LEARNING OUTCOMES AND CURRICULUM DEVELOPMENT IN AUSTRALIAN PHYSIOTHERAPY EDUCATION

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EXECUTIVE SUMMARY

This report identifies, describes and evaluates curriculum development and review processes and pedagogical innovations in Australian physiotherapy education. The review focuses on these issues in relation to the requirements of new areas in health education, which include multidisciplinary practice and information and communications technology (ICT), as well as to the needs of key stakeholders such as students and employers.

Data were collected using a range of qualitative and quantitative methods. The project team consulted nationally with stakeholders including current physiotherapy students, recent graduates, clinicians, academic staff, heads of schools of physiotherapy, employers, representatives of the peak professional body, education experts and international physiotherapy educators. In addition, the heads of schools have provided the project team with examples of effective learning and teaching practices in their courses. A selection of these is listed in this report. More information on these examples of good practice will be disseminated in Stage 2 of the project.

Demographic data for physiotherapy students shows similar patterns of diversity to those seen in the wider national student body in Australian universities. This diversity stems from a number of factors including age, ethnicity and levels of prior education. Accompanying the growing student diversity has been a rapid increase in the number of schools of physiotherapy and also in the range of course types offered. These include entry level masters courses and double degrees.

In order to contextualise this review of curriculum processes in physiotherapy, the report outlines the national role of the Australian Council of Physiotherapy Regulating Authorities (ACOPRA). The fact that registration is a requirement to practise as a physiotherapist in every state and territory has significant implications for physiotherapy curriculum development at the national level. ACOPRA was established in 1995 to maintain a consistent national approach to physiotherapy registration, to advise on standards and processes relevant to the recognition of physiotherapy qualifications and to act as the custodian of the Australian Physiotherapy Competency Standards (APCS). The primary function of ACOPRA is that of accreditation of physiotherapy courses. Clear specification of learning objectives both for entry level physiotherapy courses overall, and for individual subjects is a requirement of the ACOPRA accreditation process; as is the need for universities to demonstrate the outcomes of the course through the performance of graduates in relation to the APCS in all key areas of physiotherapy practice.

Employers of recent physiotherapy graduates are generally highly satisfied with graduates' level of competence across a range of areas. In particular, they rate new graduates' professional behaviour most highly, along with their openness to new ideas and receptiveness to the use of information and communication technologies (ICTs) in healthcare settings. Despite the many strengths identified by employers, they also perceive some weaknesses including: that some physiotherapy graduates do not integrate some elements of theory and clinical practice and that, in some cases, this was due to limited clinical experience during their undergraduate course. This was particularly evident in their lack of preparedness to work in private practice. Other

areas of clinical practice that employers perceive to be somewhat lacking among recent graduates include paediatric physiotherapy and critical care physiotherapy.

Recent graduates' satisfaction with physiotherapy courses is evaluated through the Course Experience Questionnaire (CEQ). The outcomes of the CEQ provide a valuable overview of new graduates' views of their course experiences. National responses over a number of years have consistently shown high levels of graduate satisfaction with the quality of their course, along with consistent reporting of high workloads.

Document analysis and discussions with academic staff and heads of schools of physiotherapy confirm that entry level physiotherapy curricula are comprehensive, respond to the need to include an increasing knowledge base and changing health practices. Physiotherapy curricula across Australia also reflect an awareness that new physiotherapy graduates are increasingly likely to begin professional life as practitioners of first contact without the benefit of mentoring or preceptorship from experienced physiotherapists in an increasingly constrained health sector.

As part of this review, the project team investigated the role of learning outcomes in physiotherapy pedagogy and curricula. Our findings confirm that learning outcomes in pedagogy and curriculum processes are considered to be important at all levels of curriculum design, delivery and review, from the day-to-day class level to the year-by-year course level. Academic staff, attach a high level of importance to writing objectives, at all levels of the curriculum. Feedback from students suggests that they are familiar with the concept of learning outcomes, which they most readily equate with objectives; yet they do not necessarily appreciate the value and role of learning outcomes in facilitating their learning. Our findings suggest that the discipline would benefit from a more clearly articulated discussion of the distinction between and complementarity of learning outcomes and objectives, as outlined in ACOPRA requirements.

The project team found considerable evidence of assessment and monitoring of learning outcomes on a national level from external bodies, such as ACOPRA, and through government initiatives such as the Australian Universities Quality Agency audits. Curriculum review at the institutional level is informed by quality of teaching surveys and various forms of student feedback. As well, there is widespread evidence of monitoring and, increasingly, of evaluation of support programs such as mentoring, transition programs and specific programs to support students from Non-English Speaking Backgrounds (NESB).

Many examples of good practice in learning and teaching were cited during the course of this project. Students and graduates alike emphasise the value of small group teaching, integration of theory and practice and learning in context. Early clinical exposure is seen as highly desirable but not always available. Multidisciplinary teaching is incorporated in all schools with a number having explicit subjects covering this area. All schools report extensive use of ICTs in learning and teaching. Graduates and students comment on the dedication of teaching staff and the support given to students for their learning.

Concerns were expressed at the increasing amount of content required to be included in the curricula and the challenges facing curriculum developers in preparing students to practice in increasingly complex work environments, with rapid increases in knowledge and treatment approaches used in physiotherapy. Concerns about the increasing workload imposed by the overcrowded curriculum were voiced by both staff and students. Feedback from academic staff confirms the need for ongoing educational research in the field of physiotherapy so as to inform curriculum change and support existing good practice in physiotherapy education.

Several comments focussed on the fact that, throughout their working lives, physiotherapy graduates need access to professional development to broaden and deepen their skills and knowledge and formal postgraduate study to develop specialist areas of knowledge. Employers expressed the need for graduates to have further education in fields such as paediatrics, disability management, rural physiotherapy, community physiotherapy and physiotherapy in the schools sector.

The issue evoking most concern and comment is that of the ability of schools of physiotherapy and their professional clinical colleagues to continue to deliver appropriate clinical education within current resource constraints. This is one of the most significant challenges currently facing physiotherapy educators and the profession as a whole. Appropriate clinical education is fundamental to preparing safe and effective graduates reaching the expected competency levels as designated by ACOPRA and the demands of the workplace. A considerable number of comments related to the lack of funding or the small amount of funding available for clinical education. Many respondents referred to the need for a post-graduation year of funded supported practice as occurs in nursing, or a funded intern year as occurs in medicine.

Overall, the findings of this study confirm that Australian physiotherapy curricula prepare students to work in Australian as well as overseas contexts. There is widespread evidence of good practice and innovation in the learning and teaching of physiotherapy. The study also confirms that Australian physiotherapists are highly regarded both locally and internationally, reflecting the strength of Australian physiotherapy education. Nevertheless, there is continued scope for enhancement of current practice and an imperative to plan strategically for future developments in the discipline. It is with these aims in mind that the project team makes the following recommendations arising from the study.

Recommendations

The project team acknowledges the good practice in the learning and teaching of physiotherapy that is taking place across Australia. We are making the following ten recommendations as a result of the evidence gained in this project, which involved extensive consultation with a wide range of stakeholders. These recommendations are designed to enhance the good practices in the learning and teaching of physiotherapy that are currently taking place.

The project team recommends the following:

Clinical education

1. that the Federal Government should review the Commonwealth Course Contribution Schedule and reclassify physiotherapy as a clinically based medical science.
2. that a feasibility study be instigated to explore the merits of a regulated preceptorship/mentoring system for new graduates in the workplace that recognises that new graduates require support during their first year of employment.

Physiotherapy education research

3. that federally funded competitive research grants should recognise the importance of research into education in the health sciences, including physiotherapy.
4. that schools of physiotherapy value and promote physiotherapy education research. Specifically, there is a need for research into:
   - 4.1. innovative approaches to the design, delivery and review of physiotherapy education, including clinical education, with a view to enhancing learning outcomes
   - 4.2. different approaches to the complex issue of multidisciplinary pedagogy and practice
   - 4.3. cost effective and high quality multimedia learning and teaching tools in physiotherapy education
5. that schools of physiotherapy establish a collaborative research program to provide evidence of good practice in clinical education. This will inform the profession, in both the public and the private sectors, who are critical to the delivery of clinical education.

Physiotherapy curriculum

6. that schools of physiotherapy and employers address the issue of 'the overcrowded curriculum' in the light of recent research; new areas of practice; the need to value private practice and issues pertaining to clinical education in public and private practice.
7. that schools of physiotherapy further explore and implement strategies to include the profession and many stakeholders in physiotherapy curriculum development, delivery and review processes.

Physiotherapy learning outcomes

8. that schools of physiotherapy explicate the role and value of learning outcomes in order to clarify the relevance of learning experiences for students and provide them with a more coherent learning framework.

Collaboration

9. that physiotherapy educators and curriculum developers collaborate to determine the most appropriate means of developing, sharing, promoting and disseminating effective strategies in physiotherapy education.

Accreditation and quality assurance for physiotherapy education in Australia

10. that the Australian Council of Physiotherapy Regulating Authorities (ACOPRA) continue to be the sole national standards advisory body for pre-registration physiotherapy education in Australia.

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1 INTRODUCTION

1.1 Aims and structure of report

The aim of this report is to identify, describe and evaluate curriculum design, development and review processes in Australian physiotherapy education. It also highlights selected exemplars of good practice and pedagogical innovation in the discipline.

Chapter 1 contextualises the study. It provides an overview of broad changes in the Australian higher education sector, followed by key issues and questions facing the discipline of physiotherapy within this setting. This is followed by an explanation of the study design and methods used to achieve our goals.

In a discipline where students are expected to graduate with sufficient skill and expertise to equip them for independent practice, learning outcomes are critical. A significant portion of the study was devoted to examining learning outcomes in the discipline. Chapter 3 explores the extent to which there is clear specification and national consistency of learning outcomes from entry-level physiotherapy degree courses. It does so by explaining the Australian physiotherapy educational accreditation process and the national role of the Australian Council of Physiotherapy Regulating Authorities (ACOPRA). A range of data sources, including the Australian Course Experience Questionnaire, are used to argue for broad national consistency of generic learning outcomes, while also emphasising the many unique qualities of physiotherapy courses across the nation. Included in this chapter is a discussion of ways in which physiotherapy degree courses reflect the pace of technological change in applications pertaining to physiotherapy and the health sector more generally.

Chapter 4 provides evidence of staff and student understandings of learning outcomes in physiotherapy. In particular, the team sought the input of current students and recently graduated physiotherapists to determine the degree to which they understood the purposes of having specific learning outcomes and the degree to which they considered these outcomes as attainable.

At the heart of this study was a close investigation of learning outcomes within the broader context of physiotherapy curriculum design, delivery and review in Australian universities. This is the subject of Chapters 5 and 6.

In light of the critical role of employers we sought information on their levels of satisfaction with recent physiotherapy graduates and their learning outcomes. These stakeholders were also asked to comment on perceived strengths and weaknesses of curriculum design and delivery associated with physiotherapy graduate attributes. These findings are presented in Chapter 7.

During the course of this project we have identified many examples of good practice and innovation in the teaching and learning of physiotherapy, as well as in curriculum design and review processes. A selection of these is included in Chapter 8 of this report with a view to setting the scene for Stage 2 of the project which focuses on

national dissemination of these good practices among the physiotherapy higher education community.

A number of recommendations emerged from our wide consultation with employers, physiotherapy educators, current students and recent physiotherapy graduates during the course of this study. These are listed in the Executive Summary and at the end of relevant chapters. The recommendations have implications for policy and practice across the sector at both the national and institutional levels. Chapter 9 identifies broad institutional strategic directions associated with these recommendations. It also highlights key elements of good practice identified during the study and comments on approaches to further enhancing curriculum processes and the quality of learning and teaching in physiotherapy. The final chapter, Chapter 10, draws together and summarises the conclusions from the study.

1.2 Physiotherapy in changing contexts

The final decade of the last century saw great changes in the higher education sector. The completion of the implementation of the Dawkin reforms resulted in the creation of a unified national system of higher education in Australia and significant increases in the numbers and diversity of students attending universities, and in the courses on offer. Financial contributions by students towards the cost of their higher education is an accepted norm as is the reality that all universities must attract income from a diversity of non government sources if they are to prosper. Students have become more critically evaluative of their university experience, and opportunities for them to be so have increased through provision of internal individual university surveys and through the Course Experience Questionnaire (CEQ). Most universities, following wide consultation with key stakeholders including employers of their graduates, have delineated a set of generic graduate qualities/capabilities/attributes which they expect their new graduates to exhibit.

Growth in physiotherapy courses and student numbers mirror in part changes in the sector overall. In 1994 for example, there were just six entry level bachelor courses in physiotherapy nationally, in 2004 there are 16 courses, with another two on the drawing board (See Appendix C). Not only has there been a significant increase in program numbers but also in their diversity, with physiotherapy now offered as a two year Graduate Entry Masters degree and as a five year double degree (eg with sports science) as well as through the more traditional bachelor course of four years duration. The student body itself is becoming increasingly diverse.

Changes in health care delivery have been a feature too, with day surgery admissions and short hospital stays with early discharge of acutely ill or post surgery patients, commonplace. Community management of patients with chronic conditions also exemplifies such change. The community is also changing. For example, information about medical conditions and their management is more readily available, including via the internet, leading to an expectation by members of the community of greater participation in clinical decision making. Another example is related to the increasingly multicultural society where communities of specific and mixed ethnic groups have particular cultural and communication needs.

Changing contexts for physiotherapy education are not only confined to the higher education and health sectors but also are regulatory in nature. In 1994 the Australian

Physiotherapy Competency Standards (APCS) were finalised and adopted following widespread consultation with the profession, registration boards, employers and schools of physiotherapy. The APCS have been a key factor in guiding curriculum development in physiotherapy and form an integral part of the accreditation of physiotherapy courses by the Australian Council of Physiotherapy Regulating Authorities (ACOPRA). ACOPRA was previously known as the Conference of Physiotherapy Regulating Authorities and was established by the Australian Health Ministers Advisory Council (AHMAC) to facilitate the implementation of a Commonwealth Mutual Recognition Act, to advise it on measures to maintain a consistent national approach to registration issues in that context and to recognise for the purposes of registration, new or altered courses for the education of physiotherapists for practice.

1.3 The changing nature of the student body

The Commonwealth Department of Health and Aged Care in 1999 identified that more than 4 million people (23 per cent of the population) were born overseas, making Australia one of the largest immigrant communities in the world. In 2002, the per centage of Australian students in the Non-English Speaking Background (NESB) category commencing their university studies was just 3.70 per cent of the total commencing cohort. (The Department of Education, Science and Training (DEST) definition limits the NESB characteristic to students who are born overseas and who have lived in Australia for less than 10 years.) It is likely that a much greater proportion of commencing students in 2002 spoke a language other than English at home. The diversity of the commencing student body in 2002 by equity group distribution also reveals the following - low socio-economic status (SES) (15.25 per cent), indigenous students (1.53 per cent), rural and isolated (18.48 and 1.53 per cent respectively). Many universities have implemented special schemes to encourage and enable students from particular equity groups to undertake a university course.

School leavers and mature aged students, students from rural locations and students born outside Australia, are well represented in the physiotherapy student cohort but indigenous Australian students and SES students are under represented in proportion to their numbers in the Australian population. School leaver entrants invariably have very high tertiary entrance scores, given the demand for entry into physiotherapy courses, and students entering graduate courses have high university grades. Most courses attract international students and all graduate entry master courses are full fee paying. Overall, the diversity of the student body enrolling into physiotherapy is increasingly bringing with it a need for additional support systems in both university and clinical environments.

The student population was approximately half female and half male in the mid 1990s, but in the last few years, in common with the university population more generally, physiotherapy has increased its proportion of female students. Sixty-four per cent of graduates from undergraduate courses in 2003 were female, along with two-thirds of the intake into physiotherapy in 2004. Of note is the fact that over 50 per cent of the intake into graduate entry physiotherapy courses in 2004, were male.

1.4 Resource implications of a feminised workforce

The physiotherapy workforce is predominantly female. This has a significant effect on university academic staff where the proportion of women is generally 80 per cent and

in clinical departments which provide clinical education where the proportion is close to 100 per cent.

Maternity leave costs place a disproportionate financial burden on university physiotherapy schools. As well as this cost there are the additional resources required to recruit and prepare new staff for a teaching role. The breaks in careers vary in length from a few months to several years. For those staff who return whilst their children are young there are significant difficulties in obtaining childcare places and managing these costs. For those returning several years later there are requirements for additional learning due to the rapid changes in both health and education sectors. Parallel factors affect women involved in clinical teaching in the clinical departments.

The particular challenges for more senior women continue in their responsibilities for aged parents and relatives. This can be an additional pressure as physiotherapists are highly skilled expert professionals in the management of many of the health problems of the elderly.

1.5 Requirements for clinical education

High quality, broad, clinical experience under expert guidance in an entry level physiotherapy course is critical to the achievement of the APCS competencies, which are an integral part of accreditation of physiotherapy courses by ACOPRA. This education experience is essential too, for a graduate physiotherapist to function effectively as a practitioner of first contact, whether in a major teaching hospital department or in solo practice.

Do the APCS reflect contemporary practice? The competencies were reviewed in 2002, with changes made subsequently. They are currently undergoing another major review. Widespread consultation has been a feature in both reviews.

However, the continuing provision of a comprehensive clinical education experience is under significant pressure on a number of fronts. These include the considerable growth in student numbers, continuing availability of quality clinical placements, and health and higher education sectors under significant financial pressures. There is a need to consider both greater diversity and innovative approaches to clinical placement experience and supervision models. For example, figures from the Australian Physiotherapy Association (APA) and the Australian Bureau of Statistics (ABS) indicate that approximately 50 per cent of physiotherapists in the workforce work in private practice, yet few students are able to be placed in this setting. Pressures have resulted in employers and physiotherapy educators alike articulating a need for a transition year between graduation and autonomous practice, where a preceptorship model would be in place (inclusive of the private sector). Whilst funding such a transition year is a challenge, this would provide an opportunity for the development of innovative supervision models.

Mention has already been made of the growth in physiotherapy courses and student numbers. This is well illustrated by the following statistics: in 1995 there were 693 graduates from 6 undergraduate courses, in 2005 it is estimated that 1113 students will graduate from 16 courses comprising undergraduate, graduate entry and double degree offerings. Schools of physiotherapy are finding it increasingly difficult to secure clinical placements for their students, and clinical educators/supervisors are

feeling that their capacity to adequately educate and supervise students is being pushed to the limit.

1.6 Relationships between physiotherapy and other health sciences

Whilst physiotherapists are practitioners of first contact they also work as members of multidisciplinary health teams. The APCS competencies recognise the importance of this role through the elements and performance criteria underpinning the seventh competency: *Operates effectively within the health care setting* (ACOPRA 2002a p56). But to what extent do courses provide students with opportunities to work with students from other health professions, to appreciate the roles of other health professionals and to work in multidisciplinary teams as undergraduates by way of preparation for practice? To what extent is an appreciation of the team approach and experience therein, something which occurs after graduation?

1.7 Increasing role of technology and influence of globalisation

Students graduating from universities today are likely to have a number of different careers in their working lifetimes. Most universities have delineated a set of graduate attributes which they expect their students to exhibit upon graduation and in their working lives. A commitment to life long learning (and information literacy skills facilitating such learning through life) is integral to all sets. School leavers entering university often do so with computer literacy and data search skills well beyond those of some of their lecturers.

Australian universities without exception have recognised the value of information technology in learning and teaching, and the opportunities that flexible delivery allows for students to learn ‘in place’ not necessarily requiring physical attendance on campus during their course of study, thereby facilitating a national and global reach for students. The ready access to electronic information and the immediacy of exchange with fellow students in any part of the world has provided opportunities for the globalisation of education. Technology is an increasing feature of the health system too, not only for patient care on site but also by telemedicine and technology, and it is vital in storing and retrieving information.

To what extent do physiotherapy courses, curricula and clinical education experiences reflect the increasing role of technology in learning and teaching? To what extent do employers consider physiotherapy graduates to be work ready in an information technology sense? To what extent do Australian physiotherapy courses prepare graduates to be recognised internationally?

2 STUDY DESIGN AND METHOD

This chapter outlines the range of methods used to collect data for the purposes of this project. A glossary of key terms has been included in Appendix A. Specifically, the term 'school of physiotherapy' is used throughout this report to describe the academic unit which has direct responsibility for the discipline of physiotherapy.

2.1 Methods used in the project

The data for the project were gathered iteratively, using a variety of different methods, with each method building on the information gained in the previous one.

The data sources that we used were:

- advice from the project steering committee;
- review of the literature;
- analysis of Course Experience Questionnaire responses;
- review of school of physiotherapy websites;
- focus groups with current students, recent graduates and staff in five regional and metropolitan schools of physiotherapy;
- focus groups with employers of physiotherapists in three locations;
- consultations with heads of schools of physiotherapy;
- national surveys of employers of physiotherapists;
- surveys of heads of schools of physiotherapy;
- responses by curriculum and discipline experts and by heads of schools of physiotherapy to an issues paper that summarised the initial findings of the project; and
- descriptions of examples of good practice in learning and teaching by heads of schools of physiotherapy.

2.2 Review of the literature

The project team conducted a review of recent literature relating to learning outcomes and curriculum development in physiotherapy. The information gained in this way provided a valuable basis for all the later stages of the project. It is proposed that this information be published on the Web as an annotated bibliography in Stage 2 of the project. As such, it will provide a useful academic resource for physiotherapy staff, students and employers in future.

2.3 Analysis of Course Experience Questionnaire responses

The Course Experience Questionnaire (CEQ) is a survey that is sent to university graduates approximately four months after they have completed a course of study at an Australian university. In the CEQ, graduates are asked to express the extent of their agreement or disagreement with statements about their course experience on a five-point Likert scale. All questionnaires sent out to recent graduates include 13 core items that provide results that are grouped into two scales, the *Good Teaching Scale* and the *Generic Skills Scale* and a single core item, the *Overall Satisfaction Item*. Another 36 items that make up eight further scales are optional, and each university can choose independently whether to include them in the CEQ or not. The

institutional response rate to the CEQ in 2003 for all fields of study ranged from 25.8 per cent to 63.8 per cent, with an average of 44.5 per cent.

The project team obtained CEQ data from recently graduated physiotherapy students for 2002 and 2003 from the Graduate Careers Council of Australia (GCCA). While CEQ data need to be interpreted with caution because they were not obtained from a random sample of students, they are useful for identifying possible patterns in graduates' responses which could be investigated further using other methods.

The CEQ results show graduates' responses to a group of items amalgamated into scales, such as the *Appropriate Workload Scale* or the *Learning Resources Scale*. The GCCA also provided the project team with Year 2002 physiotherapy graduates' responses to the 49 individual questions that made up the CEQ scales. This enabled the project team to make a more detailed comparison between graduates' responses to particular questions than was possible using the scale results.

2.4 An analysis of school of physiotherapy websites

A search of information about Australian University entry level physiotherapy courses was conducted, first using the DEST site, 'Which Course? Which University?' http://www.dest.gov.au/tenfields/health/health.html. From this link, a search under the heading for each university led to a summary of the Health courses available, including physiotherapy. In December 2004, DEST launched a new website 'for prospective and continuing higher education students' www.goingtouni.gov.au which provides a broad range of information about tertiary education, including courses offered at different institutions as well as fees, loans and scholarships. Another search was made using the links from the APA website 'Working and studying' http://apa.advsol.com.au/scriptcontent/aboutphysio_schools.cfm?section=foryou which connects directly to relevant web pages for physiotherapy courses in each Australian university's website.

2.5 Focus groups

Focus groups were held in three locations involving five different schools of physiotherapy. Their purpose was to identify and discuss key issues in the learning and teaching of physiotherapy that could be investigated further in subsequent stages of the project. The schools selected for focus groups represented a range of different course designs: examples of long established and more recently established courses, and courses from rural/regional areas as well as from metropolitan areas. For budgetary reasons, the focus groups all took place in the Eastern States of Australia. Heads of schools of physiotherapy or their delegates invited students, graduates and staff to take part in the focus groups, sending them a standard letter and project information provided by the project team. A balance of genders was encouraged. Students who had started their course immediately after leaving school as well as later entry students were invited to attend. The graduates invited had all completed their courses in 2002 and 2003. In some cases, employers were contacted and asked to encourage their recent graduates to attend. The project team recognises that the participants in the focus groups represent only a small proportion of the students and staff involved in physiotherapy education. However we attempted to draw from a wide cross section of the relevant populations and to validate the opinions expressed in the focus groups with data from surveys and experts.

Table 1: Numbers of participants in focus groups

School of Physiotherapy	Students	Graduates	Staff	Employers
Location 1				
New regional	7	2	4	
Total	7	2	4	3
Location 2				
Established metropolitan	11	4	9	
New regional	9	1	6	
Total	20	5	15	10
Location 3				
Established metropolitan	3	0	7	
Established metropolitan	7	2	9	
Total	10	2	16	6

Employers of the recent graduates from the public and private sectors, in all three locations, were also contacted through schools of physiotherapy and, in some cases, through the local branch of the APA. Many of them were experienced clinical educators who had employed many recent graduates from a number of different universities.

Each focus group was facilitated by two members of the project team, with one member in common for all groups to provide consistency. The facilitators used a semi-structured interview approach lasting from one to two hours. They asked a series of pre-prepared open-ended questions. The facilitators took notes during the focus group sessions which they reviewed and extended as soon as possible after the focus group had concluded. The conversations were also taped, with the permission of participants. Some of the tapes were replayed in order to extract exact quotes.

2.5.1 Current student focus groups

The 37 students who participated in the focus groups were male and female students in Year 2 and Year 4 of their undergraduate physiotherapy course, and six graduate entry masters students from one university. The students who volunteered to be involved in the focus groups represented a mix of students who had begun their physiotherapy course as school leavers as well as those that had begun at a later stage. The facilitators did not record students' ages. They asked them a series of questions about their preferred learning and teaching methods; their understanding of the meaning and purpose of learning outcomes; and the use of ICT and multidisciplinary learning and teaching in their course. They also gave them an opportunity to make undirected comments.

2.5.2 Recent graduate focus groups

Only a small number of recent graduates volunteered to participate – nine in total. Some graduates apologized that they could not attend because they were working long hours or had prior engagements. The facilitators asked the graduates a set of pre-prepared questions about the aspects of their courses that they have found to be particularly useful in their working life; which learning and teaching strategies they

found most helpful; whether their teachers made learning outcomes explicit and, if so, whether they thought these outcomes were achieved.

2.5.3 Staff focus groups

All physiotherapy academic staff were invited to attend the staff focus group held in their school. Clinical educators and those responsible for curriculum development were particularly encouraged to contribute. Staff members who were unavailable were invited to submit comments or to have a phone interview at a later date. The thirty five staff who participated represented a range of ages, years of employment, educational experience, and learning and teaching approaches. The majority of staff were female although males were represented at most venues. They were asked questions such as which of their teaching strategies they consider to be most effective in promoting student learning and how they ensure that their curriculum meets the needs of employers.

2.5.4 Employer focus groups

Nineteen employers took part in the focus groups. The majority came from large, metropolitan, public institutions. However, employers from the private sector participated in two of the three employer focus groups, as did employers from regional centres. The facilitators asked the employers about their perceptions of the recent graduates they employed, including: how well prepared they were as physiotherapists; which aspects of their university education were most effective and which aspects could be improved; how well they worked in multidisciplinary teams and how competent they were at using ICT. The facilitators also discussed with employers their preferred relationships with schools of physiotherapy.

2.6 Discussions with heads of schools of physiotherapy

All heads of schools of physiotherapy were consulted at key stages during the AUTC project by email and during discussions at meetings on 19/20 May and 28/29 October 2004.

2.7 National surveys to address curriculum issues

The literature review, focus group discussions and meetings of heads of schools drew attention to some important emerging issues in physiotherapy curriculum development and learning outcomes. In order to investigate these issues on a national basis, the project team developed and distributed two surveys: one to heads of schools of physiotherapy and one to employers of recent graduates.

2.7.1 Survey of heads of schools of physiotherapy

A survey was sent to the head of every school of physiotherapy in Australia to collect information about issues in curriculum design, development and review. The survey asked about the structure of the curriculum; integration of biomedical and behavioural sciences with professional knowledge and practice; curriculum review processes and recent curriculum changes. It was also used to gather information about the demographics of students that graduated in 2003 and the students who began courses in 2004, as well as special groups targeted for recruitment and support programs for particular groups of students. Finally, the survey gained information about key stakeholders in the development and review of the curricula, and the information technologies introduced into the curriculum in the past five years.

2.7.2 Survey of employers of recent graduates

A second survey, which addressed the outcomes of the physiotherapy educational process and employer satisfaction, was sent to employers in the public and private sectors. The survey asked employers to rank recent graduates they had employed from each university on the eight graduate competencies required for professional practice by ACOPRA. These included such factors as: the ability to *'assess client's abilities, problems and needs'* and to *'demonstrate professional behaviour appropriate to a physiotherapist'*. It also asked employers to rank the recent graduates on ten generic attributes, such as: *'highly developed communication and interpersonal skills'* and *'openness to new ideas'*. Employers made each of these rankings on a three point Likert scale labelled *'Satisfactory'*, *'Good'* and *'Excellent'*. They had the option to *'Comment on particular strengths'* for each competency and attribute. The project team did not include any unsatisfactory categories in the Likert scale as its focus was on identifying the strengths of recent graduates. The survey also obtained employers' views on the attrition rate of recently employed graduates; the information technologies they use in their workplaces; and the relationships that employers would like to have with schools of physiotherapy.

The Australian Physiotherapy Association (APA) helped the project by sending out the employers' survey by email to members of APA's Physiotherapists in Leadership and Management Group and to some large private practice groups in the Physiotherapists Business Association (PBA) in all States and Territories – a total of approximately 300 employers. Paper copies of the surveys were also sent to employers who had participated in focus groups.

Some employers, particularly in Melbourne and Brisbane where focus groups had been held, responded promptly to the survey. However, on the whole, responses to the survey were slow. Therefore, once the due date for submitting the survey had elapsed, the project officer made phone contact with the employers of large numbers of recent graduates in the public and private sectors of States and Territories other than Victoria and Queensland. A total of 44 completed surveys were received - 31 responses from employers in public institutions and 13 from employers in private practices.

2.8 The issues paper

2.8.1 The preparation of the issues paper

The results from the employers' surveys, as well as findings from earlier stages of the project, and advice from the Steering Committee informed the writing of a short issues paper. This paper highlighted some of the challenges to the education of physiotherapists that had been raised in focus groups by students, graduates, staff and employers. Its purpose was to obtain feedback from key stakeholders and curriculum experts on the preliminary findings of the project.

The issues paper was sent to a number of physiotherapy curriculum and discipline experts in Australia, Canada, the United States of America (USA) and the United Kingdom (UK). It was also sent to members of ACOPRA, to the National Office and State Branches of the APA and to the accrediting bodies for Medicine and Pharmacy. The recipients were invited to comment on whether the paper identified the important current issues in physiotherapy education and whether there were other important issues that should be included. They could elect to respond confidentially if they wished.

2.8.2 Responses to the issues paper

Responses to the issues paper from curriculum and discipline experts

Twelve responses to the issues paper were received and were considered by the project team in the light of the requirements of the project brief. Two were from experts in the UK, one was from Canada, one was from the US and nine were from Australian experts.

Responses to the issues paper from heads of schools of physiotherapy

Heads of schools of physiotherapy discussed the issues paper in detail during their October 2004 meeting. The project team distributed notes from the discussion to heads of schools for review, and some of them submitted further written comments at a later date.

2.9 Nominations of examples of good practice in learning and teaching

Heads of schools were asked to nominate educational case studies from their schools that illustrate good practice in learning and teaching, for showcasing to others. They were sent a template to complete for each example of good teaching practice. Thirty examples were received. These resources will be shared using a website in Stage 2 of the project.

2.10 Summary

In summary, the project team initially conducted a literature search into learning outcomes and curriculum development, and also looked at CEQ data from graduates of physiotherapy and other health disciplines. This information guided the questions discussed in focus groups with staff, students, recent graduates and employers. We then canvassed employers' views on their satisfaction with recent graduates and their preferred relationships with schools of physiotherapy more widely, through a national survey. We summarised our findings in an issues paper, which we used to gain feedback from Australian and overseas curriculum experts, including heads of schools of physiotherapy. Data gathered from all these sources have been analysed and synthesised into this report. The heads of schools have provided the project team with examples of good learning and teaching practice in their courses, which will be disseminated in Stage 2 of the project.

3 NATIONAL CONSISTENCY AND SPECIFICATION OF LEARNING OUTCOMES IN PHYSIOTHERAPY

3.1 Historical overview of the consistency and importance of Australian physiotherapy education

> *It is the role of professional health care practitioners to practise in a manner which demonstrates professional autonomy, competence and accountability, to engage in lifelong learning and to contribute to the development of the knowledge base of their discipline* (Higgs 1993).

Physiotherapists are primary health care professionals concerned with the assessment, diagnosis, treatment and prevention of dysfunction and impairment of movement in people of all ages and within a wide range of contexts. There are numerous areas of professional physiotherapy practice within the health, education and related systems and within industry. Physiotherapists require a broad range of knowledge and a variety of skills, including the desire and capacity for continuing to learn for the duration of their professional lives.

Physiotherapy education began in Australia in the late 1890s. By 1908 there were courses preparing physiotherapists in three states. These students were undertaking biomedical science subjects at the Universities of Melbourne, Adelaide and Sydney. The major teaching hospitals of these cities such as the Melbourne Hospital and the Adelaide Hospital, oversaw clinical preparation for professional practice. For the next 80 years the main processes for specification of educational goals and consistency of learning outcomes was through interaction between the heads of the respective physiotherapy schools within Australia and increasingly in discussion with colleagues internationally. In 1993 the heads of physiotherapy schools in Australia and New Zealand commenced regular twice-yearly meetings. The purpose of the Australasian Heads of Physiotherapy Schools meeting is to provide a regular forum for the open exchange of information and discussion of matters relating to physiotherapy education including curricula, teaching and assessment methods, research matters, and physical and human resources. The forum is designed to provide opportunities for collaboration in the sharing of resources for the teaching of entry level and postgraduate physiotherapy.

Australian physiotherapists have been keenly sought and recruited internationally as clinicians for decades. In particular, their reputation in the United Kingdom has been outstanding. Since 1990 national and global changes have increased the requirements for professional mobility with the introduction of the Trans Tasman Mutual Recognition agreement between Australia and New Zealand, and the Bologna Agreement in the European community. Canada and the United States of America have increasingly aligned their educational requirements for physiotherapy, and all courses in North America have moved to graduate entry. The International Society for Educators in Physiotherapy was instituted in 1995 following an earlier symposium in 1991 during the World Confederation for Physical Therapy Conference. The International Society for Educators in Physiotherapy has a membership spanning all continents with approximately 35 countries represented. The three physiotherapists in

the present project team are founding members of the Society, with two having served as president. The purpose of the Society is to identify and share common issues, themes and strategies including innovative educational practices for the enhancement of physiotherapy education around the world.

These developments through the 1990s demonstrate the recognition by Australia's leading physiotherapy educators of the importance of addressing professional education from a national and international perspective. They also reinforce a preparedness to collaborate and share good practice in an increasingly competitive environment. Within the Australian (and global) community there is a growing need for the knowledge and skills of highly trained physiotherapists. Research evidence is clearly demonstrating the cost benefits of physiotherapy in the maintenance and restoration of health and function in a wide range of health problems. Increased numbers of physiotherapy students, courses and participating universities, as well as reduced funding and growing problems in the provision of clinical education, present significant challenges for the preparation of physiotherapists for the workforce.

3.2 Changes and challenges in contemporary Australian physiotherapy education

In a paper entitled, *Sustainable undergraduate education and professional competency* (Crosbie et al. 2002), the senior staff of physiotherapy schools in Australia and New Zealand outline the changing nature of physiotherapy education. They describe the exponential growth of knowledge and the pressure this has put on staff and students alike. Students are expected to source a wide range of professional literature in their course while staff are challenged to cover the growing quantity of material in the curriculum. The curriculum needs to be comprehensive because, unlike many other professions, physiotherapy graduates are increasingly likely to begin their professional working life without the mentoring and preceptorship of an experienced physiotherapist.

While the number of physiotherapy courses has increased from six to sixteen since 1996, and the number of graduates has increased by 20% between 1996 and 1999, new graduates' access to expert clinical supervision has decreased. Two further universities have commenced the process of accreditation for physiotherapy courses and an additional two universities have indicated that they are considering offering courses. Should all these courses be introduced, the strain on the clinical education providers may be unmanageable.

Changes in medical technology, shorter lengths of hospital stay, cuts to outpatient services, increased privatisation of physiotherapy access, and a small number of experienced clinical educators in the relatively under-resourced physiotherapy community health sector, have created unsustainable pressures on clinical educators. The crowded curriculum also makes it hard for staff to include much-needed fields of study, such as rural health and gerontology, unless they are able to remove some other aspects of the curriculum.

Preparing physiotherapy students to work overseas, where different countries have different compulsory requirements for registration, places an additional burden on Australian curricula. Such a consideration is important for the full realisation of globalisation and to ensure that local, and the increasing numbers of international

students, are prepared for professional practice. In 2003 about five per cent of the 715 new graduates from Australian physiotherapy courses were international students. In some schools that intake is now 15 per cent and rising.

The Australasian Heads of Physiotherapy Schools have called for discussion about the curricula and consideration of alternative models, such as giving students 'core competencies' onto which they can build progressively during their professional life or the instigation of '*some form of structured internship'* for the first years of graduates' professional working life (Crosbie et al., 2002). Recognition of the costs of such an internship with funding, as is provided for other health professional courses such as medicine and postgraduate nursing, is a necessary corollary of its implementation.

The project team determined that there are a number of existing processes that enable the specificity of national requirements for accreditation of physiotherapy courses in Australia: through analysis of the Australian Council of Physiotherapy Regulating Authorities (ACOPRA) guidelines, the results of the Course Experience Questionnaire (CEQ), the websites of the universities which offer entry-level courses in physiotherapy, and through discussion with focus groups and subsequent surveys based on the information from the focus groups.

3.3 The Australian physiotherapy educational accreditation process

The profession of physiotherapy in Australia has been subject to State registration requirements since the first Victorian Act was passed in 1922. As State registration boards emerged they carried the responsibility for recognising the graduates of the physiotherapy courses in their respective States. The boards reviewed new or substantially changed educational curricula. In 1990, with the support of the Australian Government, a working party comprising representatives of the Australian Physiotherapists Registration Boards, the Australian Examining Council for Overseas Physiotherapists and the Australian Physiotherapy Association was established. This working party had the responsibility to develop competency standards relevant to physiotherapists entering the professional workforce in Australia. A steering committee, which included representatives of the schools of physiotherapy and physiotherapy employers as well as the working party organisations, guided the development. An extensive nationwide iterative consultancy process ensued, culminating in the development of the Australian Physiotherapy Competency Standards (APCS) in 1994. Regular review of the APCS was planned from the outset. The current standards were revised in 2002. The consultative process has already commenced for a further review, which is planned for completion by the end of 2005.

As the APCS were being developed, the Australian Health Ministers Advisory Council (AHMAC) established the forerunner of the Australian Council of Physiotherapy Regulating Authorities (ACOPRA) in 1992. This body was to advise the AHMAC on measures to maintain a consistent national approach to physiotherapy registration issues including that of new or altered courses for the education of physiotherapists. ACOPRA was established as an independent body in early 1995. The membership of the ACOPRA board includes one representative from each of the eight physiotherapists' registration boards in Australia and one nominee each from the APA, and the schools of physiotherapy. The terms of reference for ACOPRA are:

- *To explore issues relevant to a consistent national approach to physiotherapy registration;*
- *To advise on standards and processes relevant to recognition of physiotherapy qualifications; and*
- *To act as custodian of the Australian Physiotherapy Competency Standards (APCS)*. (ACOPRA 2002b p4)

ACOPRA recognises that there is inevitable change in health and education systems, in local and international communities' expectations of its health professionals, in the rapid growth of information technology and the effects of increasing globalisation. ACOPRA aims to be both proactive and responsive with respect to these changes.

A primary function of ACOPRA is the responsibility for the accreditation of physiotherapy education courses in Australia. This rigorous process provides a mechanism that ensures quality education and encourages enhancement of learning and teaching through innovative educational practice. It has the responsibility to ensure that the Australian community is provided with competent beginning practitioner physiotherapists who are eligible for physiotherapy registration in Australia. The ACOPRA documentation states that accreditation '*protects the standing of higher education physiotherapy awards in Australia, assures the educational community and the general public that the programs accredited are appropriate to the award conferred, and ensures compatibility of tertiary awards in physiotherapy and their national and international recognition'* (ACOPRA 2002b p4).

The current national accreditation process is based on the conclusions of the Higher Education Council's report, *Professional Education and Credentialism,* December 1996. This report described a 'good practice' model and enunciated principles for course review and accreditation processes It identified that the internal quality assurance processes of universities primarily secure academic quality of university courses related to professional preparation. However, alignment of these courses with the critically important requirements of professional practice, both in Australia and overseas, was best achieved by appropriate processes of professional accreditation. The report advised that accreditors should recognise university quality assurance processes, and focus on the learning outcomes of the graduates.

The following ACOPRA principles guide the physiotherapy accreditation process:

- *That criteria used in accrediting programs do not intrude upon the diverse and unique character of individual programs/institutions;*
- *That there is recognition that excellent education programs may differ in many respects and that educational objectives may be achieved in a variety of ways;*
- *That innovation in achieving educational objectives should be encouraged;*
- *That while an accreditation process may review a number of input elements, it will not be prescriptive in terms of precise curriculum details;*
- *That evaluation and outcomes will include the way in which the program in physiotherapy approaches the development and assessment of competency in physiotherapy students (as outlined within the APCS);*
- *That an educational program should address the professional issues relevant to the time; and*

- *That the process of accreditation should be based on the principles of equity and justice in that the profession should be assured that objective criteria will be employed and there will be an appeal mechanism built into the process.* (ACOPRA 2002b p5)

ACOPRA evaluates a physiotherapy course and the university's capacity to meet specified standards with respect to the curriculum, the process of education, the mechanisms employed to ensure quality outcomes, the resources available and the performance of graduates. Student selection and progression, staff expertise and their opportunities for development, and secure arrangements for supervised clinical education are addressed. ACOPRA provides procedures and guidelines for universities and accreditation committees for the accreditation process.

The accreditation committee of ACOPRA comprises equal representation from the registration boards, the APA and the heads of schools of physiotherapy. The Chair of ACOPRA is also a member. Each accreditation team has six members with two from each represented group. The university submitting for accreditation provides extensive documentation to support its case. Following an initial review of the materials and the sourcing of any further documentation that may be required, a site visit is made to the university. The site visit team must include two physiotherapy academics (one of whom is a senior academic and familiar with university processes) and two non-academic physiotherapists. These normally include two of the ACOPRA accreditation committee familiar with the submitted documentation, a local State registration board representative and an additional physiotherapist from interstate. Care is taken to ensure the membership is familiar with all academic, professional and registration requirements.

Clear specification of learning outcomes for entry-level (both undergraduate and graduate entry) physiotherapy degree courses is a requirement of the ACOPRA accreditation process. It should be noted that ACOPRA uses the term 'program' rather than 'course' and 'program objectives' rather than 'learning outcomes' in its guidelines and procedures. All physiotherapy courses must be accredited by ACOPRA for graduates to be recognised by state physiotherapy registration boards to practise as physiotherapists. National consistency of learning outcomes is also enhanced through the ACOPRA accreditation process.

The ACOPRA accreditation process is based upon two sets of standards, which must be met for courses to be accredited. These are the ACOPRA Standards for the Accreditation of Physiotherapy Programs at the Level of Higher Education Awards and the Australian Physiotherapy Competency Standards (ACOPRA 2002a). These standards are an integral part of the ACOPRA documentation provided to universities seeking accreditation for their physiotherapy courses. ACOPRA receives and considers recommendations from the accreditation committee and makes the final decisions regarding accreditation to be conferred on a particular course.

Under Standard 1 of the ACOPRA Standards, namely, *The Outcomes of Programs through the Performance of the Graduates… universities must demonstrate that they have a program whose graduates will meet the Australian Physiotherapy Competency Standards (APCS) in all key areas of physiotherapy practice…across all ages and from acute to community contexts* (1.1) and *evaluative procedures shall be conducted*

by the educational institution to assess the outcome of its program in terms of the standards of the graduates… and action should be taken on the basis of that evaluation to continually improve the standard of graduates particularly in relation to the APCS (1.2) (ACOPRA 2002 p13).. Two members of the AUTC project team have been on the accreditation committee of ACOPRA since the national accreditation process began. The accreditation committee members are in the privileged position of having access to all elements of the physiotherapy academic and clinical curricula of the Australian courses. They also have full awareness of the degree to which national consistency of course based learning outcomes/ objectives at the institutional level is achieved. The processes undertaken for the AUTC project have enabled triangulation of all sources of information to validate the ACOPRA accreditation.

ACOPRA Standard 5, namely, '*The Curriculum*', requires that: '*The curriculum is designed in sufficient depth and breadth to ensure that the desired outcomes of the program can be achieved, that is the preparation of graduates as competent entry level physiotherapists who meet the APCS* (ACOPRA 2002b p15). Quite specific guidance on curriculum details required is given in the ACOPRA document provided to universities. These include the requirement to provide the learning objectives for each subject, methods of assessment and how they relate not only to the subject objectives but also to the the course objectives, and an explanation of how the validity and reliability of the assessment process will be monitored. (Cross referencing of each subject and the course overall against the APCS is also a requirement.)

Whilst specifying standards to achieve national consistency of learning outcome, ACOPRA welcomes and encourages individual courses in the development and delivery of innovative educational processes to achieve these outcomes. As part of the ACOPRA accreditation process the heads of physiotherapy schools in Australia evaluate the performance of their entry level graduates using feedback from both the employers of the new graduates and the graduates themselves. All courses include a common element in evaluative surveys of employers of graduates. This common element comprises the eight major units of the APCS. The common element has been incorporated into the survey of employers undertaken by the AUTC project team. In recognition of ongoing changes in health and education, the maximum period of accreditation is seven years. All universities which achieve accreditation for their courses, are required to provide reports on changes and on specific requirements pertinent to their own courses. A number of universities which have commenced courses, or have indicated that they intend to offer courses, are still to achieve accreditation.

Most universities have enunciated generic skills, which are expected of their respective graduates. Many of these skills are incorporated within those expected by ACOPRA and have also been identified in the CEQ.

3.4 The Course Experience Questionnaire

The CEQ data from recent physiotherapy graduates has been collected each year since 1993. The reorganization of the CEQ into core and optional scales occurred in 2002 making direct comparison with the earlier years difficult. In evaluating the extent to which there is national consistency of generic learning outcomes from undergraduate physiotherapy degree courses responses from the 2002 and 2003 CEQ surveys have been used since these were both collected in the same format. The national data from

the CEQ 2002 for physiotherapy graduates has been aggregated in Table 2. The Code of Practice warns against using the data to compare institutions in a simplistic way. The AUTC project team noted the mean and standard deviation values for the items considered. The large standard deviations indicate a high degree of variability in the data and comments regarding mean values must be cognisant of this variability.

Table 2: CEQ 2002 National Responses: CEQ scale results ordered by size of mean per cent agreement given by physiotherapy graduates

CEQ scale	Mean Agreement (%)	SD	N
Intellectual Motivation Scale	83.8	29.6	37
Graduate Qualities Scale	75.3	24.6	148
Overall Satisfaction Item (core)	74.4	43.7	386
Generic Skills Scale (core)	72.7	29.0	385
Learning Resources Scale	72.3	27.4	130
Student Support Scale	62.8	28.2	127
Clear Goals & Standards Scale	59.9	39.2	86
Learning Community Scale	55.7	28.9	92
Appropriate Assessment Scale	48.4	37.8	86
Good Teaching Scale (core)	43.4	32.7	385
Appropriate Workload Scale	29.5	29.3	159

The 2002 CEQ national results indicate that on average graduates of physiotherapy courses in 2001 expressed a high level of satisfaction with their undergraduate courses. Graduates demonstrated a high mean percentage agreement with items about the Generic Skills they had developed in their physiotherapy course. Items in the Graduate Qualities and the Learning Resources scales also rated highly. Not all universities chose to ask all the CEQ questions so the number of graduates who responded to each scale varies. All courses sought information on the Overall Satisfaction Item, Generic Skills Scale and Good Teaching Scale. The 37 graduates from one university, who responded to items concerning the Intellectual Motivation of their course, rated their experience on this scale highly. Good Teaching Scale and Appropriate Assessment Scale received lower ratings by graduates. These results in the Good Teaching Scale may be partly due to lower results in the larger cohorts of responders from the larger courses. These scores need to be considered by individual universities within the context of their own learning environments in order to analyse the reasons for the discrepancies in scores across the scale items.

Graduates who completed the CEQ consistently indicated that they did not have an appropriate workload in their responses to the Appropriate Workload Scale, where mean values were less than 35.3 per cent for all institutions who used the scale. Bachelor degree courses in physiotherapy all have high workloads. The necessity for an understanding of biomedical and behavioural sciences, the scientific theory underpinning physiotherapy and clinical experience comprises a workload equivalent to five university years. In the present circumstances these five academic years are undertaken in four years. This is causing increasing concerns about workload particularly as more students undertake part time work for financial reasons. The workload and attendant financial concerns are compounded when students are

required to temporarily relocate to regional or rural centres for clinical placements. Many students are unable to work their regular jobs and are obliged to pay accommodation costs at the university as well as at the regional or rural location.

National consistency for the learning outcomes of physiotherapy graduates was considered in the range of focus groups and subsequent surveys of employers.

3.5 Focus groups of physiotherapy education stakeholders

These focus groups provided an opportunity to consider the national consistency of learning outcomes from entry level physiotherapy degree courses. Academic staff construct learning outcomes; students and recent graduates are expected to consider learning outcomes in their own learning; and employers are arbiters of whether the learning outcomes have been achieved. The findings from the staff and student focus groups are described in Chapter 4 and the findings from employers are described in Chapter 7.

Members of the community are also critical stakeholders in consideration of the value of physiotherapists to health. The funding available for this project was insufficient for the development of a national community survey.

3.6 Survey of employers

The survey of employers further confirmed that national consistency of course based learning outcomes is achieved at the institutional level. In considering the learning outcomes of the recent physiotherapy graduates who worked for them as physiotherapists, employers considered questions based on the current ACOPRA national accreditation requirements. The learning outcomes in the eight areas of professional work specified by the APCS demonstrated that graduates met these learning outcomes satisfactorily and many exceeded this level. Employers also rated their satisfaction level with the graduates from identified universities in a range of generic abilities and indicated specific strengths in these attributes. The results of the employers' survey are described in greater detail in a Chapter 7.

3.7 National consistency of course-based learning outcomes at the institutional level

ACOPRA explicitly encourages a diversity of learning and teaching approaches to physiotherapy education. Within this framework a number of pedagogical approaches to education have been adopted in different courses. The AUTC project team found some universities had developed clear philosophical approaches to their educational models, whereas others conveyed an implicit understanding of the educational context. The information available from websites was viewed and nominated academic staff members responded to a survey question regarding the academic framework of the course.

The university website is a frequent source of prospective students' information. The project team identified that all schools of physiotherapy websites are readily accessible through the Australian Physiotherapy Association (APA) Website. http://apa.advsol.com.au/scriptcontent/aboutphysio_schools.cfm?section=foryou

Each Physiotherapy School has its own style of presenting information to students on the web: some present short summaries of each course and its prerequisites while others start with a 'Welcome' from the Head of School, a description of the work done by physiotherapists, the job prospects for graduates and include commonly asked questions and answers as well as course requirements. The project team's review of websites showed that for undergraduate courses, five out of ten courses described pedagogy used in the course. One University described it thus:

> *'Physiotherapy is a health profession which deals with the prevention and treatment of human movement disorders. Physiotherapy services are used in a wide variety of areas such as health care organisations, community, sports and workplace settings, schools and private practices. The physiotherapy profession is committed to effective communication with members of the health team, the community at large and the continuing education of its graduates. Staff and students of the School are actively involved in a number of research projects which range over several areas including the investigation of human motor performance, musculoskeletal, neurological and cardiopulmonary physiotherapy, occupational health and clinical reasoning.'*
>
> *'In common with other Departments … the School promotes students development of generic (i.e. communication and teamwork skills) as well as discipline-specific knowledge and skills. The course is designed to promote self-direction and encourages the graduates to have a sense of their own individuality and creativity.'*
>
> *'Graduates of the undergraduate and postgraduate programs in physiotherapy will be prepared for a range of career opportunities. These include physiotherapy clinical practice, clinical education, administration, research, and consultancy within the public and private health care sectors.'*

For graduate level entry courses two out of five described the pedagogy. Approximately half the websites indicate the learning outcomes that students can expect from their courses. These sites describe the learning outcomes of the physiotherapy courses in general terms. For example,

'The objectives of this program are:

- *To provide students with the theoretical knowledge, skills and clinical competencies required of an entry level graduate in physiotherapy.*
- *To develop abilities to extend knowledge in physiotherapy practice and organisational management and*
- *To provide skills in research for physiotherapy.'*

Although it is possible to follow information links along many branching paths, information gathering is a somewhat idiosyncratic process according to the requirements of individual universities. On some websites further course information is only accessible with a student password.

The project team supports the present individual university processes of audits and the rigorous quality control of academic standards and the ACOPRA processes for the maintenance of overall national consistency in learning outcomes. We consider these

processes important to maintain physiotherapy academic and professional standards and to demonstrate to the community that its expectations of accountability, health and safety are met by preparing graduates for professional registration as physiotherapists. The project team recommends that a variety of philosophical and pedagogical approaches continue to be encouraged. It is supportive of innovation and creative curricula with subjects designed to address the ultimate desired learning outcomes in a variety of ways. The project team considers that ACOPRA has developed a rigorous process of accreditation that is pertinent to the needs of physiotherapy education. Its guidelines and requirements should continue to be sufficiently flexible to allow emerging trends in education and needs in health care to be accommodated, whilst holding responsibility for the standards of newly graduated physiotherapists.

A recently appointed head of a school of physiotherapy responsible for the development of a new course stated that:

> *'the accreditation process is very positive … it was a useful tool to reflect on the process and the (educational) program as it is developed. It also gets peer reflection, review – useful in developing a quality program.'*

As discerned from the various survey and accreditation processes, there is evidence that reasonable consistency is being achieved in physiotherapy entry level education. There is clear specification and national consistency of learning outcomes from undergraduate and, where applicable, graduate entry physiotherapy degree courses. Nevertheless this could not be discerned from the information obtainable from the university websites. The websites demonstrated little consistency of information for prospective physiotherapy applicants. The project team suggests that Australian schools of physiotherapy consider their websites and indicate more clearly the learning outcomes from their physiotherapy courses as well as their particular educational philosophy, and the pedagogical features of their particular courses.

3.8 Information technology applications in health and their impact on physiotherapy education

ACOPRA, in its accreditation process, has been cognisant of the growing importance of information and communication technology (ICT). Those components of the APCS which '*acknowledge the pace of change in information technology application in health and their impact on physiotherapy'* and which must be demonstrated by graduates of accredited physiotherapy courses include the competency units on evaluation '(*evaluates the effectiveness of physiotherapy intervention'*), health care ('*operates effectively within the health care system'*), and on management ('*applies management skills in physiotherapy practice'*) (ACOPRA 2002b).

For example, one of the two elements under the competency unit, Health Care, is that the beginning physiotherapist demonstrates skills in a range of information technology systems that facilitate operation within the health care system, with the attendant performance criterion '*demonstrates the ability to use the World Wide Web to access information relevant to physiotherapy practice*.' Similar examples can be provided for evaluation where the beginning physiotherapist is expected '*to demonstrate familiarity with electronic databases that provide access to clinical trials and systematic reviews of clinical evidence*' and management where the beginning

practitioner is expected to '*recognise the needs of the community through research based information'* ACOPRA 2002b).

As mentioned above, cross-referencing of each subject and of the course overall against the APCS is a requirement of the submission for accreditation. Also as previously noted the APCS are reviewed regularly to ensure that they reflect contemporary practice.

There does not appear to be any disparity between the type of computing technology used in the profession and that which is used in the education of physiotherapists. Students enter universities with a range of computer based skills. These are further developed during the tertiary educational process, particularly in the skills of searching for research evidence-based information and assignment writing. Students develop communication and presentation abilities, which include the use of multimedia. In the clinical environment, they are exposed to and gain experience in patient record input and retrieval and the use of diagnostic databases. Health technology used in diagnosis and treatment is part of both the academic and clinical curricula.

3.9 Summary

Historically, the robustness of Australian physiotherapy education has meant that Australian physiotherapists have been sought and recruited internationally as clinicians for decades. Developments in physiotherapy education in the 1990s demonstrate the recognition by Australia's physiotherapy educators of the importance of addressing professional education from an international as well as a national perspective, and preparing physiotherapist students accordingly.

The entry level physiotherapy curriculum needs to be comprehensive for a variety of reasons. These include: an increasing knowledge base; changing health practices; and the potential for solo practice. In an environment where funding is constrained, new physiotherapy graduates are increasingly likely to begin professional life as practitioners of first contact, without the mentoring or preceptorship of experienced physiotherapists. These additional needs contribute to the challenge of accommodating additional topics in an already full curriculum.

Following a comprehensive iterative process involving key stakeholders, including registration boards, the profession, and university schools of physiotherapy, beginning practitioner competencies were agreed in 1994 – the Australian Physiotherapy Competency Standards (APCS) – the eight competencies becoming, in effect, nationally specified learning outcomes.

Registration is a requirement to practise as a physiotherapist in every state and territory. The Australian Council of Physiotherapy Regulating Authorities (ACOPRA) was established to advise AHMAC on measures to maintain a consistent national approach to physiotherapy registration, to advise on standards and processes relevant to the recognition of physiotherapy qualifications and to act as the custodian of the APCS. ACOPRA was established as an independent body in 1995, and a primary function is responsibility for the accreditation of physiotherapy courses. Accreditation is based on standards which must be met. Clear specification of learning objectives both for the entry level physiotherapy course overall, and for individual subjects is a

requirement of the ACOPRA accreditation process; as is the need for universities to demonstrate the outcomes of the course through the performance of the graduates in relation to the APCS in all key areas of physiotherapy practice.

Outcomes are also evaluated through the Course Experience Questionnaire (CEQ). The CEQ and its core scales provide a valuable overview of new graduates' views of their course experiences. National responses over a number of years have consistently indicated high levels of satisfaction with the quality of their course experience by physiotherapy graduates despite consistent reporting of high workloads.

Consistent surveys of employers as part of the ACOPRA accreditation process have confirmed that national consistency of course based objectives and of beginning practitioner competencies are achieved and often exceeded in accredited courses. Employers have also expressed satisfaction at the generic attributes exhibited by new graduates of these courses.

Whilst the information provided through accreditation requirements, the CEQ data, employer survey results and discussion with focus group participants suggest clear specification and national consistency of learning objectives, this could not be discerned from information available from university websites for prospective physiotherapy applicants. Understanding and interpretation of learning outcomes is explored in a later chapter of this report.

3.10 Recommendation

The project team recommends:

- that the Australian Council of Physiotherapy Regulating Authorities (ACOPRA) continues to be the sole national standards advisory body for pre-registration physiotherapy education in Australia.

4 STAFF AND STUDENT UNDERSTANDINGS OF PHYSIOTHERAPY LEARNING OUTCOMES

4.1 Introduction

In a discipline where students are expected to graduate with sufficient skill and expertise to equip them for independent practice, learning outcomes are considered particularly important. The project brief made specific mention of the need to examine learning outcomes in the discipline within the context of curriculum design, delivery and review. This chapter reports staff and student understandings, and use of the term 'learning outcomes' in physiotherapy. Chapters 5 and 6 provide a curriculum context for these learning outcomes, while chapter 7 reports on employer satisfaction with physiotherapy graduates' learning outcomes.

4.2 Clarifying terms

Early in our conversations with students, graduates and academic staff, it became apparent that not all stakeholders shared common understandings of the term 'learning outcomes'. Some staff respondents used the terms 'objective' and 'outcome' synonymously, while others drew distinctions between the teacher-directed nature of objectives and the student-centred connotation of outcomes. Students also typically used the terms interchangeably. A probable explanation for the dual usage of these terms is that ACOPRA requires institutions to report on 'objectives of the program' and 'learning objectives for each subject', along with 'outcomes of the course through performance of graduates'. Staff are then expected to translate these terms for their own use and for the purpose of developing learning resources for students.

We recognise that in the broader curriculum literature, there is much debate about nomenclature and meaning when discussing objectives and outcomes in learning and teaching and it is beyond the scope of this report to debate the issue. For the purposes of this report, we use the term learning outcomes to refer to what students learn and what they are expected to know, understand, or be able to do as a result of a learning process.

As a result of the feedback received across a range of stakeholder groups, we conclude that learning outcomes are best understood from an hierarchical perspective. At the broadest level, graduates of a particular institution are expected to be equipped with a broad range of generic outcomes or attributes upon graduating. These are accompanied by more discipline-specific program and subject level outcomes (ACOPRA calls these objectives). At the more specific end of the hierarchy are the module and weekly outcomes, followed at the most detailed level by lecture or session outcomes. This hierarchy provides a useful backdrop to understanding possible sources of confusion around the topic when it comes to stakeholder perceptions and highlights the need for clarification at the individual School level as to what is meant by the term 'learning outcome' and how it relates to 'objectives'.

4.3 Learning outcomes from a student perspective

In order to gauge students' understanding of the purpose and attainability of learning outcomes, we conducted five focus groups comprising current undergraduate students in their second and fourth year of study across five institutions in three states. In some

cases the students were enrolled in graduate entry courses. Where their views differ notably from those of undergraduate entry students, this point is noted. A further five focus group discussions took place with recent graduates of the respective institutions to determine their retrospective views on learning outcomes.

4.3.1 Students' understanding of learning outcomes

Our discussions with undergraduate students reveal that they typically understand objectives and learning outcomes to be synonymous. This is in large part due to the fact that their teachers predominantly use the term 'objectives' to refer to student learning outcomes at the beginning of classes or in manuals.

There was widespread awareness of learning outcomes among the student body, best illustrated by the following comment:

> *'We get learning outcomes left, right and centre. We get them in the subject outline, we get them at the beginning of every PowerPoint lecture, we get them every fortnight when we finish a case, we get them in 'What you need to know' sheets. The lecturers emphasise them. I've never had any difficulty in following them. Our lecturers are really good at giving us what we need to know in lectures.'*

In general, students distinguished between two types of learning outcomes. The first type was the more general outcome such as that found in course guidelines. Students found these to be less helpful as they were too broad to be of particular assistance in their learning. The second type of outcome students identified was the more specific set of weekly objectives and lecture objectives which students found to be more useful for guiding their learning.

While these general impressions are important, it is also worth noting a range of understandings expressed by current students and recent graduates. These are not necessarily representative of the student perspective but they do shed light on the variability in students' perceptions of the concept of learning outcomes and what institutions might do to communicate more effectively the importance and value of learning outcomes in the student experience.

When asked for examples of learning outcomes, typically students and graduates encountered some difficulty. This is best summarised by a recent graduate who commented:

> *'I was aware that there were base levels we had to meet – certain standards of practice or knowledge to pass or fail – what those specific things were I don't know.'*

Another graduate recalled learning outcomes as being characterised by *long sentences with big words* and largely unhelpful. However, one student expressed her understanding of a learning outcome in the following way:

> *'My ultimate learning outcome is, Can I do my job as a physiotherapist when I graduate at the end of this year? And the way that sort of comes through is: When I go on Clinical, can I actually perform? Am I able to apply the things I have learned and use the reasoning thought processes that they've been teaching me?'*

It was particularly gratifying to have one recent graduate reflect on their understanding of the developmental nature of learning outcomes in their course, as follows:

> *'In first year the focus was on developing basic skills, communication and patient handling. Second year focussed on specific skills, then the rationale for doing it – musculo-skeletal mostly. Third year developed further. Fourth year gave us good theoretical knowledge and reasonable treatment and application. These are trends I can only notice in retrospect because you don't know what they're expecting as you're doing it. Not something you can appreciate till you finish.'*

While some of these understandings certainly are developmental in nature, there may be some merit in academics emphasising the ways in which learning outcomes combine to progressively achieve a coherent whole in the educational experiences of undergraduate students. This sense of coherence seemed to be lacking among undergraduate interviewees.

4.3.2 Students' perceptions of the role of learning outcomes

Students identified the main purpose of learning outcomes or objectives as a guide to exam preparation and as providing a general framework within which to structure their study. Across institutions, students agree that learning outcomes are most useful as a *'guide'*, a *'helpful framework'*, a *'checklist'* and as a learning tool. Several students said they referred to learning outcomes before assessments and exams since they were an important source of help: *Objectives help you learn for the exam*.

It should be noted, however, that not all students see learning outcomes as a core part of their learning. One student perceived learning outcomes as '*just another way of putting course content in outline form*.' Across institutions a selection of students admitted to ignoring the stated learning outcomes, their perception being that: '*Students mostly tune out of learning outcomes.'* Some graduates from another institution concurred with this view, saying: *'For every course we were given a list of things you had to know, but somehow you didn't take that much notice.'*

Within the scope of the present study there is no way to verify how widely held this perception might be, but it should be noted. If schools of physiotherapy see learning outcomes and objectives as integral to students' learning, this should be communicated and demonstrated through good practice in both writing and reinforcing of such outcomes. The valuing of learning outcomes should also be reinforced among students using a range of pedagogical approaches with a view to ensuring that students do not routinely *'tune out of learning outcomes'* which are so fundamental to their learning and practice.

Outcomes help students to *'link concepts'* in the words of one student. They also provide a sense of security in helping students to know what they need to learn. Students see them as a vehicle for lecturers to indicate what is important:

> *'You know that all you need is in the lectures.*
> *They give you a framework to tell you how much detail you need.'*

Learning outcomes help to identify *'core elements'* and direction for learning since there is '*lots of information'* to be processed. Students also appreciate that learning

outcomes can function as a form of reinforcement – a checklist for learning and a *'handy'* reference guide.

A few students commented on the importance of consistency in the use of outcomes in university as well as clinical settings. One student said that learning outcomes help students to transfer what they learn in class across to clinics. Another expressed the view that clinical supervisors should be more overt about expressing learning outcomes as the university lecturers do:

> *'It would be good if clinical supervisors would communicate their objectives - this would help students.'*

In the eyes of students across several institutions, there is inconsistency in the way lecturers use learning outcomes:

> *'Some lecturers are better than others at giving us learning outcomes.'*

However this did not seem to pose particular problems from their point of view.

Typically students saw learning outcomes as something provided by lecturers which determined what students learned. There was relatively little sense that students saw themselves as active participants in the translating of these outcomes other than using them as a tool to guide learning. However one student demonstrated a more proactive approach to the use of learning outcomes, commenting that:

> *'I use the objectives as guidelines. I prioritise them. If something seems irrelevant I disregard it or ask the lecturer why we need to know it. I generally won't follow through with an objective unless I understand the relevance of it to the big picture.'*

Another comment highlighted the role of learning outcomes in helping students make the transition from university classrooms to clinical settings. However, the critical importance of students playing an active role in making such links is evident from the following:

> *'That's where I really use outcomes – on my clinical placements. At University you just speed read them in class, punch holes in them and put them in your folder then never look at them again. I generally look at those outcomes when I go on prac and make sure in myself that I am achieving those outcomes and if I'm not, I re-evaluate myself and talk to my supervisor.'*

This level of self-reflection and proactivity on the students' part was not widespread among the interviewees, but in another focus group discussion, three Graduate Entry Masters students agreed on the importance of taking the responsibility for relating learning outcomes to the purpose of the learning experience.

There may be merit in considering ways of encouraging students at all levels to understand that learning outcomes do play a key role in their learning, but that this role is further enhanced when students take an active part in translating the outcomes for themselves, in asking questions about their relevance as part of the larger course, and in seeking to understand how best to prioritise outcomes and translate them from one setting to another.

4.4 The most useful types of outcomes

Many current students and recent graduates agreed that *'general'* and *'less well defined'* learning outcomes were least useful for their learning.

> *'Sometimes the objectives are broad, and you're not sure how much you should read*
> *Objectives need to be more precise and limited'*

Students appreciate specific learning outcomes which are clearly expressed, that is: '*from this lecture you need to know this'*. A recent graduate confirmed this saying:

> *'Learning outcomes are put at the front of the manual. I read them then didn't usually go back to them. They were not very specific… the general ones were not specific enough to be useful.'*

There is general agreement among students that *'some lecturers are better than others at giving us learning outcomes'*. Some clearly provide learning outcomes week by week and these are typically well received from the student point of view. One student went further to differentiate between the outcomes written in course outlines and those provided by the lecturer each week:

> *'I rarely look at* [learning outcomes] *on the subject outline so that doesn't work for me. But some of our lecturers have been really consistent in giving every week the objectives for this week, and I find that is really helpful. I wouldn't look at it on the course outline, but to have it sitting there – it is usually the first thing or the last thing on my lecture notes, saying 'This week you should be able to know this. You should be able to apply it in this way. And that's really helpful because it's broken down rather than having half a dozen or ten outlines for the whole subject…so it is much more specific and in that way you can know whether you are achieving it or not.'*

From the student perspective, there is much to be said for lecturers putting effort into translating the written outcomes in course outlines into practical realities during lectures and in breaking these down week by week. These regular cues and reminders from lecturers help to support students' learning by translating the words on a page into something meaningful and manageable for students in face-to-face settings.

4.5 Achievability of learning outcomes

Learning outcomes identified in lectures were generally considered achievable through study and revision. Students typically described lecturers as approachable and committed to helping students achieve the learning outcomes by, in some cases, holding extra teaching sessions of revision lectures. In the clinical setting, one student expressed the need for clinical supervisors to give feedback that was more closely aligned with the learning outcomes of the course.

> *'The objectives are manageable if you're willing to spend a lot of time.'*

> *'In neuro pracs, even people that do study find it is lots to take in. Sometimes it is unmanageable.'*

A further concern was that some tutors in problem-based learning (PBL) sessions were seen to be *'passive'* and did not give assistance when it was needed. It should be noted that it is, in fact, the role of a PBL tutor to facilitate students' learning and problem-solving rather than directing and taking the lead discussion. Overall, PBLs

were identified as very successful in assisting students to achieve the identified learning outcomes and in helping to raise their awareness of their achievements. PBL scenarios from early undergraduate years were easily recalled by one graduate student up to three years later.

4.6 Beyond learning outcomes – the graduate perspective

Several recent graduates commented that while learning outcomes were important, they were only a guide to *'know if you're on the right track'*. Their view was that learning outcomes did not encompass all there was to know in a practical sense:

> *'For example, interaction with patients, empathy. There's a place for learning objectives but you needn't tick off all the boxes and your training hasn't failed if you can't tick off all the learning outcomes.'*

The message seems to be that while learning outcomes provide a guide as to the necessary skill set for physiotherapists, they do not cover all that one needs to be able to do as a practising physiotherapist.

Interestingly, one of the staff members interviewed commented that she believed that *'hidden messages about professionalism and compassion'* were inherent in the work of academics in physiotherapy teaching and that these were key learning outcomes.

4.7 Academic staff perceptions of the role and nature of learning outcomes

There are mixed views among staff across institutions with regard to the meaning and appropriate use of the terms 'learning outcome' and 'objective'. Some staff viewed the two terms as synonymous and used them accordingly. A smaller proportion of academic staff interviewees sought to distinguish between the two concepts, stating that objectives were about what staff wanted to achieve, while outcomes were about what students could do as a result of their learning. One group of academics also allied the learning outcomes in physiotherapy with the institution's graduate attributes, stating that learning outcomes reflected these attributes. Some staff say that the learning objectives from a course should be measurable. Others say that they write their objectives in terms of student learning outcomes. For many academic staff 'learning objectives' and 'learning outcomes' are synonymous. This staff member perceived objectives as designed to lead to learning outcomes.

> *'Objectives are only as good as learning outcomes. It is all about the students and what they are learning'*

In two instances and in two different institutions, academics indicated that they required students to write down their own objectives for learning in the subjects in question. At the end of the semester, students were asked to review where they thought they were and what they had accomplished. This was an innovative approach to learning outcomes which was not apparent among the rest of the respondents.

Academic staff interviewees typically expressed the view that they used learning outcomes constantly during lectures and practical classes and they believed that these were made clear for clinical placements. Several also commented that they used learning outcomes as a *'major prompt for revision'* or as *'guidance for exam preparation'*. One academic commented on the policy of her department to aim for *'student friendly learning outcomes'* with an emphasis on students understanding the purpose of these.

Staff perceptions are that *'students take (learning outcomes) them very seriously'* and that they *'achieve them, but often may not know this'*. There is some awareness among academic staff that *'students tend not to read the student learning outcomes in the manuals so it's much more effective if they are right up front in the lecture'*. This is consistent with students' preferences for having the learning outcomes explicated progressively lecture by lecture. One academic also noted that *'students will pick inconsistencies in student learning outcomes'*, specifically with regard to assessment and exam questions which are not in harmony with the stated learning outcomes.

4.8 Summary

Learning outcomes perform important functions at all levels of curriculum design, delivery and review, from the day-to-day class level to the year-by-year course level. Feedback from students suggests that they are familiar with the concept of learning outcomes which they most readily equate with objectives. Some even feel that they are 'bombarded with objectives'. This no doubt reflects the importance which academic staff attach to writing objectives at all levels of the curriculum.

While our project brief required a focus on the role of learning outcomes in pedagogy and curriculum processes, our findings suggest that the discipline would benefit from a more clearly articulated discussion of the distinction between and complementarity of learning outcomes and objectives, as outlined in ACOPRA requirements. In considering ways to enhance physiotherapy pedagogy and curriculum design and development, we argue for the complementary roles of teacher-focussed objectives and student-centred learning outcomes. Further, we contend that while it is important to provide students with written information about learning outcomes it is equally important to provide them with opportunities to reflect on what the outcomes mean for them personally. Student responses in this study reflect the need to translate learning outcomes from a long list in the course outline to meaningful and manageable chunks. Students need to be given strategies on how best to make use of learning outcomes to enhance their learning and their experiences in the classroom as well as in clinical placements. This is being done in some cases, but is not as widespread as it might be.

Learning outcomes play an important role in helping students to understand the links between different dimensions of their study, from the class level, to the year level, to the course level, and between university and clinical contexts. In order to enhance the quality of students' learning and their sense of course coherence, there would be considerable merit in monitoring consistency in use of outcomes as a guide to learning and practice at all levels of the physiotherapy curriculum, within institutions and between university and clinical settings.

4.9 Recommendation

The project team recommends:

- that schools of physiotherapy explicate the role and value of learning outcomes in order to clarify the relevance of learning experiences for students and provide them with a more coherent learning framework.

5 CURRICULUM DESIGN, DELIVERY, ASSESSMENT AND REVIEW, IN PHYSIOTHERAPY COURSES

5.1 Curriculum design

The data gathered from heads of schools, academics, students, graduates and employers reflect instances of good practice in curriculum design at institutional and program level, and details are given down to individual subject areas. The information gathered predominantly covers undergraduate entry courses. Where there has been discussion of graduate entry courses this has been separately noted.

In focus group discussions, there were many aspects of the physiotherapy curricula that staff, employers and students appreciated. For example, undergraduate and recently graduated students valued the breadth of experience they had gained from working in different clinical placements and had learned a great deal from their clinical supervisors.

There are eleven Australian schools of physiotherapy offering sixteen different entry level physiotherapy degree courses between them (Appendix C). The courses have many features in common: they all aim to meet the required accreditation standards of ACOPRA. However there is also variation between them at the program structural level (eg undergraduate, graduate entry master, double degree) at the subject structural level (eg schools have different kinds and different sequences of clinical experiences) and at the pedagogical level (eg schools vary in the extent to which theory and practice are integrated at different year levels).

There is general consensus amongst the schools of physiotherapy that the diversity of curriculum approaches gives strengths to the physiotherapy courses, however issues of quality assurance become more complex. This diversity allows graduates to achieve the ACOPRA competencies /learning outcomes using a diversity of learning and teaching approaches taking into account the geographical differences of individual universities and their respective missions, goals and foci. It also accounts for the graduate entry programs in a number of the universities.
One academic member of staff stated:

> *'The course reflects an international trend in physiotherapy education in structuring the curriculum to meet the Australian Physiotherapy Competency Standards. It makes these explicit as learning objectives, teaching methods and assessment procedures throughout the course. The current undergraduate course uses clinical profiles extensively in the professional subjects to develop skills in clinical reasoning and integrate the core concepts with clinical practice.'*

5.1.1 Physiotherapy studies

Undergraduate courses are very diverse in their description of curriculum. One university commented that their small numbers enabled them to have a focus on student centred learning approaches and the ability to address individual student's needs. Many use a lifespan approach to curriculum development. One university refers to a lifespan approach, developing graduates with generalist skills but specialising in rural practice.

> *'Lifespan (eg paediatrics) and other generic skills (eg ethics) are threaded throughout the entire curriculum.'*

Most courses emphasised the development of professional behaviours and attitudes towards clinical practice, learning and knowledge development. These included a focus on reflective practice in a collaborative environment. Staff (both academic and clinical) all come from a clinical background and therefore feel they have a practice based approach.

> *'Behavioural sciences underpin the development of good professional practice and communication skills. These skills are further developed with course elements addressing professional responsibilities, ethics, legal responsibilities, management skills and the physiotherapist's role in the health care system.'*

The ethos and philosophy of the curriculum is what is important and needs to be conveyed to the students. A lot of implicit behaviours are expected of the students which academics and clinicians feel are role modelled in varying degrees by the teaching staff. Introduction to the 'profession' and the modelling required to become a physiotherapist was considered important by many academics and clinicians but it was felt that it was not necessarily made very explicit to students in their curricula.

The study found a strong emphasis in physiotherapy courses on the integration of academic and clinical learning. The embedded nature of the physiotherapy program within a multidisciplinary faculty or school emphasises the development of both professional identity and cross disciplinary skills.

> *'Key elements of the program are to enable students to develop as effective health care team members, be reflective practitioners and have a sound understanding of self directed learning as it exists in the overall career pathway of a physiotherapist.'*

A number of universities discuss the need for integration of the biological, behavioural and biomedical science subjects. Integration of the academic program of biomedical, behavioural and physiotherapy sciences in a clinical context based on research evidence was a common theme.

> *'Physiotherapy research underpins the course material.'*

One university has an integrated learning and teaching program incorporating clinical education throughout the four years with students attending clinics from the beginning of the course. In this program staff from the clinical schools are involved in curriculum development and design throughout the program. The academic program in the school of physiotherapy is based on a problem based learning approach that introduces the students to common health problems that they will encounter in their clinical practice. These problems are used to encourage: in depth understandings of the biomedical and physiotherapy sciences that underpin practice; the development of the students' ability to work collaboratively in a group; the development of skills in clinical reasoning and clinical decision making. These problems introduce the students to learning about issues of practice in an integrated manner. This approach to learning prepares the students for the context in which they will develop their practice.

> *'Integrated academic and clinical practice commences in year 1. A problem-based learning education paradigm enhances contextual learning. Biomedical and behavioural sciences subjects are integrated within the problems. Research forms the basis of the clinical reasoning processes underlying clinical practice.'*

A few of the universities discussed the vertical and horizontal mapping of their curriculum. As reflected in the previous chapter some students have sensed a lack of coherence in their courses. Curriculum developers may need to be encouraged to use strategies such as broad curriculum organisers or concept maps for students to enable them to have an overall understanding of the learning outcomes that they are expected to achieve.

5.1.2 Graduate entry courses

All Graduate entry courses build on pre-existing knowledge and use case studies to integrate knowledge. Biomedical and in most cases behavioural science prerequisites enable this to occur. Many use a systems integrated approach in the teaching of the biomedical sciences and use clinical profiles to contextualise the learning in physiotherapy practice.

> *'The … graduate entry curriculum framework is a 2 year, 4 semester model using an integrated clinical academic pattern. Coursework draws significantly on the student's previous undergraduate studies in exercise science, with assumed knowledge of physiology and applied physiology, neurosciences, anatomy, biomechanics and behavioural sciences.'*

The early introduction of clinical studies is a feature of the graduate entry Master of Physiotherapy courses.

> *'Clinical education is introduced early in the program in order to provide students with early, sequential and integrated exposure to a variety of patients with problems of increasing complexity.'*

In all cases research based practice was emphasized and clinical competencies are developed in parallel with specific clinical knowledge and skills. One university stated that their Graduate Entry Masters course was based on three philosophies

> *'Evidence based practice introduced in semester 1 and gradually increases with clinical exposure.'*

> *'The early part of the course builds on students' pre-existing knowledge and establishes an appropriate knowledge base particularly in the biomedical and behavioural science subjects.'*

> *'Case studies are used to provide a 'systems integrated' approach and provide a basis for applying discipline knowledge, reinforcing principles and concepts, problem solving, critical thinking and clinical reasoning. In addition, case studies provide a medium for incorporating cultural issues, ethical issues and an international perspective into the curriculum.'*

> *'Curriculum mapping of course outcomes and unit outcomes facilitates the integration of material.'*

5.1.3 ICTs in learning and teaching

ICTs appear to be embedded in an implicit way in all aspects of learning and teaching in both the education and health environment. Students in all universities have access to computers and the Internet. All students are instructed in the use of search engines for evidence-based practice and critical analysis of the information gained from the web. University staff frequently obtain feedback pertaining to curriculum design and delivery from students and clinicians, and introduce new courses in response to perceived needs. For example, new ICT based learning resources are being developed and evaluated in many physiotherapy subjects. All schools use the Internet to give students access to Web-based resources and some use ICT for online courses, tutorials and videoconferences.

All universities cited examples of how ICT was used in both the delivery of their curriculum, using knowledge management systems such as 'blackboard' or 'web raft', as well as using ICT as a teaching tool in discussion forums and interactive computer aided learning packages. An example of innovative practice in this area is the use of an on line workbook. Students can download this workbook and fill in additional elements during the lecture, when the cases are talked about, so that theory and practice are linked. In the following lecture, the lecturer responds to points from the previous lecture that students found difficult.

Students in large metropolitan teaching hospitals use the health sector's software programs for data management regarding patients. As well, some students are exposed to the use of telemedicine, for example in paediatric consultations where the patient is at a rural location. This is a developing area of practice, which the schools of physiotherapy must be aware of and take advantage of wherever possible. Medical informatics has not been widely commented on by participants in this study.

Many applications of information technology are being using in schools of physiotherapy. The hardware, software and staff training associated with maintaining and updating ICTs makes considerable demands on the budgets of the schools of physiotherapy. Some staff said that they would like more advice on effective ways of developing and running online subjects. Employers comment on the graduates' ability to use technologies effectively and their keenness to learn on the job especially using ICT.

Some academic staff acknowledged that developing specific computer based learning packages is costly in terms of time commitment and that to do so well requires specialist knowledge. While several academic staff indicated that they would like more ICT education a smaller number of staff were highly competent in the use of ICT as a tool for student learning and had developed sophisticated interactive programs. The Australasian Heads of Schools of Physiotherapy share information about computer aided learning packages that have been developed for their respective courses and that are available for exchange or purchase. They are all concerned at the very significant resources that are required to develop appropriate packages. The experience of this group since its inception has been that unless the multimedia products are very sophisticated, introduced appropriately and perceived to be relevant, students will be reluctant to use them. Students much prefer *'tutors to computers'*. Any multimedia needs to be well integrated into the curriculum and teaching methods.

In order for more effective use of multimedia, most academic staff require further education. Additional time and resources are required to support both staff education and the development of curriculum materials. Preparing courses for flexible delivery using multimedia is normally a time-consuming and expensive process. Considerable further research is required to establish the forms of multimedia that are truly cost-effective learning and teaching tools. The research indicates that student enthusiasm for this form of lecture delivery for example, is often minimal. Compared with initial intentions, actual usage may be very limited (Bell, Cockburn, McKenzie and Vargo, 2001). It was also evident that students required specific preparation for the effective use of multimedia.

There are a number of excellent multimedia packages suitable for a range of health professions. The award winning ‘an@tomedia' co-developed by anatomists, medical and physiotherapy academics is an excellent example of such as package (Eizenberg, Briggs, Barker and Grkovic, 1999). In the interprofessional clinical practice of students and later in their professional lives, there is further opportunity for collaborative learning in health informatics. As many health professionals, such as physiotherapists are highly mobile during their early professional careers, national and international collaboration to enable smooth transition in learning between these global boundaries would be desirable. It is important that in both the academic and clinical education environments health professional students are introduced to the health informatics tools they will need to use.

Clinical education experiences within Australia frequently occur at rural or regional clinics that are geographically distant from the universities. The Internet is used to improve communication, provide social support and promote problem solving abilities. During this project, there were a number of examples described by staff and students where password protected web sites for students and academic staff provide access to course and subject materials, forms, and requirements for submission of assignments via the web site. Access to a bulletin board, private e-mail, survey instruments, and Internet links were also available on such sites.

The educational multimedia developed specifically for physiotherapists is relatively limited. Therefore, the project team argues strongly for rigorous research and evaluation of the impact of ICT and multimedia on learning outcomes in physiotherapy education. Currently available materials require evaluation of pedagogy and content, the students' perceptions of usefulness and on their cost effectiveness as an educational tool.

5.1.4 Multidisciplinary learning and teaching

Multidisciplinary learning and teaching to work in health teams is a common theme at all universities and staff are increasingly enabling students to learn together in such teams during their undergraduate years. Five schools of physiotherapy have introduced subjects that bring together students from different health professions to work collaboratively. One school of physiotherapy has implemented a new subject, Foundation Skills for Allied Health Professionals for first year students in physiotherapy, occupational therapy, podiatry and speech pathology; another is introducing an integrated online course for four hundred students from different health professions.

One university with a large faculty representing health sciences such as physiotherapy, medicine, speech pathology and audiology amongst others said:

> '[The] *introduction of a structured program of Inter Professional Educational Experience is occurring in 2004 as part of an … initiative where students from all health disciplines work on a common clinical problem in small multidisciplinary groups. It is planned to introduce inter professional learning initiatives into all years of the undergraduate physiotherapy program in the near future to prepare graduates for changes in the delivery of health care services and improve inter professional communication…'*

Another university with a large faculty has physiotherapy, dental, pharmacy, nursing and medical students working collaboratively in its rural health module.

All universities expose their students to the roles of health professionals during their clinical practice. This was also seen by employers to be a key issue in the graduates' abilities to work effectively in the public and private health environment. Some employers discussed the need for the students to have a firm understanding of their own profession and its knowledge and skills before they could effectively engage in multidisciplinary health teams.

This is a complex area of curriculum design and delivery that needs careful consideration of issues such as timetabling, resources available and cross discipline collaboration. Further understanding of this area needs to be gained from research and international examples of good practice in the learning and teaching in multidisciplinary curricula.

5.1.5 The crowded curriculum

The question of what should be included in the undergraduate/ graduate entry level curriculum and the level of expectation of the competencies required of the graduating physiotherapist requires further exploration. In an article in the APA Journal in 2002 Crosbie et al discussed the increasing problem of determining what core teaching is required for entry-level practitioners.

Many respondents in this AUTC study reflected these concerns. As new areas of practice open up for physiotherapists and as health practice changes, the curriculum needs to be able to adapt and change. Curriculum content needs to be evaluated for its relevance on a continuing basis so as to address some of the problems of overcrowding. Concern is expressed that students are not spending enough time on core areas of practice as there are so many areas of the curriculum to be covered.

5.1.6 Changing student population

It was acknowledged by most of the participants in this study that there was an increasing diversity of the student body in physiotherapy courses. Sources of diversity include age, gender and ethnicity. With changes in the nature of the students entering physiotherapy a number of issues require consideration.

All undergraduate physiotherapy students have access to support services provided by their university, their faculty or their school of physiotherapy. These include programs for international students, students from non English speaking backgrounds (NESB), students with disabilities, and special needs students. Two universities have

specialized tutoring programs for indigenous students. Some schools have specific programs provided by staff of the school. One school of physiotherapy identified a program to support students at risk of failing; another two had programs within the school for international students. Peer tutoring and mentoring by students in higher years for specific groups such as rural students and international students are in place in some schools of physiotherapy. Students said in focus groups that they appreciated such support. These additional programs are considered important both in the academic environment and clinical learning environment. Clinicians stated that NESB students commonly needed extra support for learning in more intensive, one on one clinical encounters.

5.1.7 Cultural diversity

All respondents discussed the impact on curriculum of the increasing diversity of both the student body and the community in general. This diversity has required that changes are made in the content of curricula as universities attempt to respond to such challenges in their teaching. For example, case studies are developed, based on patients from a diverse range of populations, requiring students to understand individual views of health and illness.

5.1.8 Transition issues

Curriculum design needs to respond to different periods of student transitions. In undergraduate physiotherapy courses students encounter two main areas – their transition from school based learning to university style learning and their transition from academic learning to experiential learning in the clinical environment. These transition issues require consideration and their management should become embedded within the curriculum. In the graduate entry courses consideration should be given to the particular transition needs of those returning to study, and to study as a mature age student.

5.1.9 Full fee paying students

A larger percentage of physiotherapy students are now required to fully fund their own studies. All the graduate entry courses are full fee paying, some universities have full fee paying local students and nearly all have full fee paying international students. This provides additional stresses on students in managing intense study programs as well as needing to financially support their university places. Hence additional pressures are placed on staff as there is a high cost for academic failure for these students. While these issues were not explored in the present study they warrant close monitoring and investigation in the future.

There is an increase in the demands that students make on university staff as the higher education environment becomes more customer oriented. While this issue is not unique to physiotherapy the discipline arguably faces some unique challenges as the physiotherapy courses preclude the higher rates of part time paid employment enjoyed by students in other courses with fewer contact hours.

5.2 Curriculum Delivery

There was general acceptance that small group teaching using case based or problem based learning was an important teaching and learning tool. As well, all respondents including students commented on the need for learning to be in context. Many different approaches in curriculum delivery are used to simulate the clinical

environment. These included videos, role-plays, sessions with expert practitioners and computer aided learning programs. In many instances case studies are used to integrate learning, and evidence based practice seen as essential in (most, if not) all, courses. Case studies based on patients seen by students in clinical practice are commonly used to drive discussions around theory and management after students return to their university.

> *'The curriculum uses teaching methods which integrates classroom, clinical and research experiences in a way that teaches the students to apply their knowledge in increasingly complex situations.'*

One university highlighted the diversity of teaching staff involved in the delivery of their curriculum.

> *'The undergraduate program is developed around the concept of physiotherapy as an applied clinical science. The foundation biomedical and behavioural sciences are introduced to physiotherapy students by academic experts in these fields during the first and second years. Specialist medical and other academics and professionals also contribute to various courses bringing their own expertise to the total mix of the program. This is done in parallel with physiotherapy studies. From the beginning of the program emphasis is placed on the importance of physiotherapy clinical practice which is founded on science and is evidence based.'*

The integrating of the theory and practical sessions was also seen by students to be important in their ability to comprehend the relevance of what they were being taught. This theme of integration and linking of theory and practice was repeated by students and staff as one of the key elements of good delivery of the curriculum.

Other aspects of curriculum delivery also helped student learning. Those raised frequently by students were: they learned a lot from good lectures, from mentoring by students in higher years, peer group work and self-directed learning tasks. Students appreciated the accessibility of staff and found it very valuable when an expert physiotherapist demonstrated assessment and management of specific patients.

Students in a graduate entry program commented that the peer and group learning environment was very motivating and that the staff were very approachable so that it was easy to ask questions regarding content.

5.3 Assessing and monitoring learning outcomes in undergraduate physiotherapy degree courses

All schools of physiotherapy review their physiotherapy curriculum regularly, both at the course level and the subject level. They align their curricula with university and faculty policy, with generic graduate attributes for their university and with the APCS. The focus of the reviews is usually at a number of levels including content and reviews of learning and teaching experiences.

Assessment and monitoring on a national basis of the fitness for purpose of learning outcomes from entry-level physiotherapy courses is facilitated by requirements of the ACOPRA accreditation process. ACOPRA clearly specifies the learning outcomes required for gaining full accreditation. It requires the provision of satisfactory

evidence from surveys of new graduates and from the employers of those graduates that they demonstrate fitness for purpose against the beginning practitioner competencies (APCS) and the ACOPRA Standards. This has been demonstrated to be a very effective way to assess fitness for purpose of the learning outcomes of a physiotherapy course. Following the achievement of full accreditation, ACOPRA continues its monitoring role for physiotherapy courses through follow up reports incorporating surveys as described above.

The results and evaluation of surveys of employers of new graduates for ACOPRA accreditation purposes includes perceived strengths and weaknesses; what the university proposes to do to address the weaknesses; and how it plans to assess the effectiveness of such intervention. As well as addressing the specific ACOPRA requirements, many physiotherapy schools seek additional survey material from new graduates and their employers on a regular basis and are able to provide rich data analysis for the ACOPRA accreditation process.

5.4 Review processes in Schools of Physiotherapy

There is an extensive process of review within all schools of physiotherapy as required by their respective universities. The more recently introduced Australian Universities Quality Agency (AUQA) evaluation of universities is also impacting on schools of physiotherapy. These processes were confirmed by the survey of academics. This survey also asked academic staff to nominate the additional stakeholders they consulted for review rather than identifying stakeholders from a proscribed list. All schools of physiotherapy consult widely on a regular basis with stakeholders within the university sector, clinical educators, employers and with accrediting bodies in the course of their evaluations. Of the 10 universities responding to the survey, all identified their staff and public and private employers of graduates as stakeholders whilst eight indicated that students, clinical educators and the APA were consulted. Seven universities identified that they consulted with their State Physiotherapist Registration Board. Whilst not nominated by all universities as stakeholders, graduates are routinely contacted for feedback regarding their fitness to practice and ACOPRA undertakes a full curriculum review as part of its processes.

One university noted that:

> *'Students and lecturers are involved in curriculum review through the formal evaluation process undertaken by the Centre for Education Learning and Teaching (CELT), and through the physiotherapy curriculum review committee (PCRC). The PCRC meets in week 11 of each semester, and has representatives from each year of students and the physiotherapy lecturing staff. The student representatives are responsible for compiling a report from blinded feedback that covers all subjects taken by the students in that semester, the clinical placements, and other factors such as resources (library computers etc). The PCRC is invaluable for capturing an overview of the program, and especially students' perspective of how well subjects within a semester balance each other, vital information that is missed with the individual subject evaluations performed by CELT. The course coordinator is responsible for compiling an action plan resulting from the feedback, for relaying the information to the relevant parties and assisting in the implementation of the action plan, and for reporting back to the next meeting.'*

Another university uses computer technology for evaluation by students:

> *'Each subject and year of the course is evaluated by students using the School's on-line evaluation tool – Course Evaluation on the Web. This evaluation tool assists in the process of student and staff reflection on learning and teaching and provides a mechanism for managers and coordinators to improve the quality of the program.'*

A third approach was described thus:

> *'The Course Evaluation Instruments for each course are reviewed regularly by the Program Director and by all teaching staff involved in the course. This occurs formally in fortnightly Physiotherapy Program Review meetings and less formally in course meetings. Every two weeks, the program team has a Program Meeting to respond to and review current curriculum, staffing and other issues that may affect the running of the program. Twice a year, the program team holds a full day planning day, where minor to moderate changes to the curriculum may be made in response to student feedback, staff feedback, and discussions with external stakeholders such as clinical educators, employers and the APA.'*

A further mechanism employed by many courses accredited to date is a specific professional or community advisory or consultative committee, which includes employers of physiotherapists. These committees interact with university academic staff in the ongoing review of curricula. This constructive two way process enables courses to keep abreast of changes in the health sector that impact new graduate physiotherapists in the professional workforce. It also ensures the community is aware of educational developments or changes. Physiotherapy courses are additionally advantaged by the number of teaching staff who are also in clinical practice. In all courses some academic staff are also practising clinicians who contribute high levels of clinical relevance to their teaching and ensure contemporary management is conveyed to students. The clinical educators are in a privileged position to influence program content, although it was noted that in some locations the clinicians would like further involvement to influence course content and delivery.

One school surveys annually both the employers of the new graduates nine months after graduation and the new graduates to get both opinions on whether the graduates are adequately prepared for practice.

All schools of physiotherapy, apart from the very newest, have made changes to their courses during the past few years. They make changes in the timing or the emphases of particular subjects and clinical experiences in response to student feedback and perceived student, community or employer needs. For example, one university had made changes to its curriculum in response to University policy:

> *…'University has recently adopted a teaching and learning plan that has, as its main focus, outcomes-focused education. This change is necessitating a current review of the entry level physiotherapy curriculum and the horizontal and vertical mapping of learning outcomes for the entire course.'*

Another school stated that following a major review:

> *'The current Bachelor of Physiotherapy program was the result of taking into consideration advances in the profession, the changing health needs of the community and the changes in student learning.'*

A number of universities have made curriculum changes to reflect changes in the health needs of the community, advances in the profession and the need to integrate research into teaching. The need for students to be able to evaluate research findings and apply them in evidence-based practice was also a consideration for curriculum change.

In all courses surveyed staff used a variety of methods for evaluation: questionnaires, staff-student liaison meetings, on line feedback. The topics reviewed included issues such as feedback on individual subjects, lecture content and presentation, the staff members teaching in small groups, clinical education and administrative support.

Clinical education is monitored by feedback gained from clinicians, physiotherapy managers and students in relation to both content and process in the delivery of clinical education.

There was very little evidence gathered in this project on evaluation of teaching methods. All universities adapt and modify their learning and teaching materials in response to student feedback and advances in physiotherapy knowledge. Planning days around curriculum design, content and delivery were held in a number of universities. These curriculum planning days include staff, students and external stakeholders.

Each university has its own processes for approving minor and major course changes. These start within the school and include the faculty and then central university committees.

5.5 Summary

There is extensive assessment and monitoring of learning outcomes on a national level from ACOPRA and through AUQA audits; at an institutional level in quality of teaching surveys; and from individual subjects via student feedback. As well, monitoring of support programs such as mentoring, transition programs and administrative support is extensively carried out.

In discussions on curriculum design and delivery many examples of good practice have been cited. Students and graduates alike emphasised the value of small group teaching, integration of theory and practice and learning in context. Early clinical exposure was seen as highly desirable but not always available. Development of concept maps or other tools to enhance the students understanding of the role and value of learning outcomes in helping their study would be useful. Multidisciplinary teaching was incorporated in all schools with a number having explicit subjects covering this area. All schools reported extensive use of ICTs in learning and teaching.

Little evidence was gained on the philosophy underlying curriculum design in the different schools or why different teaching methods had been chosen. Comments from one respondent referred to the lack of evidence for teaching and learning in

physiotherapy. This is considered in an article by Chipchase, Dalton., Williams, and Scutter (2004) *'Is education immune from evidence based scrutiny?'*

5.6 Recommendations

The project team recommends:

- that federally funded competitive research grants should recognise the importance of research into education in the health sciences, including physiotherapy.

- that universities prioritise physiotherapy education research. Specifically, there is a need for research into:
    - innovative approaches to the design, delivery and review of physiotherapy education, including clinical education, with a view to enhancing learning outcomes
    - different approaches to the complex issue of multidisciplinary pedagogy and practice
    - cost effective and high quality multimedia learning and teaching tools in physiotherapy education.

- that schools of physiotherapy and employers address the issue of 'the overcrowded curriculum' in the light of recent research; new areas of practice; the need to value private practice and issues pertaining to clinical education in public and private practice.

- that schools of physiotherapy further explore and implement strategies to include the profession and stakeholders in physiotherapy curriculum development, delivery and review processes.

- that schools of physiotherapy explicate the role and value of learning outcomes in order to clarify the relevance of learning experiences for students and provide them with a more coherent learning framework.

- that physiotherapy educators and curriculum developers collaborate to determine the most appropriate means of developing, sharing, promoting and disseminating effective strategies in physiotherapy education.

6 CLINICAL EDUCATION AND STAKEHOLDER INVOLVEMENT IN CURRICULUM

6.1 Clinical education

Clinical education is a key component of physiotherapy curricula and constitutes a large part of all courses. This was the area of the curriculum that elicited the most comment and also the most concern. The majority of responses from clinicians, graduates and students stressed the importance of clinical education early in the program to enable students to understand the relevance and importance of what they were learning. In most courses the majority of the direct clinical exposure occurs in the third and fourth years of the course but all courses incorporate teaching relevant to clinical practice early in the course.

Major issues in clinical education were inadequate funding for clinical education, lack of qualified clinical teaching staff, lack of support for clinical staff from universities in the education process and from health sector employers for the education role and lack of accommodation for students in rural areas. The places for clinical education are becoming increasingly pressured with patients spending less time in hospitals, less job opportunities for physiotherapists in the acute sector, no government funding for physiotherapy clinical education, the increasing number of students and more schools of physiotherapy

> *'Clinical education is making demands on clinicians who are under resourced to provide core clinical services let alone supervise students. The increasing number of students in public hospital placements is the bottleneck.'*

Physiotherapy is a keenly sought after degree in the universities. Such popularity places pressures by universities for the schools to take extra students. The pressures on the schools are also exacerbated by the change in funding for universities and the demands to take more fee-paying students – both local and international. The development of health professionals is costly and time consuming. They require very different teaching methodologies and environments to the students studying, for example, Arts or Science. The funding models need to reflect the medical science nature of physiotherapy courses with their extensive clinical needs. Such funding has been recognised for medicine and dentistry for decades. Recently there has been Federal Government recognition that there are significant costs associated with the practical components of teaching and nursing. It is timely to acknowledge the need in physiotherapy education.

6.2 Competition for scarce resources

There are increasing numbers of physiotherapy schools competing for clinical placements. With an already under resourced (or not at all resourced) system, clinicians are especially concerned at how these students will gain adequate clinical experience. Some academics and clinicians expressed concern at a perceived need for 1000 hours of clinical practice experience. One thousand hours of clinical experience is apparently still perceived by some as a requirement for a program, despite the fact that ACOPRA has been careful to make no specification of hours of clinical experience in guidelines and procedures for accreditation and the WCPT removed the

requirement for 1000 hours of clinical experience in physiotherapy courses of member countries in 1991. Quite apart from that however, the burgeoning number of physiotherapy courses and a constrained health sector is concerning clinicians and academics. The ACOPRA standards (5.8) make it very clear that clinical experience must be of *'sufficient breadth, depth and comprehensive coverage to ensure that the objectives of the program are met, and that students have the opportunity to integrate theoretical concepts into clinical practice'*. In 2002 ACOPRA enunciated a position statement *'The primacy of an comprehensive physiotherapy clinical education experience*' and drew the attention of all universities with schools of physiotherapy or those contemplating commencing a physiotherapy program, to the primacy of a comprehensive physiotherapy clinical placement experience.

Discussions between clinical coordinators, head of schools of physiotherapy, and articles in professional journals reflect a growing disquiet as to how the profession will manage to support the clinical needs of new courses of physiotherapy. The universities participating in this research project all have different amounts of financial and academic support for the clinical facilities associated with their universities. Private practice is not used substantially; reasons given for this are loss of income for the private practice and issues regarding insurance.

Rural clinical education was another major concern. Lack of accommodation, travel costs and lack of access to learning materials were some of the issues described. It is well documented that students are more likely to work in the rural area if they have a rural clinical experience (Carroll & McMeeken 2000). Another critical issue is the lack of appropriate physiotherapists in the rural areas able to be involved in the education of the students.

6.3 Redefining clinical education

In each school of physiotherapy, one or more members of staff have responsibility for the clinical education component of the curriculum. These clinical co-ordinators have responsibility for ensuring the placement of students in clinical locations for clinical education purposes.

These clinical coordinators from all schools of physiotherapy in Australia and New Zealand have met annually for the past three years. The concerns of the profession regarding clinical education have been discussed in detail with the group acknowledging the need to further consider what constitutes clinical education and how it can be effectively and equitably delivered. There is a need to inform the profession, who are critical deliverers of clinical education, of different models and methods of clinical education. This requires a collaborative research program to be undertaken to have more evidence on good practice in clinical education.

The profession is an important stakeholder in the development of appropriate physiotherapy courses and is the key body involved in the delivery of clinical education. Clinical staff in public hospitals are deeply concerned about the pressures on them to provide high quality clinical education within the limited time and resources available to them. There is no Federal Government funding available for the clinical components of physiotherapy education and clinicians find it a great strain to manage their own case load as well as educating students. They see this problem becoming exacerbated in the future as new schools of physiotherapy are opened and

new courses, such as Graduate Entry Masters courses, are developed resulting in an increasing number of students needing clinical supervision. Clinical staff recognise that new graduates also need extra supervision in their first year. In some workplaces this is difficult to provide because there are so many students requiring supervision. Clinical staff feel that universities do not always appreciate the time and the costs of providing high quality clinical education and should make more funding available to them. Some have suggested that funding from additional fee-paying places in physiotherapy courses be used to boost the funding of clinical supervision in future.

6.4 Timing of clinical education

Early clinical experience was seen to be important by most respondents but is not available at all universities. It is important that the academic and clinical components are seen as a continuum and that the clinical component is not viewed as 'training' or 'a placement' taken at the end of the course. Clinical education requires integration with the academic program, to enable the graduates to be able to enter the workforce well prepared to practice independently. The most positive feedback from clinicians was obtained when clinical education was described as developed collaboratively between academics and well-qualified clinicians.

The students are required to develop technical expertise, clinical reasoning abilities, advanced interpersonal skills; and the knowledge and self directed learning skills that will enable them to become life long learners. Clinical education is essential in educating physiotherapists to meet the levels of expertise expected of them by the community. To facilitate this learning, close links need to be attained and maintained between the schools of physiotherapy and the health sector providing the clinical education component of the courses.

6.5 Clinical education in a changing environment

The graduating physiotherapist must be able to deal with uncertainties in the health sector, changes in the knowledge they need for practice and the ability to question their values and beliefs as they work in a diverse community. Their experiences prior to graduation need to give them the time and opportunity to develop these skills among others in order to be effective clinicians.

The health care arena in Australia is rapidly changing; more emphasis is being placed on community care and early discharge of the patients from acute care. Government agencies are directing more of the health care dollar into health promotion and prevention of injury and disease. This requires that physiotherapists be educated to become flexible independent health practitioners aware of and sympathetic to the changes taking place in the health sector. The community into which the new graduate enters is changing, it is more multicultural with specific and mixed ethnic groups, each requiring appropriate skills in communication and cultural awareness.

6.6 Possible solutions

Physiotherapists on graduating must be independent practitioners, yet unlike their counterparts in medicine there is no funding for an internship year. Therefore the undergraduate clinical program is of paramount importance in ensuring that the graduating physiotherapist is a competent, safe and independent practitioner with the ability to deliver efficient integrated and appropriate clinical outcomes. One head of school stated:

> *'This is where the physiotherapy profession needs to think deeply about its profession and the recognition of a beginning practitioner versus an experienced practitioner. This is where the concept of a provisional registration year might be an option. That is all new graduates would be required to work under supervision in their first year of practice (whether in the private or public sector). There are many ways that this supervision could be achieved, even for new grads working in rural or remote areas, which could be linked to a hospital or other non government, private organization.'*

Physiotherapy students need to engage in their professional practice in order to learn to have the conversations that enable them to understand the culture of the profession. The circumstances in which this takes place are increasingly difficult as the physiotherapists in health sector have less time to enter into these conversations.

Employers in all focus groups said that students require practice in managing the finite resources of their workplaces. They must learn to consider the cost effectiveness of treatment, for example, to weigh up how frequently they should treat patients according to the resources available. Sometimes limited resources mean they should cease treatment altogether.

It would be beneficial to clinicians and students if the physiotherapists providing clinical education were able to gain some form of qualification in experiential learning and teaching. With formal qualifications in clinical education there would be a strong argument for paid supervision.

While some clinical educators have very close links with schools of physiotherapy, others would like more consultation about the curriculum, more influence on the selection and assessment of students and more feedback about whether their suggestions are implemented. Some clinical staff are keen to broaden their university contact from joint responsibility for the supervision of students to the development of joint research projects with university staff. Others would like more professional development courses run by university staff.

Senior staff, in clinical education environments, are also employers of new graduates. The close nexus between clinical education and supervision of students to mentoring of new graduates provides an excellent example of professional educational development. In many instances the middle level physiotherapists are undertaking postgraduate courses and demonstrate by role modelling and active encouragement the next phase of professional education. Carroll and McMeeken (2000) found that, without exception, the new graduate physiotherapists in their study had undertaken continuing professional education. The 74 new graduates that responded to their survey had all completed from five to more than 30 hours of continuing professional education in the past year. This proportion of graduates undertaking formal postgraduate education has declined in recent years with the introduction of full fees for postgraduate education in physiotherapy. In order to foster such life long learning and provide appropriate health services to the community, postgraduate education similar to that available to new medical doctors and nurses is strongly recommended.

6.7 Professional and industry involvement in the physiotherapy courses

All schools of physiotherapy acknowledge the importance of consultation with the physiotherapy profession and other stakeholders in developing their curricula. The amount of consultation varied between the schools according to responses from academics. Most schools have representatives of the profession and key stakeholders on school advisory committees. One school has professional representatives on key school committees such as planning and budgets, selection, undergraduate curriculum and clinical education. All schools reported consultation with professional colleagues at times of curriculum reviews. Many schools had regular interaction with the APA and representatives of their special groups in developing curricula. Feedback is gained by all schools on the graduates' competencies, skills and preparedness for work on graduation.

In response to the project's survey of employers of physiotherapists, which asked about professional involvement with schools of physiotherapy, 86% said that they had involvement. Usually this was in the form of providing clinical education. The next most common element was involvement in advisory committees followed by the opportunity to give lectures. Some respondents stated attendance at workshops. When asked what they valued most in their relationship with the schools of physiotherapy comments included

> *'Putting something back into the school and the opportunity to look at new grads coming out.'*

> *'Opportunity to motivate students and graduates to engage in an evidence based approach including clinical research.'*

On being asked what they would like changed in their relationship, the largest number of responses related to increased support for clinical education (31%). For example, typical comments were: '*More time and /or resources for supervision'* and *'More time with university clinical coordinator'*. Twenty nine per cent stated that they would like to have more opportunities to be involved in curriculum development.

Further comments reflected ongoing concerns with clinical education and the relationship with the universities and the support given to clinicians. Finally two people commented on the wish to have:

> *'More opportunities to discuss future needs of the profession in line with changes in health policy and the big picture of health.'*

In responses gained from focus groups, which involved employers of physiotherapists, one group identified the need for support for clinical educators. Another group felt there should be more reciprocity, integration and collaboration between the profession and the universities. The third group felt that they had a good relationship with their university but could perhaps have more involvement in student selection and access to student feedback from clinics.

6.8 Employers responses to the curriculum

The health sector is changing rapidly which means that it is important for the new graduates to be prepared for the changing environment and the pressures within it, especially the rapid through-put of patients and the need for discharge planning.

In the Health sector there is increasing emphasis on working effectively in teams using a bio-psychosocial model and some respondents felt that this may not have enough emphasis in the courses. Some clinicians stated that physiotherapists are now required to take a far greater role in clinical decisions concerning patient management; for example physiotherapists are one of the key decision makers in discharge planning for many patients. This means that the new graduates need to be better prepared for this role.

> *'Changing modes of community physiotherapy need to be reflected in the curriculum preparation for workplace realities.'*

A number of employers, in both the public and private sector, commented on the need for graduates to have supervision for one year on graduation, such as occurs in medicine and nursing. Comments were that this supervised year could be managed in a number of different models taking into account rural and remote issues and the variety of different work environments, as discussed in the previous section.

Comments were made that the students have excellent ICTs skills and in many cases help staff with ICTs. The graduates on the whole, have very good assessment and problem solving skills for less complex patients and satisfactory levels of skill with the more complex patient. They are keen to learn and learn quickly on the job. Graduates do not compartmentalise their knowledge as some employers indicated they had in the past and are fully committed to lifelong learning. Employers are pleased with their professional skills, their approaches to patients, and they have good communication skills with an ability to ask appropriate questions. On the whole they need to have a greater awareness of how to work in a big institution, their place in multi-professional teams and how to fit into the health care hierarchy. Particular mention was made of the students from a regional university that they had a

> *'Good feel for rural practice, rural life and working; willing to work in rural areas.'*

Some concerns were expressed about whether the graduates from the two year graduate entry level masters courses would have enough time in their courses to develop the competencies required to practice. Overall however there were many comments on the advantages that these students have in terms of their life experiences and communication skills.

Employers also expressed concern about the adequacy of the graduates to meet the workforce demands. Issues such as time management, management of resources, working with more complex patients and diverse settings were given as examples.

> *'My opinion is that the physiotherapy courses don't adequately prepare students for the diversity of work and lack of support, especially for rural areas. Curriculum changes should focus more on problem based learning, rather than problem solving.'*

The project data indicates that some physiotherapists in private practice think that university courses prepare students preferentially for work in the public sector rather than in private practice. They would like to employ graduates who have more awareness of the differences between the public and the private systems. They voiced their need for graduates with more relationship building skills in a paying

environment, more experience in cost effective evidence based practice, better business acumen and a greater appreciation of the importance of marketing.

6.8.1 Suggested changes in curriculum from employers

Some employers felt that if there were more flexible entry processes for potential students it would help later recruitment issues where some health sectors such as the rural sector have difficulty in attracting and retaining staff. Universities offering graduate entry courses appear to have acknowledged this issue by broadening entry options.

Some comments were made that students need to be encouraged to consider alternative ways of delivering physiotherapy such as with a community focus. A graduate from one university commented on this:

> *'It was good having your eyes open to lots of areas of physio. You know you'll never get stale because you can venture into new areas. The broadness of the course was definitely something that'll help me as a long term physio.'*

Comments also related to the need for graduates to understand about resources and cost effectiveness of different types of health courses.

> *'Students need to be better able to consider the cost effectiveness of treatment, eg to weigh up how frequently they should treat patients and to realise that it is sometimes necessary to cease treatments altogether.'*

It was also considered, by many employers, that there should be a greater focus in the curriculum on the primary health care sector, chronic disease management and the national health priorities. Graduates require some different skills to work in the private sector including health promotion and injury prevention in the community.

Some employers said that graduates needed further education in fields such as paediatrics, disability management, rural physiotherapy, community physiotherapy and physiotherapy in the schools sector

6.9 Summary

There was a great deal of concern regarding the ability of the schools of physiotherapy and their professional clinical colleagues to be able to continue to deliver appropriate clinical education and therefore safe and effective graduates reaching the expected competency levels as designated by ACOPRA and the demands of the workplace. Many respondents commented on the need to have a regulated, supervised year of practice for new graduates as occurs in medicine and nursing. The imperative of funding for clinical education and professional development for clinical educators were strong themes, both in the focus groups and in responses to the questionnaires.

Employers and university staff are very aware that there has been a rapid increase in knowledge and treatment approaches used in physiotherapy during the past decade, and that this is likely to increase still further in future. University staff, provide courses that give students fundamental principles and practices in physiotherapy, they also foster evidence based practice and lifelong learning skills. However it is not possible for entry-level university courses to cover all aspects of physiotherapy in the time available. Throughout their working lives, physiotherapy graduates need access

to professional development to broaden and deepen their skills and knowledge and formal postgraduate study to develop specialist areas of knowledge.

6.10 Recommendations

The project team recommends:

- that the Federal Government should review the Commonwealth Course Contribution Schedule and reclassify physiotherapy as a clinically based medical science.

- that a feasibility study be instigated to explore the merits of a regulated preceptorship/mentoring system for new graduates in the workplace that recognises that new graduates require support during their first year of employment.

- that schools of physiotherapy establish a collaborative research program to provide evidence of good practice in clinical education. This will inform the profession, in both the public and the private sectors, who are critical to the delivery of clinical education.

- that physiotherapy educators and curriculum developers collaborate to determine the most appropriate means of developing, sharing, promoting and disseminating effective strategies in physiotherapy education.

7 EMPLOYER SATISFACTION WITH PHYSIOTHERAPY GRADUATES

7.1 Introduction

During the course of this project, employer perspectives were sought in two main ways. First, we conducted focus groups in three states with invited employers of recent graduates. These employers were selected on the basis that they represented both public and private organizations ranging from large metropolitan hospitals to rural hospitals to private practices. While some attempt at representation across the sector was made, we acknowledge that these employer focus groups did not represent all states and territories of Australia, nor did we have equal representation from the public and private sector. Nevertheless, the contribution of these stakeholders in the form of focus group discussion was a most valuable one for several reasons. First, the focus group contributions formed the basis for the ensuing survey of employers which was distributed to a much wider sample of employers across the country. Second, the employer focus groups raised issues which were subsequently identified in the project issues paper and validated by a range of stakeholders including heads of schools and curriculum experts in the field of physiotherapy. Thus we have good reason to argue that the focus group findings included in this section are representative of a broad range of views held by this stakeholder group.

The second form of data collection among the employer stakeholder group was the employer survey which sought employers' opinions of the physiotherapy graduates of 2002 and/or 2003 who they had employed in the past two years. The survey was sent to 300 potential employers of recent physiotherapy graduates. These potential employers were members of the Physiotherapists in Leadership and Management Group and Physiotherapy Business Australia. Further extensive networks within the APA, the universities and clinical educators were used to develop the employer list. Despite several follow up requests the response to the surveys was disappointing. In part this may be due to repetition of surveys to employers. All physiotherapy programs are required to undertake regular surveys of graduates and of employers for the purpose of ACOPRA accreditation. A total of 44 employers of recent graduates of physiotherapy responded to the AUTC Employers survey. The survey responses from some employers from large public hospitals related to 15 - 20 students from one school of physiotherapy whereas other responses related to one or two students. Thirty one responses were received from public institutions and 13 from private practices. Each Australian State and Territory was represented in the responses and their employers considered graduates from every course, which had graduated physiotherapists in the respective years.

7.2 Employers' views on graduate competencies and attributes

7.2.1 Employers' satisfaction with physiotherapy graduate competencies across eight areas

The first section of the employer survey was based on the current ACOPRA national accreditation requirements, where graduates of physiotherapy are expected to have acquired a beginner practitioner level of competency in eight areas of their professional work. Employers were asked to rate their satisfaction level with the

APCS competencies of graduates from identified universities and to indicate specific strengths that they had observed. The strengths are noted in the section to follow. Employers rated graduates performance as 'satisfactory' (scored 1), 'good' (scored 2) or 'excellent' (scored 3). Table 3 lists the eight professional competencies areas stipulated by ACOPRA, along with the mean level of satisfaction and the mean range of ratings recorded by employers across Australia.

Table 3: Employers' mean rating of graduate competencies and mean range across institutions

Competency area	Mean rating (1: satisfactory; 2: good; 3: excellent)	Mean range across institutions
Professional behaviour: demonstrates professional behaviour appropriate to a physiotherapist	2.61	2.33-2.89
Assessment: assesses the client's abilities, problems and needs	2.15	1.33-2.60
Interpretation and diagnosis: interprets and analyses assessment findings for the diagnosis of client's problems and definition of client's needs	2.06	1.67-2.50
Planning: develops a physiotherapy intervention and management plan to meet defined goals	2.08	1.33-2.44
Implementation: implements physiotherapy strategies	2.11	1.33-2.42
Evaluation: evaluates the effectiveness of physiotherapy	1.92	1.33-2.27
Health care: operates effectively within the health care system	2.10	1.89-2.44
Management: applies management skills in physiotherapy practice	1.59	1.33-1.86

Employers' satisfaction with physiotherapy graduates' competence across the eight areas is best summarised by the following comment: '[some graduates] *are outstanding in all these competencies, most are very satisfactory'*. Employers recorded the highest mean level of satisfaction with recent graduates' demonstration of professional behaviour appropriate to a physiotherapist. The graduates of all universities were perceived to be highly professional with an average of 2.61. In most elements of this survey employers indicated that there were individual differences between graduates. This comment was not made with respect to professional behaviour. This view is reinforced by the relatively low mean range of ratings across institutions.

The average of all employers' satisfaction with graduates' capacity to assess their clients' abilities, problems and needs was 2.15. While only one university's average result scored below 2.00, this item represented the most variable set of responses from employers (range: 1.33 to 2.60). It is not clear from the data whether this reflects individual or institutional variability.

Another important competency required of graduate physiotherapists is the ability to interpret and diagnose the client's problems and define client needs. The mean level of satisfaction on this item was 2.06, with the graduates of two universities rating less than 2.00. One employer commented:

> *'For simple non complex patients I would label them excellent but for more complex patients with multiple problems I would rate them good. We must provide ongoing skills/training to improve in this area prior to rotation into a more acute and demanding area.'*

A private practitioner commented: *'A greater focus on clinical reasoning for private practice type patients in the latter years might assist.'*

Recent graduates' ability to develop a physiotherapy intervention and management plan yielded a national mean satisfaction level of 2.08 with graduates of three universities between 1.00 and 2.00. One employer commented that graduates:

> *'Utilise goal setting and tools effectively. (In) Department processes (eg clinical meeting where all staff present) support collaborative problem solving, peer review and mentored learning approach.'*

Another employer indicated that it was *'Good that (they) adapt very quickly to environment, adopt sustainable active/self management approach incorporating health promotion messages'*. Several employers indicated that recent graduates improve in this area with experience.

Employers were also asked to rate their level of satisfaction with graduates' ability to implement physiotherapy strategies. The mean satisfaction level on this competence was 2.11, with graduates of two universities less than 2.00. The range of ratings for graduates from nominated institutions was relatively high (1.33 to 2.42). There is evidence that ongoing learning and guidance is required as reflected in this comment:

> *'Effectiveness of implementation often dependant on the willingness of the individual to utilise the skills of their senior to modify the implementation phase of service delivery.'*

Graduates' ability to evaluate the effectiveness of physiotherapy was rated relatively low compared with other competencies, with an average satisfaction rating of 1.92. Several employers suggested that further skills could be developed in this area. One senior public sector employer noted:

> *'Short rotations of new graduates (eg 3 months) do not facilitate effective evaluation skills, especially in chronic/complex conditions. Longer contacts developed excellence in evaluation.'*

As evaluation of health care outcomes from a community, economic and professional perspective is essential, consideration of undergraduate and postgraduate professional education strategies is required.

Employers are relatively satisfied with recent graduates' ability to operate effectively within the health care system with an average rating of 2.10. Graduates of two universities rated slightly under 2.00. Private practitioners considered that recent graduates would benefit from a more detailed understanding of compensation systems. One employer commented that the graduates '*readily appreciate the dynamic with other health professionals. Work hard at developing/improving relationships'*. Another employer considered that *'Clinical meetings and supervision by seniors is required to facilitate and maximise networks and liaison with outside agencies and internal health workers.'*

The ability of recent graduates to apply management skills in physiotherapy practice received the lowest satisfaction rating of 1.59. This finding is to be expected, with many employers commenting that it was a skill too early to judge and one which develops with experience.

7.2.2 Employers' satisfaction with physiotherapy graduate attributes

The second part of the employer survey considered ten generic attributes reflected in the expectations of most universities and in the professional attributes expected by ACOPRA in new graduates and by the APA in its members. Employers were asked to rate their level of satisfaction with these attributes as manifested in recent physiotherapy graduates. Table 3 presents the mean satisfaction ratings, arranged in rank order, and the mean range of ratings across institutions. As for the graduate competencies, employers identified a number of strengths and some areas of weaknesses among graduates. These are discussed in the section that follows.

Table 4: Employers' mean rating of graduate attributes in rank order

Physiotherapy graduate attributes	Mean rating (1: satisfactory 2: good; 3: excellent)	Mean range across institutions
Openness to new ideas	2.49	2.11-2.92
Receptiveness to the use of information technology as applied to health	2.40	2.13-2.67
Highly developed communication and interpersonal skills	2.17	1.33-2.67
Capacity for independent critical thought and self-directed learning	2.15	1.67-2.42
Ability and confidence to participate effectively in collaborative learning as a team member, while respecting individual differences	2.15	2.00-2.33
Well developed cognitive, analytic and problem-solving skills	2.06	1.67-2.58
Understanding of the methodological bases of research activity	2.01	1.63-2.45
Understanding and appreciation of social and cultural diversity	1.93	1.67-2.18
Ability to plan work and to use time effectively	1.77	1.00-2.17
Leadership capacity	1.71	1.33-2.09

Employers recorded the highest mean levels of satisfaction with graduates' openness to new ideas (mean: 2.49). Physiotherapy graduates of all universities scored greater than 2.00. Employers identify several strengths in this area, including the fact that recent graduates *'have demonstrated a thirst for new/fresh ideas.'* A leading public employer from one State indicated:

> *'Graduates have undertaken assisted project work, accepted responsibility for portfolio work within the team, conducted quality activities and undertaken service development and service review.'*

In a second State a comment was (Graduates) *'Seek out additional input from senior staff and use this appropriately, show eagerness to learn and develop.'*

Receptiveness to the use of ICT as applied to health also received high levels of satisfaction with an average score of 2.40 and all universities scoring greater than 2.00. This was seen by one commentator as an *'extremely strong point in … graduates. Excellent computer skills and ability to use online resources.'*

Highly developed communication and interpersonal skills were evident with an average employer satisfaction score of 2.17. Graduates from all universities except

two scored more than 2.00. Employers noted interdisciplinary communication as an important skill. A Western Australian public employer noted:

> *'Generally very confident and competent individuals. This may be more from background pre Physio. All seem very flexible and able to adjust style to demands at different times ie can easily switch from interacting with senior staff member to poorly educated patient with ease.'*

Recent graduates' capacity for independent critical thought and ability to participate in collaborative learning as a team-member scored similar satisfaction levels among employers. They commented that:

> *'Many of our more outstanding new graduates have excelled at self - directed learning, but have also availed themselves of all our senior clinicians, in each area, to learn from'* , and

> *'Very strong commitment to professional development and self directed learning, good use of online education resources.'*

Employer feedback on graduates' team skills had the lowest variability of all graduate attribute ratings in the survey (range: 2.00-2.33). This suggests consistency across institutions in preparing graduates to work and learn with all professional colleagues, while respecting individual differences. Representative comments include:

> *'Strong commitment to team processes but also unafraid of pointing out procedural or process issues.'*

> *'Well educated on aspects of team work.'*

> *'Graduates have fitted in extremely well with physio staff and with multidisciplinary team members.'*

It appears that employers are generally satisfied with graduates cognitive, analytic and problem-solving skills, recording an average score of 2.06. Graduates from all universities except two scored more than 2.00. From Victoria a public hospital employer stated *'graduates who have done PBL have better generic problem solving skills generally … and ability to apply generic problem solving skills to clinical situations'* and in Queensland it was commented that *'These students are in the top 1% of academic high achievers so this skill is expected- it is the love of the job that is evident in the very high achievers that makes them want to do their very best.'* From Tasmania a comment was *'Show willingness to accept criticism and asks for help readily - constantly trying to improve skills - not content to just 'get by'. Highly motivated'* and from South Australia *'Good lateral thinking ability'*.

Recent graduates' understanding of the methodological bases of research activity was deemed to be good, with an average score of 2.01. One university scored less than 2.00 with a range of 1.63 to 2.45.

Three graduate attributes received an average satisfaction rating of less than 2.00, although still satisfactory, from employers. These were: graduates understanding of social and cultural diversity, their ability to plan and use time effectively and their leadership capacity. Understanding and appreciation of social and cultural diversity scored an average satisfaction rating of 1.93 with four universities scoring less than

2.00. A major public sector employer commented: *'This was quite variable amongst new graduates and probably requires more emphasis from us as employers particularly as it relates to local cultural diversity.'*

Recent graduates' ability to plan work and to use time effectively was deemed satisfactory with an average score of 1.77. The range of responses on this item was the second largest (1.00 to 2.17) indicating considerable variability among institutions and individuals. Graduates from three universities scored more than 2.00. Comments from employers suggest that they consider that new graduates develop this ability with experience and guidance. Leadership capacity was also seen to be variable and several respondents indicated that there was limited opportunity to show leadership at this stage of graduates' professional careers. The average score was 1.71 with all but one university scoring less than 2.00.

The results of this survey indicate widespread employer satisfaction regarding the fact that recent graduates meet the stipulated ACOPRA learning outcomes. Graduates are more than satisfactory in the knowledge, clinical abilities and professional attributes required to begin their professional careers as physiotherapists.

7.3 Main strengths of physiotherapy graduates

The survey for employers asked them to identify specific strengths of the physiotherapy graduates they had employed in the past two years. Twenty two per cent indicated graduates possessed good problem solving and clinical reasoning ability indicating their ongoing capacity for appropriate clinical practice. Good communication and patient relationship development were considered major strengths by 18 per cent of employers, 15 per cent indicated sound knowledge and 14 per cent a keenness to learn.

The employers identified several strengths of physiotherapy graduates. The top four are as follows: i) good problem-solving and clinical reasoning skills; ii) good communication and patient relationships; iii) a sound knowledge of the area; and iv) keenness to learn. Over one fifth of employer respondents expressed particular satisfaction with the clinical reasoning and problem-solving skills of recent graduates.

Problem based assessment was particularly strong in some graduates. One employer indicated that:

> *'Assessment is of high standard for straightforward patients and pretty good for more complex patients i.e. those with multiple co-morbidities – (the) emphasis on more global approach to assessment in the curriculum rather than the former compartmentalisation assists with this.'*

This response reflects the change in curriculum approaches which have been made to accommodate the changing health environment.

A little less than one-fifth (18 per cent) identified communication skills as a particular strength. Close to fifteen per cent viewed sound content knowledge and keenness to learn as characteristic strengths of their recent graduates. Other strengths identified by ten per cent or less of the employer respondents included good professional or work ethic (10 per cent), good evidence-based practice (8 per cent). A much smaller proportion of employers mentioned the following as strengths of recent graduates: being a team player, confidence, adaptability, good ICT skills and good research

skills. Since employers were asked to nominate two main strengths, it is not clear from the data whether the small numbers of employers identifying the latter set of strengths reflects a lack of these strengths among the general graduate population, or whether clinical reasoning and communication skills simply stand out from the rest of the physiotherapy graduate competencies.

One private hospital employer commented on the fact that recent graduates had strengths in the area of general ward practice and patient care. Another commented that the recent graduates in her experience have been *'very enthusiastic and keen to contribute to professional development'* and to be involved in the APA. There is general agreement among employers that recent physiotherapy graduates are keen to learn and very adaptable. Many commented on students' commitment to lifelong learning and the obvious quality of their evidence-based learning.

In summary, strengths of recent graduates identified by employers include their:

- Clinical reasoning skills
- Professionalism
- Communication skills
- Confidence
- Confidence in the 'core basics' such as musculoskeletal groups
- Preparation of curricula vitae and the interview process
- Commitment to lifelong learning and evidence based learning
- Adaptability and readiness to learn on the job
- Ability to apply clinical reasoning skills to new areas

7.4 Perceived weaknesses of recent graduates

In addition to identifying strengths of recent graduates, the project team was charged with evaluating employer satisfaction and making proposals for curriculum development and improvement, based on these responses. As a result, we asked employers to identify not only the strengths of recent graduates, but also the areas of weakness and suggestions for improvement.

A few private practitioners commented on graduates' lack of experience and skill in private practice, including patient referral experience or understanding the health system. One commented *'we have taken the responsibility to 'train them''*. There is a shared perception among these practitioners that the *'life and times of a private practitioner are not addressed in their course'* and that they do not have sufficient business practice experience in their courses.

Another employer of many years' experience commented that *'students don't have the same level of knowledge as five years ago'* and several agreed that the graduates are very *'variable'* in quality and skill level. Employers' explanation for this skill variability was essentially that skills depended heavily on students' experiences during the course of clinical placements: *'it really depends on where students have had experience'* and *'paediatric and critical care strength* [are] *variable, depending on undergraduate experience.'*

These criticisms reflect the increasing difficulties universities face in providing clinical experience for all undergraduate students in paediatric physiotherapy and acute and critical care units.

Some employers noted that new graduates tend to focus on the physical problems manifested by patients, rather than on the whole person. It was also felt that graduates do not integrate theory and practice as effectively as they should and that, in some cases, this was due to limited clinical experience during their undergraduate course. One employer commented that this failure to integrate was partly attributed to the changes in assessment practices in universities: since there is no clinical viva at the end of the year, students do not integrate their theoretical and practical knowledge and *'it shows up when they come to the workplace'.'*

In addition to the issues raised above, individual employers identified the following as isolated areas of weakness:

- graduates have poor experience with acute patients in large hospital settings;
- graduates lack recent experience with safe and independent practice in cardio settings – the respondent recognised that it was very difficult to ensure recent experience in all respects, *'especially if their first clinical exposure to this was in their third year – it's 18 months since they have had that experience'* by the time they graduate. Nevertheless, it is of concern that some of the important recent experience is lacking.
- graduates are not used to working in multidisciplinary settings; and,
- graduates are not well prepared for private practice.

In identifying areas of weakness, employers made several suggestions regarding ways in which graduates might be better prepared through undergraduate courses. These include the need to:

- prepare graduates to prioritise so that they know how often they should see patients;
- provide students with experience in decision-making and *'not just seeing patients every day because that's what's expected'*. It is important to help students prepare to be involved;
- ensure that students have good time management skills – *'they must hit the ground running and there are significant benefits in being trained for that.'* and,
- give students more exposure to community settings. One employer noted that it is *'often luck which determines whether they have exposure to these settings during their course'*.

7.5 Challenges of supervising recent graduates

Several employers commented on the obvious need for greater supervision of recent graduates as compared with more experienced practitioners, but this was not seen to be a weakness per se – rather an inevitable outcome of their lack of workplace experience. This is a time needed for 'fine tuning' of graduates' skills:

> *'In first year out they need to learn how to survive in an organization and* [to adjust to] *our expectations of them as members of the department.'*

There was widespread agreement and acknowledgement that recent graduates require a great deal of additional support and are *'resource intensive'*. Some felt that supporting graduates was easier in large hospitals with their infrastructure than in smaller contexts and organizations.

However, one regional employer from a large organization did imply some weakness in recent graduates' lack of awareness of how large organizations work:

> *'They need to learn about department life – there are 50 staff in the department, they all have different occupations. Students need to learn about layers of seniority. They need to clarify expectations from both groups.'*

By contrast, another individual expressed the view that graduates over the past three years, in particular, have demonstrated a good understanding of organisational life.

7.6 Employer feedback on selected features of curriculum delivery

Employer views were mixed as to the relative benefits of fully integrating clinical and theoretical components, as is done in some courses, or fully academic teaching in blocks of time with clinical education closely aligned to students' clinical block placements. There was no consensus as to which model of clinical education was more beneficial.

One employer expressed the view that, *'the primary health care is missing in the coursework'* of some physiotherapy courses.

Several Melbourne-based employers commented on the strengths of the Clinical School model in familiarising students with how organisations operate. There was agreement among employers associated with this model that this is a very worthwhile approach to preparing students for workplace skills, adding that this approach *'helps students feel confident in areas such as musculoskeletal and the core basics'*.

A particular weakness identified by several employers across states is that graduates seem to have relatively little exposure to multidisciplinary teams. One employer commented that her public hospital allocates particular time and resources to *'helping them to adapt to this'*.

Another weakness is that new graduates *'struggle with multitrauma patients'* but the employer was quick to say that *'this was understandable'* as it was not necessarily a common aspect of their experience during training.

7.7 Preparing to work in multidisciplinary health care settings

A feature of the changing health care world is the emergence of multidisciplinary health care teams. In these teams, individuals representing a range of complementary professions, work together to care for the health needs of the whole person. Thus in preparing physiotherapy graduates for the workplace of the 21st century dual challenges emerge. The physiotherapy curriculum must cater for a broader education which moves beyond professional and disciplinary boundaries but at the same time, it must meet the needs of employers who demand that physiotherapy graduates have high level skills and attributes which fit the purposes of increasingly complex and highly accountable work environments. A significant feature of the survey and focus

groups for employers was the focus on employers' views on how university curricula could best prepare graduates for work in multidisciplinary health care settings.

Many employers commented on the importance of experience in multidisciplinary health settings, noting the critical importance of understanding one's role in a multidisciplinary team: *'it's important to clearly understand your role and that of others in the team'*. Another commented *'it's not something you learn out of textbook, it's not until you have clinical practice that you realise what teamwork involves'.'*

One private practitioner noted the increase in the private sector of multidisciplinary settings: *'the reality is that a lot of care is team-based'*.

While acknowledging that experience is the key to working effectively in a multidisciplinary team, one employer noted that *'it would be great if the end of their course could focus on a more holistic, integrated approach'* to physiotherapy practice which encompassed a more multidisciplinary approach. Another commented on perceived shortcomings of a curriculum which exposes physiotherapy students to a range of other professions and includes a *'lecture on the role of the speechies or the OT'*, but which places little emphasis on working with members of other professions in a range of settings. A single lecture on such topics as the role of various health professionals, including nurses and doctors, was not deemed to be sufficient by the employers in our focus groups. In response to this shortcoming, one employer noted:

> *'We try to let them spend some time sitting with speechies and OTs on clinical placements.'*

Another employer response to the need for physiotherapy and other health professionals to learn to work together in teams is a project which aims to ensure that students from different health professions are placed together during clinical placements. The project requires that students form a multidisciplinary group which aims to solve a case as a team. The aim is to ensure that the team works together, learning how to contribute their respective skills to the situation.

Another employer admitted that in her experience, physiotherapy students on placements are often not involved in the *'teamwork side of things'*, admitting that *'we often send students to have their tea break* [during the team meetings] *but perhaps we should do more to include them.*' Others shared the view that universities are not necessarily the most appropriate place for developing students' multidisciplinary team skills and that these can be most effectively developed once graduates arrive in the workplace. This is summarised as follows:

> *'so much of the team-based work practice is setting specific – I don't know how universities could prepare students for that.'*

Thus, in identifying perceived weaknesses of new graduates, it is equally important to identify areas which employers themselves may need to improve upon, or which skills are most appropriately developed over time in the workplace environment.

Several employers commented that new graduates do not have difficulty learning to work in teams and that they typically enjoy the interaction with team members. Others conceded that multidisciplinary teams do not always operate smoothly, observing that *'there's a bit of angst in the relationship between physios and nurses because of issues such as 'no lift' – nurses call physios to do lifting and this is a problem but it's*

a profession-wide issue'. Another feature of multidisciplinary teams is the fact that in some institutions, physiotherapy students interact on a regular basis with students in other disciplines, such as occupational therapy. This may be a function of the institutional structure or timetabling. Thus, some graduates are clearly more comfortable interacting with colleagues in other professions since they have had greater exposure to them during university study. A further observation was that the more experienced Graduate Entry Masters students tend to bring their life skills and maturity to the workplace '*and that's a real advantage*' in multidisciplinary team settings.

One sports physiotherapist expressed the view that in this area, in particular, graduates require the ability to work in multidisciplinary teams:

> *'Increasingly we use a bio-psychosocial model, especially in the treatment of pain. There is a need for the university curriculum to reflect this change.'*

One employer summarised the requisite skills for functioning in a multidisciplinary team as follows:

> *'Two skill sets are needed*
> *1. graduates need to be confident about their competence* [as physiotherapists] *before being part of a multidisciplinary team;*
> *2. they also need to have assertiveness and group skills. They don't necessarily have to learn those skills in multidisciplinary teams but they do require them to be able to operate effectively in teams.'*

7.8 Physiotherapy graduates and information technology

Many employers volunteered that they and their staff often learn from new graduates. Furthermore, recent graduates frequently act as the major resource for ICT expertise in clinical departments. The employer survey supported the information obtained in the focus groups. In the results of the surveys the overall mean was 'good' at 2.40 with a standard deviation of 0.17. Graduates of all courses were 'good to excellent' in their use of ICT. Receptiveness to the use of information technology and multimedia as applied to health is high with an average score of 2.40 and all universities scoring greater than 2.00. This was seen by one commentator as *'Extremely strong point in … graduates. Excellent computer skills and ability to use online resources'*. Another stated that the recent graduate *'Helps stimulate quest for up to date knowledge/practices amongst other staff members'*, but *'refreshingly do not overuse. Remain patient oriented and do not treat from a keyboard'*.

In summary, employers were unanimously impressed with the information technology skills of new graduates. Representative comments include:

> *'The graduates can do anything. They teach us. They have familiarity with databases, software processors and how to manipulate programs. It's fantastic.'*
>
> *'Their [PowerPoint] presentations are wonderful. You could take them anywhere.'*
>
> *'You just marvel at what they can do.'*

Chapter 5 provides additional information about ways in which information and communication technologies are incorporated into the physiotherapy curriculum.

7.9 Summary

On the whole, employers of recent physiotherapy graduates are highly satisfied with graduates' level of competence across a range of areas. In particular, they rate new graduates' professional behaviour most highly, along with their openness to new ideas and receptiveness to use of ICTs in healthcare settings. Despite the many strengths identified by employers, they also perceive some weaknesses including physiotherapy graduates' general lack of familiarity with working in multidisciplinary settings and their lack of preparedness to work in private practice. Other areas of clinical practice that employers perceive to be somewhat lacking among recent graduates include paediatric physiotherapy and critical care physiotherapy.

In the previous chapter we commented on the problem of the overcrowded curriculum and the challenges faced by curriculum developers in preparing students to practice in increasingly complex work environments. Clearly it is not feasible to attempt to simply add content to the curriculum. More innovative and thoughtful approaches are needed, including critical evaluation and review of curricula and their relevance. Consideration may also be given to mechanisms enabling postgraduate opportunities for study, which may include coverage of some material deemed important but not included in undergraduate curricula. In addressing some of the perceived areas of weakness in the curriculum, it will be particularly important for employers and curriculum developers to continue to collaborate to ensure that physiotherapy curricula are responsive to changing needs and healthcare settings, while maintaining the academic rigour so fundamental to preparing competent and professional graduates. Furthermore, it is critical that these innovative curriculum design and delivery practices be shared at a national level for the fostering of scholarly approaches to curriculum processes in physiotherapy.

7.10 Recommendations

The project team recommends:

- that a feasibility study be instigated to explore the merits of a regulated preceptorship/mentoring system for new graduates in the workplace that recognises that new graduates require support during their first year of employment.

- that schools of physiotherapy and employers address the issue of 'the overcrowded curriculum' in the light of recent research; new areas of practice; the need to value private practice and issues pertaining to clinical education in public and private practice.

- that schools of physiotherapy further explore and implement strategies to include the profession and many stakeholders in physiotherapy curriculum development, delivery and review processes; and

- that physiotherapy educators and curriculum developers collaborate to determine the most appropriate means of developing, sharing, promoting and disseminating effective strategies in physiotherapy education.

8 QUALITY OF LEARNING AND TEACHING IN ENTRY LEVEL PHYSIOTHERAPY

8.1 Good practice identified during the project

Examples of good practice in teaching and learning were highlighted throughout the AUTC study by students, graduates, staff and employers. The overall picture of physiotherapy education was very positive.

Students in particular were strongly supportive of small group learning that used the context of practice to integrate their learning. Academic and clinical staff were, on the whole, seen to be supportive, approachable and dedicated to facilitating student learning. Experiential practice, in the university setting and in the clinical arena, was seen to be extremely important in facilitating the learning of the students and graduates.

Academic staff in their responses gave examples of practice that demonstrated their understanding of the need to reflect changes in education and the health care sector, Many innovative examples were given of the use of ICT for both the delivery of content as well as for the administration of courses.

8.2 List of examples of good practice in physiotherapy learning and teaching received from Australian schools of physiotherapy

8.2.1 University of Canberra

1. Communication and self-management topics covered in teams from five disciplines for 1st and 2nd year Graduate Entry Masters students

8.2.2 Charles Sturt University

1. Integration of knowledge from two specialty areas using case studies for 2nd year students

2. Cross disciplinary learning and teaching in Foundation Skills subject for 1st year students

3. Problem solving techniques for complex case management for 4th year students

8.2.3 Curtin University of Technology

1. Case studies to integrate students' discipline knowledge and clinical reasoning skills with psychosocial, cultural and ethical perspectives for 2nd and 3rd year undergraduate students and 1st and 2nd year Masters

2. Additional Development Assessment Form used to Enhance Physiotherapy Student Feedback and Clinical Performance for 4th year undergraduate and Masters

3. Course Evaluation on the Web: A mechanism for online student feedback for all undergraduate and Masters students

8.2.4 Griffith University

1. Integrated Clinical and Academic Learning for all students

2. Information Technology Resources: Blackboard for all students

3. Integration of legal and ethical issues into complex cases scenarios for students in their final semester

8.2.5 La Trobe University

1. Students develop a guide book and DVD to prepare 3rd year students for spinal injury placement

2. Experience in the principles and practices of self-directed learning, interactive teaching and peer and self assessment for Women's Health unit for 4th years

3. Self evaluation of 1st year 'student therapist' using video

8.2.6 The University of Melbourne

1. Third year student conference organised by 4th year students taking a professional education elective

2. Problem based learning for all subjects in order to contextualise and integrate student learning

3. Clinical school model to facilitate clinical education for all students

8.2.7 The University of Newcastle

1. End-stage disease case study tutorial for 3rd year students

2. Collaborative learning related to neurological patients between physiotherapy and occupational therapy students 2nd year students

3. Clinical practice workbooks for 1st and 2nd year students

8.2.8 The University of Queensland

1. Using role play to assess and enhance the integration of learning in first year

2. A tutorial program for international and ESL physiotherapy students for 1st year ESL students

3. Integrated experiential teaching and learning in paediatrics for 1st year, 2nd year, 3rd year and Graduate Entry Masters students

4. Use of a computer database in physiotherapy practical examinations.

8.2.9 University of South Australia

1. Plagiarism assignment for all students

2. Project U, a unique undergraduate research training initiative for 4th year students

3. Research training with a future for 3rd and 4th year students: Bachelor of Physiotherapy with Honours

8.2.10 The University of Sydney

1. PEDRO online resource, and basis for teaching evidence based practice

2. Community health placement (learning about wellness) in clinical practicums

3. Problem-based learning in paediatrics

4. Integrated clinical and academic curricula

8.3 Dissemination of the project findings and examples of good learning and teaching strategies

During Stage 2, in 2005, the project team will create a new project website that disseminates the main findings of the project and presents the examples of current good practice in learning and teaching physiotherapy provided by schools of physiotherapy.

The dissemination strategy will be determined in the light of the recommendations of the Steering Committee and the findings of the two AUTC projects on dissemination. It is likely to include:

1. A project website which:
   - disseminates the important findings from Stage 1 of the project;
   - provides examples of case studies and good, current teaching and learning practice presented in a rich, contextualized, multimedia way. The website will include examples of appropriate, innovative approaches to curriculum development, assessment, integration of information and communication technologies, multidisciplinary team work and support for particular groups of students.
   - provides an annotated bibliography of recent research in physiotherapy learning outcomes and curriculum development.

2. Preparation of a booklet for physiotherapy educators that introduces and explains the website.

3. Forums and workshops for university staff, clinical educators, course designers and employers at gatherings such as:
   - Australasian Heads of Schools of Physiotherapy meetings;
   - meetings of the Australian Council of Physiotherapy Regulating Authorities (ACOPRA);
   - the annual conference of the Australasian and New Zealand Association for Medical Educators (ANZAME), the Association for Health Professional Education, the annual conference of the Australian Physiotherapy Association (APA), the annual Australian and New Zealand

clinical educators conference, a meeting of a physiotherapy educators group.

4. Articles in journals and newsletters read by physiotherapy educators and employers.

9 STRATEGIC DIRECTIONS TO ENHANCE LEARNING AND TEACHING

The project brief required the project team to identify strategic institutional directions arising from the study. We present these in the expectation that they will form the basis for collegial discussions among staff of schools of physiotherapy, with a view to enhancing curriculum processes and student learning outcomes in the discipline. It is imperative that schools of physiotherapy determine their own approaches to putting these broad strategic directions into practice within their unique institutional contexts and the needs of their student body.

9.1 Curriculum design, delivery, assessment and review, in physiotherapy courses

When developing curricula, academic and clinical educators are advised to consider:

- the dynamic nature of the health systems;
- increasingly diverse community contexts;
- the community's expectations of health professionals;
- the changing roles of physiotherapists in a multidisciplinary approach to health care; and
- innovative approaches to curriculum design, delivery, assessment and review.

Physiotherapy academic and clinical educators could assist students by clarifying and justifying the philosophy underpinning their pedagogical approaches to physiotherapy education.

Curriculum developers are advised to ensure that:

- curriculum coherence is made explicit to students at all stages of their course. This may include the development of relevant learning materials and the use of strategies, such as concept maps;
- issues of professional identity formation and professional expectations are made explicit. In particular, these issues should be addressed in the context of an increasingly diverse student body; and
- curricula reflect and are responsive to current developments in the area of ICTs in the discipline, including health informatics and telemedicine.

In order to achieve these curricula outcomes, it is important for schools of physiotherapy to:

- provide professional development for both academic staff and clinical educators within continuing education and formal discipline-specific coursework and higher degree programs;
- provide research opportunities and incentives for staff;
- have appropriately qualified staff.

It is also important for schools of physiotherapy to identify and explore ways to disseminate examples of good learning and teaching. The project team supports the collaborative exchange of information between schools of physiotherapy to further effective educational research and practice. It is suggested that key stakeholders in

physiotherapy education consider mechanisms to facilitate these collaborative processes.

9.2 Dissemination of web-based physiotherapy course information

The project team recognises that many schools of physiotherapy have developed attractive, informative websites. It suggests that schools of physiotherapy continue to review their websites to ensure that they:

- identify and define the unique qualities and characteristics of a physiotherapist;
- provide current and prospective students with clearer descriptors of the learning outcomes they can expect from participating in the course; and
- explain and provide the rationale for their curriculum design and educational philosophy, highlighting ways in which the curriculum prepares students for the profession.

The project team affirms the value of the APA Website in providing the community with ready access to information about physiotherapy, as well as links to all the schools of physiotherapy in Australia.

We suggest that schools of physiotherapy regularly review information about their courses that is provided by other agencies, such as DEST and the Tertiary Admission Centres. Schools could consider setting up data-bases that utilise web service and content management technology to provide outside agencies with flexible access to up to date information about their courses.

9.3 Staff and student understandings of physiotherapy learning outcomes

There would be merit in schools of physiotherapy developing consistent school wide approaches to nomenclature related to learning outcomes. The meaning and value of these learning outcomes should be communicated to students to enhance the quality of their learning.

9.4 Employer satisfaction with physiotherapy graduates

Despite the high level of satisfaction expressed by employers, some private practitioners identified the need for improved preparation of graduates for private practice. Schools of physiotherapy are advised to consider greater involvement of private practitioners in curriculum planning and delivery.

9.5 Professional and industry involvement in university education

Collaboration between universities and the profession is important at all levels of curriculum development and delivery. More could be done by schools of physiotherapy to consult with and provide opportunities for professional and industry involvement in physiotherapy education.

10 CONCLUSIONS

The project team considers that the current state of physiotherapy education in Australia is sound with many positive findings arising from the study. Whilst fulfilling the core requirements of accreditation, there is a healthy diversity of educational pedagogies, enabling students to learn within the particular context of their own university. There are a variety of different physiotherapy courses with different purposes such as rural/regional education, graduate entry and double degrees. It is both desirable and inevitable that curriculum designs and goals of these courses will vary and schools are encouraged to retain their own priorities and curriculum content, approaches and learning outcomes in addition to these core expectations. Other contextual factors will inevitably affect curricula. These include the resourcing of the schools of physiotherapy and the different forms of management, the sizes of the student cohorts and the geographical locations of the universities and their specific agendas.

10.1 Student learning in a research based academic and clinical environment

All schools demonstrate a student centred approach in both the design and delivery of curricula. The incorporation of research evidence in preparing for practice and the development of clinical reasoning are universal. Research literature is accessed by students from the early years at university and research led teaching is demonstrated by courses in ‘Evidence based practice’ and ‘Research methods’. Students are given the opportunities to learn in context with problem based learning and case based scenarios. The academic staff and clinical educators are highly committed to student learning. Graduates cite the critical importance of their clinical learning experiences in their development for professional practice.

Students progress through their courses as strongly bonded cohort groups and they describe and celebrate a strong and positive student experience. As determined from discussion with students and, more particularly with graduates and their employers, there is an outstanding and very strong commitment to lifelong learning and ongoing professional development.

10.2 Current challenges in university education

Nevertheless, there are significant challenges to the maintenance of existing physiotherapy courses and the introduction of planned new courses. These challenges include those common to all disciplines, such as students’ transition to university, the increasing personal costs of education, including for some students the payment of full fees and, aligned with this, a greater demand to work whilst studying. Academic staff are being asked to undertake more educational activities with less funding; there are imperatives to evaluate and review curricula; to maintain and increase research activity and funding; and to continue their own professional development as teachers. The increasing diversity of the student body increases the demands on staff and the development of generic skills and attributes is expected of both students and staff. A number of these challenges present additional difficulties in physiotherapy.

10.3 Selected challenges in physiotherapy education

10.3.1 Funding and resourcing physiotherapy entry level courses

Funding is a major factor in the context of physiotherapy professional entry programs, with recent trends reflecting progressive decreases in government funding for coursework and increasing pressures on schools of physiotherapy to obtain external funding through full fee paying students, research funding and consultancy opportunities. Demand for physiotherapy courses is high. The recent development of graduate entry programs has, in some universities, been opportunistic. The necessity for income from local and international fee-paying students to supplement core funding has been a driver for universities to increase the number of these students with high entrance scores in a discipline of high demand. The increased diversity of the student body enrolled in physiotherapy courses is potentially a positive influence on the internationalisation of universities and in preparing students to work globally. Despite the additional income, there is generally inadequate funding allocated to physiotherapy budgets and significant work pressures are being experienced by academic and administrative staff within the schools and by clinical educators in the (predominantly public) clinical environment. This funding shortfall warrants recognition and the reclassification of physiotherapy as a clinically based medical science for funding purposes. There is also competition for fee-paying students which potentially mitigates against cooperative development, as universities desire to maintain a 'leading edge' in attracting students.

Many of these full fee paying students are meeting the costs of courses themselves and are endeavouring to work and study simultaneously. Furthermore the personal costs of education are increased for all physiotherapy students as a result of clinical requirements. In order to help redress the lack of health professionals in rural and regional Australia, all schools of physiotherapy endeavour to provide rural and metropolitan clinical experiences for their students. Students are required to fund their own travel and accommodation costs when required to live away from their primary semester residence for a period to undertake clinical experience in a different geographic location. Unlike the significant funding support provided for medical students for this purpose, there is little available for physiotherapy students.

10.3.2 Multiple transitions for students

Physiotherapy students undergo several demanding transitions. As well as the change for those who are school leavers in moving from school to university, all students experience a transition into the clinical environment. Physiotherapy academic staff prepare students for this by the development of communication and professional skills and understanding of psychological, sociological and cultural issues, but the raw experiences of patients' trauma, disability and death are profound learning environments. On entering the workforce there is a further transition to independent practice which requires further mentoring and explicit support.

10.3.3 Staffing issues

Academic staff in physiotherapy are predominantly female and the project team perceived that these staff members take on a nurturing role for students above and beyond that observed in less female environments. Whilst students value this additional consideration, there is some risk of students failing to develop independence. On the other hand, with the profound life experiences of the clinical

environment, additional counselling of students is frequently required and assisting the transition stages is a role that falls predominantly to staff.

The physiotherapy academic staff were perceived by the project team to be hardworking, dedicated individuals pushed to the limits in their current roles. Their innovative educational ideas were often difficult to implement due to the lack of time or the requirement for additional funding. There is an urgent need to evaluate and systematically test the innovations already in place for their educational and cost effectiveness. Furthermore, competitive research funding with an emphasis on collaborative activities would promote the necessary multidisciplinary and physiotherapy research into educational practice in academic and clinical environments.

10.3.4 Addressing diverse student needs in clinical settings

The increasing diversity of the student body imposes additional challenges in developing the students' sense of professional identity and in enabling all students to integrate into a highly dynamic clinical environment. Clinical educators are deeply concerned at the additional demands on their time posed by increased student numbers and by students from different cultural backgrounds.

10.3.5 Collaboration with clinical educators

In all schools, academic staff spend significant time in consultation with clinical educators. Clinicians request even further consultation and there is the added challenge of engaging private practitioners in the education process. This will be essential to alleviate the crisis looming in clinical education in the public system. As new approaches to clinical education are considered, parallel rigorous evaluative processes must be undertaken.

10.3.6 Physiotherapy in changing contexts

There are also external changes which impact on physiotherapy entry level education. These include increasing access to health information by members of the community: graduates need further skills to advise on the information available. The role of physiotherapists as primary contact practitioners and as members of multidisciplinary health care teams are constantly evolving and curricula require frequent evaluation, review and revision to ensure graduates are well prepared for a future in which the only certainty is change. The graduates' preparedness for continued learning and their clear demonstration of enthusiastic commitment to continuing professional education and formal postgraduate learning augur well for the future.

In conclusion, there is strong evidence from this study that employers are satisfied that core learning outcomes have been achieved at the national level among existing schools of physiotherapy. Consultation with academic staff and students throughout the study confirms the fact that physiotherapy curricula are facilitating a range of learning experiences relevant to institutional contexts and student needs. The schools of physiotherapy and ACOPRA are aligned in their goals to produce competent, relevant and appropriate physiotherapy graduates for the good of the community.

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APPENDICES

A. GLOSSARY OF TERMS USED IN THE REPORT

Clinical educator: a physiotherapy clinical practitioner who teaches the students in the clinical education component of the course conducted in a clinical practice setting. It includes both formally designated positions and informal positions.

Clinical viva: an examination using a live patient

Course: A degree program or course taught at a university

Graduate entry Master of Physiotherapy: a pre-registration degree to prepare entry-level physiotherapists. In all cases students must have completed as a minimum a bachelor degree with specified prerequisite subjects. These prerequisite subjects are normally in the areas of human anatomy, human physiology, behavioural sciences and research methodology or statistics.

Learning outcomes: the demonstrable knowledge, skills and attributes of a student following a period of learning and teaching. Learning outcomes focus on what a student learns. Competencies delineated in the Australian Physiotherapy Competency Standards and used by the Australian Council of Physiotherapy Regulating Authorities are considered to be learning outcomes

Preceptor: a mentor to learners in the clinical environment. There is a sense of care and commitment within the role

Professional entry level course: Bachelor of Physiotherapy, Bachelor of Science (Physiotherapy), Bachelor of Applied Science (Physiotherapy), Master of Physiotherapy, Master of Physiotherapy Studies

School of Physiotherapy: the academic unit which has responsibility for the discipline of physiotherapy.

Subject: an assessed component of the course. Courses are comprised of such subjects (courses), modules or units

B. ABBREVIATIONS

ACOPRA	Australian Council of Physiotherapy Regulating Authorities
AHMAC	Australian Health Ministers Advisory Council
AIHW	Australian Institute of Health and Welfare
APA	Australian Physiotherapy Association
APCS	Australian Physiotherapy Competency Standards
ASCED	Australian Standard Classification of Education
AUQA	Australian Universities Quality Audit
AUTC	Australian University Teaching Committee
CELT	Centre for Education Learning and Teaching
CEQ	Course Experience Questionnaire
DEST	Department of Education, Science and Training
GCCA	Graduate Careers Council of Australia
ICT	Information and communication technology
NESB	Non-English Speaking Background
PBA	Physiotherapists Business Association
PBL	Problem-based learning
PCRC	Physiotherapy Curriculum Review Committee
SES	Socio-economic status

C. ENTRY LEVEL PHYSIOTHERAPY COURSES

Table 5: Entry level physiotherapy courses in Australia

University	Entry level courses in physiotherapy *
University of Canberra	Master of Physiotherapy (graduate entry)
Charles Sturt University	Bachelor of Physiotherapy with/without honours
Curtin University of Technology	Bachelor of Science (Physiotherapy) with/without honours Bachelor of Science (Physiotherapy) degree conversion (on-shore) Bachelor Physiotherapy (off-shore) Master of Physiotherapy (graduate entry)
Griffith University	Bachelor of Physiotherapy / Bachelor of Exercise Science (double degree) Master of Physiotherapy (graduate entry)
La Trobe University	Bachelor of Physiotherapy with/without honours Bachelor of Physiotherapy / Bachelor of Ergonomics (double degree)
The University of Melbourne	Bachelor of Physiotherapy with/without honours
The University Notre Dame	Bachelor of Physiotherapy with/without honours
The University of Newcastle	Bachelor of Physiotherapy with/without honours
The University of Queensland	Bachelor of Physiotherapy with/without honours Master of Physiotherapy Studies (graduate entry)
University of South Australia	Bachelor of Physiotherapy with/without honours Master of Physiotherapy (graduate entry)
The University of Sydney	Bachelor of Applied Science (Physiotherapy) Master of Physiotherapy (graduate entry)

* This table reflects data available in December 2004

Two new entry level courses are beginning in January 2005 at Monash University and James Cook University. Two further courses are proposed at two additional universities in future.