrative partnerships
Focus Groups with volunteers from the whole student cohort	√	√	√	√
Interview with the two Year 1 student representatives on the Curriculum Committee	√	√	√	
Interview with a representative from Adelaide Medical Students' Society (AMSS)		√	√	
Focus Groups with CBL tutors	√	√		
Focus Groups & interviews with administrative staff involved in the first year medical program.		√		√
Focus Group with international students	√	√	√	√
Interview with the International Program Coordinator	√	√	√	

Focus Groups with CBL tutors provided information about the strategies that they used to support students. The CBL tutors were an important source of information because they spent six hours per week with students in CBL tutorial groups and therefore had more contact with medical students than any other academic staff. Results are reported from focus groups with administrative staff of the MLTU office, who were often the first point of call for students with problems, and with other administrative staff who indirectly influenced the transition through their work on curriculum planning and supporting the assessment process . The questions used in all focus groups and interviews have been provided in Chapter 5.

8.2   CURRICULUM THAT ENGAGES STUDENTS IN LEARNING

Students were required to adapt to many changes in the way the curriculum engaged them in learning as they transitioned from secondary school to Case-Based Learning in the medical program. The changes causing students the most difficulty were shown to be determining the breadth and depth at which to study, finding that rote learning was not sufficient for developing good understanding and adapting to the CBL process and the role of their CBL tutor (see Chapter 7). Assistance for students with these changes was provided in the form of scaffolding and the importance of scaffolding in a PBL/CBL curriculum has been discussed. (Section 2.6.5, p.53). In this section, findings about the scaffolding to help students with these three changes is presented.

The perceptions or comments of individual students cannot be generalised to all medical students, but they can indicate the breadth of experiences within the cohort. A range of comments, from most negative to most positive from domestic students, and comments from international students, in the area of a curriculum that engages students in learning, are provided in Table 46 (p.153).

8.2.1 Determining the breadth and depth of work

Determining the breadth and depth at which they needed to study was a major concern for many students and the resulting uncertainty can be seen in these comments:

> Knowing the depth to which you had to learn and not being given a broad-scape of what you actually need to know by the end of the year, that type of stuff was a little bit different (MS.FG3).

> There's nothing really setting a clear guide of where we should stop in terms of how deep we go, so it ends up being a personal decision, so I think it's still difficult at this time (MS. FG4).

Some students who had studied neither Biology nor Chemistry in Year 12 found the breadth more difficult to determine because they were struggling with a large volume of new content. Some lecturers seemed to assume prior knowledge and as described by one student, "a lot of people also didn't do Biology, so they were really struggling in the Biology lectures that we had, because some of them didn't start with the very basic, so it was quite hard" (MS.FG4).

Comments from the student representatives (SRs) on the Curriculum Committee confirmed that a major concern for students was "not knowing what depth to go into and the lack of anyone to tell you and anyone who really knows" and that they were finding it difficult to develop strategies for discerning depth in the medical program. This was in direct contrast to three other areas of learning where students had been more easily able to discern the depth at which to study:

- In their final year of secondary school where there was a well-defined syllabus

- In the Biomedical Science course which all first year medical students are required to undertake. Students described these tutors as having more content knowledge resulting in "...a lot more guidance so you know exactly what you need to do." (from a student representative (SR))

- In other university programs from which some students had transferred into Medicine where, although there may not have been a well-defined syllabus, tutors had sound content knowledge and could and would answer all students' questions.

Students obtained help from various sources and often they developed their own strategies to determine the breadth and depth of their study. Early in the transition process, students had developed few strategies to cope with the problem of depth and some were still struggling with this in Semester 2: "I definitely went into too much depth. I still don't know to be honest. I still don't know the depth a lot of the time" (MS.FG3). However, by Semester 2, students realised being able to discern

depth was one of the requirements of self-directed learning that was different from the more teacher-directed learning of Year 12, where the depth was well defined by the syllabus and their teacher. One student described the change: "you were given the information (in Year 12) so, whereas here you have to sort of find it yourself and cause there's an endless amount of information out there, it's like "Where do I stop?" (MS. FG3). Many students were beginning to employ a variety of strategies to discern depth, including looking at the big picture and not going into too much detail. For some students it was a matter of learning this by trial and error: "I agree it's not that clear, the depth, but I have found that if you're unsure just go really general and just get a general idea, 'cos even if you've done nowhere near enough depth you've still learnt it" (MS.FG1).

Another strategy used by students was to compare their level of their detail and information with other students. Repeating students were a good source of help, as described by one student, "I use other people, like the repeaters 'cos we had a repeater in our CBL tutorial that was quite valuable. Like, 'You guys don't need to learn that', sort of thing, that was useful" (MS.FG3). However one student described the uncertainty that comparison with other students could lead to: "I find that every time I've gone into a certain amount of depth there's always someone who's done more and there's always someone who's done less and so it's like you're always kind of second guessing the amount of that you've done" (MS.FG4). As well as referring to other people to discern depth, students would try to correlate information from their lectures with what they found in their textbooks. One student described how: "quite often it's start at the text book and then if it's counter intuitive or it doesn't really fit with what the text book said or what the lecturer said, then you kind of just discount it" (MS.FG2). For this student, learning by trial and error seemed to be effective.

The problem of discerning breadth and depth also arose when students were researching learning issues that had been identified in CBL tutorial sessions. Students would research these issues and elaborate on their findings with the group in the next session. CBL tutors reported that they found many transitioning students were spending a great deal of time outside of tutorials researching learning issues, but were not managing their time effectively. They were uncertain of what resources they should be using and the depth at which to study. Some CBL tutors were willing to help students to determine breadth and depth by recommending certain resources and suggesting that depth could be worked out by consulting the textbook: "something that I do point out to them very early on is 'This stuff you're learning this year, this is stuff that is known. You are going to find it in a text book, so go to a text book first. Don't waste hours and hours reading journal articles on them' " (T.FG2). Another strategy provided by CBL tutors to discern depth was: "when you're reading, you must have a question in mind and if you're reading and you don't know what question you're answering, stop, have a think and think 'Okay, what am I trying to find out here?' and then go back to it" (T.FG2).

Variation in support provided by CBL tutors to discern breadth and depth was evident from the range of comments from students as shown in Table 46, p.153.

Table 46. Students' comments on the first area of the Transition Pedagogy model: curriculum that engages students in learning

Changes causing difficulties for students	Range of comments from domestic students		Comments from international students
	Most positive	**Most negative**	
Determining the breadth and depth of study	Yeah our tutor was really good with telling us just to stay general at first and get the big picture..... (MS.FG1) The results of formative exam helped with knowing that I was learning the right depth, and that kind of gives you an idea for all the cases in the second term, like what you're meant to know. (MS.FG2)	The tutorial group? Um.... I don't think that really helped that much, not in first semester but I think that's mainly.... the tutor because she didn't really know either it seemed. So that was a bit hard. (MS.FG3)	I think with the notes from the International Program Coordinator gives us more confidence to speak up 'cos we feel that the information that we've got from our text books that we are reading, the depth and breadth are actually supported by someone who is more experienced. (ISFG3)
Learning for more understanding (using support for developing mechanisms as an example)	Transitioning into first year Med is actually better because I'm not expected to move on if I don't understand it. (MS.FG1) You guys have (name) for a tutor and he's really big on mechanisms and that was really good. (MS.FG4) For me it (a mech) really helps my understanding, especially like linking you know, symptoms with like the disease process or whatever. And I don't know why, it just really helps me. (MS.FG2)	It would be easier if our tutors in first semester in our first couple of sessions actually showed us how to do mechanisms and what is expected from us, because our tutor just sat us down and said 'Okay, go' and he didn't really tell us this is how you do it but ' You have to deal with this stuff'.(MS. FG1) .. we did not do one single mech in our whole semester (MS.FG4) ..by the time we got to exams and we had to reproduce mechs, I just didn't know what they were like. And now I've gone to another group and we do lots of mechs which is so much better. (MS. FG4)	The program is like the CBL where the IP Coordinator gets us to talk about what we know and what we don't and try to understand certain things together.(ISFG7) Like this other system of rote learning I do understand my work as well, but it's the discussion, that when you speak about it you remember it better so we feel like we have consistent revision going on rather than just studying (ISFG2)
Adapting to the CBL process and the role of the CBL tutor	The CBL tutorial is probably where I learn the majority of everything I know, because the lectures are alright but it's basically doing learning issues is where I learn everything. (MS.FG1) To be honest I'm learning heaps and I really, really enjoy this entire course but I think that it is very, very dependent on my CBL tutors. I've had two fantastic tutors so far and really good groups. (MS.FG4) My tutor was great with feedback. She gave you all the stuff you did well, all the stuff you could improve on and all the ways you could try to improve and how much we were contributing. (MS.FG3)	At that time it was so overwhelming. Meeting new people, all of a sudden we are in small groups with a complete stranger, who was a doctor and going to be our tutor, and we don't know what to do with each other, we don't know what CBL is and learning all this extra stuff. You can't take it all in at week one and then be able to regurgitate it. (MS.FG2) When it came to feedback my tutor was really quite negative and quite often was putting people down and focussing in what they weren't good at and people were losing confidence. (MS.FG3)	One thing (the International Program Coordinator) has helped us a lot is the case presentations 'cos in every session she made everyone do a case presentation so we got more chance to practise. And at the beginning of the year she gave us notes on how to do case presentations properly (ISFG5) Like sometimes prompts and stuff, it's not very clear and then she'll kind of explain it a bit more clearly and just things like that really that help. (ISFG4)

One CBL tutor was uncertain how to guide students with breadth and depth because she was also experiencing difficulties with this: "I need actually more guidance in how much depth they need to know about things, because I have no idea" (T.FG2).

The SRs confirmed that some CBL tutors were unable to advise students on depth and that students perceived this was because of the tutor's lack of content knowledge. The SRs reported that one of the most valued sources of help for students struggling with depth was from tutors in Clinical Skills, who were either clinicians or sixth year medical students undertaking a placement in a Medical Education elective. Many students expected that the lectures they received in the three curriculum areas would provide some indication of the depth for each topic. However, SRs did not believe that the lectures helped students to discern depth because the lecturers taught their topics at greatly varying depths. Lecturers seemed to "need more guidance as to the content, because they're given the title of the lecture only, and so they can write a lecture at whatever depth they want" (SR). Even though lecturers were given the learning objectives for the case relating to their topic, it did not prevent "a lot of overlap between some of the lectures or that certain points don't get covered if they assume someone else is going to talk about that, so that can be a bit of a worry" (SR). SRs also reported that the strategies students used to work out depth were either through an intuitive process or the realization, "well I'm not going to remember everything, so I'm just going to concentrate on this" (SR).

Students had reported to the SRs how the difficulties in discerning depth were adding to the heavy workload experienced during transition as students often worked very long hours studying at too great a depth. One of the SRs described a strategy used by students to cope when they were struggling with "finding time to do everything ... the way students combat that is they stop going to lectures" (SR). Some students would always attend all scheduled lecturers, but for many students, whether or not they attended lectures was determined by:

- The quality of the lecture: "students find that the typical lecture style is a problem and doesn't help them learn as good as an interactive CBL or reading a text book" (SR).

- The advice of other students: "if someone says, yeah you should go to that" (SR).

- If the lectures were available online: "if they were online, it just gives the people who don't go or people who are sick a chance to catch up" (SR).

For many students the first opportunity to ascertain whether they were learning at the appropriate depth came in the second half of first semester. This was when they received the results of a formative examination held after mid-semester break, and reflecting on these results helped many students to work out if their depth of study was appropriate. These results provided students with the first feedback from academic staff on their written work and for most students they were an affirmation that they were studying at the appropriate depth. One student felt this improved her confidence for studying cases in the second half of the semester: "I think it's (referring to results of formative exam) knowing that I was learning the right depth, and that kind of gives you an idea for all

the cases in the second term, like what you're meant to know" (MS.FG2). Comments from the SRs confirmed the value of the formative examination for students: "doing the formative exam in the first semester was really useful because then you could see exactly how much you needed to know in an exam setting which is really useful, but up until that point there was no guidance, no boundaries or anything like that set" (SR). The SRs also reported that the timing of the formative examination: "was probably the right time, in terms of when people started to really worry because like there was more and more information coming at them and then it sort of came and they were like 'Oh that's the depth' " (SR). Students described how they were further reassured about the depth of their learning by results of the first summative examinations held at the end of Semester 1: "pretty much the assessments: the exams, the trial exams and the mid years, that's when you actually get to know 'Oh yeah, I've learned enough'" (MS.FG3).

The two programs run by the AMSS to assist medical students with their transition to university have been discussed in Section 0. The AMSS representative reported that in 2011, almost sixty percent of first year medical students participated in the MedTransit program and one of the main requests was for help in discerning the depth at which to study. Thus peers provided another source of help for students to discern depth. Information from focus groups with the MC indicated that many students consolidated support to discern depth from a variety of sources, as shown by one student's comment: "I did it (worked out depth) through other people, through tutors, just trial and error really" (MS.FG3).

Thus it can be seen that the curriculum was presenting problems for students engaging in their learning because of the difficulties they were experiencing in discerning breadth and depth. They coped in this area through:

- students developing strategies for themselves

- guidance from peers in their own year level and from peers in higher year levels through the two programs run by the AMSS

- help from their CBL tutors, but students encountered a great variation between tutors as to whether they were willing or able to provide strategies to help them discern depth.

8.2.2 *Learning more for understanding*

Whilst students had used some rote learning in Year 12, such as learning facts for recall in examinations, most students claimed that they had also striven for understanding of what they were learning. Many students did not enjoy rote learning: "I mean it worked in the exams where it's like regurgitate etc, etc, but otherwise I don't like functioning like that" (MS.FG1), but they also found it difficult to change to a way of learning where rote learning on its own was not sufficient and they had to constantly strive to understand their work: "I actually find it hard to get out of that Year 12 frame of mind where you go into something and learn all about it and regurgitate it later" (MS.FG2). However, students realised the benefits of learning for understanding. They discerned that although rote learning was appropriate in some areas of anatomy and physiology, it did not provide sufficient

understanding for elaborating on their knowledge in CBL tutorials nor did it help to develop clinical reasoning skills: "I really like it (learning for understanding) I prefer it. I don't like to rote learn and I don't like Anatomy because you have to like learn all of these things and it's just like no context, but like with clinical reasoning it's a lot easier, you understand" (MS.FG2).

The CBL approach used in the medical program at the University of Adelaide is based on the PBL approach that is used in many medical programs worldwide and has been defined as "the learning that results from the process of working towards the *understanding* or resolution of a problem" (Barrows & Tamblyn 1980, p. 18). This process occurs mainly within the context of the CBL tutorial, guided through the facilitation of the CBL tutor, who helps students work towards understanding through activation of prior knowledge, elaboration of this prior knowledge, assimilating new information from the research of learning issues with this prior knowledge to construct new knowledge, and reflection on the learning process.   As they work towards understanding, students are helped to identify the knowledge they need for each case by the development of learning issues, and they are helped to explain how a particular process, normal or abnormal, occurs through the drawing of mechanistic diagrams (mechanisms). As the development of mechanisms is important in helping students with understanding, the support provided for this process will now be discussed as an example of the support available to help students work towards understanding in their learning.

A mechanism is a diagram drawn to illustrate the sequence of events in a process. It is often the outcome of a learning issue that students have investigated between CBL sessions and it can identify any gaps or inaccuracies in student learning, thereby generating more learning issues to be researched. It provides a very important learning strategy for students when they encounter new concepts, because it actively engages the students in making meaning for themselves and relating the new information to their existing knowledge, both of which are features of a constructive learning process (Dolmans, DHJM & Ginns 2005). However some students experienced difficulties in adjusting from learning in Year 12 to using strategies like mechanisms: "it was really different 'cos we had never done it before, because in Year 12 it was just sentences, paragraphs and all that" (MS.FG4). The SRs on the Curriculum Committee confirmed that whilst students realized that being able to develop a mechanism was an important strategy to help their understanding, many of them struggled with this process. The MC requested that the SRs reported their need for help in this area to the Curriculum Committee but the SRs did not comment as to the outcome of taking this concern to the Committee.

Students varied in the time it took them to learn the skill of developing mechanisms, and even by the mid-year examinations, one student did not feel competent in this skill: "like we spent two hours on learning issues and by the time we got to exams and we had to reproduce mechanisms I just didn't know what they were" (MS.FG4). However, students who were competent in developing mechanisms described how for them, a mechanism could: "really help my understanding, especially like linking you know, symptoms with like the disease process or whatever, and I don't know why, it just really helps me" (MS.FG3). Students described how mechanisms also helped them to develop

their clinical reasoning: "then you can also apply that to the clinical reasoning within the cases, it's not this process, it's a process of one thing leads to another which leads to another, is often very logical and you can reason your way through it whereas anatomy is just rote learning pretty much" (MS.FG2). Mechanisms also provided a structure for students to help them recall their learning: "with mechanisms it's kind of like a flow chart and you can add in like pictures and colour, and like your brain remembers pictures and colours so it's a lot easier to remember a mechanism than like a list of dot points" (MS.FG2).

Students reported great variation in the help provided by CBL tutors for students to become proficient with mechanisms. Tutors who offered little guidance in the process did not intervene when students seemed to spend excessive amounts of time recording mechanisms on the whiteboard during tutorials, but other tutors would offer students specific strategies, such as using a computer program called "Bubble" to draw their mechanisms:

> I had one student who I think I gave feedback every single day for the first half of the semester, and ....she would come with slathers and slathers of work but she had none of it in her head, all of it was in the book. And finally she said 'Okay, I'll do it' and she started drawing flowcharts with the Bubble program and all of a sudden she didn't look at her book. It was all in her head (T.FG2).

One CBL tutor found it difficult to assist students with the development of mechanisms because students were accustomed from studying in Year 12 to summarising material in dot point form, and he described how students "read through the text book and come back with twenty pages of notes which they've written" (T.FG2). He advised students that this way of studying did not help to develop understanding and told them that "if you can't draw a mechanism for it to be able to link those pages together, then there's no point bringing it" (T.FG2).

Another source of help for students in developing mechanisms came from their peers through the programs run by the AMSS, which provided the opportunity for students to discuss the difficulties they were experiencing and to practise their skills in this area.

However, even by second semester, some students were still struggling with development of mechanisms and commented on how they would have appreciated more guidance in this area: "to show how to put that information into a mechanism almost certainly would help, because I'm only just starting to get how a mechanism works" (MS.FG1). The fact that by second semester, many students had realized the need to use learning strategies which constructed meaning and helped their understanding of the cases they were studying indicated the development of a deeper approach to learning. This approach is desirable for medical students because it is seen to result in a more effective medical practitioner (Reid, Duvall & Evans 2005). Students were now able to reflect on how important it was for their learning in the context of the medical program to provide them not only with knowledge, but also with sound understanding that would enable them to apply the skills relating to this knowledge both now and in their future professional practice.

Thus it can be seen that the difficulties students experienced with a curriculum that required learning for more understanding were affecting students' engagement with their learning. Consideration of the assistance that students received in the development of mechanisms has illustrated the variation in the approaches:

- Guidance from CBL tutors varied and some tutors found it difficult to teach this skill.

- Peers in the programs run by the AMSS provided help in response to requests from students.

- Some students perceived guidance in this area to be inadequate because they were still unable to develop mechanisms in the second semester.

8.2.3   Adapting to the CBL process and the role of the CBL tutor

Students were introduced to the CBL approach to teaching and learning by two orientation lectures to the whole cohort presented by academic staff from the MLTU (as described in Section 1.3.3). Of the few students who remembered these sessions, most reported that as they were held in a lecture format with the whole first year cohort, they did not help students to understand the CBL process and how it differed from their experiences of teaching and learning in secondary school. They did not find that the sessions prepared them for what to expect in their CBL tutorials. Students were provided with so much new information in the first days and weeks of the medical program that one student commented:

> At that time it was so overwhelming, meeting new people, all of a sudden we are in small groups with a complete stranger, who was a doctor and going to be our tutor, and we don't know what to do with each other, we don't know what CBL is and learning all this extra stuff, you can't take it all in at week one" (MS.FG1).

Once CBL tutorials commenced, students were required to participate fully throughout each tutorial in identifying significant aspects of the case being studied and formulating hypotheses, learning issues and mechanisms as previously described in Section 2.6.2, page 46. Comments from the MC and their CBL tutors revealed a great deal of variation in how much guidance students were given in the CBL process by their tutor. Some tutors provided strategies to help the group run the session, such as suggesting that for effective time management, students prepare an agenda for each session: "we (the CBL group) do our own agenda, they would plan the session, they would plan how much time they were going to need and *I did actually tell them to do that right at the beginning*" (T.FG2, emphasis added). Some tutors felt they should keep the discussion focussed when students were wandering too far from the learning objectives in their discussions: "I do steer anything that is really and truly way off track of the learning objectives" (T.FG2). Other tutors allowed students to work out for themselves what strategies were needed and when they were needed: for example, if the group ran out of time to complete everything in one session, then the students would see the need to develop and use an agenda during tutorial sessions.

CBL tutors reported that students developed their own strategies for conducting the CBL tutorial session and one of these strategies included setting up a Face Book group: "they did have a Face Book group and then they would decide in between sessions what they wanted to discuss, so they'd come in and they would have already done an agenda, and gone 'Okay, so this session we want to do this, this and this'" (T.FG2).

An important part of the CBL process is that in the tutorial group, students elaborate on prior knowledge and knowledge being constructed, and work collaboratively through the case. CBL tutors described how the strategy of creating a "safe environment" was important to encourage students in elaboration of their knowledge and working collaboratively, especially in first semester when students' limited knowledge bases could make them reluctant to contribute to discussions if they were unsure of how correct their information was. CBL tutors created a safe learning environment by encouraging students to participate in discussions and to feel free to make mistakes, knowing they would not be penalised: "I tell them it's going to be a safe environment where they can say whatever they want to say, and even if it's wrong, it's important to say it so that everybody can discuss it" (T.FG2). Where a safe environment was not created, participation in CBL tutorials was stressful for some students. One student described how having different tutors had provided very different experiences for herself and a friend: "I've had two fantastic tutors so far and really good groups and other people dread CBL but I have a friend who doesn't sleep the night before 'cos that person's so worried about what's going to happen" (MS.FG1).

CBL tutors believed that the strategy of improving group dynamics was closely linked with creating a safe learning environment: "if the group dynamics are not working then there is no safe environment" (T.FG2). For the group to be functioning effectively, tutors would encourage quieter students to participate more and encourage dominant students to be better listeners. They explained to students that there needed to be a balance between a dominant student constantly giving input on the one hand, and constantly questioning and encouraging other students to provide answers, on the other. Tutors also encouraged students themselves to identify the roles of all the members of the group so that students could be responsible for the group dynamics: "if all students know where they are in the group and what their strengths are, then they also know what their weaknesses are and therefore they know what they have to work on" (T.FG2). Strategies used by tutors to encourage quieter students to participate included directing questions to that student rather than to the whole group, asking those students to chair a CBL tutorial session and asking them to be the scribe for the session. Many quieter students realized the need for greater participation and one tutor described a strategy employed by one of her students was to stop worrying about what other students in the group thought about them. This student commented to the tutor, "I stopped caring about being wrong and I stopped caring about interrupting people and I went for it 'cos I knew that if I didn't, I was going to fail" (T.FG2).

An important way in which the curriculum could engage students in learning was in the development of learning issues in their CBL tutorial, because this helped students to identify what new knowledge

they needed, and reporting to the group next session provided the opportunity to elaborate on this new knowledge. How students were supported in the development of learning issues varied greatly according to the strategies used by their CBL tutor: "we'd end up spending at least like an hour on learning issues and then this semester our tutor, we don't do the learning issues at all unless there's problems, there's like a massive difference between what we've been doing in the two different tutes" (MS.FG4). One CBL tutor reported directing his group to use time more efficiently by suggesting that students prioritise the learning issues they had identified in a session: "at first they think they have to cover them all and talk about them all. Well then you say '.... just focus on the ones that you really think are necessary to discuss now' " (T.FG2). Where tutors provided little direction with learning issues for their group, students described how they perceived that time was wasted going through learning issues which everyone understood, or learning issues which just involved drawing diagrams on the board and not relating them to the symptoms or hypotheses in a mechanism. Often the diagrams were just being copied from books and this seemed to be time wasted at the expense of other activities such as the development of mechanisms.

After the first few CBL tutorials, students discovered that they were expected to participate in every tutorial whether by building hypotheses, explaining a learning issue, developing a mechanism or giving a case presentation and this required them to spend a good deal of time in preparation. In Year 12 they had found that they could remain undetected if they were unprepared because the teacher would usually provide the information they were supposed to study, but the requirement to participate in each CBL session provided a strong motivation to study. In order to improve their assessment on participation in CBL tutorials one student, who judged his tutor to be lacking in clinical expertise, described how he decided to speak more often, even if what was being said had little substance: "if you've got a tutor who doesn't know any background information but hears you talking a lot, they will mark you higher" (MS.FG1). Another student received poorer assessments when he was trying to assimilate what he had prepared outside the tutorial session, with other students' information (so was not verbally participating), than he did when he cut down on study time and contributed more information, which he felt was of poorer quality, to group discussions.

Some students were adapting well to the role of their CBL tutor as a group facilitator and not a provider of knowledge, and realised that they should now be constructing their own knowledge: "sometimes she does spend a lot of time giving us knowledge when I think we should be learning that ourselves" (MS.FG3). Other students believed that, especially in first year, it was important for them to be certain that the information they were taking away from tutorial sessions was correct:

> In first year the content is even more important because at the moment we are essentially starting out knowing more or less nothing. We need to do it from a knowledge base before we can then apply our knowledge base (MS.FG3).

> Content is really important, like you should be saying the right information and if you're not someone can correct you or you should know to correct yourself (MS.FG1).

Once again, students encountered variation among tutors in the way they answered content or knowledge questions. Some CBL tutors employed the strategy of not providing answers to questions that students had found difficult to work out for themselves, in order to encourage students to be more self-directed and to search more deeply for the answer. This could be a source of frustration for students, who often attributed this to the tutor's lack of knowledge which they felt reflected on their lack of clinical expertise. Students believed they learned better from tutors who had a clinical background or at least a sound knowledge of the cases being studied. Although some students were concerned that their knowledge base was not being developed if they did not reach conclusions on learning issues at the end of a session, other students were able to discern that the strategies used by their tutors were helping them to develop skills that were equally or more important than developing knowledge, because these were the skills they would be using throughout their professional life: "so I think the process is really important 'cos that's what you'll actually be using, but you have to have all that basic knowledge in first year but the detail probably won't carry for that long" (MS.FG1). Some students were therefore reaching a level of cognitive development where they could differentiate between the knowledge component of the medical program and the process component which was helping them to develop skills for lifelong learning and for practising as a medical practitioner.

The provision of feedback within a CBL tutorial group was an important part of the CBL curriculum to enable students to improve their engagement with learning. Apart from the written feedback provided to students when their tutor wrote their mid and end-of-semester assessments, verbal feedback to the group as a whole was provided by the tutor about how the group dynamics were functioning, about how individual students were contributing to the group and their performance in certain areas such as formulating hypotheses and clinical reasoning. CBL tutors also helped students to develop skills in providing feedback to the group on how it was functioning and to the tutor on the effectiveness of their role. One tutor described how feedback worked for his group: "I always give them feedback on what I think about the whole group process, and then I ask everybody individually if they could say something about how they think the group is doing, how they think they are doing" (T.FG2). Tutors felt that giving feedback to individual students helped them with their learning and was an important strategy for: "highlighting their strengths and using strategies to help overcome their weaknesses: as soon as you highlight their strengths and give them confidence and then you can talk about their weaknesses" (T.FG1). However some tutors felt that it was difficult to give feedback and to maintain a good relationship with the group: "I mean I'm guilty of being too nice ... maybe confusion here that you can't be nice and give effective feedback at the same time" (T.FG1). Tutors reported that students were reluctant to be critical when they gave feedback on the participation of other group members, but quite tough when giving feedback on their own performance:

> I've asked them to (give) feedback on other students and they're so polite, I found it not worthwhile. But when you ask them 'Tell me something that you think you do really well and tell me something you think you can improve on', they are ... really harsh on themselves (T.FG2).

Students valued feedback that indicated whether they were developing the right skills for learning via the CBL approach and expressed a strong desire for feedback from their tutors early in the semester and for the feedback to be honest: "if you know that they will tell you if you're failing then that's sort of a comfort" (MS.FG1). Students also sensed that some tutors felt uncomfortable giving honest feedback in front of other students, yet they wanted the feedback to be specific so that they knew exactly what aspect of their learning they needed to improve. They also wanted the feedback to be consistent and some students were confused to find they had been given a low grade for their performance in CBL tutorials at the end of the semester when they had received good verbal feedback during the semester: "I got positive feedback every feedback session and yet I failed both assessments in my CBL" (MS.FG1).

Comments about time being wasted through too long a discussion of learning issues, or trying to include everyone's ideas in drawing a mechanism, showed that some students were still discovering what the process of CBL was all about. They did not appreciate that during this time that they perceived as "wasted time", they were developing important skills needed for the CBL approach, such as elaborating on their knowledge and learning through collaboration. Some tutors were allowing students to discover for themselves what strategies were needed but many students struggled with lack of direction early in the course and wanted more consistency amongst CBL tutors regarding the strategies they gave students for the CBL approach.

> It would be easier if our tutors in first semester actually showed us how to do this and what is expected from us, because our tutor just sat us down and said "Okay, go", and he didn't really tell us "This is how you do this, this is an agenda", you have to deal with this stuff (MS. FG1).

> Tutors get briefed on like what's going in CBL, but it seems like it doesn't matter what group you go to everyone's doing something different so it should be a lot more structured (MS. FG4).

The two SRs also confirmed how students were struggling with the process of the CBL approach.

> I notice that students had a lot of trouble learning CBL and learning how to do it and it's obviously a very difficult thing to introduce as a concept. I now realise I didn't really know what it was. ... if CBL (process) was slightly more structured it would be easier" (SR).

Many students believed that a curriculum in which they studied medical cases via the CBL approach helped them to engage in learning. "I also like it because it's not 'Okay, physiology, we're going to learn about how the blood vessels work': you're actually personalising the patient to a case and the disease." (MS.FG2). The use of cases facilitated their learning because it was in the context of a practitioner: "I don't think I could just sit down and read about the heart and remember it all, but when you have a patient in front of you, you can relate it to them, you can see it happening. It's not just completely abstract" (MS.FG2). Students perceived that the skills they were developing through the CBL approach were helping them to become self-directed learners. One student described how being a self-directed learner gave him more freedom to expand the breadth of his learning than he had experienced with a set syllabus in Year 12: "it just gives you a lot of freedom to go off, you're not

restricted to ... 'Okay, now let's read chapter 13 of the physiology text book'" (MS.FG2). Students found that strategies for being collaborative in their approach actually helped their learning process:

> I enjoy that sense of community with everyone in your cohort and even older year levels (MS.FG3).

> You have so many people that you can talk to if you don't understand something, even though it's not necessarily teachers, you can discuss it with a whole lot of different people (MS.FG4).

CBL tutors acknowledged that there were several areas that created stress for them in their role of engaging students in learning by facilitating collaborative knowledge construction. One of these areas was the facilitation of group dynamics, and some tutors were concerned that at times they were unable to facilitate the group as their priority at the beginning of a case was to develop an adequate knowledge base: "Wow, I've got these nine students and I'm trying to work out the case, let alone work out the group dynamics" (T.FG1). Writing assessments for students in their tutorial groups also created stress for tutors: "when I did my first introductory training, it did not prepare me at all for what I had to do, and for the assessments, which I find, you know, taxing as we have to write so much on each student" (T.FG1). Tutors were seeking better feedback on their performance as facilitators, and they questioned the value of feedback from students in their CBL group: "nobody is giving you feedback because the students don't know how it's supposed to be done" (T.FG2). CBL tutors also requested more opportunities to discuss issues with colleagues, as they had done in the focus group: "there are things that you really don't realise that you're not doing, like now I'm hearing about the agenda and some things that I think 'Oh yeah, that's actually a good thing to do next time'" (T.FG2). Tutors suggested that they would benefit from training that included feedback from peer appraisal, the provision for new tutors of a mentor who was more experienced as a CBL tutor, and the opportunity to observe an experienced tutor facilitate a whole case before they began tutoring: "sit in with an experienced tutor, watch how it's done, maybe start asking some questions while the other tutor's still in control, and just get your confidence up" (T.FG1).

In summary, it was difficult for students to adapt to a CBL curriculum that required engagement with learning and teaching in a very different manner from that experienced in secondary school. The guidance students received in adapting to the CBL process and to the role of the CBL tutor came mainly from the CBL tutors themselves. Evidence from students has shown that this varied in the following areas:

- creation of a "safe" environment" for students
- facilitation of the group
- direction in the actual running of the tutorial session
- the provision of answers to content questions
- direction in the development of learning issues
- provision of feedback.

Evidence from CBL tutors showed that they lacked confidence in some of these areas and would appreciate professional development to help them further develop their facilitation skills.

8.2.4   Assistance from administrative staff for a curriculum that engages students in learning

The Transition Pedagogy model emphasizes the importance of partnerships amongst academic and administrators in the realization of a coherent first year experience (Kift, Nelson & Clarke 2010) both at an institutional and at a program level. In the medical program in this research, the three administrative staff members who worked on curriculum and assessment described how one of their roles was to ensure that the curriculum was engaging students in learning at the appropriate level. They did this through facilitating the process of reviewing the level at which course content was delivered to first year students. One staff member believed that "in Year 1, that is critical because they are transitioning and they don't necessarily know how to learn in an adult manner" (AS.FG2). This involved scheduling many meetings for academic staff and finding common times to suit all these busy people.

These administrative staff members also assisted students' engagement in learning through their scheduling of curriculum lectures, tutorials and assessment. During the first two weeks of semester there were no CBL tutorials, but foundation lectures were scheduled "to help them adjust in good time and they also have some learning activities that would then assist them" (AS.FG2). These staff also communicated directly with lecturers to try to ensure that the timing of delivery of content in lectures was coordinated with the cases that were being studied in CBL tutorials. To help transitioning students understand the assessment process, which differed greatly from assessment in Year 12 and in other university courses from which students may have transferred, these administrative staff ensured that at the beginning of the academic year, all transitioning students were provided with Assessment Documents: Part A contained general information and Part B, information specific to first year assessment. Lecturers discussed these documents with students, who were given the opportunity to ask questions and then required to sign the documents to indicate their understanding of the contents. One administrative staff member, with the cooperation of academic staff, improved this document for transitioning students by simplifying the language and removing any confusing repetitions. These academic staff were also responsible for scheduling a formative examination midway through first semester for first year students, and the value of this examination to students has been referred to in Section 8.2.1.

In summary, administrative staff who worked on curriculum and assessment planning indirectly assisted students' engagement with learning. They did this through ensuring timely scheduling of curriculum lectures and tutorials, reviewing the level of course content and helping students with their understanding of the assessment process.

It can be seen that in this first area of the Transition Pedagogy model, curriculum that engages students in learning, medical students:

- developed their own learning strategies and consulted with peers both in their own year and in higher year levels

- were provided with guidance in the form of scaffolding both within the case materials and provided by their CBL tutors, but experienced variation in the quality and quantity of scaffolding that they received from tutors

- were provided with indirect assistance from administrative staff through the provision of a curriculum with suitable timetabling of learning sessions, and help to develop a good understanding of the assessment process.

Findings in relation to the second and third areas of the Transition Pedagogy model will now be described. A range of comments from student about their perceptions in these two areas is provided in Table 47, p.166.

8.3   PROACTIVE & TIMELY ACCESS TO LEARNING AND LIFE SUPPORT

This dedicated area of the Transition Pedagogy model has been described as raising students' awareness of the support available and ensuring that students have timely access to support services (Queensland University of Technology 2002b). The actual strategies used by students themselves to access support, and by their CBL tutors to provide learning support, have been discussed in Section 8.2. Results will now be presented about students' awareness of this support and the timeliness of access to this support for students when they needed help with learning (academic) or life (administrative and personal) matters.

There was a range of comments from students about this support (see Table 47, p. 166). Students needed to acknowledge their need for help in a particular area and seek assistance for themselves from any of the sources available. Support was accessible within CBL tutorials as they worked through each case, but for individual problems, it was often their peers that they would seek help from as they were most easily accessible at the time. Support was often sought on an informal basis, but the representative from the Adelaide Medical Students' Society described how help from peers was also available on a more formal basis through the MedTransit program (see Section 0, page 93).The program is not designed to be another Peer-2-Peer, but a 'buddy system' to help with the transition and involves older students providing guidance to the first years regarding study techniques and readily available resources, and being an easily accessible contact point for any questions.

Students would also consult their CBL tutors for support with learning, but comments from students about access to help showed how this would often depend on their perception of their tutor's knowledge base:

> I think I would ask peers just 'cos they're around us all the time, so it's easy (MS.FG4).

I would look for help from first years first and then older students after that (MS.FG4).

Sometimes when I had a CBL tutor who was a doctor, she was really good at answering questions for us (MS.FG4).

If students had ongoing and more serious problems with life and learning matters, they needed to approach administrative staff in the office of the MLTU. Students commented that it was difficult to remember the names of staff to contact from the orientation lecture, and confirmed that the information about these staff had not been effectively conveyed to students.

You are given so much information in the first two weeks of Uni that you're not really going to remember who (to go to for help) (MS.FG4).

The thing that I found for a really long time, I didn't know who to speak to. I just didn't really know like, I know the MLTU is there but there is so many people and like who's the appropriate person to approach? (MS.FG3).

Students who did approach administrative staff in the MLTU reported that they were well supported. The staff described how they employed many strategies for ensuring that access to learning and life support was timely and proactive for the students. They provided life support with administrative matters and when necessary, liaised with academic staff to ensure that learning support was provided. In the first weeks of the first semester, students needed more support in administrative matters than academic matters and staff dealt with queries from students and parents regarding the dates and times of orientation lectures, the enrolment procedure and students' personal timetables.

Table 47. Students' comments on the second area of the Transition Pedagogy model: proactive and timely access to learning and life support

Range of comments from domestic students		Comments from international students
Most positive	Most negative	
You have so many people that you can talk to if you don't understand something even though it's not necessarily teachers you can discuss it with a whole lot of different people. (MS.FG2) I would always go to the MLTU if I have a problem with anything. They usually know where to send you if it's not their problem. (MS.FG3)	The thing that I found for a really long time, I didn't know who to speak to. I just didn't really know like, I know the MLTU is there but there is so many people and like who's the appropriate person to approach? (MS.FG1) You are given so much information the first two weeks of Uni that you're not really going to remember who to go to for help. (MS.FG4) They seem to have a lot of protocols about what to do when you do contact them and then they never really went to the first step and how to actually get there. (MS.FG3)	For me I did know who to contact and so admin staff of the MLTU say 'International Program' and make sure I see the Coordinator or else the CBL person. Any of those and even if we do face some problems and we approach the wrong person, most of the time those people will tell us the right people. (ISFG5) I think the IP Coordinator plays a role of a mentor to most of us. Like if you're not doing well in CBL like she monitors our progress so if we're not doing well and stuff she is very approachable and we seek advice from her and she's really willing to help us to improve. (ISFG6) It's like having the IP Coordinator in the back of your mind knowing that there's always someone you can turn to for help, it's just a comfort that you know..... (ISFG1)

Students relocating from country areas or from interstate sometimes queried which lectures were compulsory as they requested time to organise life matters such as accommodation. A general orientation lecture for students was held on the first day of orientation week, during which the Manager of the MLTU and key academic staff were introduced, and advice was given about the various orientation lectures for the week and about administrative matters, including enrolment.

Administrative staff realised that as students were receiving so much information on the first day that they would find it difficult to remember by the end of orientation week. Staff suggested improving orientation either by moving this lecture to later in the week or by conducting a follow-up lecture to ensure that students were not overloaded with information early in the week and also to provide the opportunity for them to ask questions that may have arisen during that first week.

Many transitioning students experienced difficulties with the enrolment process. Enrolments into the MBBS program were handled by the Faculty office but individual students were required to enrol into their various classes online and professional staff received many requests for help with this process. Staff often found they needed to provide help with enrolment for groups of students, especially late enrolments from interstate or overseas, and they often also provided support for these students in other areas:

> We (administrative staff) did a couple of groups where there was ten at a time and they were interstate and international and we sat them down and said 'You know we have now enrolled you into temporary classes until we get you enrolled, but also this is where you go for this or food or shopping, or if you need anything come to us and we will help you out' (AS.FG1).

Administrative staff described how students seeking help with their learning would inquire at the MLTU office as to whom they could speak with about their problems. The nature of the problems experienced by students included coping with the workload, not understanding the work, difficulties in CBL tutorials and the uncertainty of whether they were keeping up with other students. Administrative staff referred these students to the Year 1, online Bulletin Board to ensure they were up to date with information that could help them and then arranged a meeting for them with either the manager of the MLTU or the appropriate academic staff member.

Whereas administrative staff in the MLTU office only had contact with students who came into the office, administrative staff in the Clinical Skills Unit were involved with all students on a regular basis during Clinical Skills sessions. Sometimes, students who needed help in first semester would approach administrative staff at the beginning or end of these sessions with their problems. Staff noticed that these students "don't want to be observed again so they kind of sit back" (AS.FG1) and they were concerned that these students could disengage with their learning because they had lost confidence. They tried to "put them on to a tutor from their class so they'll be seen and get some more feedback, to be reassured that they are first years and they're not expected to know it all yet" (AS.FG1).

By second semester, most students who needed learning and life support were confident that they could access this support through administrative staff in the MLTU office. "I would always go to the MLTU if I have a problem with anything as they usually know where to send you if it's not their problem" (MS.FG4).

Thus evidence showed that regarding access to learning and life support:

- Medical students discovered that their peers were most accessible for learning support.

- Administrative staff of the MLTU office were accessible for support with ongoing and more serious problems. These staff could assist students with life matters or to refer them to an academic staff member for help with learning problems.

- Medical students did not often access learning support from CBL tutors and would only ask for support with the content of their learning if they were confident in that tutor's knowledge base. The reasons for students seeking support from their CBL tutors have been discussed in Section 8.2.3 page 158 and these findings are supported by evidence in the literature that "the tutor can be considered a last-resort device. Students seek guidance from their tutor mainly when everything else fails" (Schmidt & Moust 2000, p. 40).

8.4   INTENTIONALLY FOSTERING A SENSE OF BELONGING

Fostering a sense of belonging amongst students is an important element of the Transition Pedagogy model (Nelson et al. 2010). Quantitative results from Scale 3 of the FYEQMed (see page 120) identified a significantly stronger sense of identity amongst medical students than general university students. Now the qualitative results will be presented from the focus groups, which enabled the factors that built this strong sense of identity to be explored and also enabled investigation of whether it was stronger within or between the different year levels.

Students felt a strong sense of belonging within a community of students across all year levels that contributed to their enjoyment of studying in the medical program.

> That sense of community with everyone in your cohort and even older year levels is great (MS.FG3).

> It (sense of closeness as a group) makes it much more fun, much more enjoyable. I love coming to Uni (MS.FG2).

This strong sense of belonging developed partly because the nature of the medical program resulted in students from each year level spending most of their day together. Unlike students in other programs who could be studying different subjects within a program, all medical students studied the same three domains comprising the curriculum and therefore attended lectures, practicals and tutorials with the same students. Learning activities were all held in locations within the Medical School, limiting the contact of medical students with those from other university programs.

It's a community and (in) other courses you have different subjects and different people and different buildings and all that, but in Med you're doing all the same stuff with all the same people; there is a real 'These are the people that you're going to be spending the next six years of your life with' sort of thing (MS.FG3).

Students identified several areas of academic and social support provided by members of the Adelaide Medical Students' Society (AMSS) that helped to develop this strong sense of belonging and identity. The AMSS organised social events for medical students, provided academic help for transitioning students through the Peer-2-Peer and MedTransit programs, and help with learning in Clinical Skills. Students believed that the social functions organised by the AMSS helped to strengthen the bonds that they were developing through studying together, and to strengthen bonding across the different year levels of the program: "I think the AMSS really works hard to put together a lot of events, I've been to pretty much all of them and I love it as you get to see everyone outside of University and I'm from interstate so being away from home, I think it's good to keep me occupied "(MS.FG2).

The SRs described another reason for the development of a sense of belonging and identity amongst the students as being the model of a very close medical fraternity displayed to the students by those lecturers who were also clinicians, and this was modelled both in their teaching and their clinical roles. This may have also marked, for medical students, the beginning of the development of a sense of identity with their chosen profession.

Table 48. Students' comments on the third area of the Transition Pedagogy model: intentionally fostering a sense of belonging

Range of comments from domestic students		Comments from international students
Most positive	Most negative	
That sense of community with everyone in your cohort and even older year levels is great. (MS.FG4) I think the AMSS really works hard to put together a lot of events. I've been to pretty much all of them and I love it. You get to see everyone outside of University and I'm from interstate so being away from home I think it's good. (MS.FG1) Having the Med Revue is lots of fun and I think that also helps as well in giving people a chance to do stuff outside of Medicine but still with the Medical people. (MS.FG3) Having a sense of closeness as a group makes it much more fun, much more enjoyable. I love coming to Uni. (MS.FG3)	There were no negative comments	Just we feel really welcome; it's been a very nice environment coming into it. It's not hostile. We could have come in thinking "Oh no, what if they are not as friendly or not as nice or if there's a bit of discrimination or something like that", but there wasn't at all. Everyone is so welcoming and helpful. (ISFG7)

Evidence has therefore shown that the strong sense of belonging that existed amongst students of the MC was fostered by:

- the large amount of time that students spent studying together in the same location

- social activities organised by the AMSS

- the learning support provided to students through the two academic programs organised by the AMSS

- modelling of a strong sense of fraternity by clinical teachers.

8.5   SUSTAINING ACADEMIC-ADMINISTRATIVE PARTNERSHIPS

Strategies for sustaining academic-administrative partnerships can have implications across other dedicated areas of the Transition Pedagogy model, as sustainable partnerships can ensure timely access to support for students and support for a curriculum that engages students in learning. Within the medical program in this research, administrative staff situated in the office of the MLTU worked with other administrative staff and academic staff involved in the medical program. Administrative staff described how the MLTU manager and academic staff had clearly communicated to them the roles of different staff members in offering support to students. Consequently they felt confident to offer first-line support to students seeking help with either academic or personal problems. These staff could seek advice freely from the MLTU Manager, they could refer students to appropriate staff members for help if they could not provide it themselves and new staff members were able to seek help from experienced staff. For administrative staff, the MLTU manager had "made it clear that it's not our role to counsel them ... our job is to find the right person that they need to speak to" (AS3). These administrative staff were satisfied with the extent of their role in providing support for students and did not wish for any greater involvement.

However, lack of communication to administrative staff about absences of academic staff such as tutors, and changes to lecture schedules, hampered their ability to convey this information to students in a timely manner. This resulted in students panicking that they may have missed a learning opportunity and frustration for administrative staff who "feel awful that we can't help them because you know, they are all scared little rabbits [running around without direction]". (AS.FG1) Administrative staff suggested that this situation could be improved by holding regular meetings solely for administrative staff. A formal meeting for all staff in the MLTU, both administrative and academic, was held monthly to provide updates on the different areas of work, and it was suggested that regular meetings for administrative staff only would enable them to be updated with information. They considered that this was especially important during the first few weeks of the academic year when, as one staff member commented, "there were a whole lot of issues and that probably should've been resolved quicker perhaps if we had had (a meeting) at least every four days" (AS.FG1).

Information from the MLTU Manager confirmed the difficulties experienced by administrative staff in communicating with lecturers: "If they are a clinical person something pops up and they just expect that you can move their lecture, so the lecturers don't necessarily have a really good understanding of the importance of that lecture in the connected case" (MLTU Manager). The MLTU Manager described how transitioning students often found it difficult to cope when a lecture was out of sequence and would sometimes "choose not to attend because they consider it is irrelevant now" (MLTU Manager) and therefore they miss that section of work.

Another problem for administrative staff concerned coping with the problems of diversity groups within the transitioning cohort as they received no prior information from the Faculty of Health Sciences about these students. In the past, diversity groups in the MBBS program had mainly been composed of Indigenous students and international students, but the MLTU Manager described how in recent years, the diversity groups had included mature-aged students and international students who were entering Australia through New Zealand and were more difficult to identify than international students coming directly from Asia. These students had completed their final year of secondary schooling in New Zealand and whilst their written English was good, some were "quite clearly struggling with comprehension and language" (MLTU Manager). However, because no information was provided by the Faculty about any diversity groups, the MLTU Manager felt that administrative staff had "no way of supporting them, we find them when they fall over basically" (MLTU Manager). She had discovered that some international students initially participated very little in CBL tutorials because they were mentally translating what they heard into their own language and then trying to translate their answers back into English to present to the group. These students hoped that by sitting quietly in tutorials, their lack of language skills would not be obvious. The MLTU Manager explained how improved communication about the nature of diversity in each transitioning cohort was important both to ensure that the MLTU staff had support readily available for these students and to enable administrative staff to allocate students to tutorial groups and groups for practical work, so that diversity students could be evenly dispersed throughout the groups. This finding illustrates the relationship between the second and fourth dedicated areas of the Transition Pedagogy model as improved partnerships for administrative staff within the medical program would enhance timely access for students to learning and life support.

When the relationship between administrative staff involved with curriculum planning and assessment and academic staff was investigated, administrative staff were found to support academic staff in various areas, including providing them with pre-reading material for meetings, documents for the meeting itself and a report of the meeting. They also supported academics who were assigned tasks to complete before the next meeting by "making sure that things move along so that what is discussed at the meeting actually does happen" (AS.FG2).These administrative staff felt that their work was supported and valued by academic staff, shown by the fact that when changes to curriculum or assessment were made through the committees on which they worked with academic staff, decisions to make the changes were made by the group as a whole. Administrative staff perceived their contribution to discussions as important "because we have a perspective of everything that is taught" (AS.FG2). Administrative staff were responsible for notifying absent

academics of any changes to the medical program and for ensuring that the changes were successfully implemented. One staff member saw the role of these administrative staff as "the implementer of decisions, like a spider in the middle of a web" (AS.FG2)

The main barrier to sustaining academic-administrative staff relationships was perceived by administrative staff to be the low number of academic staff currently employed in the MLTU to plan, implement and evaluate the medical program. This created a large burden of work for the very few academic staff members. However there was the possibility that there would be an increase in academic staff in the near future and overall, these administrative staff felt that the strategies for sustaining academic-administrative staff relationships were successful: "we work very closely with (academics) and our opinions and our contributions are valued" (AS.FG2).

Thus evidence from administrative staff showed that administrative-academic staff relationships:

- were based on good communication between the two groups

- enabled administrative staff to confidently provide life support to students and direct them to learning support

- could be strengthened by better communication regarding diversity groups and changes in timetabling within the medical program

McInnis (2003, August, p. 13) reported that it was a challenge to "bridge the gaps between academic, administrative and support programs", and this research has shown that improving communication would help to bridge gaps existing within the medical program.

8.6   SUPPORT FOR INTERNATIONAL STUDENTS

The Transition Pedagogy model recommends that "the first year curriculum must be attuned to student diversity ....(its) design should recognise that students have special learning needs by reason of their social, cultural and academic transition" (Kift 2009, p. 41). International students comprised the major diversity group of the medical cohort (6.6% or 15 students). They participated in the same lectures, tutorials (including CBL tutorials) and practicals as domestic students and so similar guidance from these sources was available to both groups of students. However, international students were provided with an additional source of support and scaffolding through the International Program (IP). A brief description of the program and how weekly sessions were conducted by the IP Coordinator has been given in Section 1.3.4, p. 25. The main aim of the IP was to provide international students with strategies to help their language and their learning through the CBL approach, although domestic students who needed more assistance with their learning were also able to participate in the program. Of the fifteen international students in the MC, eight participated in the focus group solely for these students making a participation rate of 53%. Questions for this group investigated students' perceptions of the IP and how it helped them during the transition process (see Table 17, p. 93).

Results for this section will be presented in the same manner as results were presented for the whole MC in that strategies for international students will also be considered under the areas of the four key strategies of Transition Pedagogy.

8.6.1   *Engaging international students in learning through the curriculum*

For international students to engage with learning in the medical program where so many learning activities require group participation and communication, it was important for them to have good language skills and an understanding of the culture in which they will be learning Medicine. The IP provided assistance for students in the correct pronunciation of not only medical terms, but also colloquial English terms as students recognized that they could experience the following sorts of problem with colloquial English: "I think sometimes we ask questions a bit differently than the Australians do. We would say 'Where do you stay?' and they will like huh?? 'Where do you live?'" (IS2). Students were keen to understand and become part of the culture from which patients they would encounter during their training came, and they expressed appreciation for advice in this area: "she (the IP Coordinator) also helps us to understand local culture and local slangs and helps us quite a bit in assimilating into Australian culture" (IS13).

International students were helped to discern the breadth and depth at which to study by scaffolding in the following areas: provision of extra notes on the cases, guidance as to what resources to use, where they could locate resources and the depth at which to study these resources.

> In the prompts given during CBL they are usually like websites given and some of them are really hard to find and so (the IP Coordinator) will provide us with materials which are from the links provided in the prompts so it saves us quite a bit of time (IS3).

This scaffolding helped students with time-management because they were not wasting time by studying topics in too much detail. Guidance on depth and resources also reassured them of the accuracy of the information so that they could present it confidently in CBL tutorials.

> (The IP Coordinator's) materials do help with us speaking up and I think in terms of going into CBL, knowing that she is always there to guide us, it gives us a bit more confidence in speaking up 'cos you know where you are going with the knowledge and with the information that is given to you in class 'cos (name) is going to guide you. And you know you're not going too much or too far (IS6).

Confidence in their knowledge was also increased by the elaboration of this knowledge as they discussed learning issues and mechanisms with other students.

International students had come from a background in Year 12 that was even more different to the CBL approach than the background of domestic students in the MC. In many schools in Asia, students are still not taking an active role in their learning and international students described their learning in secondary school as:

It was basically rote learning. The teachers just show you some notes and you just pretty much study all night to memorise everything and regurgitate everything out. It's completely no understanding (IS2).

Normally we didn't get interactive learning, we just sit in the classroom and the teacher teached and you just sit there and listened (IS4) .

They found that their learning was being helped by working collaboratively in groups and having the opportunity to elaborate on their knowledge:

But here it's like you can share your knowledge and it's actually much more effective, I feel it's more of interactive learning (IS4).

Like this other system of rote learning I do understand my work as well. It's with the discussion that gives us an added.... kind of like when you speak about it you remember it better so we feel like we have consistent revision going on rather than just studying (IS6).

International students were scaffolded in their development of mechanisms, which was shown to be an important strategy for helping all students to understand their learning: " when we did have problems (with mechanisms), the IP Coordinator would also get us to discuss it all together until we could get to something that we all agree on" (IS8). The development of mechanisms has been shown to be an important strategy for helping all students to understand their learning (Section 8.2.2, p. 155).

The development of the skills required for active participation in CBL tutorials was particularly important for international students in view of the passive roles many of them had in previous education experiences. The IP Coordinator gave high priority to scaffolding students in the actual process of the CBL approach by encouraging them to practise the skills required. They learned how to recognise prompts that their tutors gave them about the case and how to use and respond to these prompts. They were given the opportunity to practise oral responses to their CBL tutors' questions, thus helping with elaboration of their knowledge: "(The IP Coordinator) gets us to talk about what we know and what we don't and try to understand certain things together so it kind of helps you with the CBL process" (IS1).

They were given strategies for speaking up in tutorials and for holding the attention of other group members when they spoke. They were also instructed in how to give case presentations and given the opportunity to practise this skill: "one thing she has helped us a lot is the case presentations 'cos in every session she made everyone do a case presentation so we got more chance to practise, and at the beginning of the year she gave us notes on how to do case presentations properly, so this actually helped a lot" (IS7).

The provision of feedback by the IP Coordinator was important in helping international students with their transition into Medicine. The feedback was timely and specific, enabling students to improve their skills where needed: "the good thing is that she's really, really honest with us so when there is something that goes wrong she tells us straight so we know" (IS5).

Thus the IP Coordinator made explicit to the students the processes that occur in learning through the CBL approach, these processes being activation of prior knowledge, elaboration of learning and learning in context. Her scaffolding provided students with an understanding of these processes. Students were provided with opportunities to practise the skills they would need in CBL tutorials and this practice allowed them to participate confidently when they joined the domestic students in tutorial sessions.

8.6.2 Providing international students with proactive & timely access to learning and life support

Constant access to learning and life support was available to international students through the IP. The IP Coordinator provided academic and cultural support and took on the role of mentor for these students who felt they could approach her with any problem: "I think knowing that (the IP Coordinator)'s there if anything goes wrong.... there's someone you can fall back on and allows you to enjoy the process much more" (IS6). Students knew they could seek support during the weekly sessions of the IP, but outside these sessions, they also felt confident in approaching administrative staff of the MLTU:

> For me I did know who to contact and so admin staff of the MLTU say 'International program' and make sure I see the Coordinator or else the CBL person. Any of those and even if we do face some problems and we approach the wrong person, most of the time those people will tell us the right people (IS5).

International students also found good access to support through the MedTransit program offered by the Adelaide Medical Student's Society:

> We had the MedTransit at the beginning of the year which we had some year two tutors to help us with the CBL process and have a general idea of how many......... so it was pretty helpful (IS4).

8.6.3 Fostering a sense of belonging amongst international students

Quantitative results (Section 6.3.3) showed that international students did not have a stronger sense of student identity than the GC, in contrast to domestic students in the MC, but the strategy of involving these students in a small group that met regularly helped them to establish friendships:

> We don't know each other really, really well when we first came, so it's in a good way. You start introducing each other and we actually had a short like presentation at the start of the program. We kind of know each other a little bit more which is good (IS5).

> Making friends, I made a couple but I think mostly I made most of my friends through this program (IS6).

Students who had relocated from overseas to a country with a different language and culture may have been expected to take longer to develop a strong sense of belonging. However students did not feel alienated in the medical program as shown by the following comment:

> Just we feel really welcome it's been a very nice environment coming into it. It's not hostile. We could have come in thinking "Oh no, what if they are not as friendly or not as nice or if there's a bit of discrimination or something like that", but there wasn't at all. Everyone is so welcoming and helpful (IS7).

Results from the focus group solely with international students showed that the strategies to engage them in learning through the curriculum and to provide proactive and timely life and learning support came mainly from the IP. Scaffolding not only provided students with strategies for learning the content of the cases they were studying, but also helped them understand what was required of them in the CBL process by giving them opportunities to practise the skills they needed for CBL tutorials. For these students, the IP was an important factor in providing a positive transition into first year Medicine and students commented that without the program:

> It wouldn't have been manageable for most of us or all of us (IS2).

> (CBL groups would have been)... probably a lot harder. We would have talked a lot less and gone off in the wrong direction a lot more times, using the wrong resources and spending too much time on certain things. That would have been really tough and stressful (IS7).

8.7   SUMMARY

The qualitative results have begun to provide meaning for the unanticipated findings that medical students experience difficulties in coping with a heavy workload and keeping up with the volume of work during transition. Evidence from several sources has revealed the following outcomes for students in the four dedicated areas of the Transition Pedagogy model:

- The CBL curriculum engaged students in learning by providing them with clinical case material relevant to their chosen profession. It also scaffolded students as they developed strategies for discerning the depth of study, building a knowledge base and learning for understanding. Students were provided with feedback on their progress. The extent to which they were scaffolded to develop strategies varied greatly according to the philosophy and skills of their CBL tutor.

- Students accessed support most readily from peers in their own year and from peers in higher years through two programs run by the Adelaide Medical Students' Society. Help was also accessible from academic and administrative staff in the MLTU. . Students experienced great variation in the quality and quantity of support from their CBL tutors within tutorials and support from CBL tutors outside tutorials was not frequently accessed.

- A strong sense of belonging had been fostered amongst students of the MC through their common curriculum, a sense of joining a profession and the social and academic activities organised by their peers in the Adelaide Medical Students' Society.

- There was evidence of a sustainable relationship between academic and administrative staff to assist the first year experience in all areas except in the provision of assistance during transition for diversity groups within the MC, and in communication of schedule changes in the medical program.

International students were found to be receiving consistent guidance with a curriculum that engaged them both with the content and the process of Case-based Learning through the International Program. This program provided an orientation for these students that extended over at least the first semester. It scaffolded international students in a curriculum that engaged them in learning, provided timely access to learning and life support, and fostered a sense of belonging. Thus successful strategies in the first three areas of the Transition Pedagogy model were provided by the International Program. Students valued the support they were given to engage in the curriculum, especially through scaffolding to understand the theory behind the CBL approach, and the opportunities they were given to practise the skills required for CBL tutorials. The International Program was shown to play an important part in providing them with a positive transition experience.

This chapter has considered separately findings for domestic and international students in their transition year relating to the four dedicated areas of the Transition Pedagogy model. The following chapter will link the quantitative and qualitative evidence to provide a comprehensive picture of the transition experiences for all students, formulate answers to the four research questions in the light of all findings from the qualitative and quantitative research, and consider how the transition experience for students entering the medical program at the University of Adelaide can be improved.

CHAPTER 9.

DISCUSSION

9.1   INTRODUCTION

In Chapter Nine the quantitative and qualitative results presented in earlier chapters are linked to provide complementary evidence on the transition experiences of the medical students. Transition has been described as "not a moment, but rather a dynamic process in which the individual moves from one set of circumstances to another" (Teunissen & Westerman 2011, p. 52). This chapter compares this dynamic process for domestic students and international students in order to investigate the quite unexpected results that domestic, but not international, students experienced difficulties in coping with transition due to a perceived heavy workload and keeping up with a large volume of work. The results provided an unanticipated avenue of exploration because they suggested that a comparison of the transition experiences of the two groups of students would provide valuable insights into the transition experiences of all the medical students in the cohort under investigation.

Comparisons of data on the nature of orientation and scaffolding for domestic and international students during transition provides understanding of why domestic students experienced difficulties in coping. The comparison between domestic and international students involves triangulating quantitative and qualitative data from students, academic staff and administrative staff. The Transition Pedagogy model provides a framework for consideration of conditions for transitioning students in four dedicated areas. These comparisons and considerations provide answers to the research questions which were based on the framework of the Transition Pedagogy model. Finally, the limitations of this research are discussed and, based on evidence collated from the research, a proposal is put forward for improving the first year experience for medical students.

9.2   TRANSITION EXPERIENCES OF THE WHOLE COHORT OF MEDICAL STUDENTS

The use of the First Year Experience Questionnaire (Medicine), provided evidence of a cohort of first year medical students who have had a positive experience of prior learning, whose parents understood what it was like to be a university student, who were willing to commit their time to study both on and off campus, were satisfied with their choice of program, enjoyed studying that program and were socially well adjusted. The demographic data indicated that this was a traditional cohort of students as they were not first-in-family at university, they had been high achievers in their final year of secondary school, and they and their families had high expectations of the first year at university. During their first year, compared with a general university population, medical students had a significantly higher number of contact hours, significantly more hours of private study and spent significantly less time in paid work. The scales of the FYEQMed indicated that compared with general students, medical students had significantly stronger senses of purpose and student identity,

expressed greater satisfaction with their course, were prepared and present for learning significantly more often, engaged in more extra-curricular activities and made more friends. Thus the quantitative results have provided information about students' backgrounds and prior learning experiences, which are important to understand before considering their first year experience at university (Wilson 2012).

Quantitative data highlighted areas where medical students were struggling with transition: it was not the difficulty of the work that was challenging students, nor was it having to adjust to the style of teaching at university (as compared with adjusting to the style of *learning*), but students were experiencing difficulties with the heaviness of the workload and difficulty keeping up with the large volume of work. This finding was supported by students' and tutors' perceptions of Case-based Learning, which were well aligned, except in the area of the work expected of students outside tutorials. Tutors disagreed that outside tutorials there were unrealistic demands on students to develop an understanding of the concepts and principles associated with cases, and an unrealistic quantity of work. Students, however, were neutral about these areas. More effective learning occurs when students' and teachers' expectations and understandings of the learning process are completely aligned (Crisp & Palmer 2009), suggesting that both students and their CBL tutors would benefit from time spent clarifying and making explicit the work that is expected of students outside tutorials.

The difficulties that medical students were experiencing were reflected in two areas. Firstly, the positive correlation between Scale 8, "Comprehending and Coping" and Semester One examination results indicated that for some students, the perceived heavy workload and keeping up with the volume of work detracted from their Semester One results (see Section 6.3.3, p.125). Secondly, the results of their psychological distress levels demonstrated that a significantly higher percentage of medical students exhibited distress in both first and second semester when compared with an age-matched norm (Table 36, p. 131). Although university students in other programs also exhibit distress levels higher than the age-matched norm (Leahy 2009), the distress levels of the medical students in this study indicated that the changes being experienced were likely to be contributing to significant distress for the cohort. These changes were identified from the qualitative data from students, student representatives and their CBL tutors (Chapter 7) as having to determine for themselves the breadth and depth at which to study, finding that rote learning was not sufficient for developing good understanding and adapting to the CBL process and the role of their CBL tutor. These results on distress levels support findings in the literature that in medical education there was "compelling evidence of the association between transitions and detrimental levels of stress and negative emotions" Teunissen (2011, p. 52).

Qualitative data enabled investigation of the different avenues of assistance available to medical students. A major source of scaffolding to help students cope with the changes they encounter during their transition comes from their CBL tutors during CBL tutorials. These tutorials are pivotal for the integration of the different learning areas of the medical program, and students spend a large number of contact hours with their CBL tutors. Students described a large variation between tutors

with respect to the quality and quantity of scaffolding provided. With the difficulties in discerning depth and breadth, some tutors would advise students about which resources to consult and suggested strategies to ascertain the depth of study (such as always researching with a specific question in mind and stopping once the answer was found). Other tutors gave students less direction and this could be either because the tutors themselves did not know how to advise on depth, or because tutors believed that this was an important skill for students to develop without assistance. Similarly, with learning more for understanding, some tutors scaffolded students in their development of learning issues and mechanisms, while others allowed students to develop these skills on their own. Students described how some tutors allowed discussion of learning issues to dominate a session at the expense of other tasks that were not completed.

Through linking the qualitative and quantitative data, it became clear that students who were receiving little or poor quality scaffolding to help develop skills for discerning depth, and learning for understanding, would experience a heavy workload and find it hard to keep up with the volume of work.

The importance of preparing students for the *process* of Case-Based Learning is discussed in Section 9.4.2, p.186. Medical students reported that they did not feel adequately prepared for CBL tutorials. Scaffolding for adapting to the CBL process and the role of the CBL tutor began in the two orientation lectures to the whole cohort, where the processes of learning and teaching within CBL tutorials were explained, but this did not convey to students the reality of the participation that was required. Students found large variations between their tutors in the scaffolding provided to help them understand the CBL process and in assisting them to develop the skills for participation. Key features of learning through the CBL process are the activation of prior knowledge, relating new information to this prior knowledge, elaboration of new knowledge within a group situation, collaborative learning and reflection on the learning process (Mennin et al. 2003). The inability or unwillingness of some tutors to facilitate these key features could have contributed to students studying for excessive hours outside tutorials as they were inadequately prepared for the *process* of learning through CBL.

Understanding how the role of CBL tutors differs from that of their secondary school teachers can help students adapt to Case-based Learning (Hmelo-Silver & Barrows 2006). Medical students were uncertain of the role of the CBL tutor as a group facilitator rather than a provider of knowledge. Students reported that some tutors would assist them in locating the best resources and advising the correctness of the information they presented, but others would leave this to the group to determine. When tutors encouraged students to find their own answers to questions, students often attributed this to the lack of clinical knowledge and experience of their tutor. Students were often critical of tutors who allowed them to experience the need to develop their own time agendas, to wander away from the discussion topic or to work out how best to give a case presentation for themselves. Students often did not recognise that, by doing this, tutors were actually encouraging students to become self-directed in their learning. Once again this highlights the need for students to be

instructed in the processes of CBL so that they can recognise and appreciate the rationale behind tutors' responses to questions.

Giving and receiving feedback in CBL tutorials was a new experience for many students. Small-group learning has been shown to foster the skills of reflection and critical analysis that are essential to the feedback process (Maudsley, G & Strivens 2000). Reflecting on feedback can help students to improve how they learn and tutors to improve their facilitation skills (Sandars 2009). The provision of feedback in CBL tutorials is part of the learning process, with tutors being required to give feedback to individual students and to the group as a whole, and students being required to give feedback on how the group is functioning and their tutor's facilitation. Medical students received little preparation from their CBL tutors for participating in group feedback, and they reported that tutors varied greatly in how often they provided feedback and in the quality of feedback provided. Students wanted feedback to be specific and honest but many felt that tutors were uncomfortable in giving students negative feedback in front of other students. The verbal feedback from tutors during the semester was not always consistent with the written feedback that students received at the end of semester.

The changes that were required of students in the way they went about their learning were part of becoming an adult learner. The skill of being self-directed is paramount to successful adult learning and involves the ability to plan, carry out and evaluate one's own learning (Merriam, Caffarella & Baumgartner 2007). Whilst medical students were expecting changes in the way they would learn at university, they did not fully comprehend the nature of these changes nor were these changes being made explicit to them. When CBL tutorials commenced, students were keen to be learning about Medicine and many of their tutors were keen to proceed through the case that was being studied in the given time. Consequently, little time was allocated either for discussion about the skills that were needed to become a successful self-directed, adult learner or for the development of these skills. CBL tutors had received training in the nature of learning required by the students but they expected students to be aware of the skills needed for participation in CBL tutorials, and to quickly develop these skills. It became evident from linking the quantitative and qualitative data that students who perceived the demands and quantity of work outside tutorials as unrealistic, were those whose CBL tutors were giving them less or ineffective scaffolding in the *processes* for Case-based learning, especially during their first semester of the transition year.

9.3   TRANSITION EXPERIENCES OF INTERNATIONAL STUDENTS

International students did not experience the same level of difficulties in coping with transition when compared to domestic students. This was an unexpected result as it would be assumed that international students were faced with more challenges than domestic students. These students had relocated from overseas, many were having to live independently for the first time, and they were concerned that not only would they have to focus on their first exams at university but would also

have to attend to personal domestic matters. Given these concerns, it was expected that the mean psychological distress score for international students, as measured by the Kessler Scale for Psychological Distress, would be higher than that of domestic students, but there was no significant difference between the two groups in either Semester One or Two (Section 6.4.2, p. 132).

A key difference between the transition experiences of international and domestic students was that international students were required to participate in the International Program which provided scaffolding of a different nature to that in any other part of the medical program. International students experienced the same orientation to the medical program as domestic students, including the two lectures to explain how cases were worked through in CBL tutorials. However, the International Program provided them with ongoing orientation on a regular, weekly basis, and scaffolding to help them understand and develop skills required for participating in CBL tutorials. This orientation extended throughout first semester and if they were making satisfactory progress, students could elect whether to remain in the program during second semester.

The International Program consisted of weekly sessions in which the Coordinator worked with students through the cases they were studying in CBL tutorials. The scaffolding provided for international students, in the areas of change causing most concern, has been discussed (see Section 8.6, p. 172). International students were helped to discern the breadth and depth at which to study by specifying resources, and providing additional notes about the cases. They were scaffolded in the development of learning issues and mechanisms and so were able to use these skills to improve their understanding and decrease their rote learning earlier in the year than many domestic students. The CBL process was made explicit to them and they were scaffolded in the development of the skills they needed to participate in CBL tutorials. Students were made aware of tutor prompts and how to respond to them, they were given opportunities to practise the necessary skills, including case presentations, collaborative learning and elaboration of knowledge

Students were provided with feedback on their progress in the International Program by the Coordinator. They valued this feedback not only because it was honest, but also because it was specific about the areas needing improvement. The opportunity also existed for students to discuss the feedback they were receiving in CBL tutorials with the Coordinator. The role of the International Program Coordinator was similar to that of a CBL tutor in that she facilitated the discussion of cases as in a CBL tutorial. International students could ask the Coordinator for both academic advice and personal advice regarding accommodation, shopping or generally living in a new and foreign city. They regarded the Coordinator as a mentor who monitored their progress, was approachable for all sorts of advice and willing to help them improve their learning in the CBL-based approach.

Table 49. A summary of the guidance provided by the International Program in the first three dedicated areas in the Transition Pedagogy model

Curriculum that engages students in learning	Proactive and timely access to learning and life support	Intentionally fostering a sense of belonging
Orientation: -extended beyond the first few weeks **Scaffolding**: -not only with content but also with CBL process -helped to develop skills for self-directed learning -provided specific help with depth of study, skills for mechanistic diagrams, elaboration of knowledge **Feedback**: -consistent, specific & honest -opportunities to reflect on feedback	**IP Coordinator:** -provided a readily available, consistent source of help with both academic and personal matter -was considered a "mentor" by international students	**The IP** -provided a sense of belonging for international students early in the year -provided confidence for international students to participate in CBL tutorials and develop relationships with domestic students.

Students found that having access to guidance for different types of problems helped them to engage in and enjoy their learning, because they knew there was always someone willing and accessible to advise them. An international student described how their whole group had benefitted from the extended orientation and extra scaffolding provided by the International Program. They believed that without this program, transition would have been more far difficult for them. The program directed students to the most useful resources, confirmed whether or not their content knowledge was correct and enabled them to confidently participate in CBL tutorials.

Whilst the quantitative data unexpectedly revealed that they did not experience the same level of difficulties in coping with transition as domestic students, the qualitative data has provided information about the nature of orientation and scaffolding received by the international students. By linking the two types of data, it has become evident that, unlike domestic students, the international students were being mentored with general "learning and life support" that enabled them to engage in their learning in a way that did not produce a heavy workload, and to keep up with the volume of work. This implies that the scaffolding for the *process* of Case-based Learning had enhanced their skills for self-directed learning.

Overall (see summary in Table 49, p.184) international students were being provided with effective guidance in the first three areas of the Transition Pedagogy model: a curriculum that engaged them in learning, proactive and timely access to learning and life support, and intentional fostering of a sense of belonging.

9.4   FURTHER EXPLORATION OF THE EXPERIENCES OF INTERNATIONAL STUDENTS COMPARED WITH THE WHOLE COHORT

Investigation of the learning experiences of domestic and international students has revealed differences in the orientation available to each group, the scaffolding they received to help them make the changes needed for a successful transition, and the consistency of guidance to all students from their CBL tutor and to international students from the International Program Coordinator. Orientation is vital in preparing students for a way learning and teaching that is different from their previous experiences (Taylor, I & Burgess 1995, p. 88). In the context of the medical program at the University of Adelaide, orientation should be preparing students for learning and teaching via the CBL approach. In their discussions of embedding transition pedagogy in the curriculum, Kift and Nelson proposed that "...the conceptualisation of a customised first year ... which provides the necessary *scaffolding* ….to assist students adjust to a more independent style of learning, would seem to be the obvious way in which to inspire, excite and motivate new students" (Kift & Nelson 2005, p. 229). The learning experiences of domestic and international students have been described in previous sections and the differences between these experiences will now be summarised.

9.4.1   Orientation

It is now recognised that time must be allowed for transitioning students to adapt to a new set of circumstances for learning and teaching. Kift (2009) described how orientation for this transition also needs to be recognised as a process rather than an event, and for it to be effective this process should occur over time. Orientation for the whole cohort occurred within the first weeks of the semester whereas orientation for students participating in the International Program extended throughout first semester, with the opportunity of continuing into second semester. When domestic students were asked what could be done in first semester to improve their transition experience, their responses reflected the need for ongoing guidance and support with the many changes they were encountering.

The orientation introduced all students to the content of the medical program, but only international students were provided with effective orientation to the new learning and teaching processes of the CBL approach, and help for developing skills for self-directed learning. Taylor and Burgess (1995) believe that, as students are at different stages of readiness for self-directed learning, they need to be prepared for this learning and that this orientation can take place in a manner which reflects the principles of self-direction and provides a paradigm for learning throughout the future years of their medical program. They defined orientation as "…a process in which the learner engages, facilitated by structured learning opportunities. An orientation prepares the learner for an approach to learning that may be new to her/him and which may involve changes to established habits and expectations of learning." (Taylor, I & Burgess 1995, p. 88) and they recommended that any orientation must take into account differences in race and culture of the students. Orientation for international students met these criteria through the International Program which introduced students to a language and culture that was different from their country of origin. In Australian universities there is a tendency to treat diverse groups as separate entities, but it has been proposed that this diversity can improve the transition experience for all students (McInnis 2001a). It is interesting to note that the International

Program was originally developed for international students but has been extended to include domestic students who are struggling with their learning in first semester. The combination of co-curricular and curricular support provided by the International Program warrants further exploration of how the structure of this program could inform the development of a third generation approach to a transition pedagogy for the whole cohort of first year medical students.

9.4.2   *Scaffolding*

There is evidence that appropriate scaffolding can assist students in the development of their learning (Taylor, I & Burgess 1995). The nature of scaffolding to guide students in their transition to learning via the CBL approach was different for domestic and international students. All students experienced great variation in the quality and quantity of scaffolding provided by CBL tutors to help them adapt to:

- significant changes from secondary school:
    - discerning the depth at which to study
    - deciding on and locating resources
    - developing learning issues and mechanistic diagrams
- the CBL process:
    - skills for small-group learning
    - adapting to the role of the CBL tutor
- the feedback process
    - developing skills for giving and receiving feedback
    - provision of consistent feedback

International students received additional, more consistent scaffolding in all these areas through the International Program. Evidence that domestic students, but not international students, were experiencing a heavy workload and struggling to keep up with the volume of work, suggests that CBL tutors needed to be providing additional guidance in these areas.

It is important that students are instructed both in the skills required for self-directed learning via the CBL approach and in the theoretical ideas underlying this approach to learning and teaching (Azer 2011; Hmelo-Silver & Barrows 2006; Moust, van Berkel & Schmidt 2005; Peterson 1997). Students were not seeking "spoon-feeding" for their transition to the medical program, but rather they were seeking ongoing support that was consistent from all CBL tutors. Hmelo-Silver (2007) described how PBL/CBL is not a "...minimally guided instructional approach but rather provides extensive scaffolding and guidance to facilitate student learning" (Hmelo-Silver, Duncan & Chinn 2007). Scaffolding can support students without being overly directive, and the providers of scaffolding need to recognize that "...students differ from one another on how much scaffolding they need, and an individual student's need for assistance differs from task to task" (Hogan & Pressley 1997, p. 2). The scaffolding provided by the International Program Coordinator helped international students in their

understanding of the CBL process and the importance of this "instructional scaffolding" has been emphasised in the development of skills for self-directed learning (Savery 2006).

Domestic students were seeking a sense of direction and structure from their CBL tutors and had expressed concern about what they perceived to be the lack of structure in their course compared with the well-defined syllabi they had experienced in secondary school. It has been proposed that "students in a problem-based curriculum need a minimum level of structure if any useful learning is to take place. ……..If these kinds of structures are lacking for some reason, students will seek structure from their tutor" (Schmidt & Moust 2000, p. 40), and yet the medical students were finding great variation in the structure provided by their CBL tutors.

CBL tutors had differing ideas about the extent of scaffolding needed for transitioning, and expressed varying levels of confidence in their ability to facilitate small group learning and to advise students on how to discern the depth at which to study. Tutors expressed the need to improve their skills in these areas. International students considered the International Program Coordinator to be a mentor who was providing them with the support to confidently adapt to the CBL approach and to the role of the CBL tutor. Schmidt (1995) defined two important qualities of tutors as "social congruence" and "cognitive congruence" and described how an effective tutor is one who has both relevant subject matter knowledge and an "...authentic interest in his or her students' lives and in their learning" (Schmidt & Moust 1995, p. 43). The International Program Coordinator possessed the cognitive and social congruence required to scaffold international students in their development as self-directed learners.

Discussion with administrative staff members about the current scaffolding provided for students transitioning into the medical program revealed misconceptions about the nature of scaffolding. Staff believed that first year medical students should be acting in an adult manner by taking responsibility for their learning, but did not seem to have considered that this is a process that occurs over time. There did not seem to be a good understanding amongst CBL tutors and administrative staff that appropriate scaffolding during the transition process can support students in the gradual development of skills for self-directed learning in a way that is not overly directive , but would enable them to adapt to the CBL approach and thus to cope with a manageable workload.

In summary, three differences have emerged between the transition experiences of domestic and international students. Firstly, international students received a more extensive and longer orientation to the medical program than domestic students. Secondly, they were provided with additional scaffolding, through the International Program Coordinator, that was more effective in helping them to adapt to the self-directed learning required by the CBL process. Thirdly, this scaffolding provided a more consistent source of help for international students in academic, administrative and personal matters, than domestic students were receiving. These three differences explain why, compared with domestic students, international students did not find the workload too heavy, nor were they struggling to keep up with the volume of work. Consideration of these three differences has

highlighted the changes needed to improve transition into the medical program and this is further discussed in Section 9.6, p.190. A key finding was that instructional scaffolding in the process of CBL did not hinder, but seemed to promote, the development of self-directed learning skills in international students and this finding supports evidence in the literature about the importance of this type of scaffolding.

9.5 CONDITIONS FOR MEDICAL STUDENTS IN THE FOUR AREAS OF THE TRANSITION PEDAGOGY MODEL

The Transition Pedagogy model was originally employed to design an undergraduate curriculum and co-curriculum that would provide a strong transition experience (Kift 2009). This study used the model in a different way by beginning with an investigation of the transition experiences of a cohort of medical students. The four dedicated areas of the model will now be used to triangulate data from students, academic staff and administrative staff. Quantitative and qualitative data are linked to continue the exploration of the conditions for transition and how they can be improved to provide a more positive first year experience for all medical students.

9.5.1 Curriculum that engages students in learning

First year medical students reported that the provision of clinical case material helped them to engage with the curriculum. The three main areas where students were experiencing difficulties in engaging with learning were determining the breadth and depth of study for themselves, discovering that rote learning was not sufficient for developing good understanding and having to adapt to the CBL process and the role of their CBL tutor. Students were helped in these areas by strategies they developed themselves and by the strategies used by academic staff, particularly those used by their CBL tutors and these strategies have been extensively discussed (see Section 8.2, p. 150). The most successful strategies were often those that students developed for themselves, or obtained from their peers either informally or through the two programs provided by the Adelaide Medical Students' Society (see Section 0, p. 93.) The variation in the quality and quantity of scaffolding provided by CBL tutors was a major concern to students. In first semester many students were seeking guidance for skills to develop learning issues, construct mechanistic diagrams and give case presentations. Although some tutors provided students with strategies in these areas, evidence showed that other tutors lacked skills in these areas or believed that students needed to develop these strategies for themselves in order to develop self-directed learning. Regarding content, some students found it difficult to obtain from their CBL tutors confirmation that their knowledge resulting from investigating a learning issue was correct. Some tutors lacked the ability, described by Barrows (1980) as important for CBL tutors, to discern whether further questioning to help students confirm their content knowledge was required, or students had exhausted their own information base and the provision of knowledge would actually enhance students' learning. International students received consistent support for engaging with the curriculum from the IP Coordinator, including appropriate scaffolding in the three main areas of difficulty, which also provided them with strategies for adapting to the CBL process.

9.5.2 Proactive and timely access to learning and life support

Life support with administrative or personal matters was often needed in the first few weeks of the year, especially in the areas of enrolment and relocation from interstate or overseas. Students received strong support in these areas and for ongoing or more difficult problems, they could successfully access help through administrative staff in the MLTU office. These staff were able to discern the nature of students' problems and provide the help needed or refer them to another appropriate source of help. The only difficulty experienced by medical students in accessing help was that some students were uncertain as to which staff member to contact for a particular problem as they did not remember this having been made explicit to them during orientation lectures. When medical students needed help with learning or life matters, they often found their peers to be more accessible than their CBL tutors. The importance of peer support to transitioning students has been recognised within transition pedagogy at the Queensland Institute of Technology, through the appointment of a coordinator to oversee peer-facilitated approaches to orientation (Kift, Nelson & Clarke 2010). This suggests that consideration needs to be given to strengthening the support provided to the peer-led programs for medical students at the University of Adelaide, especially in view of the evidence that this is one of the major sources of learning and life support for transitioning students.

9.5.3 Intentionally fostering a sense of belonging

The strategies adopted to foster a sense of belonging amongst first year students in the medical program were very successful. First year medical students had a significantly stronger sense of identity than general first year students (Section 6.3.2, p. 120) and medical students commented on how they identified strongly with other students not only in the same year but also in higher year levels of the medical program. A sense of belonging has been identified as an important factor in helping students engage in the first year experience (Krause & Coates 2008). The sense of belonging amongst medical students can be attributed to three factors: firstly to the nature of the medical program where all students in a year level study the same courses, secondly to activities organised by their peers in the Adelaide Medical Students' Society (including the MedTransit and Peer-2-Peer programs, which were developed to help first year students with their academic work, and social activities for all students both at the beginning of the academic year and throughout the year) and thirdly to students beginning to develop a sense of identity with the medical profession. For international students, the support provided by the International Program Coordinator fostered a sense of belonging, helped them to develop friendships with other international students and gave them the confidence to contribute in other group activities in areas outside the International Program. Domestic students did not attribute their strong sense of belonging to their CBL tutors.

9.5.4 Sustaining academic-administrative partnerships

Although there was a sustainable relationship between administrative and academic staff involved in the medical program, there were areas where change could be implemented. Administrative staff described good communication with academics working in the MLTU. They were able to help students effectively in the first few weeks of the year because they had been well informed about

matters such as the enrolment procedure, orientation programs and student timetables. They were also able to discern when it was appropriate for them to provide help for students and when to refer students to another administrative staff member or to an academic staff member for help with learning. One area where administrative staff did not feel confident in offering support was with diversity groups within the medical cohort, such as mature aged students. (Nelson et al. 2010) emphasised the importance of administrative staff being made aware of "...the diversity characteristics of their incoming cohort and the support features within the Faculty and University that may be of help" (Nelson et al. 2010, p. 25). Administrative staff received no prior notification from Faculty staff as to the nature of diversity groups within each year's medical cohort and so felt unprepared to offer or direct students to assistance that they might need.   Administrative staff also were not always advised in time about absences of lecturers and tutors, and changes to the medical program, to allow timely provision of this information to students. Strengthening communication in this area would ensure that administrative staff could give timely advice to students about when lectures or tutorials had been rescheduled so they did not miss this learning opportunity.

In summary, whilst transitioning medical students experienced great variation in the scaffolding from CBL tutors to engage them in their learning through the curriculum, they were well-assisted through timely and proactive access to learning and life support, the fostering of a strong sense of belonging and sustainable relationships between administrative and academic staff involved in the medical program.

9.6   ANSWERS TO THE RESEARCH QUESTIONS

Chapter One described how four research questions, investigating how students cope with transition into Medicine at the University of Adelaide, were developed around the framework of the Transition Pedagogy model. The answers to these questions will now be considered in the light of evidence from the quantitative and qualitative data.

Question 1. How does the curriculum engage students in learning in the first year of the medical program based on CBL?

Answer. Many students were engaging successfully in their learning through strategies they developed for themselves or through guidance from their peers that they received on an informal basis or on a more formal basis through the two academic programs run by the Adelaide Medical Students' Society. However many students in the domestic cohort had difficulty engaging with the volume of work and the heavy workload, while international students were not experiencing this struggle. CBL tutors varied greatly in the strategies that they were willing or able to offer students in this area. International students were receiving more effective scaffolding to help them engage with the nature of learning via the CBL approach. This has been referred to as "instructional scaffolding" and its importance for learners who are new to CBL has been emphasised (Savery 2006). This suggests that all students of the medical cohort could benefit from more explicit instruction in the

nature of the CBL process and from the opportunity to practise the skills needed for participation. Evidence from students and their tutors suggested that the support to engage in learning provided by their CBL tutors needs to be more uniform across the group of tutors. Students expected to find some variation in the way tutors facilitate their CBL tutorials, but were seeking a better understanding of the role of the tutor in areas including advice on depth, whether content questions were answered or referred back to students, the amount of scaffolding provided for students in the development of mechanisms and learning issues and the manner in which feedback was provided. International students, receiving consistent, appropriate scaffolding, showed no higher levels of distress than domestic students in spite of the additional academic and life changes they were experiencing during transition.

Question 2. How proactive and timely is the access for students to learning and life support?

Answer: Medical students were aware of access to learning and life support which was provided in a timely manner. Students needed to recognise their need for assistance and found that the most accessible help for learning was from their peers. They accessed students in their own year level but students from higher years were also willing to help either informally or though tutoring in the two programs run by the Adelaide Medical Students' Society. Help with ongoing learning problems or with personal problems was available through administrative and academic staff of the MLTU and less through their CBL tutors. International students were similarly well supported by administrative staff and in addition received significant and effective learning and life support through the International Program. Administrative staff reported that assistance for diversity groups within the cohort may not have been readily accessible because they were not notified about these students in time to prepare to help them.

Question 3. How do first year medical students perceive their sense of belonging/identity in the program?

Answer: A strong sense of belonging had been established amongst students of the medical cohort. This was due partly to the nature of the medical program in which students from the same year level spent many hours attending the same lectures and tutorials together. Activities organised by the Adelaide Medical Students' Society, both at the beginning of the academic year and throughout the year, helped students from different years levels get to know each other. For international students, a sense of belonging was fostered through the International Program, which not only helped them to develop friendships with other international students but also gave them the confidence to participate in other group activities with domestic students, such as CBL tutorials. This group participation helped to create a sense of belonging with students outside the International Program. A sense of belonging for both domestic and international students was also fostered as students began to experience the sense of joining a profession.

Question 4. Are the partnerships between academic staff and administrative staff sustainable and effective in the transition into the first year medical program?

Answer: Administrative staff had a strong partnership with academic staff and good communication between the two groups enabled them to assist transitioning students with problems they encountered. However they were not confident to help students from diverse backgrounds with either learning or life matters because they were not informed by Faculty staff about diversity students within the cohort. Changes to the scheduling of teaching and learning sessions occur for many reasons, including staff absences, but these changes were often not communicated by academic staff to the administrative staff in time for students to be informed.

In the previous two sections, consideration of the conditions provided for transitioning students in the four dedicated areas of the Transition Pedagogy model has led to the key finding that the provision of instructional scaffolding in the process of CBL did not hinder the development of self-directed learning skills in international students. Answers to the research questions have highlighted many successful strategies already in place for transition into the medical program and areas where improved strategies are needed. The following section will consider how these improvements can be implemented.

9.7   A TRANSITION PEDAGOGY FOR THE MEDICAL PROGRAM

The unanticipated results of this study that medical students were not coping with transition as well as general students, and were experiencing considerable distress during transition, opened avenues of research framed around strategies in the four dedicated areas of the Transition Pedagogy model. Orientation, scaffolding and CBL tutoring need careful consideration to enable the medical students to cope better and reduce , but improvements in these areas alone may not be the answer to providing the best curriculum for engaging students in learning. This would be a piece-meal approach when evidence suggests that for an optimum transition experience, there needs to be a "move beyond tendency to adopt add-on initiatives " (Kift 2009, p. 58). For many tertiary institutions this requires the acknowledgement that the first year of their programs needs special consideration (MacDonald 2000), which may involve the design of a curriculum specifically for the transition year. It has been argued that "an optimal first year experience should be framed around intentional curriculum design that carefully scaffolds, mediates and supports first year learning" (Kift, Nelson & Clarke 2010, p. 11), and for Kift and Nelson this resulted in a transition pedagogy that transformed the first year experience at their university.

Therefore, for the medical program at the University of Adelaide, academics involved at the level of governance through the various committees directing curriculum, teaching, learning and assessment, would firstly need to acknowledge the requirement for a curriculum specifically for the first year, and distinct from the other five years, of the program. It has been emphasised how important it is for curriculum design to be carried out in "an institutional environment that is committed to an optimal first year experience both at the policy and practice levels" (Kift, Nelson & Clarke 2010, p. 10). Members responsible for curriculum governance would then need to develop

policy for a transition pedagogy based on a third generation approach that could be implemented through the practice of combining co-curricular and curricular approaches. Resource implications would need to be carefully considered in implementing this transition pedagogy, especially in the provision of appropriate orientation and scaffolding for the first year experience, which may involve the reshaping of professional development for CBL tutors. Evidence from this research, about strategies in the four dedicated areas of the Transition Pedagogy model that extend across all areas of the curriculum, could be used as a starting point to inform this practice as follows:

1. A curriculum that engages students in learning requires an orientation program that is delivered not only in the first weeks of the semester, but extends throughout at least the first semester and provides scaffolding in the process of Case-based Learning. There is evidence that transition and orientation for transition are processes that should occur over time (Kift, Nelson & Clarke 2010; Teunissen & Westerman 2011). Throughout orientation, students need to be provided with consistent scaffolding in the areas of change causing most concern, so that all students are provided with a manageable workload and volume of work. Consideration should be given as to whether this scaffolding is best provided by CBL tutors within the context of CBL tutorials or by an additional program that would provide support of a mentoring nature as currently provided by the International Program Coordinator. The possibility of extending the International Program to provide guidance for the whole cohort from the beginning of Semester One also needs considering. These alternatives would require reshaping tutor training, which has been identified as an important co-curricular activity in first year curriculum design (Kift, Nelson & Clarke 2010). Training for CBL tutors that provided tutors with good social and cognitive congruence and a sound understanding of the nature of scaffolding needed for transitioning students would result in a greater consistency in the scaffolding provide by these tutors. Such training would develop the techniques and characteristics of expert tutors as summarised by Lepper (1997, p. 130) in the acronym INSPIRE:

   Intelligent
   Nurturant
   Socratic
   Progressive
   Indirect
   Reflective
   Encouraging

   Tutors would then be able to provide adequate and appropriate scaffolding for medical students in the process of Case-based Learning. Key evidence from this research supports evidence in the literature that appropriate scaffolding does not inhibit students' development of self-directed learning skills (Taylor, I & Burgess 1995). Scaffolding need not be overly directive but should provide a balance between guiding and challenging students to develop skills for the different tasks they encounter (Hogan & Pressley 1997). Orientation for medical students to the process of Case-based Learning could also be enhanced by the development of a DVD which demonstrates how a CBL tutorial group works through a case with their tutor. It has been emphasised that "the main aim

of PBL is to develop learning around the problem" (Hamdy 2008, p. 740), and students in the medical program commented that observing how this learning is developed, either in person or on a DVD, would have helped them to understand what was expected of them as they began their participation in CBL tutorials. This resource could demonstrate the steps undertaken as the case is worked through, including determining the significance of the patient's given signs and symptoms, developing hypotheses, learning issues and mechanisms, elaboration of knowledge, collaborative learning and the provision of feedback by both the CBL tutor and the students. A resource such as this would highlight the facilitation skills needed by the CBL tutor for the successful development of group dynamics and so would also be a valuable resource for the training of CBL tutors.

2. Provision of the optimum proactive and timely access to learning and life support needs careful consideration. The support provided both by administrative staff and by other academics in the three curriculum domains of the medical program (Clinical Skills, Medical Professional and Personal Development and The Scientific Basis of Medicine) could be strengthened if all staff understood that appropriate support for transition can assist students in their gradual development of the skills for adult, self-directed learning. Support need not be overly directive, and will enable students to adapt to the CBL approach and to cope with a manageable workload. This is especially important in view of the evidence that informally, students access sources of help other than their CBL tutors, who are often approached only as a last resort (Schmidt, Rotgans & Yew 2011). Providing opportunities for academic and administrative staff members to reflect on how their roles in providing help could be strengthened would increase the number of sources providing strong support for transitioning medical students. Peer support with learning, through the Peer-2-Peer and MedTransit programs organised by the Adelaide Medical Students' Society, was highly valued by medical students as a readily accessible source of help. Therefore consideration should also be given to academic and administrative staff providing more publicity for these programs, especially with regard to communicating them to late admission students. Some of these students had come from interstate and were so concerned with relocating that they were often unaware of these highly valued programs.

3. Although there was a strong sense of belonging amongst medical students, this was often fostered through efforts of their peers in the Adelaide Medical Students' Society (through their organisation of social events and curricular and co-curricular support) rather than through efforts of academic staff. International students developed a strong sense of belonging with other students in the International Program and felt generally welcomed by students and staff associated with the medical program. However, the discomfort that students could experience in relation to their CBL tutors, such as not sleeping the night before a CBL tutorial because they are so worried about the next day (MS.FG1), or having their confidence destroyed by negative feedback from a tutor

(MS.FG3), would be detrimental to students developing a sense of belonging. If all staff, academic and administrative, were made aware of the importance of this sense of belonging to a positive transition experience, and if they also considered their involvement in its development, then students would experience an enhanced sense of belonging through all areas of the program in addition to those organised by the AMSS.

4. The sustainability of academic-administrative partnerships is vital to the organisation and implementation of the medical program in all year levels and especially in first year where the students have to cope with so many changes as they transition to university. Administrative staff described how stronger communication in two areas could improve this partnership. Firstly, there needs to be good communication between faculty admissions staff and administrative staff about the number and nature of diversity students within the cohort to enable planning for any help these students may need. This is especially important in view of the increasing number of students from diversity groups that are attending university (James, Krause & Jennings 2010). Secondly, better mechanisms need to be established for academic staff to communicate changes to the scheduling of teaching and learning sessions in time for students to be informed. Transitioning students can be overwhelmed by the changes they experience in the first few weeks at university. Clear and timely information about timetabling would prevent confusion amongst students and help them not to miss important learning opportunities.

In summary, whilst this research used the framework of the Transition Pedagogy model to investigate strategies in the medical program in four dedicated areas, the challenge now is to use the model for its original purpose: the intentional design of a curriculum that combines curricular and co-curricular approaches. Such a curriculum for the first year medical program would recognise the benefits to students of an extended orientation and appropriate scaffolding in the *process* of Case-based Learning. Consideration needs to be given as to whether this scaffolding is best provided by CBL tutors within the context of CBL tutorials or by an additional program that would provide support of a mentoring nature as currently provided by the International Program Coordinator. The possibility of extending the International Program to provide support for the whole cohort from the beginning of Semester One also needs considering. Development of a transition pedagogy with intentional curriculum design would provide the optimum first year experience for transitioning into the medical program at the University of Adelaide.

9.8   RESEARCH LIMITATIONS

The main limitations to this research were the quantitative instruments and how they were used, the case-study nature of the investigation and the role of the person undertaking the study which must always be accounted for in any research.

- The instruments and how they were used could have affected the quality of data collection. The FYEQMed and the Kessler Psychological Distress have been shown to be valid and reliable instruments (Section 4.7, p. 85). The CBL Perceptions Questionnaire was developed from an instrument used to compare perceptions of the PBL and CBL approaches from students and tutors involved in both approaches, whereas in this research it was used only to investigate perceptions of the CBL approach. To ensure validity of this questionnaire, academics were consulted during its development and it was trialled for clarity and relevance with second year students (Section 4.7, p. 85).

- The results of this case-study are relevant only to medical students, academic and administrative staff within the context of the medical program at the University of Adelaide. Therefore care was taken not to generalise the findings to other medical programs. Whilst the findings might be of interest to other programs, careful consideration would need to be given to how the context of their program compared with the context of this study.

- The prior experiences of the researcher could have influenced decisions about the nature of data collected, and how they were collected and analysed. To minimize this type of bias in the research, data were collected from a variety of people involved with transition into the medical program, careful consideration was given to the validity and reliability of the qualitative instruments and qualitative approaches and an experienced statistician was consulted to ensure appropriate analysis of the data. The researcher was also new to the field of medical education research and whilst this limited the experience brought to the research, it meant that the researcher had no preconceived ideas about the transition experience. Whilst the researcher was physically based in the Medicine Learning and Teaching Unit, she was removed from any decision making regarding the medical program and was not involved in delivering any part of the program and was therefore able to approach the research with an open and unbiased mind

- Data were not collected from all academics involved in the first year medical program. Investigations did not seek the views of academics who play a large role in the curriculum governance of the medical program through their involvement on curriculum and learning and teaching committees. In view of this limitation, the researcher has not extrapolated beyond the data collected and, to ensure that a reasonably broad range of views were represented, data were triangulated from students, CBL tutors and administrative staff.

9.9   FURTHER RESEARCH

Whilst the findings from this research have answered the original four research questions, they have also posed the following questions around transition into the medical program:

1. What curriculum design elements are needed to incorporate a transition pedagogy into a Case-based Learning medical program? This research has considered the strategies in the four dedicated areas of the Transition Pedagogy model, but in order to develop a transition pedagogy for the medical program, research needs to be undertaken into the six generic First Year

Curriculum Principles of design, transition, engagement, diversity, assessment and evaluation (Kift 2009).

2. a) What are the specific factors contributing to the decrease in distress levels of medical students from first to second semester of their transition year?

b) How do second year students perceive transition into the medical program as they reflect back on their first year experiences?

Research into these two areas would provide further information about what is important to students in their transition year and thereby enhance understanding of the complex learning environment of this medical program. Regehr (2010) commends research that "represents well the complexity of the social interactions that shape education and learning at a local level" (Regehr 2010, p. 31) as he believes it can generate "rich understandings of the complex environments in which our collective problems are uniquely embedded" (Regehr 2010, p. 31). Thus these further investigations in the medical program at the University of Adelaide could contribute to a deeper understanding of the transition into other Case-based Learning medical programs.

3. What constitutes effective orientation and scaffolding, for first year students in the process of Case-based Learning, in other medical programs? This study has shown that extended orientation and scaffolding in the process of Case-based Learning did not inhibit the development of skills for international students in self-directed learning. It resulted in these students coping better with the heavy workload and keeping up with the volume of work than domestic students. Hmelo-Silver (2007) believes it is important to ask "what kinds of support and scaffolding are needed for different populations and learning goals?" (Hmelo-Silver, Duncan & Chinn 2007, p. 54). Research into what constitutes effective orientation and scaffolding for first year students in other medical programs would help to determine whether the scaffolding provided for international students is also appropriate for domestic students. Within the medical program at the University of Adelaide, research is needed to determine the most effective way of providing this scaffolding: within the current CBL tutorials, with an additional program that would provide mentoring for all students or with an extension of the International Program that provided support for the whole cohort.

4. a) Why do students seek co-curricular support?
b) What is the nature of strategies provided to students from the different sources?
c) How do these strategies support students in the curriculum?

Students use strategies from several different sources in co-curricular areas to help them with their learning. For some students the strategies they developed themselves were important, together with the strategies provided by their peers in the co-curricular support program run by the Adelaide Medical Students' Society. Investigation into the above questions would enhance

understating of the importance of co-curricular aspects to students' learning and the links that exist between the co-curricular and curricular aspects of this learning.

5. What constitutes effective training for Case-based Learning tutors to enable them to provide orientation and scaffolding that meets the needs of transitioning students? CBL tutors varied greatly in their skills and confidence in their facilitation of tutorial groups. They requested further professional development to include the provision of a mentor for new tutors and the instigation of peer appraisal to improve the feedback they were receiving. The introduction of mentoring and peer appraisal into tutor training has been recommended (Dolmans, D. H. et al. 2002). Much of the research about CBL tutors has focussed on investigating whether content expertise or group facilitation skills make a better tutor and on the need for the development of skills to promote self-directed, collaborative learning within CBL tutorials. Research now needs to be carried out to evaluate whether the inclusion of mentoring and peer appraisal into tutor training can improve tutors' strategies in providing the orientation and scaffolding needed for transitioning students.

9.10 CONCLUSIONS

An answer to the original research question "How do they cope? The transition to an undergraduate, Case-based Learning medical program at the University of Adelaide" would seem to be that students of the 2011 first year medical cohort at the University of Adelaide coped well in many areas of their transition to university, and adapted to a new way of learning and teaching via the Case-Based Learning approach. However, a complete answer to this complex question cannot be provided by this research alone. Through using the framework provided by the Transition Pedagogy model, areas have been identified where some students were experiencing difficulties. The way in which this study used the Transition Pedagogy framework to inform the changes needed to improve the first year experience of the medical cohort has proven to be a viable approach. The nature of the difficulties experienced by students, and the reasons for them, have been investigated. Evidence has been provided that additional scaffolding for students in the *process* of Case-based Learning can enhance, rather than inhibit, the development of skills for self-directed learning. The findings from this research present the challenge of developing a transition pedagogy for the medical program at the University of Adelaide which recognises that the needs of first year students are different from those of students in higher years. Results from this study have highlighted many areas for further research which would provide a more comprehensive answer to the original research question. These results will be of interest to other medical programs where the CBL approach is used and also to other tertiary programs such as Engineering, where Case-based Learning is employed. The need for a transition pedagogy for medical programs may also present an interesting challenge to other medical schools.

APPENDICES

APPENDIX 1. FIRST YEAR EXPERIENCE QUESTIONNAIRE: CURRENT VERSION (JAMES, KRAUSE & JENNINGS 2010)

NOTE:
This appendix is included in the print copy of the thesis held in the University of Adelaide Library.

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thesis held in the University of Adelaide Library.

HOW DO THEY COPE? TRANSITIONING INTO YEAR 1, CBL- BASED MEDICINE.

INFORMATION SHEET FOR PARTICIPATING YEAR 1 STUDENTS 2011

People carrying out the study
The study is being conducted as part of the research for a PhD award.
The researchers are:

Lynne Raw, PhD candidate in the Medicine Learning and Teaching Unit.
Phone: 8303 6305.   Email: lynne.raw@adelaide.edu.au

Professor Anne Tonkin, Director of the Medicine Learning and Teaching Unit and supervisor of the PhD candidate.
Phone: 8303 5387   Email: anne.tonkin@adelaide.edu.au

Please contact them with any queries you may have about the study.

Purpose of the study
Transitioning from year 12 into university is an exciting time for most students but it can be fraught with worries about living away from home, your social life and how you will cope with study at university.

For medical students the transition can be additionally difficult because you are introduced to a new way of learning in the CBL (case-based learning) process. In 2009, the School of Medicine changed from PBL (problem-based learning) to CBL across the whole curriculum in order to improve student outcomes.

Research is now being carried out to investigate the factors affecting the transition into Year 1 Medicine, including students' and tutors' perceptions of the CBL approach.

Benefits of the study
It is important that participants understand that there may be no direct benefits to them, but that the results of this study will benefit:

- Future students: by improving the transition process
- Tertiary institutions: improving the transition into first year could improve the pass-rate at the end of that year and consequently retention rates could also improve.
- Medical educators in the School of Medicine at the University of Adelaide: giving an insight into problems that students encounter during transition. Previous research has shown what the outcomes of the PBL approach are, but there are now calls for research into how the approach is perceived and why certain outcomes are being obtained.

It is vital that feedback is provided on new or changed methods used in medical education, so that medical educators can continually monitor and improve the quality of medical education.

What is involved

1. Sign the consent form

2. Complete a questionnaire regarding demographic data and your perceptions of CBL-base Medicine. The questionnaire will take no more than 30 minutes to complete.

3. Place the questionnaires into one of the boxes provided.

4. Give your name to Lynne Raw as you leave if you wish to volunteer to give up approximately one hour of your time to be part of a focus group interview.

5. Complete a brief (5 minutes) questionnaire in May and September (Kessler's K10 Scale)

Consent

Participation in this study is voluntary and your participation or non-participation will have no effect on your academic progress.

Confidentiality of your data
- Anonymity of all participants will be assured at all times.

- The data collected from questionnaires or accessed from student records will be reported in aggregate format and used for the comparison of groups. No individual data will be used.

- The following data will be obtained from student records:
  - "Student Assessment-CBL" completed by CBL tutors at the middle and end of semester
  - End of Semester Examination results

- Where individual comments are used from questionnaires or interviews, they will be de-identified.

- Questionnaires used for cross referencing will be labelled with code names.

How your data is stored
All hard copies of completed questionnaires, audio-recording of interviews, transcripts of interviews and copies of data will be kept in a locked filing cabinet in a room that is locked when unoccupied.
Electronic storage of data (including transcripts of interviews and data from questionnaires) will be stored in password protected computer files and only accessible by the major researcher.

Data reporting
The anonymous data from this study will be aggregated and may be used in a thesis, journal publications, conferences and seminar presentations.

If you wish to speak to someone who is independent of this project:
Please see page 4: "Contacts for Information on Project and Independent Complaints Procedure".

THE UNIVERSITY OF ADELAIDE
HUMAN RESEARCH ETHICS COMMITTEE

Document for people who are participants in a research project

CONTACTS FOR INFORMATION ON PROJECT AND INDEPENDENT COMPLAINTS PROCEDURE

The Human Research Ethics Committee is obliged to monitor approved research projects. In conjunction with other forms of monitoring it is necessary to provide an independent and confidential reporting mechanism to assure quality assurance of the institutional ethics committee system. This is done by providing research participants with an additional avenue for raising concerns regarding the conduct of any research in which they are involved.

The following study has been reviewed and approved by the University of Adelaide Human Research Ethics Committee:

Project title: ***HOW DO THEY COPE? TRANSITIONING INTO YEAR 1, CBL-BASED MEDICINE.***

1. If you have questions or problems associated with the practical aspects of your participation in the project, or wish to raise a concern or complaint about the project, then you should consult the project co-ordinator or researcher:

Professor Anne Tonkin, Phone: 8303 5387   Email: anne.tonkin@adelaide.edu.au

Lynne Raw,   Phone: 8303 6305.   Email: lynne.raw@adelaide.edu.au

2. If you wish to discuss with an independent person matters related to
   - making a complaint, or
   - raising concerns on the conduct of the project, or
   - the University policy on research involving human participants, or
   - your rights as a participant

contact the Human Research Ethics Committee's Secretary on phone (08) 8303 6028

THE UNIVERSITY OF ADELAIDE HUMAN RESEARCH ETHICS COMMITTEE

STANDARD CONSENT FORM
FOR PEOPLE WHO ARE PARTICIPANTS IN A RESEARCH PROJECT

1. I, …………………………………………………(Year 1 student 2011)
    (please print name)

    consent to take part in the research project entitled: ***HOW DO THEY COPE?***
    TRANSITIONING FROM YEAR 12 INTO YEAR 1, CBL-BASED MEDICINE.

2. I acknowledge that I have read the attached Information Sheet entitled: ***HOW DO THEY***
    COPE? TRANSITIONING FROM YEAR 12 INTO YEAR 1, CBL-BASED
    MEDICINE.

3. I have had the project, so far as it affects me, fully explained to my satisfaction by the research worker. My consent is given freely.

4. Although I understand that the purpose of this research project is to improve the quality of transition into Year 1 Medicine, it has also been explained that my involvement may not be of any benefit to me.

5. I have been given the opportunity to have a member of my family or a friend present while the project was explained to me.

6. I have been informed that, while information gained during the study may be published, I will not be identified and my personal results will not be divulged.

7. I understand that I am free to withdraw from the project at any time.

8. I am aware that I should retain a copy of this Consent Form, when completed, and the attached Information Sheet.

    …………………………………………………………………………………………………...
    (signature)   *(date)*

WITNESS

I have described to   ……………………………………………….   *(name of subject)*

the nature of the research to be carried out. In my opinion she/he understood the explanation.

Status in Project: Major researcher, PhD candidate

Name: Lynne Raw

                                        …………………...
    (signature)   *(date)*

HOW DO THEY COPE? TRANSITIONING INTO YEAR 1 CBL- BASED MEDICINE

INFORMATION SHEET FOR PARTICIPATING TUTORS

People carrying out the study

The study is being conducted as part of the research for a PhD award.
The researchers are:

Lynne Raw, PhD candidate in the Medicine Learning and Teaching Unit.
Phone: 8303 6305.   Email: lynne.raw@adelaide.edu.au

Professor Anne Tonkin, Director of the Medicine Learning and Teaching Unit and supervisor of the PhD candidate.
Phone: 8303 5387   Email: anne.tonkin@adelaide.edu.au

Please contact them with any queries you may have about the study.

Purpose of the study

Transitioning from year 12 into university is an exciting time for most students but it can be fraught with worries about living away from home, their social life and how they will cope with study at university.

For medical students the transition can be additionally difficult because they are introduced to a new way of learning in the CBL (case-based learning) process. In 2009, the School of Medicine changed from PBL (problem-based learning) to CBL across the whole curriculum in order to improve student outcomes.

Research is now being carried out to investigate the factors affecting the transition into Year 1 Medicine, including students' and tutors' perceptions of the CBL approach.

Benefits of the study

It is important that participants understand that there may be no direct benefits to them, but that the results of this study will benefit:
- Future students: by improving the transition process
- Tertiary institutions: improving the transition into first year could improve the pass-rate at the end of that year and consequently retention rates could also improve.
- Medical educators in the School of Medicine at the University of Adelaide: giving an insight into problems that students encounter during transition. Previous research has shown what the outcomes of the PBL approach are, but there are now calls for research into how the approach is perceived and why certain outcomes are being obtained.

It is vital that feedback is provided on new or changed methods used in medical education, so that medical educators can continually monitor and improve the quality of medical education.

What is involved

1. Sign the consent form for allowing access to:
   a. "Tutor Feedback on CBL Training Program".
   b. "Student Assessment – CBL" by tutors at the middle and end of semester.
2. Completing the "Questionnaire for Year 1 CBL Tutors 2011"
3. Place the questionnaires into one of the boxes provided.
4. Give your name to Lynne if you wish to volunteer for a Focus Group discussion to be held at a later date.

Consent

Participation in this study is voluntary.

Confidentiality of your data

- Anonymity of all participants will be assured at all times.

- The data collected from questionnaires or accessed from records will be reported in aggregate format and used for the comparison of groups. No individual data will be used.

- Where individual comments are used from questionnaires or interviews, they will be de-identified.

- Questionnaires used for cross referencing will be labelled with code names.

How your data is stored

All hard copies of completed questionnaires, audio-recording of interviews, transcripts of interviews and copies of data will be kept in a locked filing cabinet in a room that is locked when unoccupied.
Electronic storage of data (including transcripts of interviews and data from questionnaires) will be stored in password protected computer files and only accessible by the major researcher.

Data reporting

The anonymous data from this study will be aggregated and may be used in a thesis, journal publications, conferences and seminar presentations.

If you wish to speak to someone who is independent of this project

Please see page 4: "Contacts for Information on Project and Independent Complaints Procedure"

Document for people who are participants in a research project

CONTACTS FOR INFORMATION ON PROJECT AND INDEPENDENT COMPLAINTS PROCEDURE

The Human Research Ethics Committee is obliged to monitor approved research projects. In conjunction with other forms of monitoring it is necessary to provide an independent and confidential reporting mechanism to assure quality assurance of the institutional ethics committee system. This is done by providing research participants with an additional avenue for raising concerns regarding the conduct of any research in which they are involved.

The following study has been reviewed and approved by the University of Adelaide Human Research Ethics Committee:

Project title: ***HOW DO THEY COPE? TRANSITIONING INTO YEAR 1, CBL-BASED MEDICINE.***

1**.**   If you have questions or problems associated with the practical aspects of your participation in the project, or wish to raise a concern or complaint about the project, then you should consult the project co-ordinator or researcher:

Professor Anne Tonkin, Phone: 8303 5387   Email: anne.tonkin@adelaide.edu.au

Lynne Raw,   Phone: 8303 6305.   Email: lynne.raw@adelaide.edu.au

2.   If you wish to discuss with an independent person matters related to
   •   making a complaint, or
   •   raising concerns on the conduct of the project, or
   •   the University policy on research involving human participants, or
   •   your rights as a participant

contact the Human Research Ethics Committee's Secretary on phone (08) 8303 6028

THE UNIVERSITY OF ADELAIDE HUMAN RESEARCH ETHICS COMMITTEE

STANDARD CONSENT FORM
FOR PEOPLE WHO ARE PARTICIPANTS IN A RESEARCH PROJECT

1. I, ……………………………………………………. (CBL Tutor 2011)
   (please print name)

   consent to take part in the research project entitled: ***HOW DO THEY COPE? TRANSITIONING INTO YEAR 1, CBL-BASED MEDICINE.***

2. I acknowledge that I have read the attached Information Sheet entitled: ***HOW DO THEY COPE? TRANSITIONING INTO YEAR 1, CBL-BASED MEDICINE.***

3. I have had the project, so far as it affects me, fully explained to my satisfaction by the research worker. My consent is given freely.

4. Although I understand that the purpose of this research project is to improve the quality of transition into year 1 Medicine, it has also been explained that my involvement may not be of any benefit to me.

5. I have been given the opportunity to have a member of my family or a friend present while the project was explained to me.

6. I have been informed that, while information gained during the study may be published, I will not be identified and my personal results will not be divulged.

7. I understand that I am free to withdraw from the project at any time.

8. I am aware that I should retain a copy of this Consent Form, when completed, and the attached Information Sheet.

   …………………………………………………………………………………………...
   (signature)   *(date)*

WITNESS

I have described to ………………………………………………….. *(name of subject)*

the nature of the research to be carried out. In my opinion she/he understood the explanation.

Status in Project**:**   Major researcher, PhD candidate

Name: Lynne Raw

…………………………………………………………………………………………...
(signature)   *(date)*

3 June 2010

Professor AL Tonkin
School of Medicine

Dear   Professor Tonkin

PROJECT NO: *The first year experience: a case study of the transition into Medicine using the*
H-059-2010   *case-based learning (CBL) method at the University of Adelaide*

I write to advise you that I have approved the above project on behalf of the the Human Research
Ethics Committee. Please refer to the enclosed endorsement sheet for further details and conditions
that may be applicable to this approval.

Approval is current for one year. The expiry date for this project is: 30 June 2011

Where possible, participants taking part in the study should be given a copy of the Information Sheet
and the signed Consent Form to retain.

Please note that any changes to the project which might affect its continued ethical acceptability will
invalidate the project's approval. In such cases an amended protocol must be submitted to the
Committee for further approval. It is a condition of approval that you immediately report anything
which might warrant review of ethical approval including (a) serious or unexpected adverse effects on
participants (b) proposed changes in the protocol; and (c) unforeseen events that might affect
continued ethical acceptability of the project. It is also a condition of approval that you inform the
Committee, giving reasons, if the project is discontinued before the expected date of completion.

A reporting form is available from the Committee's website. This may be used to renew ethical
approval or report on project status including completion.

Yours sincerely

Professor Garrett Cullity
Convenor
Human Research Ethics Committee

28 June 2011

Professor A Tonkin
School of Medicine

Dear Professor Tonkin

PROJECT NO: H-059-2010
         The first year experience: a case study of the transition into Medicine using the
         case-based learning (CBL) method at the University of Adelaide

Thank you for your report on the above project. I write to advise you that I have endorsed renewal
of ethical approval for the study on behalf of the Human Research Ethics Committee.

The expiry date for this project is: 30 June 2012

Where possible, participants taking part in the study should be given a copy of the Information Sheet
and the signed Consent Form to retain.

Please note that any changes to the project which might affect its continued ethical acceptability will
invalidate the project's approval. In such cases an amended protocol must be submitted to the
Committee for further approval. It is a condition of approval that you immediately report anything
which might warrant review of ethical approval including (a) serious or unexpected adverse effects
on participants (b) proposed changes in the protocol; and (c) unforeseen events that might affect
continued ethical acceptability of the project. It is also a condition of approval that you inform the
Committee, giving reasons, if the project is discontinued before the expected date of completion.

A reporting form is available from the Committee's website. This may be used to renew ethical
approval or report on project status including completion.

Yours sincerely

PROFESSOR GARRETT CULLITY
Convenor
Human Research Ethics Committee

E-MAILED
28.06.11 LM.

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