

TOWARDS CLINICAL EXPERTISE:  
LEARNING TRANSITIONS OF  
NEUROMUSCULOSKELETAL  
PHYSIOTHERAPISTS

NICOLA JANE PETTY

DPT 2009

---

## Abstract

---

Postgraduate neuromusculoskeletal physiotherapy courses in the UK, accredited by the Manipulation Association of Chartered Physiotherapists (MACP), aim to promote clinical expertise. Gaining the specialist qualification has been demonstrated to enhance career progression to extended scope practitioner, clinical specialist and consultant roles within the NHS. While research has identified the attributes of expertise, there is limited understanding of how individuals learn and develop that expertise. The aim of the study was to develop an explanatory theory of the learning transitions of neuromusculoskeletal physiotherapists on completion of an MACP approved Masters programme.

The methodology was a naturalistic inquiry using a single theory-seeking case study design and insider research. Twenty six semi-structured face to face or telephone, audio-taped interviews with eleven alumni who had successfully completed a MSc neuromusculoskeletal physiotherapy course participated and were selected using purposeful sampling. Alumni were interviewed between six months and five years after completion of the MSc. A further two study participants with high levels of clinical expertise, were theoretically sampled and interviewed once. Dimensional analysis of the research data was used to develop a substantive theory of the learning transition.

The learning transition was from hidden, received practice knowledge with routine, therapist centred clinical practice to critical understanding of practice knowledge that enabled patient centred practice and the capability to learn in, and from, practice. This development towards clinical expertise was primarily facilitated by critical evaluation of practice knowledge through critical companionship in the practice setting. The learning transition varied between study participants and depended on their conception of clinical practice, epistemology of practice knowledge, conception of teaching and learning, achievement motivation, locus of control, perceived self efficacy in practice knowledge, professional self esteem, emotional control, learning relationships and learning style.

Findings suggest that direct observation of clinical practice together with the questioning and challenging approach of critical companionship within clinical practice enhanced the clinical expertise of neuromusculoskeletal physiotherapists. Clinical expertise was characterised by critical understanding of practice knowledge, patient centred practice and a capability to learn in, and from, clinical practice. The explanatory theory of the learning transition has implications for physiotherapy clinical practice, education and research.

---

# Contents

---

<b>Abstract</b> .....	<b>ii</b>
<b>Contents</b> .....	<b>iii</b>
<b>List of Tables</b> .....	<b>vii</b>
<b>List of Figures</b> .....	<b>viii</b>
<b>Acknowledgements</b> .....	<b>ix</b>
<b>Declaration</b> .....	<b>x</b>
<b>Introduction to the thesis</b> .....	<b>11</b>
<b>Chapter 1: Introduction</b> .....	<b>16</b>
<b>1.1 Introduction</b> .....	<b>16</b>
<b>1.2 The political milieu</b> .....	<b>17</b>
1.2.1 Statutory professional regulation and CPD .....	17
1.2.2 The NHS and CPD.....	18
<b>1.3 Clinical practice milieu</b> .....	<b>22</b>
1.3.1 The workplace .....	22
1.3.2 Nature of neuromusculoskeletal physiotherapy clinical practice.....	22
<b>1.4 The professional milieu</b> .....	<b>24</b>
1.4.1 Impact of NHS reforms on physiotherapy .....	24
1.4.2 Continuous Professional Development (CPD) .....	26
1.4.3 Postgraduate education in physiotherapy.....	28
1.4.4 Development of the MACP approved MSc .....	30
1.4.5 The impact of the MACP approved MSc on practitioners.....	32
1.4.6 The impact of the MACP approved MSc on patients .....	36
1.4.7 The impact of the MACP approved MSc on workplace organisations.....	36
1.4.8 The impact of the MACP approved MSc on the profession .....	37
<b>1.5 Conclusion</b> .....	<b>39</b>
<b>Chapter 2: Literature review</b> .....	<b>42</b>
<b>2.1 Introduction</b> .....	<b>42</b>
<b>2.2 Use of the literature within the research study</b> .....	<b>42</b>

2.3	Clinical expertise.....	44
2.4	Learning transition.....	47
2.5	The research questions .....	50
2.6	Conclusion .....	51
<b>Chapter 3: Methodology .....</b>		<b>52</b>
3.1	Introduction .....	52
3.2	Naturalistic inquiry .....	52
3.3	Case study design.....	54
3.4	Insider research .....	56
3.5	Researcher-participant relationship .....	62
3.6	Anonymity and confidentiality .....	63
3.7	Trustworthiness .....	64
3.7.1	Credibility.....	64
3.7.2	Transferability .....	67
3.7.3	Dependability and confirmability .....	68
3.8	Data analysis .....	68
3.9	Dimensional analysis .....	69
3.10	Conclusion .....	70
<b>Chapter 4: Methods.....</b>		<b>71</b>
4.1	Introduction .....	71
4.2	Recruitment of study participants.....	71
4.3	Data collection.....	73
4.4	Data analysis .....	79
4.4.1	Identification of dimensions .....	79
4.4.2	Differentiation .....	88
4.4.3	Integration.....	92
4.5	Conclusion .....	93
<b>Chapter 5: Findings.....</b>		<b>94</b>
5.1	Introduction .....	94
5.2	Outline of the MACP approved MSc.....	95

<b>5.3</b>	<b>Participants' background .....</b>	<b>96</b>
5.3.1	Age and gender .....	97
5.3.2	Years of clinical experience.....	97
5.3.3	Work situation .....	97
5.3.4	CPD activity .....	98
5.3.5	Perceived self efficacy to succeed .....	98
5.3.6	Family and work situation .....	98
<b>5.4</b>	<b>The learning transition.....</b>	<b>99</b>
<b>5.5</b>	<b>Antecedent conditions .....</b>	<b>99</b>
5.5.1	Hidden received practice knowledge .....	100
5.5.2	Therapist centred routine clinical practice .....	104
<b>5.6</b>	<b>Expectation of the learning experience .....</b>	<b>105</b>
5.6.1	Enhance clinical practice and/or career development.....	105
5.6.2	Enhance knowledge and skill through didactic teaching .....	106
<b>5.7</b>	<b>Learning contradiction.....</b>	<b>107</b>
5.7.1	Classroom-based critical evaluation of handling skills.....	107
5.7.2	Classroom-based critical evaluation of practice knowledge .....	108
5.7.3	Practice-based critical evaluation of practice knowledge .....	110
<b>5.8</b>	<b>Reaction to learning contradiction .....</b>	<b>111</b>
5.8.1	Reaction to critical evaluation of handling skills.....	112
5.8.2	Reaction to classroom-based critical evaluation of practice knowledge.....	116
5.8.3	Reaction to practice-based critical evaluation of practice knowledge .....	120
<b>5.9</b>	<b>Learning outcomes.....</b>	<b>131</b>
5.9.1	Critical understanding of practice knowledge .....	132
5.9.2	Patient centred practice.....	136
5.9.3	Learning in and from practice.....	139
5.9.4	Job promotion .....	142
<b>5.10</b>	<b>Moderating factors .....</b>	<b>143</b>
5.10.1	Conception of clinical practice .....	145
5.10.2	Epistemology of practice knowledge.....	146
5.10.3	Conception of teaching and learning .....	146
5.10.4	Achievement motivation.....	146
5.10.5	Locus of control .....	147
5.10.6	Perceived self efficacy in practice knowledge .....	147
5.10.7	Professional self esteem.....	148
5.10.8	Emotional control .....	148
5.10.9	Learning relationships .....	150
5.10.10	Learning style .....	150
<b>5.11</b>	<b>Summary of the learning transition .....</b>	<b>151</b>
<b>5.12</b>	<b>Conceptual grouping of study participants .....</b>	<b>151</b>
5.12.1	Doing better .....	152
5.12.2	Gaining status .....	154
5.12.3	Knowing better .....	155
<b>5.13</b>	<b>Conclusion .....</b>	<b>156</b>
<b>Chapter 6:</b>	<b>Discussion.....</b>	<b>157</b>

<b>6.1</b>	<b>Introduction .....</b>	<b>157</b>
<b>6.2</b>	<b>The learning transition in relation to the literature.....</b>	<b>159</b>
6.2.1	Summary statement 1 .....	159
6.2.2	Summary statement 2 .....	160
6.2.3	Summary statement 3 .....	161
6.2.4	Summary statement 4 .....	162
6.2.5	Summary statement 5 .....	163
6.2.6	Summary statement 6 .....	165
6.2.7	Summary statement 7 .....	166
6.2.8	Summary statement 8 .....	167
6.2.9	Summary statement 9 .....	170
<b>6.3</b>	<b>Authenticity .....</b>	<b>172</b>
<b>6.4</b>	<b>Transferability .....</b>	<b>173</b>
<b>6.5</b>	<b>Critical reflective and reflexive account .....</b>	<b>174</b>
<b>6.6</b>	<b>Implications for practice .....</b>	<b>178</b>
<b>6.7</b>	<b>Implications for education .....</b>	<b>181</b>
<b>6.8</b>	<b>Implications for research .....</b>	<b>182</b>
<b>6.9</b>	<b>Conclusion .....</b>	<b>183</b>
<b>References</b>	<b>.....</b>	<b>186</b>
<b>Appendix 1:</b>	<b>Timeline of data collection methods and analysis .....</b>	<b>207</b>
<b>Appendix 2:</b>	<b>Letter of invitation to participants .....</b>	<b>208</b>
<b>Appendix 3:</b>	<b>Request for 2nd interview .....</b>	<b>209</b>
<b>Appendix 4:</b>	<b>Request for 3rd interview.....</b>	<b>210</b>
<b>Appendix 5:</b>	<b>Research contract with the study participants.....</b>	<b>211</b>
<b>Appendix 6:</b>	<b>Returning transcript for checking.....</b>	<b>214</b>
<b>Appendix 7:</b>	<b>Participant consent form.....</b>	<b>215</b>
<b>Appendix 8:</b>	<b>Reflections following an interview.....</b>	<b>216</b>
<b>Appendix 9:</b>	<b>Excerpt of interview transcription .....</b>	<b>217</b>
<b>Appendix 10:</b>	<b>Comparison of clinical practice experience of participants .....</b>	<b>218</b>
<b>Appendix 11:</b>	<b>Examples of three dimensions and properties.....</b>	<b>219</b>
<b>Appendix 12:</b>	<b>Round two analysis .....</b>	<b>220</b>
<b>Appendix 13:</b>	<b>Invitation to ‘expert’ participants .....</b>	<b>221</b>
<b>Appendix 14:</b>	<b>MACP approved MSc course aims and objectives .....</b>	<b>223</b>

---

## List of Tables

---

Table 1.1	M level learning outcomes .....	30
Table 2.1	Characteristics of clinical expertise .....	46
Table 2.2	Types of knowledge .....	47
Table 3.1	Types of case study .....	54
Table 3.2	Sources of data used in this study .....	56
Table 4.1	Schedule of interviews .....	78
Table 4.2	Round one interview guide .....	80
Table 4.3	A reflective summary of an interview .....	81
Table 4.4	Round one data collection and analysis .....	83
Table 4.5	Round two interview guide .....	85
Table 4.6	Round two data collection and analysis .....	86
Table 4.7	Analytical memo for the career development group .....	88
Table 4.8	Round three interview guide .....	90
Table 4.9	Interview guide for 'expert' participants .....	91
Table 4.10	Round three data collection and analysis .....	91
Table 5.1	Outline of the MSc modules required by the MACP .....	96
Table 5.2	Age of participants .....	97
Table 5.3	Clinical experience of participants .....	97
Table 5.4	Description of each moderating factor .....	144
Table 5.5	Moderating factors and reaction to critical evaluation of practice knowledge ...	145

---

## List of Figures

---

Figure 1.1	Typical CPD in NMS physiotherapy .....	27
Figure 2.1	A conceptual framework of learning transition .....	50
Figure 5.1	Conceptual framework of the learning transition for this study.....	100
Figure 5.2	University based learning.....	110
Figure 5.3	Clinical practice based learning .....	111
Figure 5.4	Learning outcomes.....	132
Figure 5.5	The learning transition towards clinical expertise.....	152



---

## Acknowledgements

---

There are a number of people who have been with me and supported me on this five and a half year learning journey. I would like to say a very big thank you to:

Professor Julie 'Jools' Scholes and Dr Lorraine Ellis for their supervision of this study with timely advice and guidance and masterfully balancing high challenge with high support.

Alumni who willingly and enthusiastically participated in the study and openly shared their experience with me.

Graham Stew for creating an open, creative and critical learning environment; it was a wonderful experience.

Dr Charlotte Ramage for her initial support and advice as action set facilitator and correctly predicting that 'you'll grow out of it'! For some great corridor conversations about learning and for encouragement over the years.

Sue Coxhill for very careful proof reading of this thesis.

Mary Morley for being a superb study buddy. For the numerous conversations and advice, sharing of nuggets and most of all, for helping me crack the theory.

Colleagues who have allowed me to interrupt their photocopying and coffee making to discuss ideas, offer advice and give support.

Chris Murphy for patiently listening and actively engaging in numerous brainstorms to clarify ideas.

My friends who've stuck with me, despite my obsessive behaviour; always encouraging and supporting me through the journey.

My parents, Vee and Alf, for their constant love, encouragement and support; and offering a weekly telephone advisory service to boot!

---

## **Declaration**

---

I declare that the research contained in this thesis, unless otherwise formally indicated within the text, is the original work of the author. The thesis has not been previously submitted to this or any other university for a degree, and does not incorporate any material already submitted for a degree.

Signed \_\_\_\_\_

Dated \_\_\_\_\_

---

## **Introduction to the thesis**

---

This research study was conducted as part of the requirements for a Professional Doctorate of Physiotherapy at the University of Brighton. The initial stage of the doctorate programme involved exploration of my professional practice to identify a researchable question. As a university lecturer, my major role was as course leader for the Masters (MSc) in Neuromusculoskeletal Physiotherapy, which was approved by the Manipulation Association of Chartered Physiotherapists (MACP), a clinical interest group of the Chartered Society of Physiotherapy. I was coordinator of six mandatory modules of the MSc that involved around 12 weeks of direct contact time with students each year. Since coming into higher education in 1991, I had moved from a concept of teaching as the didactic transmission of knowledge and skills, to a more holistic and student centred approach. I had become fascinated by the learning process, particularly at postgraduate level, and chose to explore this aspect of my professional practice for the doctorate programme.

In order to identify a research question, I critically reflected on my beliefs and understanding of my role in the classroom and explored the literature on didactic and student centred approaches to learning and teaching. This raised a number of important issues. A safe, comfortable, mutually respectful environment helps to facilitate student learning. The relationship between lecturers and students and between student peers is critical to learning. Facilitated critical discussion that enables students to articulate their knowledge and learn from each other is a potentially powerful learning process. Learning is personal and individual and so my role as teacher is to be aware of how students are learning, as I teach. This appraisal triggered a range of research questions that included: What do MSc students learn from the course? How does the course enhance their clinical practice? What difference does a student centred approach make to learning? What is the experience of MSc students completing the course? What do students expect in terms of the lecturer-student relationship?

My decision to explore the MSc from the perspective of the student was inspired by the following quote: ‘seeing our practice through the learners’ eyes, helps us to teach more

responsively...without this information it is hard to teach well' (Brookfield 1998 p199). This strongly resonated with me as I aspired to be an excellent teacher. At this stage my intention was to explore the experience of current MSc students.

As I explored my ontological and epistemological position in relation to the study, I closely reviewed my role as a researcher interviewing current students. This raised such serious ethical concerns that I started to rethink the whole study. I reflected on my core values and beliefs to identify meaningful research questions within my professional practice and in each case explored the relevant literature. This led to the following research question: What do neuromusculoskeletal physiotherapists understand by 'care' within the notion of patient centred care? I thought this would benefit me professionally, enhancing the way I cared for students within a student-centred approach, as well as personally with friends and family. My interest in pursuing patient centred care, however, diminished over time and the solution of using alumni rather than current students brought me back to my original research idea.

I conducted a small pilot study with two alumni that explored the impact of the MSc in Neuromusculoskeletal Physiotherapy on their professional practice. My position as researcher required a critical review of the advantages and disadvantages of insider research. This demanded a critical exploration of my responsibility, position, attitudes and values as MSc course and module leader. I reflected on significant previous learning experiences, key periods of professional development, and on my beliefs and attitude towards my profession. This enhanced my awareness of my own attitudes, beliefs and values and promoted a critically reflective and reflexive stance as researcher in this study (Finlay 2002, Finlay and Gough 2003).

I considered the methodology for the pilot study to be an illuminative evaluation using case study design. I was evaluating the MSc from the perspective of the student and this resonated with my role as course leader researching my professional practice. The study necessitated a review of the research evidence surrounding M level study and its impact on practitioners. Following individual semi-structured interviews with the two alumni, thematic analysis, supported by NVivo, was used to analyse the research data. Both

alumni considered that the course had enhanced their confidence in clinical practice with patients, in teaching others and in evaluating research. While one participant considered it had enhanced their handling skills and rapport with patients, the other considered it had enhanced their knowledge base and their status with peers and patients. These findings raised further questions and enhanced my curiosity to explore the MSc from the perspective of alumni.

Further data was collected and analysed and I continued to focus on the impact of the MSc on the professional practice of alumni. As the study progressed, my immersion in data collection and analysis strengthened my identity as a researcher. My emerging theoretical conceptualisation of the learning experience of alumni started to overshadow my perspective as course and module leader. This shift in perspective influenced the focus of the study and subsequent methodology. Illuminative evaluation case study gave way to a theory-seeking case study to develop an explanatory theory of the learning transition of the alumni.

This summary of my motivation, stance and development aims to make explicit to the reader how I, as researcher, have impacted on the study (Finlay and Gough 2003, Robson 2002, Willig 2008) from the very inception of the process. It aims to contextualise the researcher within their professional practice and explain the early development of the current study described in this thesis.

What now follows is a brief overview of the structure of the thesis in the form of a synopsis for each chapter.

Chapter 1 provides an introduction to the study. It explores continuous professional development (CPD) and postgraduate education within the clinical speciality of neuromusculoskeletal physiotherapy. It discusses the political, professional and clinical practice milieu, within which neuromusculoskeletal physiotherapists engage. Current research on the impact of MACP approved MSc courses is reviewed. The chapter concludes with the initial exploratory research questions of this study.

Chapter 2 critically reviews the literature in relation to learning transitions. One of the important learning outcomes of an MACP approved MSc, is enhanced clinical expertise, and for that reason the literature related to expertise is explored. The literature review led to a refinement of the initial exploratory research questions in Chapter 1 and these conclude this chapter.

Chapter 3 explains the methodological decisions taken in relation to data collection and analysis in order to address the research questions. This naturalistic inquiry adopted a single, theory-seeking case study design using insider research. Issues around researcher and informant bias and the nature of the researcher-participant relationship are critically explored. The ethical issues of anonymity and confidentiality are especially important in case study design and these are discussed. The quality of this naturalistic inquiry depends on its trustworthiness (i.e. credibility, transferability, dependability and confirmability) and authenticity, and strategies to enhance these are explained. Dimensional analysis of the research data is then addressed. A summary of the main methodological decisions that underpinned this study concludes this chapter.

Chapter 4 examines how the broad methodological decisions were developed within the methods of data collection and data analysis. It explains how study participants were recruited and how interviews were conducted. Purposeful sampling was used. Following two rounds of data collection and analysis, dimensions and properties were identified. Differentiation of these dimensions into an explanatory matrix took place after a third round of data collection and analysis. Theoretical sampling guided the addition of the final two study participants. Finally, integration involved reconfiguration of the matrix and its development into a substantive theory. Details of these processes provide an audit trail to enable judgments to be made around dependability and confirmability of the study.

Chapter 5 presents the findings of the study. The scene is set by outlining the background of study participants. The data are organised to illustrate the learning transition of study participants. Quotes have been selected to ensure a balance between study participants and across responses. The findings are presented according to key

conceptual headings from role and learning transition theory. These were antecedent conditions, expectations, learning contradictions, reaction to learning contradictions, and learning outcomes. A variety of moderating factors that influenced the different learning transitions of study participants is then provided. Three conceptual groupings were created from the data and these descriptions conclude this chapter.

Chapter 6 first relates the findings to current literature. This highlights the contribution of this study to the profession's body of knowledge. The quality of this study is then tested in relation to transferability and authenticity. This is followed by a reflective and reflexive account to help make transparent the influence of the researcher on the study. The implications of the study findings are then identified for physiotherapy clinical practice, education and research.

Throughout the thesis, footnotes have been used to provide explanatory notes.

---

# Chapter 1: Introduction

---

## 1.1 Introduction

This chapter situates and contextualises continuous professional development (CPD) and postgraduate education within the clinical speciality of neuromusculoskeletal physiotherapy. The chapter considers the contemporary political, professional and clinical practice contexts within which postgraduate neuromusculoskeletal physiotherapy education is embedded.

The most important aspects of the political milieu relevant to this study relate to mandatory CPD for continued professional regulation, the contractual right of NHS physiotherapists to undertake CPD, and the creation of a structured clinical career pathway that recognises and rewards high level clinical expertise in neuromusculoskeletal physiotherapy. These changes have enhanced the status of postgraduate education, and of particular relevance to this study, of MACP approved MSc programmes that aim to develop clinical expertise.

The clinical milieu of relevance to this study is the workplace culture of a typical physiotherapy department in the NHS, and the nature of neuromusculoskeletal physiotherapy clinical practice. These aspects of clinical practice provide the context within which neuromusculoskeletal physiotherapists undertake CPD and postgraduate education.

The professional milieu of relevance to this study includes the impact of the NHS reforms on physiotherapy, the typical CPD activity of neuromusculoskeletal physiotherapists, and postgraduate education within physiotherapy. The development of MACP approved MSc programmes in the UK is outlined with an exploration of its impact on practitioners, patients, the workplace and the physiotherapy profession. This chapter concludes with the aim of the study and the initial exploratory research questions.



## **1.2 The political milieu**

The political milieu largely relates to the government's 'modernisation' of the NHS which began over ten years ago (Department of Health 1997). Of relevance to this study, is the impact of this process on CPD and clinical practice. These two issues are discussed.

### **1.2.1 Statutory professional regulation and CPD**

The high status and autonomy given to professionals, including the 'minor' (Carr-Saunders and Wilson 1933) profession of physiotherapy, has been replaced by a public and professional society that demands control and accountability. The White Paper, Trust, Assurance and Safety – the regulation of Health Professionals in the 21st Century (Department of Health 2007a) provides a reform programme for statutory professional regulation. This represents part of a quality assurance package to enhance clinical governance in the NHS and protect and ensure high quality care (Department of Health 2000a).

Professional regulation is controlled by the independent regulator, the Health Professions Council (HPC). Its remit is to sustain, improve and assure professional standards are being met, as well as to identify and address poor practice (Department of Health 2007a). A fundamental change in the regulatory arrangement is the requirement of CPD evidence to maintain registration; the first audit for physiotherapy is due in April 2010. For a number of years physiotherapists have advocated mandatory CPD to prevent professional obsolescence (Ashton 2002, Dubin 1972, Finley 1988, Grant 1992, McCormick and Marshall 1994).

The HPC define CPD as 'a range of learning activities through which professionals maintain and develop throughout their career to ensure that they retain their capacity to practise safely, effectively and legally within their evolving scope of practice' (Health Professions Council 2006 p21). Learning activities include: work based learning (reflecting on experiences, considering feedback from service users); professional activity (being a mentor or teaching others); formal education (going on courses); and self-directed learning (reading articles and books) (Health Professions Council 2006).

While HPC requirements for initial professional registration are well established, standards for advanced levels of practice are due to be published by the end of 2008 (Department of Health 2007a, Department of Health 2007b). Mandatory CPD is a statutory requirement, and the responsibility for its provision lies with the employer so that it remains focused on local patient and service needs (Health Professions Council 2006). Effective CPD within physiotherapy relies on the partnership of government, the employer, the physiotherapy employee, HPC, Chartered Society of Physiotherapy and higher education. The relevant employer in relation to this current study is typically the NHS. Mandatory CPD may increase the uptake by physiotherapists of MACP approved MSc programmes.

### **1.2.2 The NHS and CPD**

Within the NHS, CPD is a contractual right of employees (Department of Health 2000b; Department of Health 2001a). The way in which Allied Health Professions have undertaken CPD has been described as ‘informal, uni-disciplinary, unaccredited, and not tied into organisational requirements’ (Department of Health 2000a p34); this situation is mirrored throughout the NHS (Audit Commission 2001). The government wants this situation to change so that a more strategic approach is taken with direct benefit to the organisation and to patient care. This is reflected within the clinical governance<sup>1</sup> framework for CPD (Department of Health 1999) and includes:

- assessment of individual and service needs supported by the Knowledge and Skills Framework<sup>2</sup> (KSF)
- utilisation of personal development plans (PDPs)
- implementation of learning and CPD activity
- annual evaluation of PDPs.

These measures however, have not been fully implemented by Strategic Health Authorities (Kings Fund 2007). Furthermore, the government priority to increase

---

<sup>1</sup> Clinical governance is ‘a system through which NHS organisations are accountable for continuously improving the quality of their services and safeguarding high standards of care by creating an environment in which excellence in clinical care will flourish’ (Scally and Donaldson 1998).

<sup>2</sup> The framework defines the knowledge and skills required by NHS staff to deliver quality services. The KSF framework with the staff development review process is a major strand within Agenda for Change (Department of Health 2005).

support of CPD for physiotherapists has yet to be realised (House of Commons Health Committee 2007). While this may have hindered the development of opportunities for CPD, the government's new career structure for physiotherapists may trigger greater uptake of MACP approved MSc programmes.

The government set out the future role for NHS physiotherapy in 'Meeting the Challenge: a Strategy for the Allied Health Professions' (Department of Health 2000b). It created clinical roles with much higher levels of clinical practice expertise rewarded by higher pay and status. A national pay spine linked to the Knowledge and Skills Framework (KSF) determined pay progression and career development (Department of Health 2007c). The advanced clinical practitioner grades of clinical specialist, extended scope practitioner<sup>3</sup> (ESP) and consultant were created. A pre-requisite for an advanced practitioner role in neuromusculoskeletal physiotherapy is a clinically orientated MSc, from a range which includes the MACP approved MSc. While this political initiative was partly driven by the cost implications of complying with European Union Working Regulations for new doctors (The Working Time (Amendment) Regulation 2003), it was also believed that up to 40% of patients seeing orthopaedic consultants in outpatients, 'would be better off being treated by a physiotherapist' (Department of Health 2000a p4). This view has been supported by a number of research studies that have identified the positive impact of orthopaedic ESP physiotherapists on service delivery (Anaf and Sheppard 2007, Dickens et al. 2003, Hattam 2004, McClellan, Greenwood and Bengler 2006, Pearse, Maclean and Ricketts 2006). There are currently around 400 ESP physiotherapists in the UK.

The number of NHS advanced practitioner roles has not kept pace with government targets. A new generation of 250 Allied Health Professional (AHP) consultant posts by 2004 has not been achieved with only 70 secured by 2005. Thirty four of these were in physiotherapy (Limb 2005). Current figures from the Chartered Society of Physiotherapy indicate 114 AHP consultants with 59 in physiotherapy (Fitch 2008). Financial difficulties within the NHS (Council of Deans and Heads of UK University

---

<sup>3</sup> ESPs in neuromusculoskeletal physiotherapy may, for example, request x-rays or blood tests and use the results to assist in clinical diagnosis.

Faculties for Nursing and Health Professions 2007, House of Commons Health Committee 2007) may in part be responsible for the slow growth in consultant posts.

Consultant and extended scope physiotherapists are central to the government plan for an integrated national service framework for patient care. A core vision of the government is to reorganise the NHS so that it revolves around the patient (Department of Health 2000a, 2001b, 2008a). The Musculoskeletal Service Framework (Department of Health 2006) for long-term conditions, describes what it considers best practice for patients with musculoskeletal conditions and promotes integration of healthcare services with blurred professional boundaries (Department of Health 2000c). Major health problems and the skill mix<sup>4</sup> of staff needed to provide an integrated care package are currently being identified by Skills for Health (Skills for Health 2007). Role and career development, as well as service and educational delivery have recently been integrated into a competence-based career framework for Allied Health Professionals (Department of Health 2008b).

The impact of statutory CPD coupled with a structured clinical pathway to high levels of clinical expertise with higher pay and status, provides an unprecedented opportunity for physiotherapists. The realisation of such opportunity is, however, dependent on adequate funding for CPD. Postgraduate physiotherapy education, including MACP approved MSc programmes, is funded through the Non-Medical Education and Training (NMET) funding stream; which is part of the Multi-Professional Education and Training (MPET) levy for the majority of all NHS education and training. The level of investment and funding for postgraduate education is managed by the local employer to ensure that CPD activity is relevant to local patient and service needs (Department of Health 1999). However, an Audit Commission (2001) identified that some local NHS employers had not prioritised CPD activity; variable opportunities existed within and between Trusts, with little funding for physiotherapy. Employers have not fully supported CPD; instead they have used part of their training budgets to offset major

---

<sup>4</sup> Defined using the Knowledge and Skills Framework to identify the range of skills and qualities required.

financial deficits (Council of Deans and Heads of UK University Faculties for Nursing and Health Professions 2007, House of Commons Health Committee 2007).

The impacts of financial deficits within the NHS on physiotherapy training budgets, and of lack of investment in staffing at Trust level, were considered dire in a recent report (Chartered Society of Physiotherapy and Royal College of Midwives 2007). Resources to support training and CPD were thought to be barely adequate (Chartered Society of Physiotherapy and Royal College of Midwives 2007). A recent survey found that 60% of physiotherapy managers had experienced a significant reduction in their staff training budget (Review Body for Nursing and Other Health Professions 2007). Seventy seven per cent considered it inadequate to meet KSF development needs and 82% considered the budget inadequate to meet CPD needs (Review Body for Nursing and Other Health Professions 2007). The report highlighted the need to prioritise physiotherapy education and training to enable physiotherapists to reach advanced clinical practice levels and thus enhance patient care (Chartered Society of Physiotherapy and Royal College of Midwives 2007).

The variation in CPD funding by local NHS employers with unprotected training budgets has been identified as problematic by the government. A recent initiative whereby funding follows the trainee may address this issue (Department of Health 2008a, 2008c). This may significantly enhance the potential for physiotherapists to undertake CPD, and of relevance to this study, to embark on an MACP approved MSc programme.

In summary, the political milieu has been in a state of turbulence since the government published its white paper, 'The New NHS: Modern, Dependable' (Department of Health 1997). This constituted the first major overhaul of the NHS since its inception in 1948, with significant changes throughout the organisation. CPD has a much greater importance than in the past; it is now required for registration and is part of the contract of employment. Furthermore, the government target to create advanced practitioner roles brings clinically orientated Masters level education into centre stage. The recent change to CPD funding to follow the practitioner may significantly enhance the

potential for physiotherapists to engage in postgraduate education and in particular undertake MACP approved MSc programmes. This will be fuelled by the creation of advanced clinical practitioner posts with greater clinical responsibility, salary and status. Having discussed the broad political context, the professional context will now be considered.

## **1.3 Clinical practice milieu**

### **1.3.1 The workplace**

A physiotherapy outpatient department in the NHS provides a typical workplace setting for neuromusculoskeletal physiotherapy. Physiotherapists generally work with patients within a screened cubicle to provide undressed patients with privacy; day to day clinical practice is usually performed alone and unobserved. The therapist takes responsibility for their practice and for their patients. The clinical competence of practitioners is generally measured according to their efficiency and through-put of patients. Quality of care remains an individual's professional responsibility to their patients.

It is assumed that a qualified physiotherapist is competent to manage patients with neuromusculoskeletal conditions. A junior is encouraged to discuss their 'problem patients' with a more senior physiotherapist, who uses the patient notes as a guide. This assumes that a junior physiotherapist is able to effectively learn through clinical experience with some support from a more experienced colleague. It assumes patient mileage will enhance clinical practice expertise (Richardson 1996, 1999a). As a physiotherapist gains clinical experience and a CPD portfolio, they are promoted to more senior roles. They may then provide guidance to newly qualified physiotherapists and junior members of staff.

### **1.3.2 Nature of neuromusculoskeletal physiotherapy clinical practice**

Patients with neuromusculoskeletal conditions typically present with symptoms in a region of the body; common areas being low back pain, neck, knee and shoulder pain (Clinical Standards Advisory Report 1994). The initial challenge is to identify the

underlying cause of the patient's symptoms (diagnostic reasoning). The process firstly requires differential diagnosis, so that serious pathologies are excluded, and then identifying the source(s) and contributing factors of the patient's symptoms. This process involves abductive reasoning<sup>5</sup> (Blaikie 1993, Rolfe 1998). Patient information (cue acquisition) generates multiple hypotheses (Maitland et al. 2005, Petty 2004, Petty 2006), which are tested through data collection and continual reassessment (Jones and Rivett 2004). This process includes narrative reasoning to contextualise and personalise the problem to the patient; how they perceive and experience their problem and its impact on their life.

To make sense of signs and symptoms without the benefit of a known pathological condition means that clinical practice is inherently uncertain and unpredictable. High levels of clinical skill in differential diagnosis and analysis of impairments is required for safe and accurate physiotherapy assessment of patients. Having accurately identified the cause and nature of the symptoms, treatment and management strategies aim to resolve the symptoms and rehabilitate the patient (Petty 2004). Continual reassessment is needed to monitor treatment and management interventions and to test the applicability of the working hypotheses; where improvement slows for example, modification may be required. In this way, therapists treat and manage patients on the basis of working hypotheses and not from certain and absolute knowledge.

The uncertain nature of clinical knowledge is incorporated within the 'permeable brick wall' concept described by Maitland et al. (2005). This posits that a patient's presentation will not necessarily fit with theoretical or scientific knowledge and requires the practitioner to remain within the uncertain but true world of the patient and their presentation (Maitland et al. 2005). In addition, routine treatment techniques for patients are not advocated, but rather developed from the patient assessment, and the clinician needs to be creative so as to meet the needs of the individual (Maitland et al. 2005). The Maitland concept thus embraces a messy, uncertain and unpredictable world of practice (Eraut 1994, Schon 1987). The practitioner is required to problem set as well as problem solve within a patient centred approach. The term "patient centred approach" is

---

<sup>5</sup> Abductive reasoning is the construction of theory from language, meanings and theories (Blaikie 1993)

used here to refer to the conscious, deliberate, creative, individualised and collaborative clinical care of patients (Eraut 1994, Higgs and Titchen 2000, Johns 1998, Martin, Siosteen and Shepard 1999, Titchen 2001). There is a plethora of treatment and management approaches advocated for patients with neuromusculoskeletal conditions. Physiotherapists learn about these approaches through attendance of nationally-advertised weekend courses.

In summary, the clinical practice milieu highlights some important aspects in relation to the development of clinical expertise. The culture assumes practitioners are competent and able to manage effectively on their own. It assumes that with patient mileage, practitioners will enhance their clinical practice. Patients present with ill-defined complex problems which the practitioner has to identify and resolve within a patient-centred approach. This involves high levels of reasoning to provide safe and accurate assessment. From this problem setting, a creative and personalised treatment approach is devised. Throughout the management of patients, practitioners are required to constantly and critically reflect on the effectiveness of their approach.

## **1.4 The professional milieu**

This section provides the context within which an MACP approved MSc programme is embedded. The impact of the NHS reforms on roles and expertise towards more advanced autonomous levels of physiotherapy practice is discussed. Typical CPD activity by neuromusculoskeletal physiotherapists is then explored to identify the possible learning needs and expectations of practitioners entering an MACP approved MSc. The development and expectations of formal postgraduate education are then followed by a review of the literature surrounding MACP approved MSc programmes. In particular, the impact of these programmes on practitioners, patients, workplaces and the profession is explored.

### **1.4.1 Impact of NHS reforms on physiotherapy**

The impact of the NHS reforms has been reviewed in an extensive survey by the Chartered Society of Physiotherapy (CSP) and the Royal College of Midwives



(Chartered Society of Physiotherapy and Royal College of Midwives 2007). The results are not altogether positive. Increased workload, increased requirement of knowledge and skills, staff shortages, low funding and inability to deliver quality care for patients have not enhanced the working lives of practitioners (Chartered Society of Physiotherapy and Royal College of Midwives 2007). On a more positive note, the demand for professions to be publically accountable for their service and to demonstrate their effectiveness, has fuelled physiotherapy research activity. This is beneficial since a robust knowledge base gives authority, legitimacy, persuasiveness and political leverage, and is considered essential to the survival of the profession (Higgs and Titchen 2001, van de Meene 1978, 1988). Furthermore, the NHS reforms have significantly enhanced clinical career opportunities for physiotherapists with the development of advanced clinical practitioner grades. These posts give much greater autonomy to clinical physiotherapists than they have had in the past.

The growth in autonomy has increased rapidly in the past 30 years since the 1973 McMillan report<sup>6</sup>. At that time physiotherapy became independent of the medical profession in relation to type and duration of treatment, as well as an ability to receive referrals from non-medical professionals. Fourteen years later physiotherapists became first contact practitioners and while this was immediately embraced by private practitioners, self referral of patients has only recently been promoted in the NHS. In Scotland, self referral has been found to benefit the patient, the service and direct NHS costs in a one year trial with over 3,000 patients (Holdsworth, Webster and McFadyen 2007). Similar findings have been reported in England with self-referral pilot sites to NHS musculoskeletal physiotherapy services (Department of Health 2007d, 2008e). In October 2008, Alan Johnson, the Secretary of State for Health, announced the authorisation of patient self-referral to NHS physiotherapy departments (Johnson 2008). The review of the Health of the Working Population, by Dame Carol Black (2008), and the recommendation of Fit for Work services, is also likely to impact on

---

<sup>6</sup> The UK Secretary of State for Social Services set up a working party chaired by Mr E L McMillan (Department of Health and Social Security 1973) to make recommendations on the future role of physiotherapy. It recommended that physiotherapy services be managed by physiotherapists; that physiotherapists be allowed to decide the nature and duration of treatment for patients; and that physiotherapists could receive direct patient referral from health professionals other than medical practitioners (Barclay 1994).

musculoskeletal physiotherapy services. This growth in clinical autonomy and responsibility for patient care brings with it a greater need for practitioners with clinical expertise. Critical to this development will be the provision of effective CPD and postgraduate education.

#### **1.4.2 Continuous Professional Development (CPD)**

The CSP considers CPD activity as obligatory within the Rules of Professional Conduct and Code of Conduct (Chartered Society of Physiotherapy 2007a). It is defined as a systematic, ongoing structured process for maintaining, developing and enhancing skills, knowledge and competence both professionally and personally in order to improve performance at work (Chartered Society of Physiotherapy 2007a). CPD encompasses a range of formal, informal and incidental learning activities (Chartered Society of Physiotherapy 2005a). The CSP recommends employers provide individuals with at least one half day per month protected personal learning time for informal CPD activities, as well as further study leave for formal educational programmes (Chartered Society of Physiotherapy 2005b). Historically, physiotherapists have tended to be opportunistic in relation to their CPD with little planning for their professional development (Gunn and Goding 2008). The NHS reforms have created a more structured approach.

There are a number of benefits to a structured CPD approach for physiotherapy. The rapid growth in knowledge and skills underpinning physiotherapy practice over the past 30 years has made it increasingly difficult for the undergraduate programme to comprehensively educate students in the breadth and depth of competencies expected of colleagues in the workplace (Crosbie et al. 2002). This increases the need for effective CPD to support clinical practice development in novice physiotherapists. Practitioners wanting to secure enhanced clinical roles within the NHS may also require a more structured approach to their development. A clinical specialisation framework for CPD has been created by the Australian Physiotherapy Association (Jull and Moore 2008, Rivett 2008, Robertson et al. 2003) and the American Physical Therapy Association (Di Fabio 1999) that provides a professionally recognised career structure. Specialisation would structure clinical development and may also enhance patient care by facilitation

of patient referral to colleagues with greater expertise (Carr and Shepherd 1996, Wellington 2002). In the UK, the CSP defines specialists but does not officially recognise them (Chartered Society of Physiotherapy 2001a). While the development and recognition of specialisation across the European Union was proposed a number of years ago (Donaghy and Gosling 1999), to date this has not been achieved. So while the NHS reforms have structured CPD activities, this has not been mirrored by the Chartered Society of Physiotherapy.

The nature of informal CPD largely involves seeing numbers of patients to gain ‘patient mileage’ (Richardson 1996, 1999a), in-service training and weekend courses (Maxwell 1995) that emphasise hands-on skill (Chartered Society of Physiotherapy Research Development Group 1996). Teaching typically follows a didactic<sup>7</sup> approach whereby the teacher explains and demonstrates a technique; participants then practice on each other with the teacher providing individual guidance. CPD learning involves a progressive step by step accumulation of skill development through regular attendance on weekend courses and in-service training, along with continued clinical experience. This is summarised in Figure 1.1.

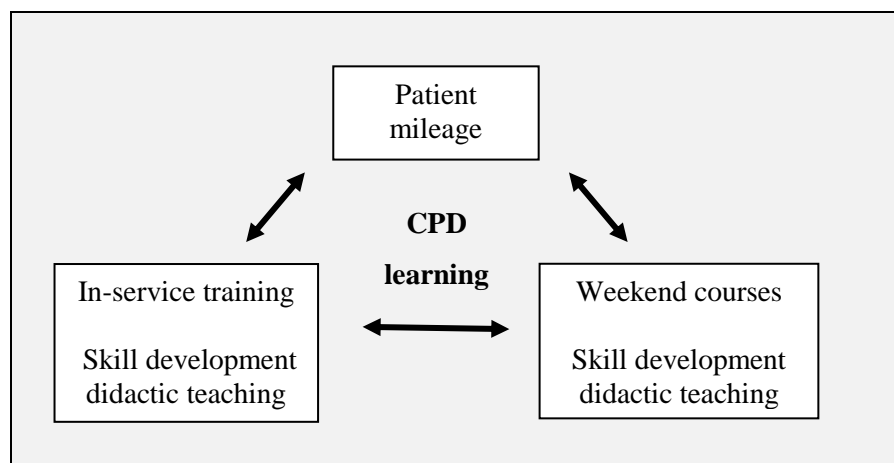


Figure 1.1 Typical CPD in NMS physiotherapy

---

<sup>7</sup> Transmission of knowledge and skills from the teacher to the student; this is in contrast to student centred facilitation of learning whereby the teacher facilitates active engagement by the student to facilitate their own learning.

While this established CPD approach has served the profession for many years, it has some limitations. Firstly, participation without formal assessment, does not necessarily lead to learning (Criticos 1993, Ramsden 2003) and enhanced skill development (Chiplin and Bassett 2002). Without assessment, there is no formal recognition of post-qualification levels of competence which may inhibit investment into such CPD activity by physiotherapy managers (Chiplin and Bassett 2002). A second limitation is that the progressive accumulation of skills may not become integrated together, limiting understanding by the practitioner. A third limitation is that weekend courses and in-service training occur away from patients. The practitioner has to learn how to apply new skills in clinical practice and this learning may be limited (Chiplin and Bassett 2002). The focus on handling skills is only one aspect of clinical practice; other skills are also required and these are not addressed with this approach. Finally, while teaching by demonstration and imitation are considered vital for learning (Schon 1987) by creating 'zones of proximal development' (Vygotsky 1978), a didactic approach may hinder learning. It may engender an uncritical acceptance of knowledge (Conneeley 2005, Hunt et al. 1998) with limited understanding (Hunt et al. 1998) and limited change to practice (O'Brien et al. 2001).

### **1.4.3 Postgraduate education in physiotherapy**

Formal postgraduate education is deemed by some authors to be an essential CPD activity for practitioners (Grant 2002, Wellington 2002). It is considered to enable practitioners to engage with the rapid increase in knowledge and skills underpinning practice (Grant 2002) as well as the need to demonstrate credibility in a competitive and discerning market place (Wellington 2002).

Postgraduate education has flourished (Chartered Society of Physiotherapy 2001b, Gosling 1997, Gosling 1999a) since physiotherapy became an all graduate profession in the early 1990s. It has triggered independent professional post-registration courses and prompted professional interest groups to seek formal recognition from higher education institutions (Gosling 1997). However, there are a number of factors that hinder

enrolment onto M<sup>8</sup> level programmes. These include: lack of funding, time and study leave<sup>9</sup>, time away from work and home, and the challenge of M level learning (Beeston, Rastall and Hoare 1998, Gosling 1997, Gosling 1999a, Maxwell 1995, O’Sullivan 2003, Titchen 1987). Despite this, the uptake of postgraduate education by Allied Health Professions increased by 106% between 1996 and 2002 (Sastry 2004). The enhanced profile of research and evidence informed practice as well as the national review of postgraduate education in the UK (Higher Education Funding Council for England 1996) may have been partly responsible for this increase.

Documentation of expected learning outcomes following M level study is provided by the Quality Assurance Agency (QAA) Qualifications Framework (2001). More specific learning outcomes following clinically orientated M level study are provided by the Chartered Society of Physiotherapy (Chartered Society of Physiotherapy 1998). These documents provide a backdrop of expected learning outcomes following completion of an MACP approved MSc and are summarised in Table 1.1 overleaf. These may not, however, translate into the learning outcomes experienced by postgraduate students (Kushner 2000).

M level learning that questions professional assumptions and paradigms of practice, emphasises and critically evaluates research knowledge, and requires independent study, differs markedly from typical weekend courses and in-service training (Gosling 1997). In addition, higher education has a particular spoken and written language that is different to that in clinical practice (Eraut 1994). Practitioners may feel threatened by the requirement to question assumptions (that underpin their practice, knowledge and skills), engage with and evaluate research, and study independently (Gosling 1997). One research study found Diploma level postgraduate students preferred a concrete and fact-based, teacher-led environment to an abstract, student-led environment (Kell 2006). While the findings were inconclusive, given the small sample of 20 students from one course and data collection limited to questionnaires, the findings suggest that not all M level students are ready to engage with student centred learning (Kell 2006). To ease the

---

<sup>8</sup> M refers to Masters.

<sup>9</sup> Completing an MACP approved MSc programme requires around 9 months full time study of which 14 weeks is in the university classroom or in clinical placement settings; the cost is around £5,000.

transition to M level learning individuals need to be aware of these differences before they enrol (Chartered Society of Physiotherapy 1998, Gosling 1997, Gosling 1999a, O’Sullivan 2003). This suggests that participants in this current study may or may not be adequately prepared for M level learning.

QAA for Higher Education (2001)	CSP (1998)
<p>Deal with complex issues systematically and creatively, make sound judgments in the absence of complete data, and communicate their conclusions clearly to specialist and non-specialist audiences</p> <p>Demonstrate self-direction and originality in tackling and solving problems, and act autonomously in planning and implementing tasks at a professional level</p> <p>Continue to advance their knowledge and understanding, and to develop new skills to a high level</p> <p>Exercise initiative and personal responsibility</p> <p>Decision-making in complex and unpredictable situations</p> <p>The independent learning ability required for CPD</p>	<p>Promote a questioning and critical approach to theory and practice</p> <p>Develop creativity and innovation</p> <p>Expand and refine clinical skills</p> <p>Develop skills to evaluate practice in the light of research</p> <p>Enhance ability to substantiate and justify clinical decision-making</p> <p>Increase levels of job satisfaction (Gosling 1999a)</p> <p>Increase levels of self esteem (Gosling 1999a)</p> <p>Enhance career opportunities and progression (Gosling 1999a)</p>

Table 1.1 M level learning outcomes. (Adapted from CSP 1998, Gosling 1999a, QAA for Higher Education 2001)

#### 1.4.4 Development of the MACP approved MSc

Postgraduate courses in manipulation<sup>10</sup>, outside of higher education, started in the 1950’s. The Manipulation Association of Chartered Physiotherapists (MACP) was formed in 1968 and ran basic and advanced 12 week courses in spinal manipulation (including clinical work); participants underwent a membership examination at the end

---

<sup>10</sup> Terminology has changed from ‘manipulative’ physiotherapy in the 1960s to ‘neuromusculoskeletal’ or ‘musculoskeletal’ physiotherapy in the late 1990s.

of the course. By 1979, a basic peripheral manipulation course was also run. In 1986, the MACP expanded the entry examination to include applied knowledge of anatomy, biomechanics, physiology and pathology, research knowledge underpinning practice, medical diagnosis, concepts and philosophies within neuromusculoskeletal physiotherapy, demonstration of practical manual skills and clinical examination of patients. The MACP ran its own route to membership through a self directed learning pathway (SDLP) with membership examination at the end. In addition, a one year post-registration course in the Management of Musculoskeletal Dysfunction ran for four years, but was disbanded in 1992 when the MACP in association with Coventry University, set up an accredited Postgraduate Diploma in Manipulative Therapy. This was the first higher degree in manipulative physiotherapy in Europe. The further growth of MACP approved MSc programmes will, in March 2009, bring to an end the SDLP route. The MACP now works alongside universities through the Committee for Education and Approval (Rushton and Petty 2002). This committee monitors the quality of post-registration courses, supported by the Educational Standards Document of the International Federation of Orthopaedic Manipulative Therapists<sup>11</sup> (IFOMT). The MACP is the UK representative of IFOMT and undergoes regular international quality review of its approved educational programmes. Currently in the UK, there are ten MSc courses with MACP approval that furnish successful students with eligibility for full membership of the MACP.

All MACP approved MSc courses require applicants to have a minimum of 1,000 hours of clinical experience managing patients with musculoskeletal conditions. Courses all involve a minimum of 200 hours of neuromusculoskeletal physiotherapy theory, 150 hours of practical skill development and 150 hours mentored clinical practice. Students must undertake formal assessment of practical skills and clinical practice. These requirements are a stipulation of the IFOMT educational standards. The MACP states that full members are able to provide an excellent standard of care in examination, treatment and management for people with neuromusculoskeletal conditions; they are

---

<sup>11</sup> IFOMT was formed in 1974 and is a subgroup of the World Confederation of Physical Therapists. Its vision is ‘world-wide promotion of excellence and unity in clinical and academic standards for manual/musculoskeletal physiotherapists’ (International Federation of Orthopaedic Physical Therapists 2008). The academic standards document is not in the public domain.

promoted as ‘experts in optimising musculoskeletal health’ (Manipulation Association of Chartered Physiotherapists 2008).

MACP approved MSc courses provide a significant step towards clinical physiotherapy specialisation (Carr and Shepherd 1996, Chartered Society of Physiotherapy 2002a, 2002b, Robertson et al. 2003) in relation to the advanced clinical practitioner grades of clinical specialist, extended scope practitioner and consultant. The CSP recognises that successful completion of an MACP approved MSc would, in part, fulfil the requirements of these advanced clinical practitioner grades (Chartered Society of Physiotherapy 2002a, 2002b).

Of particular relevance to this study is the literature related to the impact of an MACP approved MSc on the clinical expertise of practitioners. However, practitioners are embedded within a work environment and a professional network of colleagues and for that reason, the literature that relates to the impact of an MACP approved MSc on patients, the workplace organisation and the profession is also reviewed. This provides a more comprehensive analysis of the potential learning outcomes from an MACP approved MSc (Gosling 1999a).

#### **1.4.5 The impact of the MACP approved MSc on practitioners**

There have been four pertinent research studies that provide insight into the impact of an MACP approved MSc on individual practitioners. These are considered in chronological order.

The impact of an American Orthopaedic residency training programme on alumni was explored using an extensive postal questionnaire (Smith, Tichenor and Schroeder 1999). The programme was recognised by the American Academy of Orthopaedic Manual Physical Therapy which is equivalent to the MACP in the UK. Ninety alumni considered the programme enhanced their:

- clinical reasoning skills
- ability to evaluate the literature
- ability to apply evidence based practice



- job opportunities and leadership roles
- career interest and fulfilment.

The questionnaire design used in this study precludes detailed understanding of these changes. Cultural differences may also limit the relevance of these findings to this current study.

The second study used focus group interviews to investigate the impact of M level study on practitioners (Stathopoulos and Harrison 2003). Five clinical physiotherapists who had completed a Masters course from one university took part in the phenomenological study. Three of the five physiotherapists had completed an MACP approved MSc. The major impact of the course was to enhance participants' clinical practice and enhance their ability to secure higher level posts. The change to clinical practice was described as 'massive'. Their clinical expertise was considered by the researchers to have developed beyond competence and proficiency (Benner, Tanner and Chesla 1996, Jensen et al. 1999) and to display behaviours characteristic of expert practice; they appeared to:

- be patient centred
- have a holistic view of problematic clinical situations
- have more options at their disposal in clinical decision-making, including the option not to treat
- consider education and coaching equally important to the use of their skills
- have enhanced criticality (i.e. critical evaluation and judgment) towards their own practice and that of others
- have learnt how to learn.

Enhanced criticality and self direction were not nurtured by their university based undergraduate degree where participants had been 'spoon fed' (Stathopoulos and Harrison 2003 p163). The reason for this may be that criticality is dependent on an existing experiential base (Bethune and Jackling 1997, Eraut 1985, Gerrish, Ashworth and McManus 2000, Stenhouse 1967). The substantial enhancement of clinical expertise following completion of the course, in physiotherapists with considerable

clinical experience, suggests that clinical experience alone was not sufficient to develop expertise (Stathopoulos and Harrison 2003); this has also been observed in American physiotherapists (Smith, Tichenor and Schroeder 1999) and nurses (Benner 1984, Rischel, Larsen and Jackson 2008).

The third study explored the impact of M level study on practitioners in the final stages of a practice-based MSc (Conneeley 2005). Two physiotherapists and four occupational therapists took part in focus group interviews to explore their postgraduate educational experience. Participants considered the course enhanced their:

- personal confidence with changes to their personal relationships
- enthusiasm for clinical practice
- professional confidence
- clinical reasoning skills
- ability to evaluate the literature
- ability to apply evidence based practice
- ability to learn (learnt how to learn)
- career opportunities.

This small study of practitioners, with only two physiotherapists, who had not yet completed the educational programme, limits its applicability to this current study.

The fourth study used a postal questionnaire to investigate the career development of physiotherapists who had completed an MACP approved MSc (Green, Perry and Harrison 2007). Practitioners had completed the course between one and ten years previously (1994-2005). While each cohort was represented, almost half of the participants were within two years of qualifying. Of the 48 physiotherapists who took part, 6% were consultants, 19% clinical specialists and 15% at ESP level; 10% were in private practice and 19% in higher education. Practitioners secured ESP and clinical specialist roles once they achieved full membership of the MACP (PG Diploma stage). In total, 83% remained within clinical practice. The study suggests that graduates from an MACP approved MSc are fit for practice (MACP membership) and fit for purpose

(to fulfil consultant, specialist and extended clinical roles) (Green, Perry and Harrison 2007). Participants considered the course had enhanced their:

- confidence
- knowledge
- clinical reasoning
- ability to evaluate research
- ability to engage in evidence based practice
- career development.

The study focused on career development changes and while this was compatible with questionnaire design, it does not provide in-depth understanding of the above changes.

The impact of Masters level study identified in these four studies, suggest that the most likely learning outcomes following successful completion of an MACP approved MSc are enhanced:

- confidence
- clinical reasoning
- criticality
- ability to engage with EBP
- ability to learn
- career development.

This provides a broad understanding of the expected learning outcomes following an MACP approved MSc. However, it lacks detail. It does not explain how practitioners developed these attributes. It does not provide insight into differences between individuals. It does not inform educational programmes on how best to enhance the development of practitioners towards these learning outcomes. This knowledge is important if educational programmes are to efficiently and effectively facilitate practitioners' development towards clinical expertise.

#### **1.4.6 The impact of the MACP approved MSc on patients**

It is difficult to assess directly the impact of M level learning on a change in clinical practice and whether patient care is enhanced. It is difficult to connect a change in practice to an increase in knowledge and skill (Gosling 1999a, O'Sullivan 2004). There is little evidence to relate any type of CPD activity to competence in clinical practice (Powell 1997); an outcome-based competence framework may help to demonstrate clinical competence and the impact on enhanced patient care (Gosling 1999b). A model of CPD outcomes to profile individuals' learning over time may identify links between CPD and competence to practise (Cross 1998). Despite the difficulties, some attempt to do this is important to secure and justify the necessary funding and study leave (Gosling 1999a, Jordan 2000).

An attempt to assess patient outcomes in relation to physical therapists with or without postgraduate certification (approved by the American Academy of Orthopaedic Manual Physical Therapists<sup>12</sup> (AAOMPT)) was conducted by Resnik and Hart (2004). This qualification was associated with better patient outcomes; however there were a number of limitations to this study, not least of which was the small number (2.9%) of therapists with certification (Resnik and Hart 2004).

#### **1.4.7 The impact of the MACP approved MSc on workplace organisations**

The impact of a physiotherapist completing a Masters level course may or may not benefit the workplace organisation. A number of studies have identified a range of potential positive and negative impacts on the workplace.

Positive impacts on the workplace organisation include:

- improvements in in-service education (Gosling 1999a)
- enhanced demands and expectations at work (Conneeley 2005)
- enhanced ability in the workplace and increased credibility in front of others (Stathopoulos and Harrison 2003)

---

<sup>12</sup> AAOMPT is equivalent to the MACP in the UK and is the member organisation of the International Federation of Orthopaedic Manual Therapists (IFOMT). Courses approved by AAOMPT would comply with the IFOMT Educational Standards document.

- colleagues' consideration of them as experts as soon as they registered on the MSc (Conneeley 2005).

Negative impacts on the workplace organisation included:

- relationship difficulties; those without a higher degree felt threatened (Gosling 1999a, Green, Perry and Harrison 2007) or jealous (Conneeley 2005).
- under-utilisation and a sense of being devalued in a service orientated towards productivity rather than quality (Stathopoulos and Harrison 2003)
- frustration because of resistance to change (Conneeley 2005, Stathopoulos and Harrison 2003). Similar findings were noted by Masters qualified nurses, suggesting Masters level practice requires a Masters level organisation (Gerrish, Ashworth and McManus 2000)
- resignation of Masters level physiotherapists from the workplace organisation that failed to meet their expectations (Stathopoulos and Harrison 2003).

These findings demonstrate that the impact on the workplace depends very much on the culture and working relationships within the organisation. A workplace that adapts to the enhanced skills and expectations of Masters level physiotherapists facilitates the practitioner's continued growth and development. A workplace that does not adapt may trigger the practitioner to become deflated with lower levels of motivation (Gosling 1999a). This may adversely affect the quality of patient care provided by these practitioners, who may ultimately resign from the organisation. According to Beeston, Rastall and Hoare (1998), practitioners' sense of being under-valued is mirrored by the attitude of some managers and senior clinicians to M level study. Half of the respondents did not consider a higher degree advantageous in securing a post; around one third considered clinical experience the most important factor (Beeston, Rastall and Hoare 1998). This study however, was carried out 10 years ago and attitudes may have changed.

#### **1.4.8 The impact of the MACP approved MSc on the profession**

The development of clinical expertise is not only of relevance to an individual and their patients', it is also part of professionalisation (Richardson 1999b). There are a number

of ways in which physiotherapists who have completed an MACP approved MSc may enhance their contribution to the profession. They may stand on national committees, act as a moderator for online professional discussion through the interactive arm of the Chartered Society of Physiotherapy (Chartered Society of Physiotherapy 2008), develop and teach on nationally advertised weekend courses, become a clinical mentor for MSc students, teach on MSc courses, and review articles for peer reviewed journals.

In summary, the professional milieu has highlighted a number of current issues. The rapid growth in knowledge and skills underpinning physiotherapy practice has made it increasingly difficult for newly qualified physiotherapists to gain the breadth and depth of competence expected of colleagues in the workplace. The professional autonomy and clinical responsibility of physiotherapists has grown significantly in the last ten years with the development of advanced practitioner grades. In addition, service delivery has changed with greater emphasis on patient self referral and a move into the community. Practitioners need to gain the necessary clinical competence and expertise. Critical to this will be effective CPD and postgraduate education.

Changes within society now demand greater accountability of and justification for the professions. Evidence is required to demonstrate the efficiency and effectiveness of service delivery. This has enhanced research activity within physiotherapy to develop and strengthen the evidence base needed for its survival. Practitioners must apply this evidence judiciously to their patients in clinical practice and this process requires high levels of clinical expertise.

All of these changes demand higher levels of professional practice than that in the past and this requires effective CPD learning. It appears that current CPD learning does not prepare practitioners for M level learning. The traditional model of informal and disparate CPD activity appears incongruent and outmoded in the current climate. A more structured approach to the development of clinical expertise would seem necessary to enhance clinical practice and enable physiotherapy to survive in the competitive marketplace. An MACP approved MSc course may provide one route towards this. However, higher education is not immune from the changes within society

and the NHS. Postgraduate education needs to be systematically evaluated to determine its effectiveness to stakeholders. Strategic health authorities, responsible for education commissioning and quality assurance, will reward high quality, value for money education that enhances the fitness for purpose of employees (Department of Health 2008c).

A number of authors have highlighted the need for the evaluation of educational programmes to determine their impact (Gosling 1999a, Grant 1992, McCormick and Marshall 1994). The lack of justification for clinically-orientated Masters level study threatens its viability for both purchasers and providers (Beeston, Rastall and Hoare 1998, Stathopoulos and Harrison 2003). Furthermore a lack of understanding of the professional development of physiotherapists will make it difficult to plan and create opportunities for learning (Eraut 1994).

## **1.5 Conclusion**

This chapter has placed continuous professional development and postgraduate education within the clinical speciality of neuromusculoskeletal physiotherapy. It has discussed the political, professional and clinical practice milieux in which neuromusculoskeletal physiotherapists are engaged.

Policy dictates that CPD is required for continued registration (Department of Health 2007a) and is part of the contract of employment (Health Professions Council 2006). Employers, however, have not consistently promoted CPD (Chartered Society of Physiotherapy and Royal College of Midwives 2007, Review Body for Nursing and Other Health Professions 2007) and this has hindered growth in the number of advanced practitioner roles in the NHS (Council of Deans and Heads of UK University Faculties for Nursing and Health Professions 2007, House of Commons Health Committee 2007). Changes in legislation now demand greater accountability of and justification for the professions. Evidence is required to demonstrate the efficiency and effectiveness of service delivery. Practitioners are required to judiciously apply this evidence in clinical practice. High levels of reasoning are required to provide safe and accurate assessment

of patients with ill-defined, complex problems. A creative and personalised treatment approach has to be devised and throughout this patient centred management, practitioners are required to constantly and critically reflect on the effectiveness of their approach (Jones and Rivett 2004). These changes demand high levels of clinical expertise. High quality patient care is predicated on high quality professional education (Department of Health 2008c, 2008d, Ellis and Lee 2005).

Practitioners do not appear to develop high levels of clinical expertise from current informal CPD and patient mileage (Conneeley 2005, Smith, Tichenor and Schroeder 1999, Stathopoulos and Harrison 2003). Research suggests that a formal MACP approved MSc promotes the clinical expertise of practitioners (Conneeley 2005, Green, Perry and Harrison 2007, Smith, Tichenor and Schroeder 1999, Stathopoulos and Harrison 2003). This has been characterised by enhanced clinical reasoning, criticality, evidence based practice and ability to learn. Recognition of these skills by employers facilitated job promotion to extended scope practitioners and consultant therapists (Conneeley 2005, Green, Perry and Harrison 2007, Smith, Tichenor and Schroeder 1999, Stathopoulos and Harrison 2003).

While the research literature has identified enhanced clinical expertise as a major learning outcome from an MACP approved MSc, it does not shed light on how practitioners developed the attributes of expertise or whether practitioners varied in these attributes. It does not explain any potential relationship between these attributes, nor does it identify factors that facilitated or hindered the learning process. This knowledge is fundamental to the effectiveness and efficiency of educational programmes. This gap in the knowledge of how practitioners learn during an MACP approved MSc led to the following exploratory research questions:

- why did physiotherapists enrol on the course?
- what were their expectations of the course?
- what was their experience of completing the course?
- what factors facilitated and hindered their successful completion of the course?



- what impact did the course have on their clinical and professional development?

Consistent with a naturalistic investigation (Ely et al. 1991) the study aim and research questions were further developed through the process of data collection and analysis. The initial exploratory research questions guided the early rounds of data collection (Section 4.4.1). Early in the data analysis a variety of issues needed to be explored further in the literature and this resulted in further development and refinement of the research questions (presented in Section 2.5).

---

## **Chapter 2: Literature review**

---

### **2.1 Introduction**

This chapter starts by clarifying the way in which the literature has been utilised throughout this research study. It then explores the literature related to clinical expertise and highlights the limited understanding of the developmental process of practitioners as they move towards expertise. Learning transition theory is then explored to provide the conceptual framework that informed this study. This review of the literature enabled the initial exploratory research questions identified in the previous chapter, to be further refined, and these conclude this chapter. The literature that informed data analysis and subsequent substantive theory from this study is explored in Chapter 6.

### **2.2 Use of the literature within the research study**

The relationship of the literature to data collection in grounded theory is a contentious issue. While some advocate no initial review prior to data collection (Cutcliffe 2000, Glaser 1992, Hickey 1997), others argue its necessity (Backman and Kyngas 1999, Strauss and Corbin 1998). The central issue at stake is that the theory must come inductively from the data, requiring the researcher to remain open minded (McGhee, Marland and Atkinson 2007).

Prior to the start of this study, the researcher had a sound grasp of the professional literature related to neuromusculoskeletal physiotherapy and, of particular relevance to this study, the application of clinical reasoning in practice. The first three pieces of coursework for this professional doctorate explored the literature in relation to key foundational elements of the research study. This developmental process, as well as the need to apply for ethical approval, necessitated a review of the research literature surrounding MSc learning outcomes and, in particular, following an MACP approved MSc. This raised my awareness of current knowledge and helped develop and justify the initial research questions identified in Section 1.5. It is argued here that some review

of the literature was necessary prior to data collection and this did not threaten the open mindedness of the researcher.

During data collection, analysis and write up, a review of the literature was ongoing. However, there were periods where this was the primary activity, aimed at enhancing theoretical sensitivity for analysis and theory generation; the literature was therefore used as an analytical tool (Strauss and Corbin 1998). The pattern of activity between literature review, data collection and data analysis is summarised in Appendix 1.

The literature was accessed in a variety of ways throughout the research study. Only literature in English that could be obtained from online or hand searching was identified. Online databases included: Allied and Complementary Medicine (AMED), Cumulative Index to Nursing and Allied Health Literature (CINAHL), the Educational Resources Information Center (ERIC), Emerald, Expanded Academic (ASAP), Ingentaconnect, Medline, PubMed, ScienceDirect, and Web of Science. The search terms included: clinical, education, expert, expertise, experiential, knowledge, learning, Masters, neuromusculoskeletal, postgraduate, practice, professional and transition. Boolean operators combined search terms with physical therapist, physiotherapist and physiotherapy. Professional literature from organisations was accessed from online sources, for example, from the Chartered Society of Physiotherapy and from the Department of Health. The literature was also accessed by hand searches of journals and books, as well as numerous serendipitous conversations and readings. Each piece of literature provided a further source of references. Generated literature was initially scanned for relevance to the current study. Literature related to post-registration clinically orientated Masters level courses for physiotherapists was particularly pertinent to this study and included research from the UK, America and Australia. Extending the search to the profession of nursing and occupational therapy identified further relevant literature. Literature related to pre-registration learning or learning from a Masters course that did not have a clinical element, was excluded.

The literature reviewed in this chapter was explored at different stages during the research study. The literature related to clinical expertise was largely considered

towards the write up stage of the thesis. The following section on learning transitions was examined during the analysis of the first and second round of interviews.

### **2.3 Clinical expertise**

The literature on this subject is extensive and only the most pertinent aspects to this study are explored. The notion of expertise and expert clinical practice is contested in the literature and a brief summary of the arguments is presented below.

Expert level is considered by some to develop from progressive accumulation of knowledge and skills through experience (Benner 1984, Dreyfus and Dreyfus 1986).

There are a number of difficulties with this assertion:

- expertise in performance does not correlate with years of experience (Ericsson 2006)
- the conception of clinical practice as a mix of knowledge and skill divorced from clinical practice (technical rationality) appears inadequate
- the assumed progression of skill through the stages has not been identified amongst teachers (Huberman 1995, Mevarech 1995), nurses (Rischel, Larsen and Jackson 2008), students (Beaty and Morgan 1992, Marton, Dall'Alba and Beaty 1993), or engineers (Sandberg 2000)
- the expert level<sup>13</sup> suggests there is a final destination point. This is difficult to accept since practitioners continue to adapt and change their practice
- expert practitioners are considered to be arational<sup>14</sup>; intuition is considered to guide action (Benner 1984, Dreyfus and Dreyfus 1986). This is also difficult to accept since patient centred practice requires deliberative action (Eraut 1994, Ericsson 2006)
- the expert level description mirrors higher levels of motor skill performance (Johns and Freshwater 1998) and skilled behaviours under conditions of rapid decision-making (Eraut 1994). It does not reflect the advanced cognitive

---

<sup>13</sup> There are five suggested levels of skill development: novice, advanced beginner, competent, proficient and expert level (Benner 1984, Dreyfus and Dreyfus 1986).

<sup>14</sup> Arational means 'without conscious analytical decomposition and recombination' (Dreyfus and Dreyfus 1986, p36).

abilities used in clinical practice (Benner 2004, Eraut 1994, Johns and Freshwater 1998) to find solutions to indeterminate problems that require continuous experimentation (Engestrom, Engestrom and Karkkainen 1995).

While someone may perceive a practitioner as 'expert', this term as a formal description is therefore rejected. The literature around expert practice is subsumed under the broader title of expertise. The characteristics of a practitioner with clinical expertise are summarised in Table 2.1 overleaf.

The last characteristic is worth further elaboration. The capability to learn in, and from, practice (that is, to learn from experience) is considered essential not only to develop, but also to maintain expertise (Eraut 1994, Kennedy 1987, Martin, Siosteen and Shepard 1999). To learn in, and from, clinical practice requires practitioners to be capable of and disposed to critically examining, evaluating, creating, developing and transforming their practice knowledge and clinical practice (Billett 2001, Eraut 1994, Fish and Coles 1998, Kennedy 1987, Rolfe 1998). It is the questioning and challenging of practice knowledge that leads to its transformation (Cranton 2006). The practitioner therefore needs to be critically reflective and reflexive (Rolfe 1998). The requirement to learn in, and from, practice embraces lifelong learning (Caney 1983) and highlights the importance of critical evaluation skills. Learning from clinical practice also generates practice knowledge that is vital for the knowledge base of the profession (Richardson, Dahlgren and Higgs 2004).

Practice knowledge is used here and elsewhere in this thesis, as an umbrella term to include all types of knowledge expressed in clinical practice and inclusive of all terms cited in Table 2.2. Since practice knowledge (Higgs, Richardson and Dahlgren 2004) is organic, residing within the practitioner, the term also incorporates cognition (Higgs and Jones 2000, Higgs, Richardson and Dahlgren 2004), metacognition (Eraut 1994, Higgs and Jones 2000, Higgs, Richardson and Dahlgren 2004, Higgs and Titchen 2000, Jensen et al. 1999) and reflection (Eraut 1994). Clinical reasoning is therefore subsumed within the term practice knowledge.

Patient centred practice	Benner 1984, Jensen et al. 2000, Martin, Siosteen and Shepard 1999, Titchen 2001
Conscious, deliberate and creative practice	Eraut 1994, Higgs and Titchen 2000, Johns 1998
Instant or rapid interpretation through pattern recognition	Benner 1984 and 2004, Glaser 1999, Milidonis, Godges and Jensen 1999
Detect inconsistencies or links between bits of clinical data and in relation to what they know from experience	Benner 2004, Jensen et al. 1999, Glaser 1999
Holistic view of problematic clinical situations	Benner, Tanner and Chesla 1996, Higgs and Jones 2000
More options in clinical decision-making, including the option to not treat	McEwen 1999
Education and coaching considered equally important to their skills	Jensen et al. 1999
Spend time trying to understand the clinical problem (c.f. novices spend time trying out different solutions)	Sternberg and Horvath 1995
Appropriate and rapid navigation between clinical action (chains of practice) and understanding (integrated net of understanding). This is suggested to explain the intuitive dimension of expertise	Benner 2004, Eraut 2000, Kinchin, Cabot and Hay 2008
Critical evaluation of practice knowledge	Eraut 1994, Higgs and Titchen 2000, Milidonis, Godges and Jensen 1999, Titchen 2001
Understanding of clinical practice with integration of knowledge. Similar to connoisseurship <sup>15</sup>	Benner 2004, Boshuizen 1999, Caney 1983, Eisner 1985, Fish and Coles 1998, Martin, Siosteen and Shepard 1999, Milidonis, Godges and Jensen 1999, Sandberg 2000, Tynjala 1999
Reflective, reflexive and self evaluative	Glaser 1999, Higgs and Titchen 2000, Martin, Siosteen and Shepard 1999, Milidonis, Godges and Jensen 1999, Rolfe 1998, Titchen 2001
Dynamic, negotiated, and situated	Benner 2004, Billett 2001
Ability to explain and justify clinical decisions	Rolfe 1998
Learning in and from practice	Benner 2004, Caney 1983, Daley 1999, Eraut 1994, Fish and Coles 1998, Kennedy 1987, Martin, Siosteen and Shepard 1999, McEwen 1999

Table 2.1 Characteristics of clinical expertise

<sup>15</sup> Connoisseurship is awareness and understanding of what has been experienced (Eisner 1985).

aesthetic	emotional	intuitive	process
artistic	espoused theories	knowing in practice	professional craft
assumptions	ethical	moral	propositional
attitudes	expectations	personal	situational
beliefs	experiential	practical	tacit
emancipatory	heuristic	presentational	theories-in-use
embodied	impressions	procedural	values

Ryle 1949/2000, Argyris and Schon 1974, Polanyi 1983, Benner 1984, Kolb 1984, Eisner 1985, Dreyfus and Dreyfus 1986, Schon 1987, Shepard, Jensen and Hislop 1990, Brown and McIntyre 1993, Eraut 1994, Morgan 1994, Benner, Tanner and Chesla 1996, Heron 1996, Fish 1998, Reason 1998, Higgs and Titchen 2000, Beeston and Higgs 2001, Billett 2001, Higgs and Andresen 2001, Titchen and Ersser 2001a, White 2001.

Table 2.2 Types of knowledge

A major gap in understanding within the literature, regardless of the terms expert or expertise, is the developmental process by which practitioners enhance their clinical practice. The way in which clinical expertise may be developed and facilitated is highlighted by a qualitative study (Martin, Siosteen and Shepard 1999) in which twenty one physiotherapists with high levels of clinical expertise considered four aspects which were instrumental in their professional development:

- formal graduate education
- mentors and role models
- clinical practice experience and education from colleagues and patients
- personal and professional critical events.

Having explored the literature related to clinical expertise, the rest of the chapter will explore the conceptual framework of learning transition that underpinned this study.

## 2.4 Learning transition

Learning transition is defined here as the process of change to a practitioner as a consequence of a learning experience. The change could be a change in attitude,

knowledge, or behaviour and could be manifested within the professional or personal life of the practitioner. In relation to this study, the process of change was towards clinical expertise.

The notion of a learning transition is novel and has only been described by one researcher (Scholes 1995, 2006). It was developed to explain the change in practitioners during an educational programme from enrolled (general) to registered general nurse (Scholes 1995, 2006). A key element was a change in role and for that reason the learning transition framework was based on role transition theory (Allen and van de Vliert 1984).

Role transition theory maps the process of change from one set of expected positional behaviours in a social system to another (Allen and van de Vliert 1984). Role transition is primarily concerned with social position, expectation and behaviour related for example, with a life event such as marriage, parenthood (Dohrenwend and Dohrenwend 1974, Moos 1986), career change, job promotion or retirement (Nicholson and West 1988, Schein 1978). The central trigger of role transition theory is positional status, which was not entirely appropriate for the learning transition explored in this study. Nevertheless, elements of role transition theory influenced the development of the learning transition described by Scholes (1995, 2006) and the learning transition used in this current study.

The central trigger of the learning transition identified by Scholes (1995, 2006) was new knowledge and experience that contradicted previously held knowledge and experience. This triggered change in practitioners as they reinterpreted past assumptions and experiences and this led to significant change in their professional and personal lives (Scholes 1995, 2006). The degree of change varied between practitioners and depended on whether they defended against, tolerated or embraced the contradiction to their knowledge. While individuals who defended against contradiction showed no signs of change, those who tolerated the experience gained enhanced capability and competence. Those that embraced the situation experienced a radical transformation in both their professional and personal lives. They were unrecognisable and emancipated from their



past professional and personal identities, with optimistic career aspirations and change to their personal styling and relationships (Scholes 2006).

Perhaps significant to this study, was the low professional and personal self esteem as well as low professional and intellectual perceived self efficacy of the nurses at the start of the programme. Their past history and low achievement led them to believe they would struggle and fail the course. Vital to their transition was supportive critical reflection on past assumptions and experiences. The programme was created to enable enrolled nurses to meet the requirements of a single professional UK register; this may have motivated some practitioners to enrol for employment survival rather than by aspiration of career development. In relation to this current study, neuromusculoskeletal physiotherapists may differ from enrolled nurses in relation to their professional and personal self esteem and perceived self efficacy. To gain a place on a pre-registration UK physiotherapy course, for example, is a significant success; academic entry requirements are high and competition for a place is stiff. This background suggests they may be high achievers.

Despite these differences, the conceptual framework of the learning transition described by Scholes (2006) informed this study, and is shown in Figure 2.1 overleaf. The antecedent conditions provide the pre-course contextual factors relevant to the learning experience. Expectations of the learning experience will influence the perception of the experience. The learning experience incorporates the facilitation or trigger to learning, the reaction of the practitioner to this facilitation<sup>16</sup>, and the learning outcomes<sup>17</sup>; in other words, it incorporates the course experience. Moderating factors are the personal characteristics of the practitioner that influence the process.

---

<sup>16</sup> The reaction of the practitioner to the learning experience somewhat subsumes the stages of role strain, reaction and consequences within role transition theory (Allen and van de Vliert 1984).

<sup>17</sup> The term 'learning outcomes' refers to a change in practice knowledge. It is used instead of 'consequences' within role transition theory (Allen and van de Vliert 1984).

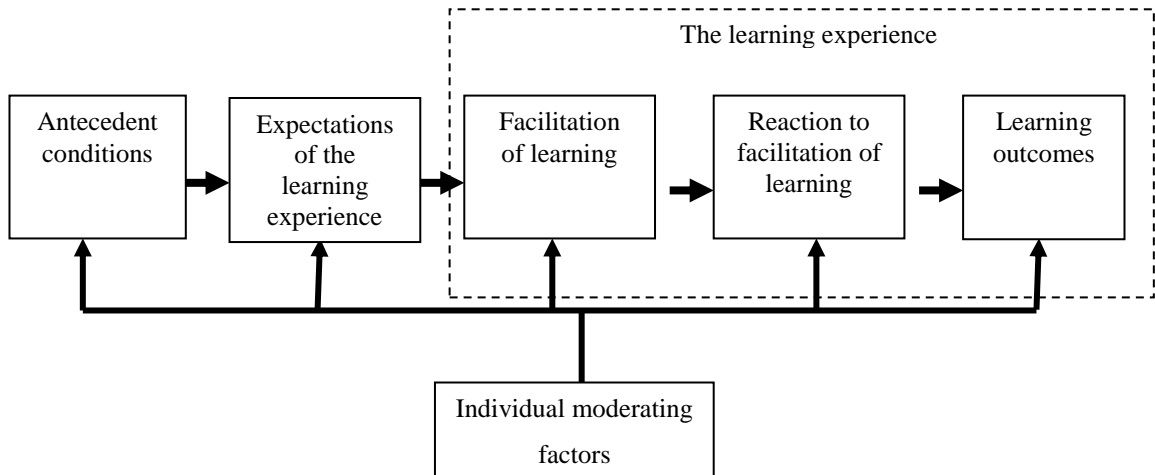


Figure 2.1 A conceptual framework of learning transition (Adapted from Allen and van de Vliert 1984, Scholes 1995, 2006)

## 2.5 The research questions

The literature reviewed in this chapter has identified limited understanding of how practitioners develop clinical expertise. If practitioners are to reach higher levels of clinical practice, in line with the government reforms, and enhance the quality of patient care, then an understanding of the development of clinical expertise is needed. This will allow effective CPD measures to be put in place that will ensure practitioners reach high levels of clinical practice expertise. There is currently little evidence of the impact of an MACP approved MSc on postgraduate neuromusculoskeletal physiotherapy students. Initial data collection and analysis enabled the study aim and initial exploratory research questions (Section 1.5) to be sharpened and refined. The aim of the study was to develop an explanatory theory of the learning transition of alumni on completion of an MACP approved MSc. The research questions were as follows:

- Do practitioners experience a learning transition?
- What is the nature of the learning transition?
- What factors facilitate or hinder learning?
- Do learning transitions differ amongst practitioners?

- What is the nature of any variation in learning transition?
- What factors determine differences in learning transitions?
- What are the outcomes of the learning transitions?
- To what degree do practitioners develop clinical expertise?

## **2.6 Conclusion**

The notion of a clinical expert was rejected in favour of clinical expertise. A range of attributes associated with expertise was identified which included criticality and the capability to learn in, and from, practice. Currently, understanding of how practitioners learn and develop clinical expertise is limited.

The conceptual framework of a learning transition was developed from the literature following the initial round of data collection and analysis. The use of learning transition triggered a change of focus of the study from evaluation of the course to a more theoretical search of the learning process. This refined the initial exploratory research questions (Section 1.5) and affected subsequent data collection and analysis. The study aim was then to develop a substantive explanatory theory of the learning transition of neuromusculoskeletal physiotherapists on successful completion of an MACP approved MSc. The methodological decisions that enabled this explanatory theory to be developed are discussed in the next chapter.

---

## Chapter 3: Methodology

---

### 3.1 Introduction

This chapter sets out the methodological decisions in relation to data collection and analysis to address the aim of the study; that is to develop an explanatory theory of the learning transition of alumni from an MACP approved MSc in Neuromusculoskeletal Physiotherapy. This chapter thus explores how knowledge and theory were generated and how the research needed to be conducted to address the research question. First, the theoretical paradigm of naturalistic inquiry that underpinned this study is explained. Then, the broad research strategies of case study design and insider research are discussed. This is followed by the ethical issues and decisions around confidentiality and anonymity. Issues of trustworthiness (credibility, transferability, dependability, confirmability) are then explored. Finally the choice of dimensional analysis is explained. These issues, taken together, summarise the methodology that underpinned this study.

### 3.2 Naturalistic inquiry

To understand the learning transitions of study participants, the theoretical paradigm of naturalistic inquiry was embraced (Erlandson et al. 1993, Guba and Lincoln 1981). This naturalistic inquiry may also be referred to as a constructivist-interpretive approach (Denzin and Lincoln 2000). The study assumed a relativist ontology (Denzin and Lincoln 2000); that is, the nature of the social world of study participants was assumed to consist of multiple, socially constructed realities (Erlandson et al. 1993). The study assumed a subjectivist epistemology that the social world could be 'known' through the intersection of meanings of individuals who create and recreate their reality (Denzin and Lincoln 2000 p21, Dyson and Brown 2006 p11). The intersection of meanings would itself be negotiated through the social interaction and exchange of social symbols between individuals (Berger and Luckmann 1967, Dyson and Brown 2006). The social symbol of language would therefore create and limit meaning.

Through thick description (Erlandson et al. 1993) of an individual's learning experience, shared understanding and meaning would be co-constructed with study participants. Reconstruction of collective meanings would then follow (Blaikie 1993) to create a substantive explanatory theory of the learning transition. The explanatory theory would provide a petite, particularised (Stake 1995) or fuzzy generalisation (Bassegy 1999).

The research question aimed to capture the learning transition of study participants and to create a substantive theory of the process. The study assumed this process involved not only the formal educational environment of the university and clinical placement, but the informal social, work and home environment of the alumni. It would involve both formal educational relationships with peers, university tutors and clinical tutors, and also social, work and family relationships. In other words, this study assumed the learning process lay within the individual, influenced by interaction with the world, described as the 'learning milieu' (Parlett and Dearden 1977 p14, Parlett and Hamilton 1977). In addition, it assumed that the learning experience would be significantly different to documented programme intentions (Kushner 2000, Parlett and Dearden 1977) or the instructional system (Parlett and Hamilton 1977). For this reason, course documentation was only used to provide a broad context within which to interpret the learning experience of study participants. These assumptions are consistent with illuminative evaluation. Initially, this was considered an appropriate methodology for this current study. As the focus of the study shifted from an exploration of the course experience to the development of an explanatory theory of the learning transition of alumni, the appropriateness of illuminative evaluation was re-examined. This highlighted a number of reasons why it was incompatible for this study.

Illuminative evaluation aims to comprehensively understand the complex multi-factorial learning milieu of an innovative programme (Parlett and Hamilton 1977). In contrast, this study focused on the experience of learners from a well established course. External evaluators (Bassegy 1999, Clarke 1999, Parlett and Dearden 1977, Parlett and Hamilton 1977, Patton 1997) were not used; rather the study used insider research. An analysis of the effectiveness of the programme in guiding future action for improvement (Clarke

1999, Patton 2002) was not the purpose of this study; instead it aimed to theorise and explain the learning transition of participants. For these reasons, illuminative evaluation was rejected as the conceptual framework for the current research.

### 3.3 Case study design

While Crotty (1998) considers the case study to be a method, other authors consider it to be a broad research strategy (Denzin and Lincoln 2000, Eisenhardt 2002, Robson 2002, Yin 2003). It is the study of the particular (Stake 1995, 2000); the science of the singular (Bassey 1999, Simons 1980). Case studies have been classified in a number of ways, as summarised in Table 3.1.

<b>Bassey 1999</b>	<b>Stake 1995, 2000</b>	<b>Yin 2003</b>
Story-telling and Picture-drawing (analytical accounts to illuminate theory)	Intrinsic (specific and intrinsic interest in the case)	Descriptive
Theory-seeking (use of case to understand something else)	Instrumental (use of case to understand something else)	Exploratory (‘what’ questions)
Theory-testing (use of case to test theory)	Instrumental (use of case to understand something else)	Explanatory (‘how’ and ‘why’ questions)

Table 3.1 Types of case study. (Adapted from Bassey 1999, Stake 1995, 2000, Yin 2003)

The aim of this study was to create an explanatory theory of learning transition. It was a theory-seeking case study as described by Bassey (1999). Theory-seeking case studies seek to interpret and explain what is happening in a given situation, without trying to induce change in that situation (Bassey 1999). This type of case study creates theory and leads to fuzzy generalisation (Bassey 1999) of what may happen elsewhere. The scope of the study precluded it being considered a grounded theory.

A case study is defined by what is being studied (Stake 2000). In the current research, the case was defined (Miles and Huberman 1994) as the learning transition of individual practitioners. It was bounded to practitioners who had successfully completed an MACP approved MSc in Neuromusculoskeletal Physiotherapy from one university and for that reason was considered a single case study (Bassegy 1999, Miles and Huberman 1994). Individual practitioners were embedded within this single case (Miles and Huberman 1994).

Case study, as a method, relies on multiple sources of data collection; typically observation, interviews and archived documentation (Bassegy 1999, Gillham 2000a, Huberman and Miles 2002, Stake 1995). This study sought to explore the *perceived* impact and learning transition on the alumni *after* completion of the course<sup>18</sup>. For this reason the primary data collection was through individual interviews<sup>19</sup>. While formal observational data was not carried out in this study, ten years of experience with students on this educational programme provided a rich and extensive source of observational memory that supplemented formal data collection and facilitated data analysis. Archived documentation was not formally used as data since the experience of the participants was considered to vary substantially from programme intentions (Kushner 2000, Parlett and Dearden 1977, Parlett and Hamilton 1977). The course document (Definitive Course Handbook for MSc Neuromusculoskeletal Physiotherapy, University of Brighton, 2006) provided the course structure which was used to contextualise the learning transition, and this is briefly outlined in Section 5.2. The published literature was also considered data. The sources of data used in this study are summarised in Table 3.2 overleaf.

---

<sup>18</sup> During the early stages of identifying a research question, the possibility of observing and interviewing current students was considered. However, I had educational responsibilities for the students which created serious ethical difficulties with this approach. It also would not give a broad overview of the learning transition. For these reasons it was abandoned.

<sup>19</sup> A questionnaire was not used as it would not give in-depth knowledge of the processes involved for individuals or insight into the full range of moderators affecting the learning experience. Focus groups were not used as the data would be more of a superficial consensus of learning experiences that would not be amenable to examining personal individual and unique journeys (Haggis 2002).

<p style="text-align: center;">Individual interviews with study participants  Observational memory of the researcher  Published literature</p>
--

Table 3.2 Sources of data used in this study

### 3.4 Insider research

Involvement in formal data collection along with observational memory constituted insider or practitioner research, whereby the researcher has ‘pre-existing knowledge and experience about the situation and the people involved’ (Robson 2002 p535). Close involvement is considered one of the hallmarks of case study research (Cohen, Manion and Morrison 2000). The advantages and disadvantages of insider research lie on a continuum and are discussed below.

Advantages of insider research are researcher credibility and the rapport that develops with participants which may enhance the quality of the interview data (Kushner 2000, Measor 1985). Furthermore, familiarity with the course and participants may improve understanding and enhance the flow of interviews. For some, the teacher-researcher is considered to be in a strong position to provide insights into educational practice (Burke and Kirton 2006, Mercer 2007).

The disadvantages relate to researcher bias and informant bias that may impact on the trustworthiness of the study (this is discussed further in Section 3.7). Researcher bias may distort and misrepresent the data as the researcher takes for granted what was said and/or makes false assumptions (Mercer 2007). Bias, however, is inevitable. What is important is gaining awareness of, and acknowledging, one’s assumptions and perspectives so that they can be minimised. An ongoing professional relationship with some study participants may have enhanced motivation to minimise researcher bias. The bias of the researcher in this study was counteracted in three ways. The researcher took a reflexive and critically self reflective stance during data collection and analysis,



spent a prolonged period of time completing data collection and analysis, and made a number of verification checks throughout the study period. Each of these strategies will now be discussed.

An important initial step in taking a critically reflective and reflexive stance as researcher occurred prior to data collection. The first three pieces of coursework required by the professional doctorate programme included substantial amounts of critical reflection on relevant attitudes, beliefs and values related to this study. Key issues included the MSc course and module leadership roles, significant previous learning experiences, key periods of professional development, and my attitude towards the profession. This enhanced my self awareness and promoted a critically reflective and reflexive stance prior to data collection. Of particular relevance was the impact of my own learning experience following completion of a postgraduate course in neuromusculoskeletal physiotherapy in Australia some 20 years previously. The course had had a profound impact on my professional and career development and was inextricably linked to my current role as course leader of the MACP approved MSc. Documenting this experience helped to clarify and deepen my understanding of my own beliefs, values and attitudes in relation to my role as course and module leader. Capturing this understanding in written form was critical to being able to put to one side my own views, when listening and analysing the views of participants. This articulation of my own experiences and position constituted a reflexive analysis of my subjectivity (Breuer and Roth 2003) and enabled me to preserve my own experiences, beliefs and attitudes.

One example of critical self reflection during data collection and analysis occurred while I was transcribing the tape recordings of the initial interviews. I realised that on occasions I became defensive, which was manifested by a change in intonation and failure to follow up negative comments about the course. I had to put to one side my own aspirations for positive comments about the course and choose instead to hear all that participants had to say. Writing a reflective diary was a helpful way to explore these thoughts and feelings. As I became more aware of my own values, needs and insecurities it enabled me to become more open and accepting of alternative views. I

checked subsequent interview transcriptions and found my defensiveness lessened as my identity as a researcher overshadowed my identity as course leader. In the later stages of analysis and write up, I made every effort to ensure a balanced and fair representation of these views, deliberately identifying a range of responses.

Researcher bias was also evident during later stages of data analysis. I was very familiar with the skills, knowledge and clinical reasoning required of students. This knowledge hindered, to some degree, my ability to make conceptual connections between the data and thus develop an explanatory framework. I was close to the situation and so took what they were saying for granted; I found it very difficult to 'fly above' and abstract from the data. I think this was fuelled by my own inexperience of qualitative data analysis. It was the lengthy period of iteration between analytical insight and reviews of the literature which gradually made the familiar strange. The theoretical concepts from the literature enabled me to see the data through a theoretical lens and build conceptual links. The application of dimensional analysis, coupled with an enhanced understanding of qualitative data analysis, finally enabled me to see patterns within the data.

Over-familiarity was also countered by a variety of verification checks. Understanding was checked during interviews, at subsequent interviews and through participant verification of the transcribed interview data (Robson 2002). Data analysis and theoretical ideas were tested by critical self reflection, informal conversations with current students, colleagues and critical friends, by formal presentations of the study to professional colleagues, and by one study participant critiquing the final substantive theory within this thesis.

Turning to informant bias, this relates to participants saying what they thought was wanted (Mercer 2007). This may have been augmented by the previous power relationship the researcher had had with participants. Study participants may continue to perceive a power imbalance in the research interview. Strategies were needed to offset this power imbalance to remain ethical, prevent coercion and minimise informant bias. Strategies included: explicit communication and documentation to separate out the research relationship from previous or current ongoing professional relationships, and

the development of a respectful and trusting research-participant relationship (these are explored in more detail in Section 3.5).

While my previous relationship with study participants may have caused informant bias, I also believe it enhanced my ability to perceive informant bias. My awareness fuelled critical self reflection during both data collection and data analysis. I was acutely aware, particularly in the first interview with each participant, of our previous relationship and the need to establish a new way of relating for this study. My previous knowledge of study participants helped identify subtle signs of informant bias in their speech and body language. I responded to this for example, with encouragement, gently challenging and testing their views, changing my intonation or body language. I had anticipated participants would be overly positive and would avoid talking about negative aspects of the course. My experience with most participants was quite the reverse; they appeared to positively enjoy telling me about negative aspects, particularly in the first interview. Once participants had debriefed their experience of the course, this enabled the research-participant relationship to be more firmly established in subsequent interviews. I gained greater assurance about the risk of participants telling me what they thought I wanted to hear by asking each participant directly about the issue during their first interview (Table 4.2 in the next chapter). I received an emphatic denial from all participants. A number of participants commented that while there had been a power imbalance, this had now ended and this freed them from a need to please me.

Following the first round of interviews, I believed the researcher-participant relationship had echoes of the previous power imbalance. To help minimise this, telephone interviews were used which enhanced the ease of communication. With subsequent interviews, and progressive focusing of the issues, the nature of the conversation became more personal. I was more comfortable having this conversation on the telephone than I think I would have been had the interviews been face to face; it felt less intrusive. Study participants were interviewed two to three times over a one to two year period. This allowed me to cross check interview data and clarify my understanding. Participants remained remarkably consistent between each of their interviews; they often used very similar words and phrases to describe the same event. In addition, the

prolonged period of time further distanced my previous power relationship with them and consolidated the researcher-participant relationship. Re-interviewing over a prolonged period of time was therefore thought to help minimise informant bias.

Transcription of the interviews provided a further opportunity to critically listen to and analyse the interview to detect informant bias. During the interview, I checked my understanding of what they had said in terms of their meanings and my analytical assumptions. Transcribing the interviews identified some instances of miscommunication with ambivalent, ambiguous and/or hesitant responses from study participants that helped inform transcription and analysis. For example, when a participant appeared hesitant in their response to my interpretation, this reduced its analytical significance.

The advantages and strategies to offset the disadvantages of insider research have been considered. The relative merits of insider versus outsider research have been debated in the literature (Mercer 2007, Merton 1972, Shah 2004, Simmel 1950). While this study falls under the broad umbrella of insider research (as described by Robson 2002), the issues and assumptions that underpin this approach become problematic on closer examination. The insider-outsider research dichotomy is rejected here in favour of a multi-dimensional continuum where the status (inside/outside) of individuals is considered to continually fluctuate depending on shared or different experiences, topic of discussion, personality, age, gender, ethnicity, emotions, attitude, values and so on (Mercer 2007). A superficial analysis reveals that I was an insider because of my knowledge of the study participants, having worked with them and facilitated their learning during the MSc. I was also an insider because of my role as course and module leader. This provided a range of shared experiences and meanings, albeit at a superficial level. On the other hand, I was an outsider to a range of dimensions including their gender, age, personality, attitudes, emotions, values, and learning experience. In addition, I was an outsider to an individual's experience and interpretation of events.

From the above analysis, it can be seen that during any one interview conversation, there was a constant fluctuation between insider status with shared understanding and

outsider status with different understandings. A critical self reflective stance was needed to test shared understanding (since this would always be superficial, imperfect and incomplete), and to seek to know different understandings held by others. For example, I shared a great deal in common with one participant and this, in part, fuelled a dynamic conversation that resulted in the generation of a number of novel ideas. This participant commented on the value of the interviews and how helpful they had been in developing their ideas and practice. As a researcher, I found the challenge with this interview was in maintaining a focus and completing within the previously agreed timescale. With another participant, I believed I had quite different values and understandings and the flow of conversation was more difficult. This triggered significant critical self reflection for some time after. However, by the final round of interviews my attitude had changed as my identity and role as researcher strengthened and the focus of the interviews became more theoretical. Not only was I better able to embrace alternative views, consistent with a grounded theory approach, I actively sought them out. Different views were valuable to test out and inform my ideas and the emerging explanatory matrix.

If insider research and in particular informant bias was considered a weakness of the study, this would reduce the significance of the findings and any contribution to knowledge and practice. The use of the term 'bias' has echoes of a positivist stance where bias and variables have to be eliminated or controlled. Within the constructivist-interpretive paradigm (Denzin and Lincoln 2000) of this study, knowledge was created through the subjective and inter-subjectivity of data collection and analysis. Whoever acted as researcher would bring their subjectivity to the process. Whether insider researcher or not, what was important was genuine and respectful listening to the participant, so that knowledge was mutually and respectfully constructed and not forcefully created by the researcher. The credibility of this insider research, in part, would therefore depend on critical self reflection and reflexivity during the process (Burke and Kirton 2006) and most importantly, the relationship between the researcher and participant.

### **3.5 Researcher-participant relationship**

While all interview data is socially and temporally created and co-constructed by the participants and the researcher (Beer 1997, Haggis 2002, Holstein and Gubrium 1995, Nicolson 2003, Silverman 1993, Stenhouse 1967, Wengraf 2001), the influence of the researcher-participant relationship was critical to the credibility of this study.

Study participants were all chartered physiotherapists and members of the MACP; they were all part of a common professional network of colleagues. The researcher had an ongoing collaborative, mutually beneficial working relationship with some participants, although not in the same institution. It was therefore imperative that the experience of participants did not adversely affect these ongoing professional relationships. A number of strategies aimed to reduce the risk of coercion. A formal written invitation was used to demarcate the study from any ongoing professional relationship (Appendix 2). The invitation included an option not to participate. Ongoing informed consent<sup>20</sup> was sought from participants for each subsequent interview (Appendix 3 and 4).

The intention was for participants to consider it a valuable experience, perhaps giving empowerment, education and connection (Erlandson et al. 1993). The researcher aimed to enhance dignity, autonomy and self esteem by being respectful and sensitive to participants during interviews and in all correspondence. This involved ethics-in-action that relied on personal ethical and moral responsibility as a researcher (Radnor 2001); it cannot be fully codified. Inside knowledge of the learning processes and of the participants facilitated empathic understanding as a researcher (Merton 1972). Comprehensive and explicit information about the study, in the form of a research contract, was given to participants to engender collaboration (Appendix 5) and since the study was exploratory in nature this did not threaten to ‘contaminate’ the data (Silverman 2000 p200).

---

<sup>20</sup> Informed consent relates to the utilitarian principle of individual autonomy (Christians 2000 p138) that upholds freedom of choice. Informed consent means: giving information relevant to the decision about whether to participate; making sure subjects understand the information; and ensuring participation is voluntary.

Study participants needed to perceive the study as a distinctive entity to be confidentially respected, and for the relationship to be clearly established and separated out from previous, present and potential future working relationships<sup>21</sup>. The research contract was used to facilitate this process and operationalise these values (Appendix 5). In all communication and dealings with the participants, the researcher role was emphasised to establish the new relationship. No memories of the past relationship, which may have recreated the power imbalance, were initiated by the researcher. What was made explicit was an open, honest and genuine desire to understand and honour their learning experiences; this was imperative for building trust. The researcher-participant relationship was emphasised and facilitated by conducting the interviews in a friendly, non-judgmental, open, honest and relaxed way.

### **3.6 Anonymity and confidentiality**

Stringent strategies were put in place to protect the anonymity and confidentiality of the participants in this study. Potential participants were a relatively small subset of the profession and so reference to contextual details could enable others (both inside and outside the case) to recognise them (Archbold 1986). The aim was to maintain anonymity within the case, that is, alumni within the study would not recognise each other. Risk was reduced by asking participants to check their interview transcript for any threat to their identity (Appendix 6). Examples of potentially recognisable information included: place of work, title of previous degree or occupation, children, marriage and moving house. Maintaining anonymity so that participants would not recognise themselves was considered unrealistic since they may recognise their own quotes. While anonymity could not be guaranteed, the ethical responsibility of the researcher was protected by making skilful judgments of the data to keep identities hidden (Wengraf 2001). Findings disseminated at conferences were carefully checked to maintain the anonymity and privacy of the participants. This approach has been continued within this thesis and will also apply to any future dissemination (Archbold 1986).

---

<sup>21</sup> The emphasis here was on the establishment of a new way of relating to each other within the research context; it does not suggest that relationships can actually be demarcated from one another.

The issues of confidentiality and privacy between the researcher and the participant were addressed in a number of ways. Communication with participants (and potential participants) maximised confidentiality. Any information that might threaten confidentiality during the transcription of the interview and in any dissemination of the study was eliminated. A threat to confidentiality could have arisen (it did not) if an issue had been raised at interview that was viewed to be harmful to others. The situation would have been identified in accordance with guidelines set out in the Chartered Society of Physiotherapy Rules of Professional Conduct (Chartered Society of Physiotherapy 2002c). Electronic data was stored on a password protected computer with secure storage of back up data on USB flash drives<sup>22</sup>. The computer, data and all research activity took place in a dedicated study at home. Data from individual participants was identified by pseudonyms.

Ethical approval was obtained from the University of Brighton Research Ethics Committee. Ethical approval from employers was not sought since the study was not related to their current work.

### **3.7 Trustworthiness**

Trustworthiness (Erlandson et al. 1993, Guba and Lincoln 1981) can be subdivided into: credibility or verification that the findings ring true; transferability of the findings to other situations; dependability of the study procedures; and confirmability that the findings relate to the data. Each of these issues will be discussed in turn.

#### **3.7.1 Credibility**

Credibility was enhanced by:

- prolonged engagement and persistent observation
- triangulation
- research supervision
- peer debriefing

---

<sup>22</sup> Six flash drives in different locations were used in the completion of this thesis!



- participant verification
- a reflexive journal.

Each of these is now discussed.

Prolonged engagement and persistent observation had occurred as chair of the course development team in 1996 and since then as course leader and module leader of the MACP specific modules. This provided around ten years of observational memory of students undertaking the course. Throughout this study, there was also opportunity to informally observe and interact with current students that helped inform the analysis. While I was familiar with the formal curriculum, however, what was not known was how this affected individuals and their learning experience.

Participants were interviewed on two or three occasions that were spread over one to two years. This may have had a number of benefits. The infrequent and prolonged engagement may have reduced distortions for both researcher and participant. The social, temporal and situated nature of knowledge generation meant that repeated interviews were likely to smooth out factors that may have distorted a one off interview. Furthermore, comments that were repeated and of similar significance, separated by such a time lapse enhanced the credibility of the data. The two year period of data collection and analysis allowed a gradual disengagement from the MSc and a greater ability to stand back from the situation and view the course from the participants' perspective. This was promoted by a critical self-reflective and reflexive stance during data collection and analysis. Repeated interviews also established the researcher-participant relationship and helped build trust and rapport. Interviews became more open and produced descriptions of personal feelings and attitudes on each subsequent occasion.

Triangulation involves comparison between different sources (e.g. time, space and person) and methods of data collection (e.g. observation, interview, documentary evidence) (Erlandson et al. 1993). Credibility is enhanced where these different sources converge to provide overlapping and complimentary perspectives. In relation to this

study, no formal triangulation process was conducted as data came from one source, interviews. However, triangulation could be considered to occur informally, to some degree, in two ways. Firstly, informal triangulation was through the researcher's memory of study participants on the course. Secondly, as course leader and module leader on the MSc programme throughout this current study. This made informal observation and discussion with current students possible, as a way to test out interpretations and analyses.

Research supervisors provided critical evaluation and guidance throughout the research process, including the analysis and generation of theory. This enhanced the credibility of the study, although it is omitted from the process by Erlandson et al. (1993). In the current research, the extensive educational and research knowledge of both supervisors provided a rigorous testing of hypotheses during theory generation.

Peer debriefing was used to enhance credibility of the study. Professionals outside the immediate context are considered helpful because they can critically analyse the study as it progresses (Erlandson et al. 1993). A number of colleagues in the workplace with an educational research background enabled numerous informal exchanges. In addition, more formal testing of the study by work colleagues occurred at research seminars and annual research student presentations. Students on the doctoral programme were also useful in the early stages and two particular peers were helpful in the final stage of this study. National meetings of course leaders running MACP approved MSc programmes in the UK provided a valuable opportunity to test ideas. Comments received needed to be carefully weighed and analysed while maintaining a critical self reflective and reflexive stance. At various stages throughout the process of data analysis and creation of the theory, the findings were formally presented at professional conferences that provided critical peer review.

Participant verification occurred in a number of ways. The default position was an assumption that interaction with participants would involve miscommunication and for that reason there was a frequent check of understanding throughout the interview and where appropriate, from previous interviews. In addition to this, as an insider

researcher, it was possible to have informal conversations with some study participants. This enabled interpretations and analyses to be tested out, an important part of dimensional analysis. Furthermore, dissemination of the findings at seminars and conferences provided further opportunity to test the analysis with study participants. Critical feedback was sought. The final stage of participant verification involved receiving critical comments on the whole thesis by one study participant.

A reflexive journal was started in September 2003 following enrolment onto the doctoral programme and supported the early development of the research study. Once data collection started however, this was abandoned. Instead, critical self reflection and reflexivity were documented within textual information related to data collection and data analysis.

### **3.7.2 Transferability**

This refers to the degree to which the findings can be applied to other situations; it is the generalisability of the findings (Erlandson et al. 1993). A single theory-seeking case study can lead to fuzzy generalisation or proposition of what *may* happen elsewhere (Bassey 1999), and this is enhanced by thick description.

Data collection continued until there was theoretical sufficiency to potentially create a substantive theory (Charmaz 2006); data needed to be sufficiently detailed to both create and substantiate the theory. If this was sufficiently robust then it would potentially allow others to test the application of the theory to their own setting. Transferability was tested during the analysis of this study through seminar and conference presentations; details are given within the analytical process in the next chapter.

Purposeful sampling enabled detailed and divergent data to be obtained as a consequence of insights from previous data analysis (Erlandson et al. 1993). It ensured sufficient data was gathered to develop an explanatory matrix and enhanced the subsequent transferability and credibility of the substantive theory.

### **3.7.3 Dependability and confirmability**

To enhance dependability of the research procedures in this study, an audit trail of the procedures and processes (e.g. interview guides, notes, documents, memos, journals) was documented. To enhance confirmability, an audit trail of the process leading to interpretation, analysis of the data and creation of theory was documented. This included coding of the data, development of dimensions and properties, Excel spreadsheets, case reports, memos and diagrams. The next chapter presents examples of this documentation to enable the reader to judge the dependability and confirmability of the study.

## **3.8 Data analysis**

The aim of the study was to develop an explanatory theory of the learning transition of neuromusculoskeletal physiotherapists. A theory-seeking single case study may generate a substantive theory (Glaser and Strauss 1967). A method of data collection and analysis was needed that would lead to the generation of theory<sup>23</sup> and the most appropriate choice was to draw on the techniques of grounded theory. The notion that theory can be generated from a case study design using a grounded theory approach has been outlined by Eisenhardt (2002). An abductive research strategy (Blaikie 1993) was adopted to enable the accounts given by participants to be translated to social scientific descriptions that generated social theory and could be understood within existing social theory. The process involved iteration between theory generation (data analysis and interpretation) and testing (data collection and identification of theory from the literature).

Initially, the constant comparison method of analysis (Strauss and Corbin (1998) was used. A variety of methods were tried including line by line coding, NVivo (Gibbs 2002) and the creation of provisional pre-interview codes (Miles and Huberman 1994). However, as noted elsewhere (Kools et al. 1996, Robrecht 1995), attention became

---

<sup>23</sup> The word ‘theory’ is used to denote an explanation that ‘systematically integrates various concepts through statements of relationship’ and thus explains a phenomenon (Strauss and Corbin 1998 p25).

more focused on the process of coding, than on the data itself. This difficulty was also due to inexperience, but nevertheless an alternative method was sought.

### **3.9 Dimensional analysis**

Dimensional analysis is a ‘natural analysis’; that is, the normal everyday interpretation of life events and phenomenon (Schatzman 1991). The only difference within a research process is the sustained, intentional and exaggerated degree of analysis (Kools et al. 1996) to identify “what ‘all’ is involved here” (Schatzman 1991 p310). Dimensional analysis assumes the researcher has the ability to interpret and analyse dimensions or aspects of a phenomenon in terms of its attributes, context, processes and meaning (Schatzman 1991). The interpretation and analysis is influenced by the interaction between the phenomenon and the experience and the perspective of the researcher. The overall aim of the analysis is to interpret and analyse natural events and interactions between human beings. The dimensional analysis process involves three overlapping stages (Kools et al. 1996):

- identification of dimensions
- differentiation
- integration/reintegration

The initial stage is to breakdown the phenomenon into a wide variety of dimensions or components. For each dimension associated properties are identified. This process aims to expand the data to provide a wide variety of perspectives on the phenomenon in an attempt to uncover all that is going on. It enables meaning to be discovered from the data. This process of analysis (with data collection) continues until there is sufficient explanatory potential, at which point, the analysis moves to the next stage.

Differentiation involves organising the dimensions into an explanatory matrix that provides a meaningful description of the phenomenon; reference to the literature supports this process. It moves the descriptive dimensions and properties of the phenomenon into the realm of explanation and theory. The process involves making one dimension at a time central to the explanatory matrix with subsequent organisation of

the remaining dimensions. Each new central dimension changes the position and importance of all the other dimensions and creates a quite different interpretation of the phenomenon. Through testing and retesting, the most powerful and persuasive explanatory matrix is finally chosen. This process enables the scaffold of meaning to be tested through different lenses. More focused data collection may then aim to clarify, test and consolidate the explanatory matrix.

The final stage involves integration, which moves the explanatory matrix towards a substantive theory. This finalises the matrix and the positioning and description of the dimensions and properties. The theoretical account of the explanatory matrix then creates the substantive theory.

These analytical processes are presented more fully in the next chapter, with examples of data.

### **3.10 Conclusion**

This chapter has explored the methodological decisions and assumptions that underpinned this study. These can be succinctly summarised in the following way:

- View of social world/ontology/nature of social world: *relativist*
- Research paradigm/epistemology: *subjectivist*
- Methodology: *single, theory-seeking case study using insider research*
- Data collection: *individual semi-structured interviews*
- Data analysis: *dimensional analysis*

The next chapter provides details of how these broad methodological decisions were developed within the methods of data collection and data analysis. It offers an audit trail of the procedures and processes used throughout data collection and the processes used for data analysis to enable judgments to be made around dependability and confirmability of the study. It aims to make explicit to the reader the process by which the substantive theory was created from the research data.

---

## **Chapter 4: Methods**

---

### **4.1 Introduction**

The chapter outlines the methods used for data collection and data analysis. It offers an audit trail of the procedures and processes used throughout data collection and the processes used for data analysis to enable judgments to be made around dependability and confirmability of the study. It aims to make explicit the process by which the substantive theory of the learning transition was created from the research data. The process involved iteration between data collection and analysis, consistent with a grounded theory approach (Charmaz 2006, Strauss and Corbin 1998); however, for clarity, the method of data collection is explained separately to data analysis. The first person is used to enhance the clarity of the processes.

The sources of data were individual interviews with study participants, memory observation of the researcher and published literature (Charmaz 2006). The relationship between these data collection methods and the analysis and development of theory over time are portrayed in Appendix 1. Data collection methods are described, including the way in which the study participants were recruited and interviewed. The section on data analysis is presented according to the three stages of dimensional analysis. Firstly, identification of dimensions occurred through two rounds of data collection and analysis. Differentiation through a third and final round of data collection and analysis then followed. Finally, integration/reintegration took place whereby the explanatory matrix was developed into a substantive theory.

### **4.2 Recruitment of study participants**

The research population included 48 chartered physiotherapists who had obtained an MSc/PG Dip in Neuromusculoskeletal Physiotherapy from one UK University. Contact details of potential participants were obtained in autumn 2004 from the open access part of the MACP website (Manipulation Association of Chartered Physiotherapists 2004).

This reduced the number of potential participants to 39; nine alumni had not chosen to become members of the MACP. A further 4 participants were excluded either because they were still students at the university or they were currently work colleagues. This left 35 potential participants. From this potential pool, eleven became participants of this study (participants numbered 1-11). Purposeful sampling was used to select these participants based on a number of factors to ensure a wide range of experiences and perceptions. Sampling aimed to gain a broad spread of participants from across cohort years (1997-2002), across graduation years (2002-2006), across work settings, and of different gender. Sampling also aimed to identify potential participants that I believed would be forthright and frank with me.

Theoretical sampling was used to recruit the last two participants (participants 12 and 13). They were physiotherapy clinicians who had successfully completed a clinically orientated MSc a number of years ago, and held consultant posts in the NHS. They were considered to have already gained high levels of clinical expertise and acted as a contrast with the current study participants. This data was collected towards the completion of the study to shed light on the developing explanatory matrix.

Potential participants were initially approached by post or email (Appendix 2). Voluntary participation was important, without any coercion. While this was critical for ethical research, it was also critical to me. I did not want to recruit participants who felt an obligation; I wanted participants who were genuinely interested in discussing their learning experience with me. To minimise the risk of coercion the following strategies were adopted. Written information about the study in the form of a research contract (Appendix 5) and consent form (Appendix 7) with a stamped addressed envelope, was sent to them with the letter of invitation. The invitation included the option to decline. This fully informed participants about the study and the consequences of participation. Once a signed written consent form was received (no time limit was set), participants were contacted to arrange an interview. All seven potential participants agreed to take part.



### 4.3 Data collection

To capture the personal learning transition of study participants, the method of data collection used individual semi-structured in-depth interviews (Wengraf 2001).

Alternative types of interviewing were considered. A structured interview was rejected because I was an ‘outsider’, unsure of their learning transition. Unstructured interviews were not used as I already had a broad impression of the learning process and was not without ideas. As an ‘insider’ I had been closely allied to their learning process, acting as tutor and course leader. In addition, I had experienced a radical transformation of my own clinical practice 20 years previously after completing a similar course in Australia (a brief reflexive account is provided in Section 6.5). Semi-structured interviews allowed the researcher’s inside knowledge to guide the interview and yet remained flexible and open in order to follow the participants’ accounts.

An alternative to individual interviews was the use of focus group interviews. An advantage of focus groups is the group dynamics that can trigger new insights and thoughts. The dynamics may also enable the most significant experiences to be identified and may initiate the analysis. The disadvantages, however, can be power struggles within the group such that responses are limited to those with more extreme views. The main reason why focus groups were not used was the loss of individual personal learning experiences (Robson 2002). As a researcher, I wanted to see through the individual learners’ eyes (Brookfield 1998) and a focus group would not enable this.

The interviews required participants to reflect on their learning transition following successful completion of the MSc. The time delay between completion and the first interview ranged between 2 months and 5 years. Their perception of the learning transition would be influenced by their subsequent experience. For this reason, some general information about their professional role since completion was sought. What participants revealed would be influenced by:

- their partial memory of the experience
- how they related to me
- how they wished to be perceived (Goffman 1959)

- what they presumed I wanted (Robotham 2004)
- the dynamic of the social interaction at interview (Beer 1997, Holstein and Gubrium 1995, Nicolson 2003, Silverman 1993, Stenhouse 1967, Wengraf 2001)
- their beliefs, experiences, emotions, values, gender and culture.

The interview itself might also have altered their perception of the experience (Beer 1997). I came to the interviews with beliefs, experience, emotions, values, gender and culture, and this affected my understanding and interpretation of what they said and how I responded. As an insider researcher, I was better able to use self as the research tool and my past experience to best advantage.

Because of the dynamic nature of the interview, I adopted a friendly, respectful, relaxed, informal and open stance toward the participants (Gillham 2000b). I aimed to put the participant at ease, so they would feel sufficiently safe and comfortable to tell me about their learning transition. I explained my motivation for the study to enhance their trust and promote honest and open dialogue. I made explicit my desire to hear their honest opinion about their experience and attempted to actively listen to the participant without judgment. I remained conscious of my non verbal and verbal cues and limited articulation of my own thoughts and beliefs; this was particularly important in the first interview where the relationship was being established and tested. I attempted to have a normal conversation, albeit for a specific purpose, with participants (Erlandson et al. 1993). My experience as a clinician and clinical tutor informed a belief that it would be extremely difficult to communicate accurately with another person. For that reason, I continually checked my understanding with participants and asked whenever I was unsure.

For the majority of participants, the initial interview provided an opportunity to debrief from the course. They told of their difficulties, improvements that could be made to the course, reasons why they had difficulty with assessments, difficulties they had with lecturers and their professional development since completing the course. Some participants took the opportunity to ask questions that they perhaps would not have done

otherwise. This debriefing process in the initial interview appeared valuable for a number of participants.

The researcher-participant relationship became more firmly established with second and third interviews, with communication more relaxed and informal. The rapport I had had with participants appeared to influence this process; a greater connection with individuals quickened establishment of the research relationship. This seemed to promote more open accounts with descriptions of their personal feelings and attitudes; it provided richer data than the first interview. The participants appeared to trust the process and not to be concerned about disclosure of their learning experience. The final round of interviews involved testing the theory with participants. Participants were encouraged to comment on, and critically evaluate, the developing theory. I took a critical stance to their response to my insights. When they agreed with me, I questioned whether they *really* agreed or were just saying they did. I listened carefully, looking for changes in tone or hesitation that might indicate this. If there was doubt, then I limited the influence of, or ignored, the data in the subsequent analysis. This critique of the developing theory by participants appeared a natural end product of an established research relationship.

Participants were asked to nominate a convenient day, time and place and in almost all cases I was able to fit in with their availability. The first seven participants were initially interviewed face to face. Some participants were impressed by my willingness to travel for hours to conduct a face to face interview with them. These same participants also remarked that they might not have agreed to participate had an unknown interviewer requested the interview on my behalf; this would have been interpreted as a lack of effort on my part. However, the face to face interviews challenged the ability of both myself and the study participants to clearly demarcate this relationship from the previous power relationship I had had with them. I felt this somewhat inhibited easy and relaxed communication and made in-depth exploration of their experience difficult. For this reason, telephone interviews were instigated (exceptions were at the request of the participant) and became the preferred approach. My initial reluctance at the loss of non verbal communication was quickly overcome by the greater ease in communication.

Participants appeared more relaxed; I felt more comfortable and less intrusive, and it allowed me the freedom to refer to my notes and memos during the interview without the need to maintain eye contact. This enhanced the quality of the interview data and facilitated more in-depth exploration of participants' experience. Additional advantages of telephone interviews were enhanced confidentiality and privacy, reduced noise for recording, and increased opportunity to arrange a convenient day and time. These advantages have also been identified in the literature (Musselwhite et al. 2007, Novick 2008, Opdenakker 2006).

Each taped interview was digitally recorded and then transcribed. The first few interviews were transcribed verbatim (paralinguistic signs were not documented), but thereafter were paraphrased. This avoided embarrassment for participants when they read the transcription and facilitated analysis by providing clear statements. I transcribed the interviews for a number of reasons: it provided an opportunity to listen to the interview again without having to concentrate on taking part and this resulted in hearing things for the first time; it allowed an opportunity to listen again to the way in which the participant spoke (paralinguistic communication) and this helped guide interpretation; it supported my reflective practice to learn the skills of interviewing and finally, it enhanced reflexivity (Finlay 2002, Cutcliffe 2003). I approached data transcription and analysis mindful of the subjectivity and inter-subjectivity of the interview data (Wengraf 2001); this resulted in dismissing data that had ambiguous meaning. As soon after the interview as possible, the recording was transcribed and a reflective summary form was completed (Miles and Huberman 1994, Appendix 8).

Transcriptions were returned by email or post to the participant within 10 days of the interview. The participant was asked to: check the accuracy of the text; add further comments; and remove text or information that threatened their anonymity (Appendix 6). On two or three occasions study participants removed identifiable information. On one occasion a study participant sent an email to clarify what they thought was an ambiguous response within the transcription; this was then added to their interview transcription. Once the participant returned the agreed and amended transcription it was considered 'research data'.

Informed consent continued throughout data collection and analysis (Appendix 3 and 4). Participants were invited to take part in a second, and in some cases, a third interview; after each interview they were asked to check the transcription. In all communication, continuing consent was not assumed; the option to refuse was given.

A number of factors were used to select the first participant (Wengraf 2001). I was a novice to qualitative research and needed to learn the skills of interviewing; for that reason the first participant needed to be someone with whom I felt comfortable. In addition, the participant needed to be someone who would be forthright and frank with me and with whom the participant-researcher relationship could be quickly established. The first participant chosen was well known to me; there was an established respectful, and open relationship that was expected to enable a frank and candid research interview. In addition, the meeting took place in the participant's home, providing a comfortable setting for the interview.

Data analysis of the first interview, guided the selection of the second participant and, thereafter, subsequent participants. Sampling included a search to elaborate and enhance variation from the early analysis. This included, for example, sampling men and women, private and NHS practitioners, and those with more and less clinical experience. Data analysis led to the progressive focusing of issues; this is elaborated upon within Section 4.4 on data analysis.

The overall schedule of interviews is presented in Table 4.1 overleaf. In total, 28 interviews were carried out between January 2005 and April 2007. This involved around 19 hours of collected data and generated 170 A4 pages of single line transcription. The first seven interviews generated a great deal of research data with commonality and variation between study participants. My inexperience with the analysis, as well as limited theoretical understanding of issues identified, prompted data collection to stop. This allowed time for continued analysis of the data and theoretical sensitisation of the issues by returning to the literature.

<b>Participant</b>	<b>Interview 1</b>	<b>Interview 2</b>	<b>Interview 3</b>
1	Jan 2005 F	March 2006 T	April 2007 T
2	Feb 2005 F	March 2006 T	March 2007 T
3	July 2005 F	March 2006 T	March 2007 F
4	Aug 2005 F	March 2006 T	March 2007 T
5	Aug 2005 F	Accepted invitation but not arranged	March 2007 T
6	Aug 2005 F	No reply to invitation	Not invited
7	Sept 2005 F	March 2006 T	March 2007 T
8		March 2006 T	March 2007 T
9		April 2006 T	March 2007 T
10		April 2006 F	April 2007 T
11		April 2006 T	April 2007 T
12			March 2007 F
13			April 2007 F

Table 4.1 Schedule of interviews. Key: F = face to face interview; T = telephone interview

Following this five month period of analysis, a second round of data collection was started. New participants, as well as current participants, were interviewed in this second round of interviews to widen and deepen understanding of the issues identified from the analysis. Seven new potential participants were invited to take part. Of these, two did not reply and one was unable to participate. This led to an additional four new study participants. Participant 6 did not respond to the invitation and while participant 5 agreed to a second interview in May 2006, this was not arranged. The reason for this was that following nine interviews within a short time frame, data collection had once more overtaken the process of analysis. On reflection, this was a poor decision. Having invited the study participant, I should have organised a second interview. The second round of data collection involved 9 interviews.

Over a period of ten months I concentrated on analysis and enhanced my theoretical sensitivity to the issues. This led to a third round of interviews and a return to all study participants. Participant 6 was not invited because they had not responded to the second interview invitation; further correspondence would have amounted to a degree of

coercion. The ten other study participants each agreed to a further interview. In addition, two new participants were theoretically sampled for their clinical expertise to help develop and test the developing explanatory matrix.

Because of the close interaction between data collection and analysis, details of each round of data collection and analysis are presented together below.

## **4.4 Data analysis**

Data analysis is presented in this section according to the three stages of dimensional analysis:

- identification of dimensions
- differentiation
- integration/reintegration

### **4.4.1 Identification of dimensions**

The phenomenon under investigation was the learning transition of study participants. This stage involved identification of a broad number of dimensions within the learning transition. This stage involved two rounds of data collection and analysis.

#### **4.4.1.1 Data collection: round one**

The aim of this first round of data collection was to explore the learning experience of study participants. While semi-structured, I remained reflexive to allow the participants to steer the interview.

The first interview involved a brief introduction, verbal consent to record the interview and some biographical data. The outline interview guide for the initial seven semi-structured interviews is shown in Table 4.2 overleaf.

### **Round one interview guide**

I'd like to know your perspective on the course, from where you are now. I'm very interested to hear your experience of the course.

Has the course affected your clinical practice in any way?

Skills: clinical reasoning, communication? Patient outcomes? Patient examination, assessment, treatment or overall management? Relationship with patients? Knowledge? Understanding? Clinical decision-making?

Has the course affected your career/professional development in any way?

Role? Job? Promotion? Salary? Status? Relationship with colleagues?

Has the course had an impact on you personally in any way?

Values? Self-esteem? Attitudes? Confidence? Self? Beliefs? Job satisfaction? How you regard physiotherapy or yourself as a physiotherapist?

Have there been any negative effects of completing the course?

Financial cost? Emotional cost? Relationships? How you regard physiotherapy or yourself as a physiotherapist?

Is there anything else?

A criticism of any data I collect will be that I have biased your comments, because you know me. What would you say to those who might criticise this research?

Table 4.2 Round one interview guide

I created prompt questions for myself to aid the flow of the interview and to enable me to concentrate on listening to the participants. Written and verbal communication is very different and the questions documented in Table 4.2 (and later interview guides) fail to represent the more conversational style and situational context of the questions. However, it does provide a broad outline of the semi-structured interview.

The interview guide was split into three main areas: clinical practice, career and professional development, and personal development, and this guided the first three questions. This guide was informed by my prior experience and expectations of the learning transition. This expectation was guided by my experience of completing a similar course 20 years previously, my MSc course and module leadership roles, my external examining role of a similar MSc, and my discussions with UK course leaders



running similar programmes. To help counteract an overly positive response, negative aspects were sought. The final question was asked to provide insight into the issue of insider research.

#### 4.4.1.2 Data analysis: round one

Following each interview, I completed a reflective summary of the interview (Appendix 8). An example of a completed summary is given in Table 4.3. The set of prompt questions in the left-hand column was developed from the literature (Miles and Huberman 1994).

<b>Reflective question</b>	<b>Researcher's comment</b>	<b>Future action</b>
Was there anything else that struck me as salient, interesting, illuminating or important?	Not clear at all about the various titles of his job! My hunch that his comment about it being hard for others (from first interview) was not exactly what he meant; he was actually talking about standards.	Check these at next interview.
Was there anything to do with me as an interviewer relevant: environment, my non-verbal behaviour, discomfort with any topic, emotional response, impact of interviewee (positive or negative)?	I wondered whether I was patronising, saying well done when he told me about doing weekend courses.	Need to think about this some more and listen again and see how it could be understood. If it is then I need to stop it.
Are there any problems, discrepancies, or gaps in the information being obtained?	The problem again for this interviewee as well as interviews 1 and 2 is the difficulty they are having in thinking about the course in isolation. For all interviewees so far, it is quite some time since they completed the course and they are having difficulty remembering. What is also complicating the picture for them is the change they have undergone since completing the course.	For this reason I want to interview some alumni who have fairly recently completed the course.

Table 4.3 A reflective summary of an interview

The transcribed interview was analysed line by line to identify dimensions and their properties, and the process was supplemented by the reflective summary. An excerpt of an analysed interview transcription is provided in Appendix 9. Identification of dimensions and properties was guided by the method of constant comparison (Glaser and Strauss 1967). Comparisons were made between participants, in relation to their feelings, situations and experiences. For example, comparisons were made between data from the same participant over the course of the two or three interviews, between dimensions and properties within data from one participant, and between participants (Charmaz 2006). This comparative process involved asking myself what, why, how and when questions of the data to identify variations and possible explanations. An example of a comparison between participants in relation to their clinical practice experience before enrolment on the MACP approved MSc is provided in Appendix 10. For each participant, a case report was written which summarised the dimensions and associated properties as well as any relevant information from the reflective summary.

Once the initial round of 7 interviews had been completed, comparison between participants was carried out (informal comparisons had been carried out throughout data collection). This involved repetitive reading of the interview transcripts with associated dimensions and properties, and the individual case reports for each participant. The dimensions and properties obtained from all participants were analysed and from this a set of significant dimensions and properties was identified. The dimensions and properties identified after this first round of data collection and analysis are summarised in Table 4.4 overleaf.

In order to produce a broader analysis, these dimensions and properties were input into an Excel spreadsheet. This was particularly helpful for maintaining an overview of all the dimensions on one sheet<sup>24</sup>. The dimensions were logged across the columns, the individual participants logged down the rows, and the cells contained the properties. The electronic format allowed efficient manipulation of the data. For each dimension, like properties were grouped together. For example, under the dimension of workplace setting, private practitioners were grouped separately to NHS practitioners. Eyeball

---

<sup>24</sup> One sheet consisted of around 10 pieces of A4 paper sellotaped together.

analysis then compared the similarities and differences in all other properties within and between the groups. This allowed identification of potential relationships between concepts. For example, those in private practice were the more experienced practitioners and did not expect to have to change their clinical practice.

<b>Dimensions</b>	<b>Properties</b>
Gender	Male or female
Years in clinical practice prior to enrolment	Years in practice
Time to complete all modules on MSc for MACP membership (excluding dissertation)	Years to complete
Time to complete the whole MSc	Years
Workplace setting	NHS or private practice
Change to workplace setting during the MSc	NHS, private practice, private hospital
Cohort	1st, 2nd, 3rd or 4th
1st interview: time since graduation	Years
Change to cognition and metacognition	Attitude, beliefs
Change in practice knowledge	Research, theoretical, practical
Change in handling skills	Sensitivity to feel, reliability
Change in clinical reasoning	Subjective, physical examination procedures
Change to patient assessment	Interpretation of findings
Change to patient treatment and management	Treatment choice, management of patients
Autonomy in clinical practice	Strength: high or low

Table 4.4 Round one data collection and analysis

Data analysis had so far identified the perceived learning outcomes of participants and identified possible relationships between dimensional properties. What remained unclear was the learning process that underpinned these outcomes. My limited theoretical understanding hindered my theoretical sensitivity and analysis of the data. Consistent with dimensional analysis (Schatzman 1991), I then went back to the literature and used it as an analytical tool. Role transition theory (Allen and van de Vliert 1984) provided a theoretical framework for the inter-relationship between

antecedent conditions, expectations, experience (including reactions and coping mechanisms), impact and moderating factors. The data was re-analysed using this framework. This process identified gaps in the data and guided round two data collection.

#### 4.4.1.3 Data collection: round two

The aim of round two data collection was to fill the data gaps relative to the role transition framework. Gaps identified were antecedent conditions, expectations of participants and the relationship between these two within the learning process on the course. In addition, details of their subsequent professional development were explored to contextualise the MSc into their broader professional development. The interview guide is outlined in Table 4.5 overleaf. Once again, a list of prompt questions was used to help maintain the flow of the interview and to help me concentrate on listening.

#### 4.4.1.4 Data analysis: round two

The process of analysis was broadly similar to that in round one. Following each interview, I completed a reflective summary of the interview. The transcribed interview was analysed line by line to identify additional, or modifications to existing dimensions and their properties, and the process was supplemented by the reflective summary. For each participant, the additional analysis was added to their case report.

New dimensions and properties were added to the Excel spreadsheet with adaptation, where needed, of existing dimensions and properties. An example of this spreadsheet showing three dimensions and properties of six study participants is provided in Appendix 11. New dimensions and properties identified from round two are summarised in Table 4.6.

### **Round two interview guide**

I want to understand how the course has impacted on your professional practice and professional career.

#### **Pre-course experience**

What went on before coming on the course? Where were you in terms of your professional and clinical practice? What courses had you done? What were your ambitions within physiotherapy, before doing the course? What do you imagine you would have done if you hadn't been able to do this type of course?

#### **Expectations of the course**

How did you know you needed to do an MSc? Why are these reasons important to you? What did you think it would be like? How did you prepare for coming on the course? What impact did you think the course would have on you?

#### **Experience of the course**

How did you find the course? In what way did your experiences of the course match what you expected? In what ways did the course differ from what you expected? Were you surprised by anything? Why do you think you were surprised? Of the difficulties you had on the course, give example, how did you cope with them? Why do you think you had these particular difficulties? Did you ever have any doubt that you would succeed? What would it have been like for you if you had not succeeded?

#### **Impact of the course**

What impact has the course had on you? (e.g. clinical practice, career, personally)? Do you think you could have achieved your fully potential without having done this course? How would you see yourself/feel/think yourself if you had failed? What does it mean to you, to have done the course? How do you feel/see/think differently as a result of completing the course? Did you learn anything about yourself?

#### **Post course activities and development**

What have you been doing since you completed the course? What professional development did you need? If you could achieve whatever you wanted in physiotherapy, what would it be? Do you think you can achieve that? What will stop you?

#### **Miscellaneous last questions**

Is there something else we should discuss? Are there any questions you want to ask me? Is there anything else that I haven't asked that I should? A criticism of any data I collect will be that I have biased your comments, because you know me. What would you say to those who might criticise this research? This is absolutely great, I'd like to go away and reflect. Could I come back to you?

Table 4.5 Round two interview guide

The way in which round two enhanced round one analysis is reflected in the following example. Round one analysis had identified a possible relationship between the dimensions of clinical experience, and expectations to change clinical practice. Round two strengthened this relationship and identified other associated dimensions. These were high levels of anxiety and stress associated with the learning contradiction, high

<b>Dimensions</b>	<b>Properties</b>
Motivation to enrol on the MSc	Nature, situation
Confidence to successfully complete MSc	Strength: high or low
Expectations of the teaching approach	Didactic or student centred
Teaching approach preference	Didactic or student centred
Expectation of a need to learn	Positive or negative
Confirmatory learning experiences	Type
Reaction to confirmatory learning experiences	Cognitive, behaviour and emotional
Change in teaching role in the workplace	Type, style and frequency of teaching
Contradictory learning experiences	Nature of contradiction
Reaction to contradictory learning experiences	Cognitive, behaviour and emotional
Coping strategies of contradictory experiences	Cognitive, behaviour and emotional
Learning style preference	Active or reflective
Professional self esteem	Strength: high or low
Confidence in theoretical knowledge	Strength: high or low
Changed relationship with colleagues in workplace	Nature of change
Career and professional aspirations	Continue or maintain

Table 4.6 Round two data collection and analysis

levels of confidence in clinical practice, minimal critical self-reflection, and no prior experience of being observed in clinical practice by someone more experienced. This identified moderating factors that influenced the learning transition.

The relationship between the moderating factors (confidence to learn, confidence in their clinical practice, critical self-reflection, professional self esteem and a fear of failure) and their influence on the learning transition remained unclear. For example, what was the relationship between confidence and professional self esteem? How did confidence affect the learning process? These issues raised by the data led me to further explore the literature and enhance my theoretical sensitivity for analysing the collected

information. This was further facilitated by preparing for, and presenting the research study at an educational conference<sup>25</sup>.

Aspects of role transition described by Allen and van de Vliert (1984) were combined with the learning transition framework described by Scholes (1995, 2006) to create a modified conceptual framework for the learning transition identified in this study. In addition, social learning theory described by Bandura (1977, 1997) provided a theoretical framework for the inter-relationship between confidence, self esteem, emotion, identity and performance. With greater theoretical sensitivity I then re-analysed the data and added new and adapted existing dimensions and properties to identify potential relationships. Case reports were rewritten according to a learning transition framework.

Participants were conceptually grouped according to their motivation to enrol onto the course. Three motivations were identified: clinical practice development; career development; and practice and career development. An analytical memo of each group was written to define them and to facilitate further analytical insight into “what ‘all’ is involved here” (Schatzman 1991 p310). The analytical memo for the career development group is given in Table 4.7 overleaf.

This resulted in fine tuning of the Excel spreadsheet of dimensions and properties. There appeared to be theoretical sufficiency (Charmaz 2006) to potentially create a substantive theory. The term saturation has been deliberately avoided here. The notion that a researcher is able to predict that further data collection will not create new theoretical insights and new dimensions was considered incompatible with the constructivist-interpretive paradigm (Denzin and Lincoln 2000) that underpinned this study. Knowledge is not predictable and fixed, it is inconclusive and provisional. Once theoretical sufficiency was reached, further data collection was stopped and the analysis moved to the stage of differentiation.

---

<sup>25</sup> Petty NJ, Scholes J, Ellis L (2006) What is the impact of a postgraduate manipulative physiotherapy course on the practice of the alumni? Society for Research into Higher Education: Newer Researchers and Postgraduate Student Conference, Sussex University.

**Antecedent conditions:**

These students enrolled on the course primarily to enhance their career and achieve promotion; they believe that the qualification will enable them to do this. They appear pragmatic and ambitious. The experience of the course seems dependent on whether the student is ready to learn or not (ready to change their thinking/skills/clinical practice).

**Experience of the course:**

One student with high self confidence and ready to learn, did not have any major role strain on placement and had a good relationship with the clinical tutor: friendly, supportive and constructive.

One student, who was ready to learn but had low self confidence, felt undermined by constructive feedback while on placement.

One student who was very confident of their practice and was not ready to learn suffered a major role strain on clinical placement. Those who are confident in their clinical practice (not critical of it) tend not to identify any problem and appear not ready to learn or change their practice. Perhaps for this reason they experience major role strain during the clinical placements. The contradiction is caused by not doing as well as they expect. Feedback from the clinical tutor suggests a mismatch between how they thought they were and how they are being judged. Because they did not expect to have to change their practice (they were very confident clinically), they were not ready to learn and so have to make a large adjustment to their thinking if they are to realise their aim of getting the qualification. The clinical placement may then be considered a hostile environment in which they have to survive. The relationship with the clinical tutor may then be threatening and unhelpful and they may cope by trying to minimise the threat by, for example, ignoring the clinical tutor and focusing instead on the patient.

The expectation that the course would enhance their career development was realised in all cases with promotion, enhanced status and increased respect from peers. Clinical practice was also enhanced. The degree appears related to their expectation at the start of the course.

Table 4.7 Analytical memo for the career development group

**4.4.2 Differentiation**

Data collection and analysis had so far created a broad number of dimensions with associated properties. The breadth and depth of dimensions and properties appeared comprehensive in relation to the conceptual framework of a learning transition. What was now required was to develop the relationship of the dimensions into an explanatory matrix. This involved trying out each dimension as a central dimension, fitting the remaining dimensions around it and judging its explanatory power. Comparisons were



made between created matrices as well as between existing theories (Charmaz 2006) of role transition, learning transition and social learning theory. The most powerful explanatory matrix from round two data analysis was finally identified and is presented in Appendix 12. This explanatory matrix guided the third and final round of data collection.

#### 4.4.2.1 Data collection: round three

Data collection in this stage aimed to clarify, test and consolidate the explanatory framework. In particular, it aimed to clarify and test the inter-relationship between perceived self efficacy, professional self esteem, identity, emotions and performance; this would shed light on the impact of individual moderating factors on a learning transition, which would help explain differences in participants' learning transition. The interview guide in Table 4.8 below and overleaf, provided me with topic areas to explore rather than interview questions to ask.

#### **Round three interview guide**

##### **Possible reasons for differences in perceived self efficacy**

- At work: were you surrounded by people a lot better than you? Were you familiar with being watched with patients? Were you familiar with receiving critical feedback? Were you familiar with critical discussions with colleagues?
- When you applied for the course, were you confident that you would successfully complete it?
- Was school positive and did you do well? Was university positive and did you do well?
- What values did you take from your family, in terms of achieving and succeeding?

##### **Influence of previous learning on perceived self efficacy to succeed**

- When you applied for the course what aspects of your knowledge and skills did you think you would need to improve and what did you think was OK?

##### **Perceived self efficacy and identity**

- On the course, for each thing you struggled with: did you doubt your ability to succeed? Was it related to the other students? Was it related to the teacher/clinical tutor? Was it related to other external stresses?
- Some people have told me their identity as a physiotherapist was very fragile. Can you relate to that? Some people have said they took criticism personally. Can you relate to that? Were you confident of going on placement and then passing the clinical exam?

*continued overleaf*

### **Round three interview guide continued**

- On the management modules some people have said being listened to and realising others didn't know everything boosted their confidence. Can you relate to this?
- Were you confident of passing the practical and the assignment on the management module?
- I think if you're confident of passing and pass, it probably doesn't do much to your confidence but if you're not confident of passing and pass, this boosts your confidence and self esteem. What do you think?
- Were you aware of any change to your own internal standards of ok practice?

#### **Influences on perceived self efficacy**

- What processes during the course developed your confidence to...?
- Some people have told me that they used to feel they should be able to get every patient better and when a patient didn't they felt they had failed in some way. Can you relate to this at all? Did the course affect this belief in any way?
- Some have told me that if someone said 'this is how you should do a neuro' instead of just following what they said they would then be able to say 'well yeah you can do it like that, but I do it like this, and unless you've got a better argument, mine is just as valid as your way'. So it sort of gave them a personal and professional authority. Can you relate to this?

#### **Current learning needs and perceived self efficacy**

- Did you notice wanting/needing different things at work after the course, compared to before? For example, wanting to teach, read articles, discuss with colleagues, be more challenged?
- Some people still have a deep niggling doubt about their abilities. Can you relate to this?
- What drives you now?

Table 4.8 Round three interview guide

The identification of a central dimension posed a significant challenge. In an attempt to facilitate this, two neuromusculoskeletal physiotherapists who had previously completed a clinically orientated MSc and had reached consultant level, were theoretically sampled for their high level of clinical expertise. The aim was to identify factors that enabled practitioners to reach the very highest level of clinical practice. This may have helped identify the central dimension and create an integrated matrix. An adapted invitation letter and information about the study was sent to potential participants (Appendix 13). The interview guide is shown in Table 4.9 overleaf. Interviews were carried out in March and April 2007.

- Could you talk me through your journey to consultant level? (Asked to draw the journey on a blank sheet of paper and then to talk through it)
- What made you aim for consultant level?
- In your family, what sort of values did you have in terms of achieving?
- If you had a day where every patient was grumbling at you, no one was getting any better, can you think how you would feel?
- In terms of the consultant post, how did that happen?
- Where do you think you are going in your career?
- Has the drive within you to achieve, diminished at all?
- What would be your ideal work environment?

Table 4.9 Interview guide for ‘expert’ participants

#### 4.4.2.2 Data analysis: round three

The transcriptions were not formally coded this time. My immersion in both the data and analysis meant that this round of interview data could be swiftly incorporated into the existing explanatory matrix. This third round of data analysis further clarified and refined the labels given to the dimensions; for example confidence was now replaced with perceived self efficacy and criticality took on a greater emphasis. These dimensions are summarised in Table 4.10.

<b>Dimensions</b>	<b>Properties</b>
Experience of critical evaluation of practice knowledge in the workplace	Nature and frequency
Experience of being observed in clinical practice by a senior colleague	Nature and frequency
Perceived self efficacy in practice knowledge	Strength: high or low
Perceived self efficacy in clinical practice	Strength: high or low
Relationship with other student peers	Status and significance
Relationship with tutors	Status and significance
Impact on formal assessment mark and perceived self efficacy	Change to perceived self efficacy
Disposition to critically evaluate	Strength: high or low

Table 4.10 Round three data collection and analysis

The analysis of the two consultant neuromusculoskeletal physiotherapists supported the existing explanatory matrix but did not trigger further analytical insight. This perhaps reflected the theoretical sufficiency of the data. Further reflection and analysis continued into the final stage of dimensional analysis.

#### **4.4.3 Integration**

This stage involved the production of a written account of the matrix. This 16 month process started in April 2007 and was complete in August 2008. Writing was itself a creative process that facilitated further analysis and interpretation of the data; this has been noted elsewhere (Charmaz 2006, Richardson 2000).

Within this stage an opportunity arose to formally present the research. The explanatory matrix from round two data analysis (albeit with minor changes) was tested out locally through a formal presentation to around 100 physiotherapists<sup>26</sup>. A number of those in the audience were participants in this study. Critical feedback was encouraged both formally at the start of the presentation and informally in discussion afterwards. No formal challenge was offered to the explanatory matrix; questions focused around clarification and embellishment of the issues. Study participants commented that they were able to find themselves within the explanatory matrix. This suggested that the analysis had some credibility and confirmability in their eyes. Informal requests for critical feedback resulted only in affirmation of the matrix. While this was encouraging, it also brought into question whether the audience had critically engaged with the presentation. The preparation and delivery of the presentation further underlined to me the lack of coherence in the explanatory matrix.

Through further writing, reflection, reading of the literature, discussion with supervisors, critical friends and finally a study peer, a central dimension was identified that enabled other dimensions to fit into a coherent explanatory matrix. The central dimension of the learning transition was identified as the learning contradiction; that is the trigger to learning. From this, it was possible to slot other dimensions into place

---

<sup>26</sup> Petty NJ (2007) Postgraduate learning transitions in neuromusculoskeletal physiotherapists. Musculoskeletal Research and CPD Seminar, Brighton.

within the antecedent conditions, expectations, reaction to the learning contradiction, learning outcomes and individual moderating factors. The writing up of this explanatory matrix enabled the creation of a substantive theory.

This theory was tested out on an audience of around 150 at an international conference of neuromusculoskeletal physiotherapists<sup>27</sup>. Within the audience were participants from this study as well as other alumni from the MSc course. No formal challenge was offered and an informal request for critical feedback resulted only in affirmation of the theory. While this was encouraging, it again raised the question of whether the audience had really engaged with what was being presented. Study participants and alumni all appeared to consider the theory made sense to them. This suggested it had some credibility and confirmability.

Further writing to create this thesis has provided a final opportunity to reflect on and refine the theory. This is presented in the next chapter.

## **4.5 Conclusion**

This chapter has provided details of how the broad methodological decisions were developed within the methods of data collection and data analysis. Dimensions and properties were identified from two rounds of data collection and analysis. Differentiation of these dimensions into an explanatory matrix was achieved through a third round of data collection and analysis. Finally integration involved reconfiguration of the matrix and its development into a substantive theory. Details of these processes aim to offer an audit trail to enable judgments to be made around dependability and confirmability of the study. The next chapter presents the substantive theory supported by the interview data.

---

<sup>27</sup> Petty NJ (2008) Connecting postgraduate neuromusculoskeletal education to enhanced clinical practice and professional development. International Federation of Manipulative Therapists Congress, Rotterdam

---

## Chapter 5: Findings

---

### 5.1 Introduction

To contextualise the learning transition, the chapter first outlines the MACP approved MSc course aims, learning objectives, and module descriptors for the four key modules. A brief background to the study participants is then provided. Analyses of the three rounds of data collection from the eleven study participants, which involved a total of 26 interviews, are examined. Data from the last two study participants (participants 12 and 13) are not presented in this chapter because the data did not trigger further analytical insight and was therefore not relevant to the findings. Participants reflected on the course experience after successful completion and this facilitated development of a broad perspective of the entire course. For some this enhanced clarity<sup>28</sup>. It was a remembered story of the highs and lows, the challenges and difficulties, the cost and the pain, as well as the joys and rewards of success. The first round of data collection and analysis explored participants' perception of the course experience and identified dimensions and properties. The second round explored these dimensions in greater depth within a developing explanatory matrix. The final round further developed, embellished and tested the explanatory matrix. This completed data collection and was followed by integration where further analysis, writing and return to the literature enabled the earlier explanatory matrix to be transformed into a substantive explanatory theory. The learning transition is presented in the following order: antecedent conditions, expectations, learning contradiction, reaction to learning contradiction, learning outcomes and moderating factors. Each stage of the learning transition is supported by quotations from the interview data. Quotations were chosen to ensure a balance across study participants and to ensure the breadth of responses was represented. Where similarity occurred, a typical response was chosen.

---

<sup>28</sup> Participants (participants 1, 4, 6, 7, 8) talked about the impact of the course being a gradual process, taking time; two (participant 4, 6) remarked that they would not have been clear what the impact of the course had been soon after completing the course.

The final section of the chapter presents a description of three broad conceptual learning transitions identified within the group of study participants.

## **5.2 Outline of the MACP approved MSc**

The aims and learning objectives of the MACP approved MSc and the list of modules are provided in Appendix 14. In line with IFOMT Educational Standards, MACP approved MSc neuromusculoskeletal physiotherapy courses must include a minimum of 200 hours of neuromusculoskeletal theory, 150 hours of practical skill development and 150 hours mentored clinical practice. A representative of the MACP monitored the course to ensure it fulfilled the academic standards of IFOMT. These requirements were fulfilled by two university classroom-based management modules and two practice-based clinical placement modules; a brief overview of these modules is given in Table 5.1 overleaf. All students started with one of the university-based management modules<sup>29</sup> and on successful completion were permitted to enrol onto the appropriate clinical placement. Some chose to complete both management modules before they enrolled on a clinical placement module.

The university-based management modules had a class size of around 12 students attending the module. The same tutor attended each day to ensure continuity in the learning process while other tutors came into sessions to provide specific expertise. Tutors facilitated student centred, peer learning.

Students completed two clinical placement modules in approved NHS or private practice locations in the UK, away from the student's work place. Each placement was of 90 hours duration and could be completed on a full or part time basis. Students paired up and they chose an MACP clinical tutor from a nominated list<sup>30</sup>. For each 90 hour

---

<sup>29</sup> The course regulation required successful completion of a university-based management module prior to enrolment on the relevant clinical placement module.

<sup>30</sup> Selection of clinical tutors was based on the following criteria: successful completion of a recognised postgraduate course in neuromusculoskeletal physiotherapy; previous experience as a clinical tutor for pre-registration or postgraduate students; attendance of MACP Clinical Mentor courses throughout the period they maintain this role; abreast of developments in neuromusculoskeletal physiotherapy in line with the CSP and MACP Continuous Professional Development strategy.

placement, 45 hours was one to one supervision. The remaining 45 hours of the placement involved students managing patients with or without student peer observation, and practicing techniques on each other.

<p><b>University based neuromusculoskeletal (NMS) management modules (upper<sup>31</sup> and lower<sup>32</sup> quadrant)</b></p> <p>Anatomy, biomechanics, physiology and pathology related to patients with neuromusculoskeletal conditions. Theory, research and concepts underpinning clinical practice for patients with neuromusculoskeletal conditions. Reliability and validity of clinical examination and treatment procedures. Psychological issues, communication skills and clinical reasoning skills associated with clinical practice. Manual<sup>33</sup> skill development related to examination and treatment procedures for patients with neuromusculoskeletal conditions.</p> <p><u>Assessment:</u> 3,000 word essay critically evaluating theory and research underpinning an aspect of patient management and a patient case study with justification and research evidence. A 45 minute practical examination for each of the upper and lower quadrant management modules<sup>34</sup>.</p>
<p><b>Clinical Placement 1 and 2 - Upper and Lower Quadrant</b></p> <p>Examination, assessment, treatment and management of patients with NMS conditions.</p> <p><u>Assessment:</u> 45 minute new patient appointment and a 40 minute follow up patient appointment for each placement module.</p>

Table 5.1 Outline of the MSc modules required by the MACP

### 5.3 Participants' background

The participants' background is provided here to help contextualise the findings presented in this chapter. Participants came from four different cohorts: five were from the first, one from the second, one from the third and four from the fourth cohort. Ten had graduated with an MSc and one had enrolled and exited with a PG Diploma.

---

<sup>31</sup> Upper quadrant refers to cervical and thoracic spine and upper limb.

<sup>32</sup> Lower quadrant refers to lumbar spine, pelvis and lower limb.

<sup>33</sup> Manual skills relate to the ability to touch, handle and move patients; it is essential for accurate and reliable physical testing procedures and thus underpins accurate assessment of patients.

<sup>34</sup> The practical examination was marked by an internal university tutor and an external clinician. There was a 20% referral rate (MSc Area Examination Board 9.7.02, Minute 4.2 (McGreal 2006)).



### 5.3.1 Age and gender

Of the eleven participants, there were six men and five women. The age of study participants is given in Table 5.2.

Number of participants	Age
5	24 – 30 years
4	31 - 40 years
2	41+ years

Table 5.2 Age of participants

### 5.3.2 Years of clinical experience

The eleven study participants had between 4 and 23 years of clinical experience prior to enrolling on the course; further breakdown is given in Table 5.3. Seven participants worked in the NHS, while 4 were self employed private practitioners.

Number of participants	Years of clinical experience
5	4-5 years
4	9-11 years
1	14 years
1	23 years

Table 5.3 Clinical experience of participants

### 5.3.3 Work situation

Study participants came from both private practice and NHS work settings. The breakdown was as follows:

- three participants in private practice (participants 1, 3, 11)
- three participants senior II in the NHS
- five participants senior I in the NHS.

#### **5.3.4 CPD activity**

Study participants had accumulated considerable technical skill from in-service training and weekend courses. They attended approximately three weekend courses a year and had one hour in-service training on a weekly or fortnightly basis.

#### **5.3.5 Perceived self efficacy to succeed**

Participants were generally confident in their academic ability and highly motivated to successfully complete the course. This high perceived self efficacy to succeed emanated from previous positive learning experiences, if not at school, then during their physiotherapy degree. This fuelled a belief that they could successfully complete the course and overcome obstacles during the learning process. A typical comment was:

*I always believed I would succeed...I would make sure I succeeded.  
(Participant 1)*

#### **5.3.6 Family and work situation**

The family situation of the alumni varied a great deal. Some alumni made no reference to the impact of the course on their family situation, while others briefly mentioned the helpful support of their partner. Those with children tended to take longer to complete the course, perhaps five to six years; for those without children the time taken varied between two and five years. There were no notable differences between men and women. Some alumni were already parents before coming on the course; others became parents during the course. In all cases, this affected their studies; for example one participant commented:

*I had children while doing the course and coming home from a day's work and sitting down at 9pm and see if you can be inspired to write an essay; which is perhaps not the right time! So from that point of view, it was quite stressful. (Participant 5)*

Most participants had to use their annual leave to attend modules and for private study. The majority partly or wholly paid the course fees and expenses associated with travel and accommodation<sup>35</sup>. This is reflected in the following two statements:

*The cost was quite high for me because I had very little support from the hospital. I didn't have any financial support so that wasn't particularly helpful. (Participant 2)*

*I had study leave and a large percentage of the fees were paid for, but I had to pay for my accommodation and meals out every night so on placement it was costing me around £400 a week. (Participant 5)*

## **5.4 The learning transition**

A conceptual framework of the learning transition is presented in Figure 5.1 overleaf which flows from left to right. The first two boxes to the left relate to pre-enrolment and include the antecedent conditions and expectations of the course held by study participants. The third, fourth and fifth boxes relate to the overall learning experience. The third box is the learning contradiction, the fourth box the reaction to the learning contradiction as experienced by the study participants. The fifth box outlines the learning outcomes or consequences of the learning experience by the study participants. The box below includes the individual moderating factors. While these factors influenced all aspects of the learning transition, they were particularly relevant to an individual's reaction to the learning contradiction and this is indicated by a much larger arrow. The interview data will be presented following this framework.

## **5.5 Antecedent conditions**

The antecedent conditions relate to the characteristics of participants prior to enrolment. As participants reflected on the impact of the course, they identified how they were before they came onto the course compared to after the course. The most notable characteristics were of hidden, received practice knowledge and routine, therapist centred clinical practice; these are now explored.

---

<sup>35</sup> Some participants received no study leave or financial support, while others received some study leave and financial support.

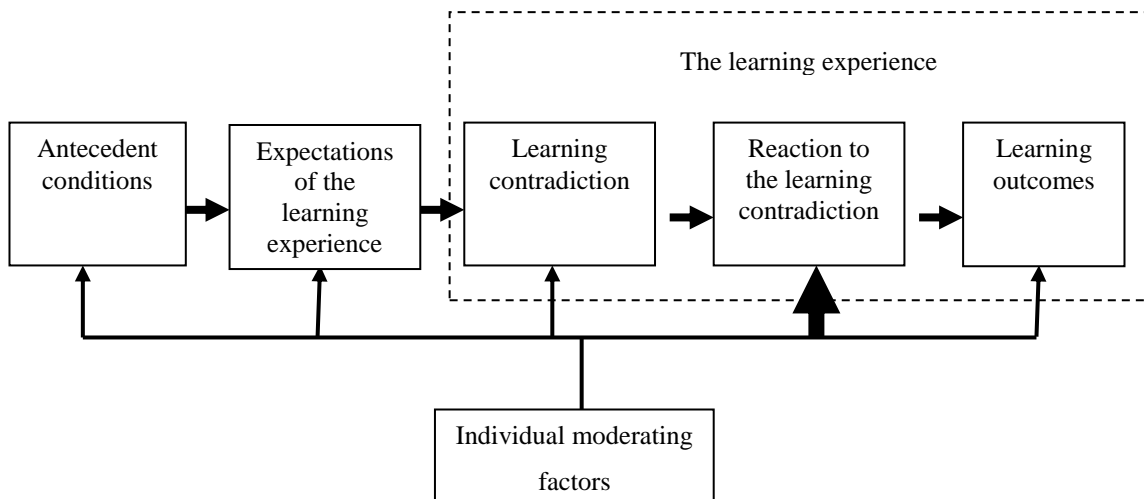


Figure 5.1 Conceptual framework of the learning transition for this study

### 5.5.1 Hidden received practice knowledge

Practice knowledge was hidden in two ways. Firstly most participants had not shared, discussed or critically evaluated their practice knowledge with colleagues prior to enrolment. The three participants who had sometimes discussed things at work (participants 3, 9, 10) tended to do so only occasionally and briefly because of the pressure of work. Secondly, the application of practice knowledge in clinical practice with patients had remained hidden from colleagues. Only two participants (participants 3, 9) had been directly observed with their patients. As one participant remarked:

*We are very lone practitioners with the patient in front of us and we don't know what is happening in the next cubicle. (Participant 6)*

Almost half of the participants exhibited received practice knowledge (participants 1, 2, 8, 9, 11). They uncritically accepted what others in authority told them and considered knowledge to be dualistic (Perry 1970). This is demonstrated by the following extracts:

*The course helped me understand there are two or three ways to do something. Before I used to think there was only one way to do something, that's what you learnt at undergraduate level. (Participant 10)*

*I would look at articles and I'd accept what was said. I didn't really question things... Now I would probably evaluate it much more and think 'is that worth doing?' (Participant 2)*

*I could do the handling side of things, I'd been given them on my undergraduate course, but I'd changed them since then and I needed to know what was correct. I needed the knowledge of this so my actual handling could improve. (Participant 11)*

Other participants (participants 3, 4, 5, 6, 7, 10) demonstrated a rather more critical and constructed stance towards practice knowledge. They had begun to question what they were being told. This is reflected in the following two extracts:

*They were really rigid, absolutely rigid about how you should do things; it was black and white all the time. I found that really difficult because I didn't understand why there couldn't be other ways of doing things than the way they were doing it; it didn't fit right with the way I was thinking about things. (Participant 7)*

*I began to feel more confident with the basic clinical skill.... I then began to look further a field, think more laterally about what I was doing. This caused me to question what people were telling me on the weekend courses and why they were telling me to do something in a certain way...they weren't always able to answer questions very well... they were quite dogmatic. (Participant 10)*

While this group evaluated what others told them, they remained somewhat received knowers in the sense that they expected to be guided and told by the tutor. This is highlighted by the following:

*I wanted to know how other people clinically reason and how I should be reasoning. While I had lots of techniques available to me and lots of background knowledge, but I didn't really have a clear idea of when to use each of these fancy techniques. (Participant 3)*

This instilled a dependency on others, particularly on the tutor, to transmit this knowledge to them using a didactic approach. Study participants' tendency towards received practice knowledge may be related to a number of factors, including: their undergraduate education; post-qualification learning and clinical experience; conception of professional practice; and the culture of physiotherapy.

#### 5.5.1.1 Physiotherapy undergraduate education

Physiotherapy undergraduate education that follows a didactic teaching approach may engender a belief that knowledge is unproblematic, certain and unchanging as the tutor delivers information. Undergraduate education seeks to introduce the student to professional knowledge and while to some degree it can be problematized, there remains a need for clear guidance if graduates are to be fit for purpose. This, and the ever expanding syllabus, may promote a degree of pragmatism and the use of a didactic approach. Inadvertently, the side effect of didactic teaching may be to foster received practice knowledge.

Physiotherapy undergraduate education requires students to tackle both received and constructed knowledge. Rules of professional practice for example demarcate a right and wrong way to do things. In this situation, a novice needs to focus on how to carry out a task and since they may not have applied the rules in practice, any critical evaluation would be somewhat superficial. In contrast to this, other aspects of the syllabus might demand that a student constructs knowledge; for example creating a meaningful exercise programme for a particular patient. This diet of both received and constructed knowledge may give confusing messages to students regarding the nature of professional knowledge.

#### 5.5.1.2 Post-qualification learning and clinical experience

Post-qualification learning may also reinforce received knowing. Senior colleagues who adopt a didactic approach when supporting newly qualified and junior physiotherapists may unintentionally promote received knowing; the senior may themselves be a received knower. This was the experience of one study participant who commented:

*As a junior, I also had individual peer support or mentoring with a named senior I; every couple of weeks we would meet for an hour and I could discuss cases or specific techniques. It's interesting to think about it now, because I remember they tended to tell me what to do rather than ask me questions that caused me to reflect and help me learn. (Participant 10)*

Senior colleagues tended to take control and quickly solve clinical problems, but may have inadvertently inhibited critical evaluation. Some of the study participants worked

at a senior level and used a similar approach with their juniors. One participant commented that:

*At my previous job it was like everybody turned to me for information and advice and knowledge. (Participant 8)*

Clinical practice itself may reinforce dualistic thinking. The multi-factorial nature of clinical problems makes it difficult to accurately judge the value of therapy. Yet patients provide dualistic information when they say that they are either getting better, or are not. This may be interpreted as right or wrong by the therapist judging their clinical decision.

#### 5.5.1.3 Conception of professional practice

The conception of professional practice may also engender dualistic and received knowing. Practice conceived as a collection of competencies to be mastered may promote a didactic approach.

The high profile of evidence informed practice and the dominant paradigm of quantitative, positivist research within physiotherapy culture may have engendered dualistic thinking in study participants. Despite the philosophy of science which attempts to disprove the hypothesis and on failing to disprove, to then reluctantly and temporarily accept the hypothesis, this may not be the way findings are translated by busy clinicians. They may value knowledge that can be instantly applied to their clinical practice and this pragmatic stance may promote received knowing.

#### 5.5.1.4 Physiotherapy culture

The NHS modernisation agenda seeks standardisation of patient care and this may foster dualistic thinking. The messy, uncertain world of clinical practice where variation, creativity and individuality abound is being reduced to standardised and routinized patient care (e.g. NHS Quality Improvement Scotland 2008). This may not only undermine any notion of individuality and clinical judgment on the part of the patient or clinician, it may promote somewhat simplistic dualistic thinking about patients, their presentation and physiotherapy management.

Finally, study participants may have exhibited received practice knowledge because of broader health and social influences. Dualism lies at the heart of the medical model of health and only fairly recently has the psychosocial model been adopted. Social discourses around the world embrace dualistic thinking. People tend to think, act and talk in terms of polar opposites of true and false, fact and fiction, black and white, young and old, right and wrong.

### **5.5.2 Therapist centred routine clinical practice**

More than half of the participants (participants 1, 2, 4, 5, 7, 9, 11) considered their assessment and treatment of patients was characterised by therapist centred, routine clinical practice. They did not adapt their examination and treatment to individual patients and this is reflected in the following extracts:

*...doing something routinely. I used to think all shoulders are the same and all hips are the same. (Participant 1)*

*I would do the subjective and ask the patient routine questions. I would not really take information from my subjective into the objective. I would do a routine objective examination. (Participant 4)*

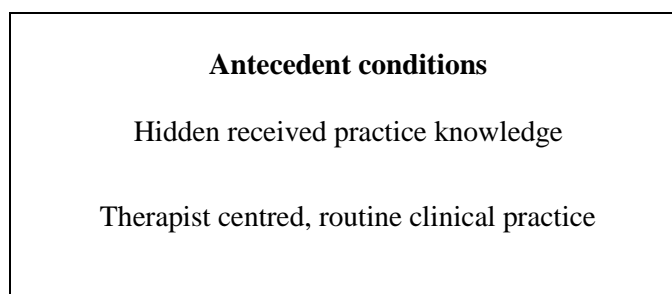
Treatment and management of patients involved the application of techniques with little critical evaluation of their effectiveness. This limited their ability to learn and adapt their management to individual patients. This is reflected in the following two comments:

*It might be quite a few treatments down the line before you're really thinking 'am I actually helping the problem?' (Participant 2)*

*...I used to sling in the kitchen sink a bit and I wasn't quite sure what bits of it got them better... (Participant 5)*



The antecedent conditions are summarised below.



## 5.6 Expectation of the learning experience

The expectations of study participants are considered under two headings:

- enhance clinical practice and/or career development
- didactic teaching will enhance knowledge and skills

### 5.6.1 Enhance clinical practice and/or career development

The achievement motivation of study participants<sup>36</sup> who registered on the course was a desire to enhance their clinical practice and/or their career development. Some participants were strongly motivated to enhance their practice (participants 2, 3, 9, 11), others their career development (participants 1, 8), and others a mixture of both practice and career development (participants 4, 5, 7, 10). These three achievement motivations are summarised by the following comments:

*I needed to do a course on outpatients...to take some time out and learn about outpatient things rather than a weekend here and weekend there.  
(Participant 9)*

*I wanted to have MACP membership and I wanted a senior I job.  
(Participant 8)*

*I came onto the course predominantly for career development, but also out of frustration about my own clinical practice. (Participant 7)*

---

<sup>36</sup> Based on 10 study participants; one was only interviewed once.

Where enrolment was motivated by enhancement of clinical practice, the expectation was to improve competence and perceived self efficacy in practice knowledge leading to greater clinical effectiveness. These study participants were motivated by learning goals. This may have focused attention on learning, and engagement in critical evaluation and discussion of practice knowledge with peers and tutors, rather than on formal assessment.

Where enrolment was motivated by career development, the qualification was expected to facilitate job promotion and enhance professional status; the course was more of a means to an end. These study participants were motivated by performance goals. This motivation may have focused more attention on formal module assessment and expectations of the tutor to ensure success, rather than on learning and engagement in critical evaluation and discussion of practice knowledge with peers and tutors.

The remaining study participants were motivated by both learning and performance goals; this provided a dual motivation towards learning and success. Study participants may have been able to draw strength from either source to overcome difficulties during the learning process. Dual motivation may have promoted a more pleasurable and persistent commitment to learning as well as a resolve to succeed.

### **5.6.2 Enhance knowledge and skill through didactic teaching**

All study participants expected to enhance their knowledge and skill through didactic teaching. They expected to be told by a more skilled and informed tutor and this was expected to lead to a progressive accumulation of higher level knowledge and skill. For more than half of the participants, this expectation was related to previous learning experiences (participants 3, 4, 5, 6, 7, 8, 10); however, for others it was related to a strong faith in dualistic knowledge imparted by others (participants 1, 6, 9, 11). These differences are reflected by the following two comments:

*I expected the course to be more taught because that was the way I was being taught on weekend clinical courses. (Participant 3)*

*I needed to be taught, to listen to people with expertise telling me what I should be doing. (Participant 11)*

This expectation was probably instilled by their previous learning experience at school, in undergraduate physiotherapy education, post-qualification in-service training and on weekend courses. These educational experiences emphasised tutor-centred transmission of knowledge and skills.

The expectations of the learning experience are summarised below.

<p style="text-align: center;"><b>Expectations of the learning experience</b></p> <p style="text-align: center;">Enhance clinical practice and/or career development</p> <p style="text-align: center;">Enhance knowledge and skill through didactic teaching</p>
---

## **5.7 Learning contradiction**

Physiotherapists experienced contradiction when there was a mismatch between their expectations and experience<sup>37</sup>. The contradictory experience for study participants was critical evaluation of their practice knowledge. The major aspects of this involved:

- classroom-based critical evaluation of handling skills
- classroom-based critical evaluation of practice knowledge
- critical evaluation of practice knowledge in clinical practice.

### **5.7.1 Classroom-based critical evaluation of handling skills**

Handling skill development involved participants practicing examination and treatment procedures on each other and giving critical feedback to enhance their skill progression. They also demonstrated, explained and discussed their handling skills as a whole group. The process of learning was facilitated peer learning and tutor guidance. Formal critical

---

<sup>37</sup> Within role transition theory, this mismatch is equivalent to 'role strain' (Allen and van de Vliert 1984).

evaluation of handling skills was by a 45 minute practical examination. This aspect is summarised by the following two extracts:

*...you're getting feedback and you don't have the luxury within the department to practice that much; I mean you have in-service training, but its infrequent really; whereas we had a lot of time to practice, and we practiced together outside of the sessions as well. (Participant 2)*

*Normally at work you don't have as much time to practice techniques over and over again and having the practical exam makes you improve your handling to a certain level. (Participant 9)*

The learning experience was familiar to study participants. They were familiar with practicing techniques on each other and giving each other critical feedback. What was new was the intensity of practice and the formal assessment of their handling skills.

### **5.7.2 Classroom-based critical evaluation of practice knowledge**

The classroom provided an opportunity to break down and slow down clinical practice into small chunks for closer scrutiny through demonstration, discussion and critical evaluation. This provided a trigger for deepening understanding as well as identification of further learning needs. Participants shared their knowledge with one another and heard alternative views, meanings and perspectives.

*The whole course was an open discussion. We'd have a topic and while to some degree we were taught because you need to be, it was then very open to our experiences, our personal skills, what we felt was beneficial and how we measured it and that type of thing. (Participant 5)*

*...going back to really basic things like what is palpation and what is a mobilization and what do we actually think we're doing. (Participant 7)*

*I was pleasantly surprised by the way the course was taught, being student centred and giving opportunity to discuss things openly and thrash things out at some depth rather than glossing over things. (Participant 3)*

The tutor guided the group to agree meanings and identify key principles that were considered fundamental to clinical practice. Examples include the reason why severity and irritability were important; when neurological integrity testing must be carried out;

and how to identify a spinal segment as the source of symptoms. These principles were often described using agreed language and symbols created by the group as they developed shared meaning and understanding. This is reflected in the following extract:

*...working with peers in the profession, we formulated the best way of doing things and knowing that was the best way of doing things and then getting the acknowledgment at the academic standard in the exam...I managed to get a distinction, so that really set my professional world alight because I then knew that what I was doing was acknowledged at being the highest standard at M level. (Participant 10)*

While some principles could be immediately tested out and applied within the classroom, for example performing a spinal manipulation, other knowledge had to be tested out elsewhere, for example through a search of the relevant research papers or textbooks. All practice knowledge however, remained at a conceptual level until it had been applied and tested out in clinical practice. For example, participants had to learn when and how to perform spinal manipulation on particular patients. The knowledge had been created within the classroom and needed to be applied in clinical practice. New or adapted practice knowledge needed to be legitimised in the real world of clinical practice before it could be fully accepted. Participants had to know how to apply new practice knowledge and new principles of practice to specific patients and situations. There was a significant degree of learning required to do this, as reflected in the following comment:

*In my first clinical placement, I didn't have a clue what I was doing and in my second I wasn't much better. That's a big problem. So it really depends on where you start from and weaker students may fly through the classroom stuff, the written assignments and even fly through the practical exam, but when it comes to actually doing the job that's the big problem. (Participant 6)*

This learning experience during the two management modules at the university is summarised in Figure 5.2 overleaf. It involved demonstration and articulation of practice knowledge with peers and tutors that was then critically evaluated by tutors and peers.

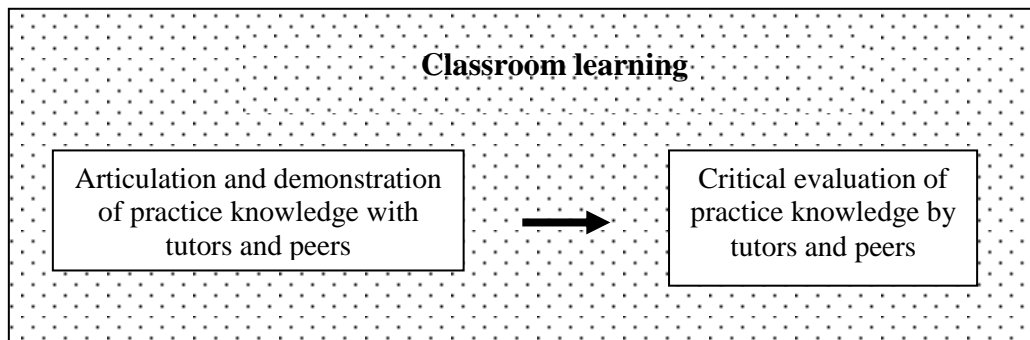


Figure 5.2 University based learning

### 5.7.3 Practice-based critical evaluation of practice knowledge

The MACP clinical tutor observed study participants with new and follow up patients. Following observation, there was facilitated critical self reflection, specific and immediate feedback, discussion and critical evaluation of the patient appointment. All aspects of their practice could be discussed and included their subjective and physical examination procedures, their interpretation of findings, and their decision on treatment and management. Through questioning, answering, advising, listening, demonstrating, observing, imitating and criticising, the clinical tutor acted as a coach, to facilitate student learning; this echoed critical companionship described by Titchen (2001). This process is summarised by the following three extracts:

*What's really nice is when you've got clinicians who are challenging you, not in a nasty way... just challenging you about your practice, and asking 'why are you doing it like that?' (Participant 4)*

*I was expecting some criticism from the educators...I decided to use the placements and that was why I was there and it's the only time in your career that you're going to have that amount of input from a senior clinician with that sort of experience so you might as well use it. (Participant 9)*

*I thought 'I'm here to learn, I'm here to get something out of this placement, and therefore to look at what I'm doing and say, 'don't do it like that, perhaps do it like this' or say 'have you thought about that'; because that's why I was there. (Participant 10)*

As they altered their practice with subsequent patients, they tested out the value of the change, leading to consolidation or further adaptation. This process resulted in a gradual enhancement of their clinical practice in terms of patient examination, assessment, treatment and management. This learning experience during the two clinical placements is summarised in Figure 5.3.

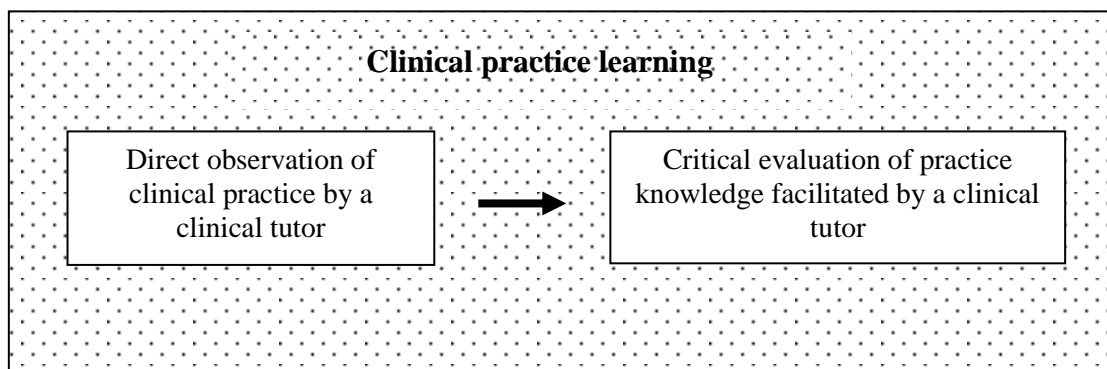
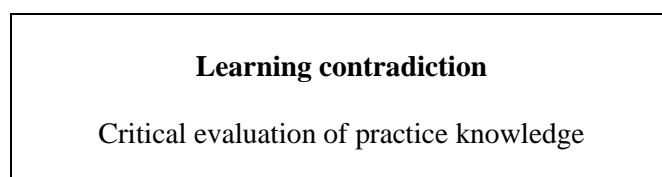


Figure 5.3 Clinical practice based learning

The learning contradiction both in the university classroom and on clinical placement is summarised below.



## 5.8 Reaction to learning contradiction

The reaction of participants to these learning contradictions varied. Reactions ranged between defensiveness to full acceptance of the situation. Defensiveness against contradiction was generally associated with learning anxiety and stress, while those who

embraced the contradiction experienced pleasure and satisfaction. The reaction of study participants to each of the three learning contradictions is described below.

### **5.8.1 Reaction to critical evaluation of handling skills**

The learning contradiction associated with critical evaluation of handling skills related to the:

- contradictory teaching approach
- contradictory standard of handling skills
- formal evaluation of handling skills by tutors.

#### **5.8.1.1 Contradictory teaching approach**

Study participants had expected a didactic teacher-centred approach. They expected the tutor to demonstrate and directly guide the way in which they were to practice. Instead, the tutor facilitated a student centred process where participants demonstrated techniques to each other and tutors, and demonstrated only occasionally. While some participants commented on being pleasantly surprised that the university tutor was not telling them how to perform a technique (participants 3, 7, 10), one participant (participant 11) expected, and indeed wanted, to receive direct instruction. This variation is evident in the following extracts:

*The practical hands on skill were taught differently than I was used to and the way I expected. On the weekend clinical courses there was a way to do something. On the MSc, techniques were taught more openly, less prescriptive, which was liberating really. (Participant 3)*

*I think I would have been completely out of my depth if it had been more of a talking shop environment. What was good for me was sitting back and listening to people with expertise telling me what I should be doing. (Participant 11)*

While the former participant adapted and embraced the situation, the latter was defensive. Their preference for a didactic teaching approach appeared to be associated with low professional self esteem and self efficacy in practice knowledge. These comments suggest differences in the learning relationship with tutors, with the second participant appearing to adopt a ‘child’ stance towards the ‘parent’ tutor where



knowledge was uncritically and automatically accepted. The tutor appeared an authority figure whose opinion was not to be questioned. This stance may have prevented effective critical evaluation of practice knowledge with the tutor.

#### 5.8.1.2 Contradictory standard of handling skills

Almost all participants considered their manual handling skills were at, or close to, the standard required for the course. Critical evaluation of handling skills did not pose a particular threat or challenge to study participants. They were familiar with the practicing of handling skills on a peer and receiving critical feedback during post-qualification in-service training and weekend courses. This is reflected in the following two extracts:

*I was used to getting some feedback on the weekend courses doing practical stuff. (Participant 1)*

*The peer support, working with other clinicians, and they're giving you lots of feedback on what you're doing and constructively criticising you as well, I think we're quite good at criticising. (Participant 2)*

One study participant had to alter what they were doing, saying:

*The hard thing about the practical was being perfect at every single technique, thinking that I was but then finding out that I wasn't. I thought I was doing something absolutely fine and had been doing it for 5 years and then had to change it all around and re-learn and then do it to such a high standard which I wasn't used to doing. (Participant 9)*

The shock of discovering that change was needed, and the challenge this posed, were associated with learning anxiety. While this participant had over-estimated their handling skill ability, all other participants had accurately judged their handling skills. Years of peer learning may have promoted a realistic judgment and accurate perceived self efficacy of the participants' handling skills in relation to the course standards.

For some participants, the focus was on handling skill development (participants 1, 8, 9) while for others it was on how to apply skills appropriately to patients in clinical

practice (participants 3, 6, 11). This range is summarised by the following two comments:

*I thought the course was going to be practical so I could practice my techniques and learn new techniques. That's what I wanted, I wanted something really practical. (Participant 9)*

*I'd lost the core of my clinical practice, the Maitland assessment procedure. I had all these skills but I didn't know how to use them. I felt I had lost all guidance, I felt I had no guidance. (Participant 11)*

These comments may suggest different learning style preferences (Kolb 1984), the latter favouring reflective observation and abstract conceptualisation and the former active experimentation with concrete experience. A preference for active experimentation with concrete experience may be related to undergraduate education, post-qualification learning, and clinical experience.

Undergraduate education may promote active experimentation with concrete experience in a number of ways. A student may spend around 9 hours each week being taught skills within 20 hours of contact time at the university. Students undertake a great deal of superficial rote learning for anatomy, biomechanics, pathology and physiology and this does little to develop reflective skills or skills in critical evaluation. A packed syllabus with limited time may emphasise action at the expense of reflection. Furthermore a didactic teaching approach may promote imitation of the tutor and hinder reflection by the student. Within the BSc course, 1,000 hours are spent in clinical practice which is largely skill based and in a busy department may leave limited time for reflection. While reflective observation and abstract conceptualisation may be introduced into level two and three BSc learning, breadth and depth are limited by superficial understanding of clinical practice.

Post-qualification learning and clinical experience may also have reinforced active experimentation with concrete experience. In-service training and weekend courses may reinforce this style with its strong emphasis on didactic teaching for handling skill development.

A physiotherapy department that values efficiency may not sanction, let alone reward, reflective observation or abstract conceptualisation. While these two reflective activities may facilitate deepening understanding that would enhance future efficiency, articulation of a robust argument to authorities in management may be problematic. NHS physiotherapy services may limit the opportunity for clinicians to reflect on their practice. Efficiency may drive action at the expense of reflection. Habitual pattern recognition may be reinforced while a more careful abductive reasoning process may be considered too slow.

#### 5.8.1.3 Formal evaluation of handling skill by tutors

Formal critical evaluation of handling skills was assessed by a 45 minute practical examination invigilated by a university tutor and MACP clinical tutor. Students were required to demonstrate a range of examination and treatment procedures with explanatory theory and research knowledge. This triggered a variety of reactions in participants.

The use of tutors to invigilate the practical examination may have fostered an external locus of control for study participants. It created tension for some participants between the invigilators and their own creativity and freedom (participants 6, 7, 8), reflected in the following comments:

*You can start to think you've got to jump through hoops, that you have got to do it a certain way and you lose your own creativity. And if you go down that line I think that's the wrong way, to think I must do it like this and I must hold my hands like this and if I don't have this angle it's not correct. (Participant 7)*

While tutor judgment may have decreased the internal locus of control and inhibited critical self evaluation, it may have enhanced the validity and legitimacy of a successful outcome. This is suggested in the following extract:

*I think it was also just ticking the boxes every time I passed the practical exam, because I was very nervous about them, and that was an enormous thing; that was an enormous boost to my confidence. Yes the feedback from two examiners and the model in each practical exam, I got a lot by passing and it did give me a boost. (Participant 9)*

The formal critical evaluation of their handling skills during the practical examination was a more threatening situation that triggered anxiety and fear in some participants (participants 5, 9). These experiences were reflected in the following comments:

*I wasn't confident of passing the practical exams. I find those situations extremely nerve wracking. (Participant 5)*

*If I can go into the exam, knowing that I couldn't have done one more thing, then I will go into the exam with confidence. (Participant 9)*

This suggests an association between locus of control, perceived self efficacy to succeed and emotional reaction. For those participants who were not confident and had to overcome their stress and anxiety (participants 5, 9), passing the examination resulted in a 'massive boost' (participant 5) in confidence. Acceptance of the examiners' feedback that their performance was at an acceptable level caused them to judge their ability more favourably and enhanced their confidence.

Formal assessment of learning triggered test anxiety in a number of participants for a number of possible reasons: unfamiliarity with the process; having their practice knowledge put under the spotlight and formally evaluated by course tutors, or the negative consequences of failure. While undergraduate education involved formal examination, post-qualification education (in-service training and weekend courses) did not require study participants to demonstrate their learning through formal assessment.

### **5.8.2 Reaction to classroom-based critical evaluation of practice knowledge**

The reaction of study participants revolved around three issues: articulation and critical discussion of practice knowledge, influence of learning relationships, and formal evaluation of practice knowledge.

#### **5.8.2.1 Articulation and critical discussion of practice knowledge**

Almost all considered their practice knowledge to be below the standard required for the course. Critical evaluation of practice knowledge posed a moderate challenge to most study participants. The articulation of participants' knowledge enabled it to be evaluated with subsequent acceptance, rejection or adaptation that was then less personally

embedded in the self. Participants responded differently to this process, as reflected by the following two comments:

*It was fantastic to have the opportunity to talk about your own views and hear other people's views in the room which were often quite varied.  
(Participant 10)*

*There were so many questions that came up with every single thing we did and sometimes I felt I was going one step forward and two steps back; although eventually at the end it all came together. When we were doing techniques that we'd been using for years, we were questioning them so much that I began to think it was ridiculous for me to use the technique, but then at the end I was thinking no, it's OK, it does work, and I'd go forward again and it would be fine. (Participant 9)*

While the first participant appeared to embrace this situation with learning satisfaction and pleasure, the second participant appeared less tolerant with associated learning anxiety. Embedded within the process of critical evaluation is problematic, uncertain and changing practice knowledge. This contrast may have generated a learning contradiction for those with strongly held beliefs towards certain practice knowledge. Intolerance of ambiguity and uncertainty would cause them to defend against it possibly through limited participation and engagement in the critical evaluation process. They could choose to just engage with the conclusions drawn from a lengthy discussion which would enable them to enhance their knowledge base and maintain their sense of certain knowledge.

The reason participants found it difficult to articulate their practice knowledge and enter into critical discussion may be that they were unfamiliar with doing this. Those participants who did critically discuss things at work (participants 3, 9, 10) tended to do so only occasionally, and briefly, because of the pressure on time.

As study participants gained higher levels of self efficacy in their critical understanding of practice knowledge, their fragility when facing peers and tutors was replaced by resilience. This enabled them to more fully engage in critical evaluation of practice knowledge with peers and tutors. A typical response to this was:

*They were in their second management module and I was in my first so I wasn't in a strong position to challenge their opinion, whereas second time around I would have felt on a more equal footing, and I would have felt stronger to challenge them. (Participant 10)*

#### 5.8.2.2 Influence of learning relationships

Learning relationships within the challenging environment (tutors and peers) were powerful agents that magnified or diminished learning anxiety and stress. Learning relationships that engendered a safe and supportive environment helped diminish anxiety related to fear of ridicule or harsh judgment. It takes courage to expose one's knowledge to others. Judgment or rejection of one's knowledge can feel like a personal judgment or rejection of the self. The participants' attempts to articulate their practice knowledge resulted in uncertain, incomplete and often inconsistent speech; support and encouragement were vital to strengthen the early attempts. The risk was offset by the possibility of gaining support and acceptance by others, with subsequent enhancement of confidence. This was reflected in the following extracts:

*You gain in confidence when they go 'that's interesting' or 'I think that was really important'. (Participant 11)*

*We'd listen to each other and when you said something and it was respected and you were listened to, it really boosted your confidence in your thinking and in your opinions. (Participant 5)*

Study participants with low levels of professional self esteem and/or self efficacy in their practice knowledge could be intimidated by peers with higher levels of practice knowledge. This undermined the potential support from peers, as articulated by one participant who commented:

*I was on the module with others who were doing their second module and they were full of confidence they were on a downhill while I was thinking this is impossible. I thought I was never going to pass; I thought it was just too difficult. Once I'd passed the first one then the second wasn't so bad. (Participant 9)*

Most participants found it difficult to articulate their knowledge and were not confident to share that knowledge publicly, as the following extracts demonstrate:

*On the first module I couldn't actually believe that anyone would listen to what I had to say. (Participant 11)*

*I was surrounded by other students who were very confident and so it made me feel I was bottom of the class. I felt more inexperienced than other students for almost the whole course. (Participant 9)*

These participants not only had low perceived self efficacy, they also appeared to have a very low professional self esteem. They appeared to have a habitual self critical voice that was associated with a weak criticality toward others; this portrayed the belief 'I'm not OK - you're OK' (Harris 1973). This stance was associated with a desire to learn but tended to foster an uncritical acceptance and dependency on others for learning. One participant with low perceived self efficacy and learning anxiety coped with the situation by disclosing their practice knowledge in a small peer group, saying:

*I didn't feel able to share my thinking in the whole group situation and instead got into a small group and it was there that I was able to discuss things more openly and I felt less threatened...I was looking for them to acknowledge what I said before I said anything to the whole group. That process helped me to develop confidence in my own thinking. (Participant 7)*

The relationship of two participants with their peers was noteworthy because they did not comment on the value of sharing knowledge with peers (participants 1, 8). Their relationship with their peers and its impact on their learning was not considered of particular value. While one participant (participant 8) made no comment on this aspect, the other participant was fairly indifferent commenting:

*I'm not sure whether the 3 week management modules at the university taught me anything particularly; more than just being with like minded people. The modules were just doing techniques, learning techniques. (Participant 1)*

These participants placed less value on critical evaluation of practice knowledge with peers and tutors and may have defended against alternative views to their own.

### 5.8.2.3 Formal evaluation of practice knowledge

Formal critical evaluation of practice knowledge through a 3,000 word assignment did not trigger strong reactions in participants. All but one of the participants (participant 3) was confident in their ability to impart their knowledge through the written assignment for the management module. They were shocked when they were referred (requiring them to re-submit), commenting:

*I remember I referred in my case study after my first placement which was horrific. It was quite a bad thing, I don't like failing, just like I don't like losing. I was asking myself why I got this wrong, why I was so wide of the mark, it wasn't a good feeling and that drove me even harder in the rest of the assessments on the course. (Participant 10)*

*When you go through the same institution, you get an understanding of the lecturers and the process. But I had come from another university...I didn't understand at first the process and what was required of me. So to start with, even though I had always been an ok student, I was referred and did not do as well as I should have done, and that was because I didn't understand what was required of me. (Participant 11)*

*There was a very high referral rate and discussing that with someone, we thought either you've been selected wrongly or you're not being taught well enough; there's no point beating yourself up over it. So that didn't help my confidence about myself because I hadn't been referred in anything in my last degree, so that was slightly worrying. (Participant 8)*

The first study participant took full responsibility for their referral, suggesting an internal locus of control. The second participant took partial responsibility. The last participant did not take responsibility but believed there were external factors that caused the referral, suggesting an external locus of control.

### **5.8.3 Reaction to practice-based critical evaluation of practice knowledge**

The clinical placement was expected to be the most challenging aspect of the course. The strength of opinion voiced by study participants, however, was unexpected. Some participants enjoyed the process (participants 3, 9, 10, 11), while most found it extremely challenging (participants 1, 2, 4, 5, 6, 7, 8). The overwhelming reaction to the clinical placement as a whole was encapsulated by one participant who said:



*I found the placements really, really helpful and even though it was very, very difficult, it was probably the most positive thing to come out of the course. In my practice, I'm still using aspects of the clinical reasoning and the key criteria that I learnt on placement and use it in my undergraduate and postgraduate teaching. (Participant 7)*

Participant reactions to the critical evaluation of their practice knowledge whilst on clinical placement related to:

- reaching the required level
- critical evaluation of their practice by the clinical tutor
- observational learning from the clinical tutor
- high challenge - high support learning
- high challenge – low support learning
- formal evaluation of their practice by tutors.

Each of these issues will now be discussed.

#### 5.8.3.1 Reaching the required level

Reaching the required level posed a major challenge for most study participants. While two participants (participants 1, 8) had very high perceived self efficacy, two had very low self efficacy (participants 9, 11) in their clinical practice; this is revealed by the following two extremes:

*When I started the clinical placement, I felt confident I would pass it...I was very confident that I was good at treating patients because of the feedback from patients and I did quite a lot of outcome measurements and always did really quite well. (Participant 8)*

*I felt I needed to do the MSc, because I was completely confused by the end, completely. I would treat someone by thinking I would throw a bit of muscle balance at it. (Participant 11)*

The high perceived self efficacy of the first participant was associated with high professional self esteem and working with less experienced colleagues. The low self efficacy of the second participant was associated with low professional self esteem and working with more experienced colleagues.

A major challenge for most study participants was to reach the required standard within the 90 hour timescale and this was associated with high levels of learning anxiety. This is captured by the following comment:

*I don't think I'll ever forget the placements, for good reasons and bad reasons. Its three weeks, three weeks goes in a flash and it's really key and it's scary. I felt someone had stripped me naked and said right off you go and start all over again. That's how I felt, I felt I didn't know a thing, which is ridiculous because I've been doing this for years, but suddenly hang on lets go back to basics. (Participant 4)*

The majority of study participants struggled to maintain a belief that they could successfully reach the requirements (participants 1, 5, 6, 7, 8, 9, 10, 11). This was accentuated for one participant (participant 6) who was unsure of the level required and needed to observe the clinical tutor to clarify the standard.

#### 5.8.3.2 Critical evaluation of their practice by the clinical tutor

Critical evaluation of their clinical practice by the tutor posed a major challenge to study participants. Typically, study participants experienced anticipatory anxiety at the prospect of receiving harsh or negative judgment of their practice, saying:

*I felt scared to death about going on the placement because I was scared the clinical tutor might see me clinically and think my practice was [rubbish] (Participant 4)*

While half of the participants continued to feel threatened during the two placements (participants 1, 2, 5, 6, 7, 8), a perception often fuelled by a fear of failure, for others the threat diminished almost immediately:

*I remember with my first patient I was watched and I thought 'oh no, what are they going to think about me', but that feeling very quickly disappeared. (Participant 10)*

*After being watched once on placement, I didn't find it very stressful at all. It was an interesting exercise. (Participant 3)*

Participants may have found critical evaluation of their clinical practice challenging, because they were unfamiliar with the process. While all but two participants (participants 3, 9) were used to discussing patients on an ad hoc basis with colleagues in their workplace, they were not used to being directly observed with their patients. Critical evaluation of their clinical practice was a new experience for almost all study participants.

The opportunity to adopt defence strategies was limited on the clinical placement where a tutor worked directly with two participants. The tutor directly observed their clinical practice with patients and provided feedback and guidance as well as facilitating critical self reflection. The participants may have defended against critical evaluation by limiting their level of involvement and/or their initiation of critical discussion.

Reactions to the critical evaluation of their clinical practice varied widely amongst study participants. At one extreme some believed they deserved criticism (participants 9, 11) while other participants had not expected critical feedback (participants 1, 8). This variation is reflected in the following two comments:

*I wanted and deserved criticism. I needed it. (Participant 11)*

*I hadn't expected to get critical feedback, because I thought my practice was ok. (Participant 1)*

The former response suggested under-estimation of perceived self efficacy and professional self esteem in the participant's clinical practice. This stance readily embraced the critical evaluation of practice knowledge, but tended to foster a desire to receive knowledge uncritically from others.

The latter response suggested over-estimation of perceived self efficacy and professional self esteem in the participant's clinical practice. This person tended to have a weak self criticality but strong criticality towards others. They portrayed the belief 'I'm OK - You're not OK' (Harris 1973). While they were confident to articulate their practice knowledge with clinical tutors they defended against alternative views to their own.

An over-estimated or under-estimated professional self esteem may have arisen from errors in feedback from self-evaluation and/or from others (patients, colleagues) in the workplace. Feedback from patients is problematic as there is no clear cause and effect and this limits accurate judgment. Study participants could have chosen to believe a patient improved because of their skills or for a host of alternative reasons. Additionally, isolated clinical practice may have fostered errors in professional self esteem as colleagues did not provide independent feedback on clinical decisions and interventions that might have facilitated a more accurate estimation of professional self worth.

The observation and subsequent questioning and critical evaluation of their practice with the clinical tutor provided specific and immediate feedback as well as requiring participants to articulate and justify their clinical decisions. This process was summarised by the following extracts:

*I wanted them to look at what I was doing and say, 'don't do it like that, perhaps do it like this' or say 'have you thought about that'; because that's why I was there. (Participant 10)*

*So then you have to sort of rebuild it and say 'actually the reason I'm doing this is because of this, this and this' and being able to verbalise 'actually I know why I'm doing this'. (Participant 4)*

As they altered their practice with subsequent patients, they tested out the value of the change, leading to consolidation or further adaptation; thus mimicking an experiential learning cycle (Kolb 1984). The following excerpts summarised this change to their practice:

*I could see that within a week my practice was already changing and improving. Within three weeks my practice had completely altered, it was such a fantastic experience. (Participant 10)*

*It was such a great experience, to have somebody watching me and questioning what I'm doing; really daunting, terrifying initially, but really helpful. (Participant 2)*

### 5.8.3.3 Observational learning from the clinical tutor

Study participants also learnt from observation of the clinical tutor. Two participants held their clinical tutor in high esteem, describing them as a ‘really good role model’ (participant 10) and ‘utterly inspirational’ (participant 11). Other study participants commented on direct observation of the clinical tutor to witness the actions and consequences of a higher level of clinical practice. For one participant, this involved affirmation of their palpation skills (participant 11); while for two others it involved critical evaluation with the tutor (participants 6, 9). These responses are summarised below:

*She showed me how to feel. She would ask me to PPIVM a back and I would say L3/4 and then she would PPIVM it and say, ‘yes I think L3/4’. Things like that gave me an awful lot of confidence to say ‘I can feel what I think I’m feeling’ and to properly tune in to what I’m feeling. (Participant 11)*

*They would give their views on the patient and you’d think there’s no chance this is a neck problem and then they go and prove it by treating the neck and changing the shoulder movement. (Participant 6)*

These extracts suggest differences in the learning relationship with tutors. The first participant received support and affirmation from the tutor. It suggested a child-parent relationship where there was uncritical and automatic acceptance of tutor practice knowledge. In contrast, the second participant challenged the tutor and expanded their practice knowledge. It suggested a more adult-adult relationship with critical evaluation of tutor practice knowledge. Here, the participant required a rational and persuasive argument and a critical discussion with the tutor before accepting their judgment; learning occurred through the process of critical evaluation.

Observation of the clinical tutor’s questioning of their practice, following a patient encounter, may have provided a structure for the clinical reasoning used by the clinical tutor. It may also have provided exemplars of how to question and reflect on clinical practice. The physiotherapists may have learnt a repertoire of questions for critically reflecting on their practice. Over time, these questions may have become internalised so that the participants automatically asked themselves questions about their practice.

Learning through observation of the clinical tutor was best summarised by the following excerpts:

*I did things and then you're challenged 'why have you done that? It's not necessarily that what you've done is wrong, but it made you think 'actually what am I doing?' (Participant 4)*

*I didn't realise I didn't know it, no one had questioned me before; I then questioned myself and redefined what I was doing, so then I realised I never knew it before. (Participant 1)*

#### 5.8.3.4 High challenge-high support learning

A positive relationship with the clinical tutor was the most influential factor in helping participants to embrace critical evaluation of their clinical practice. An enjoyable, albeit challenging, clinical placement for participants was crucial to the learning experience. For at least one clinical placement, most participants (n=10) experienced an open, friendly, positive and respectful relationship where they were sensitively challenged and encouragingly supported. Positive attributes of clinical tutors included: positive and constructive feedback (participants 2, 7), being calm (participants 4, 11), relaxed (participant 10), easy going (participants 5, 10), approachable (participant 11), experienced (participants 4, 9), open to alternative views (participant 7) and having the ability to develop a friendly relationship with the participants (participants 4, 9). The impact of this experience was well summarised by one participant who said:

*It's also how the criticism is given as well, if its constructive and positive and supportive 'well you can try doing it this way', then you tend to go from strength to strength. (Participant 2)*

The clinical tutor acted as a facilitator and worked collaboratively, where changes to practice were negotiated through rational argument. This high challenge – high support environment provided a powerful learning experience which enhanced their clinical practice. Participants who embraced this learning process would be expected to develop a genuine and authentic enhanced professional self as they negotiated the transformation of their practice. Where participants appreciated the learning process, this motivated

them to seek out further challenges to their practice, saying:

*I was asking my clinical tutor to come and watch me and would be quite disappointed when they didn't come in and watch me and give me their input and feedback. (Participant 10)*

These attributes of the clinical tutor echo the role of a critical companion described by Titchen (2001).

#### 5.8.3.5 High challenge-low support learning

A negative relationship with the clinical tutor was the most influential factor cited as causing participants to defend against critical evaluation of their clinical practice and creating a stressful learning experience. It most often occurred in the first clinical placement when the participant was less certain of their practice and felt more vulnerable. A number of negative aspects were associated with some clinical tutors. These included: 'negative feedback' (participants 1, 6, 7), 'strongly opinionated' (participant 6), didactic (participants 4, 5) and adopts a power relationship (participants 5, 7). A typical description of the negative feedback was given by one participant who said:

*If you're going to tell them what they've done wrong, you first need to tell them what they've done right, what they're good at. And that just didn't happen on my placement. I really did try to listen out for it but it was every time they would say 'this is where you've gone wrong'... That's the problem I think, some clinical tutors fall into some sort of power trip. (Participant 7)*

They coped with the situation by trying to damp down their internal stress. Faced with a strongly opinionated clinical tutor one participant avoided the risk of further deterioration in the relationship by giving the clinical tutor 'what they wanted' (participant 5). They believed that their ability to stand back from the situation and analyse it, strengthened their ability to cope with it. They also felt undermined by the clinical tutor in front of patients. For example:

*The patient had very little confidence in me, because there was a clinical tutor there in the cubicle; and if the clinical tutor interrupted at all and suggested something, the patient would immediately believe that what the clinical tutor said was right. (Participant 5)*

Three participants suffered a crisis of confidence during the clinical placements (participants 1, 7, 8) two of whom believed this was sparked by receiving negative feedback from the clinical tutor (participants 1, 7). They overcame this crisis through their strong motivation and commitment to succeed which involved work, social, family and financial investment. Overcoming this traumatic experience to successfully complete the course gave these participants a sense of achievement. Those who experienced negative feedback commented that the experience had left them with vivid memories of how not to give feedback to others and this had informed their future behaviour when teaching others.

Other situational factors influenced the perception of the challenge and relative support. These included being in a different hospital or private practice and with new people, (participant 7), travelling long distances (participant 7), being away from home (participant 5), boring evenings (participant 5), financial cost (participant 5), juggling a part time placement with an existing job (participant 8), being alone on placement (participant 5), and differences in ability between themselves and their peer (participant 1).

#### 5.8.3.6 Formal evaluation of their practice by tutors

Formal critical evaluation of clinical practice through a new patient and a follow up patient examination triggered a variety of reactions in the study participants. The clinical tutor and a university tutor observed the student with the new patient and follow up patient. The student had 45 minutes with a new patient and during this time an accurate and appropriate examination and assessment was expected with education, advice and in some cases treatment. The student then explained and justified their clinical decisions in a 30 minute discussion with the examiners. The student had 20 minutes with a follow up patient and this was followed by a 20 minute discussion with the examiners. The referral rate for the clinical placement module was around 30%<sup>38</sup>. While one participant (participant 5) considered the exam motivated them to work to a higher level, some (participants 4, 7) commented that the examination detracted from

---

<sup>38</sup> MSc Area Examination Board 9.7.02, Minute 4.2 (McGreal 2006).



their learning. This is summarised by:

*But I think the overall examination process, I don't like it, but I don't see another way around it. So I think it's a necessary evil in a way, because it makes you work towards a standard. (Participant 5)*

*In some ways I felt the clinical exam slightly detracted from the learning process. I felt that I could have got more out of the placement if I didn't have in the back of my mind that I've got to pass this. I've got to do this...I would have liked to have the opportunity to go away and do it and really work hard at it and know there's nothing else to worry about at the end of it. (Participant 4)*

The first comment suggests a strong motivation to learn where the quality of the learning was critical to the study participant. This was in contrast to the second participant who expressed a motivation towards performance goals where the formal module assessments guided their learning.

Five participants (participants 2, 3, 4, 7, 8) felt confident in their ability to pass both clinical placement examinations; three participants (participants 1, 9, 10) were not confident that they would pass the first placement, but were confident about the second. Lack of confidence in the first placement was related to limited competence (participants 1, 10) and not knowing the standard required (participant 9). Further learning on the second placement addressed these issues. Two participants were not confident in their ability to pass either the first or second placement examinations (participants 5, 11), with one saying:

*I didn't feel confident of passing the placements, I was petrified of that. I was petrified of the placements and they didn't get any easier. (Participant 5)*

Low perceived self efficacy to reach the required standards was associated with high levels of test anxiety. A number of participants commented on the stressful nature of examinations (participants 1, 4, 5), with some experiencing a fear of failure (participants 5, 8, 10, 11). This test anxiety was best summarised by one participant:

*I remember at my exam everything went out of my head. I didn't know what I was doing because I was thinking I'm [rubbish]. I didn't know why the examiners were asking me questions. (Participant 1)*

Participants varied in their response to feedback from the clinical placement examination. While some gained enhanced confidence and a sense of achievement (participants 4, 5), one participant with low perceived self efficacy, rejected the affirmation and questioned the validity of their mark (participant 11). For one (participant 8), it triggered a learning need. The range of responses is best captured by the following extracts:

*I feel I've achieved a lot having passed. I feel I'm good; from that point of view the exam was very rewarding. (Participant 4)*

*I don't have limits on myself; not now. I never thought I would be capable of gaining a distinction at MSc level. (Participant 10)*

*I could have learnt more and hadn't corrected all my faults. I felt a little bit that I shouldn't have passed because I hadn't attained that 100% level I wanted. (Participant 11)*

*...my educator had no sense of timing at all and so I'd not practiced it at all and I'd not had any discipline about only spending 20 minutes on the subjective and 20 minutes on the physical. I suddenly thought 'I've got to get that into shape'. (Participant 8)*

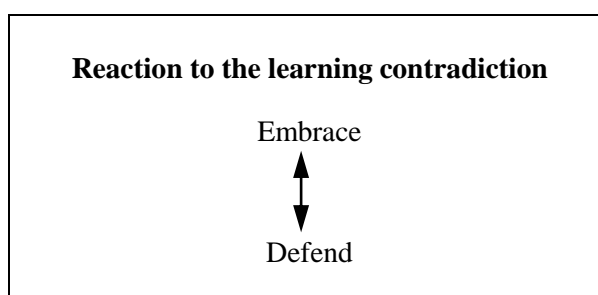
The above comments also suggest variation between the participants in their locus of control. The first two participants demonstrated an internal locus of control and success boosted their confidence. The last participant suggested an external locus of control, where the educator was considered to have been responsible for their timing difficulty within the examination.

Formal assessment of learning triggered test anxiety in a number of participants, possibly due to the negative consequences of failure as well as unfamiliarity with the process. While undergraduate education involved formal examination, post-qualification education (in-service training and weekend courses) did not require study participants to demonstrate their learning through formal assessment.

Successful completion of the clinical placement assessment provided private and public acknowledgement of advanced clinical practice. Once participants had successfully completed both clinical placements<sup>39</sup> they were eligible for full membership of the MACP. This completed the journey towards becoming a full member of this clinical interest group within physiotherapy which provides recognised specialised knowledge and skills within the field of neuromusculoskeletal physiotherapy; they were now legitimate members.

The clinical placements were considered highly challenging by study participants and required high levels of support from the tutor to facilitate learning. The placement experience had the most significant impact on changing their practice.

The reaction to the learning contradiction to critical evaluation of practice knowledge is summarised below.



## 5.9 Learning outcomes

This section will consider the outcomes of the three learning contradictions as a whole. The significance of the learning outcome for a participant appeared related to the magnitude of the contradictory learning experience. The minimal contradiction of critical evaluation of handling skills was considered the least important consequence for the majority of study participants. The moderate contradiction of critical evaluation of practice knowledge through discussion with tutors and peers, and the major contradiction of clinical practice, created the more significant learning outcomes for

---

<sup>39</sup> As well as the two NMS management modules, research methods and an optional module (giving 120M level credits).

study participants. The learning transition was from hidden, received practice knowledge and therapist centred routine clinical practice to three major learning outcomes: critical understanding of practice knowledge, patient centred practice, and capability to learn in, and from, practice. These three learning outcomes constituted a development towards clinical expertise. These changes are summarised in Figure 5.4 and discussed in turn.

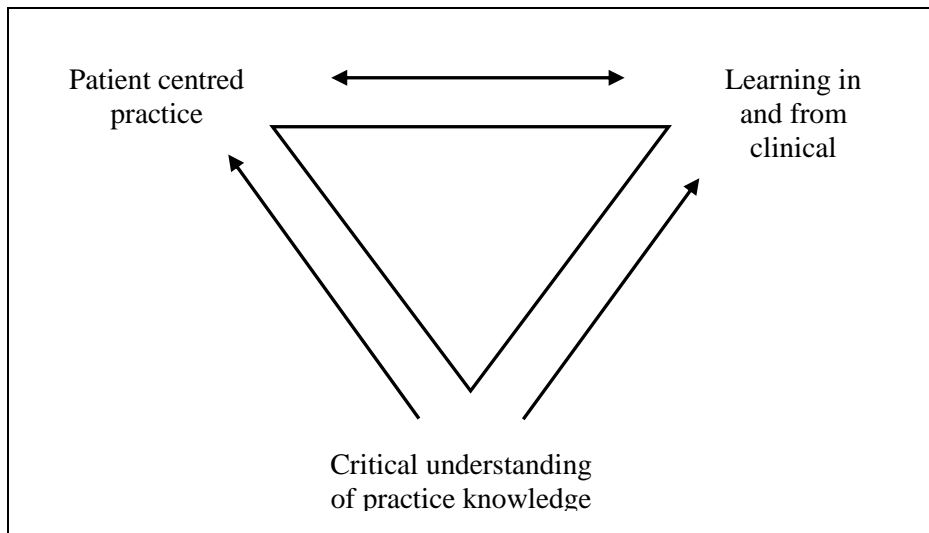


Figure 5.4 Learning outcomes: critical understanding was the initial change that enabled practitioners to become patient centred and learn in, and from, their clinical practice. Patient centred practice itself enhanced capability to learn in, and from, practice; conversely, learning in and from practice enhanced patient centred practice.

### 5.9.1 Critical understanding of practice knowledge

All participants referred to an enhanced critical understanding of their practice knowledge. They improved their understanding of the subjective and physical examination that enabled them to make more sense of their assessment of patients. They also developed their understanding of treatment and could justify their choice. These changes are summarised best by the following assertions:

*The main thing the course gave me was clinical reasoning, knowing why you're asking the questions you're asking. (Participant 1)*

*You've gone through a process, you know exactly why you've done each test and for what reason. (Participant 2)*

*I can move logically, but still quite creatively, and can justify what I am actually doing and have some logic to my treatment; rather than me jumping from place to place with no actual basis for why I am doing it. (Participant 7)*

All but one participant (participant 3) commented that they were better able to understand patients and their presentation. They were better able to make sense of the information from patients and identify patients' problems more accurately (participants 5, 6, 8, 10, 11) and more quickly (participants 2, 5, 6, 8, 9, 10). While most participants spoke confidently, one was less certain (participant 11). The different responses are best summarised by the following examples:

*I've improved my thought processes behind what I'm doing and why I'm doing it; my ability to reflect, my ability to deduce what information that test has given me and the value of that information in terms of the evidence base. (Participant 10)*

*I can eliminate alternative diagnoses and know why I've done it; I can do it very thoroughly and quickly. I'm much more confident that I've put the right stuff together to get the right diagnosis. (Participant 8)*

*I know how I should assess patients and do it much better, and can fit together the findings from the assessment to apply the correct treatment.....There is always that one patient where I've made an assumption and I've not examined them properly. I still think there are gaps in my knowledge and assessment. (Participant 11)*

All but one participant commented that they had become more critically evaluative of research (participants 1, 2, 3, 4, 5, 6, 7, 8, 9, 11). This caused most of them to use research evidence more judiciously in their clinical practice. One participant still struggled to be critically evaluative (participant 11) and one appeared not to have synthesised this (participant 9). The range of responses is summarised below:

*I didn't really question things, and you'd be thinking that's a wonderful thing to do and perhaps not thinking about the evidence behind it. Now I would probably evaluate it much more. (Participant 2)*

*I don't just read the journal and think everything's absolutely right, I question everything and that's what you're meant to do. (Participant 9)*

*I still tend to think I must take on board what people tell me and don't tend to question the research behind what they're saying. (Participant 11)*

The deconstruction and analysis of practice knowledge may have resulted in a greater depth and breadth of understanding of their clinical practice. Knowing why, when and how to ask or do something in practice increased complexity and promoted more individual care of patients, rather than routine 'one size fits all' thinking. The enhanced understanding of subjective questioning and physical testing procedures changed clinical practice, making it more patient centred. In addition, improved understanding also influenced their professional practice with regard to teaching others and in relating to other health professionals; these are now discussed.

#### 5.9.1.1 Teaching others

For half of the participants, enhanced perceived self efficacy in critical understanding of practice knowledge promoted greater engagement in teaching others back in the workplace (participants 1, 2, 5, 7, 9, 10). For two participants this was related to teaching skills rather than theory (participants 2, 9). Five (participants 1, 3, 4, 7, 10) had become clinical tutors for MSc neuromusculoskeletal physiotherapy students and most were also involved in some teaching and examining within the university modules; one participant was teaching for a company (participant 7). In contrast, one person (participant 11) did not feel sufficiently competent to act as a clinical tutor for MSc students. This is summarised by the following two comments:

*When I'd written an essay that had necessitated me reading probably every available paper that had been published on the subject at the time up to that day, I could speak at work with a real high degree of confidence about the literature base. (Participant 10)*

*I feel a lot more comfortable teaching people...students, juniors, senior II's, I feel more comfortable with my handling skills, so that confidence probably comes across. (Participant 2)*

The student centred approach (participants 2, 3, 7, 10) and negative learning experiences (participant 1), changed the way these participants chose to teach; they became facilitators of learning. This is summarised by one participant who commented that:

*I've taken that ethos forward at work and tried to create an open learning environment where people are happy to discuss and challenge. (Participant 3)*

#### 5.9.1.2 Relating to other health professionals

Half of the participants (participants 3, 7, 8, 9, 10, 11) commented on a greater ability to discuss and defend their clinical practice with other health professionals; all spoke with confidence apart from one participant (participant 9) whose confidence lay in what the course had taught them. This change demonstrated an enhanced confidence to engage in professional critical discourse. The following two quotes demonstrate this variation in confidence:

*I'm very confident to argue my case with anyone over any subject or patient. (Participant 3)*

*Now I would argue my point and have more confidence to say 'this is the way that I do it' and not feel you're doing it incorrectly. (Participant 11)*

*If anyone questions me then I can say that this is the way that I've been taught on my postgraduate course. (Participant 9)*

The development of openness and confidence in justifying their practice with colleagues may be associated with the social nature of the learning process during the management and placement modules. Creating and triggering learning through critical discourse resulted in a critical stance towards their practice knowledge and a greater confidence to articulate and defend this knowledge with others.

The increased ability to justify their clinical practice and decisions to themselves, their patients, and to work colleagues could be expected to enhance their professional identity and self esteem. Their clinical practice would become more authentic. This ability

suggests a greater integration of practice knowledge, blending all forms of knowledge (experiential, propositional, procedural, personal, and so on). Articulation and justification of their practice to others may further enhance its integration and understanding. These changes might also help to build a sense of professional responsibility and accountability.

### **5.9.2 Patient centred practice**

Several participants (participants 1, 2, 4, 7, 9) considered that they now adapted their examination to the individual patient; their practice had become deliberate, individualised and creative. While most participants spoke with personal authority, one participant's authority came from their successful completion of the course (participant 9). The move towards patient centred practice is demonstrated by the following assertions:

*I then saw each patient more as an individual with many facets and going more into the biopsychosocial side of things. (Participant 1)*

*Now I'm looking at what I've got subjectively to be able to decide what I need to do within my objective examination. (Participant 4)*

*I now think that because I've done the course and I've passed my exams, then I don't have to do absolutely everything. I just need to do the essential things and can leave other tests for another day, so I cut things down. (Participant 9)*

A number of participants talked about their previous lack of logical thinking when it came to choosing treatment; they tended to pick a treatment technique without much deliberation and just hoped it would benefit the patient. Half of the participants (participants 3, 6, 5, 7, 10, 11) commented that they now had a logical and deliberate way of choosing treatment for patients based around the assessment findings. For participant 3 this was one of the major impacts of the course. This change is well summarised by one participant who said:

*I've moved away from recipe treatments and from pathology based treatment; I now use the evidence from the patient rather than research evidence or theoretical knowledge to guide my treatment. (Participant 3)*



Five participants (participants 1, 2, 6, 10, 11) referred to being more creative in their treatment of patients. While three commented confidently about their ability to do this (participants 1, 6, 10), two were more hesitant (participants 2, 11). This is reflected in the comments:

*I think it's completely changed the way that I practice physio. Rather than teach me particular techniques it's allowed me to create these myself from the actual assessment...it gave me the freedom to create treatment techniques to suit me and the patient. (Participant 6)*

*The course helped me understand there are two or three ways to do something. At undergrad you can't be given two to three ways. (Participant 10)*

*I suppose I've found my own way in treating, but I would have liked more understanding from the course. (Participant 11)*

This creativity suggests study participants had gained constructed practice knowledge and a more relativist way of thinking about their practice. The ability to apply relativist thinking in clinical practice may have been related to their critical understanding of the principles underpinning such practice.

Four participants remarked on their enhanced handling of patients (participants 2, 7, 9, 11), as illustrated by the following comment:

*I'm more sensitive, feeling what's happening with the tissues...testing is more reliable, consistent and specific. (Participant 2)*

However, half of the participants made no reference to any development of their handling skills (participants 1, 2, 3, 4, 8, 10). This may be related to high levels of handling skill at enrolment that needed only minor adjustments to reach the required level. The learning of handling skills on the course did not pose a major challenge for participants and may therefore be considered unremarkable.

For almost half of the participants (participants 2, 4, 5, 7, 9) greater practice understanding enhanced their confidence in communicating with patients; it was the

major impact of the course for participant 7. They believed that a more confident approach led to better success in patient management. This was summed up by the following two remarks:

*The biggest thing the course gave me was the justification for what I'm doing; to be able to say I'm doing this because of X, Y and Z, that's the biggest thing... justify your theory of what's wrong with the patient ...is there enough evidence to support a shoulder problem or is there enough evidence to support a cervical problem? (Participant 7)*

*Therefore, if you can sell your examination to them then they will come on board, they will be more compliant and you're going to get a better outcome at the end of the day...I think a lot of what we do is selling what we do to the patient and I'm now much better at talking to the patient. (Participant 4)*

Enhanced assessment skills were considered particularly valuable with more complex patients; four participants commented on this improvement (participants 1, 2, 5, 6). One (participant 9) also commented on being better able to manage more complex patients but related this ability to having more examination and treatment procedures. In contrast, another participant (participant 11) considered they had limited ability to help patients with more complex problems. The range of comments was summarised by three participants, as follows:

*The more complicated the problem the more I relish what I do. I relish discovering the problem, of trying to help the patient. Before I might have got lost on certain things, especially the harder problems, but now nothing would faze me like that. (Participant 1)*

*A lot of our patients have recurrent problems and so it's really having the wider vision to find where the pain is coming from and more importantly why is that happening? (Participant 6)*

*I still don't think my process really helps me get some complex patients better in some parts of the body. (Participant 11)*

Enhanced critical understanding of their practice led them to be more deliberate in this area of their work, adapting their examination and treatment to the individual patient. They stopped working in routine and uncritical ways that they had learnt from undergraduate training, weekend courses, and in-service training, and/or had developed

from clinical experience. They thought more about what they were doing and their greater understanding provided them with more choices and promoted more flexible and creative ways to practice. Being more deliberate in their practice enabled them to learn and further develop their understanding. These changes may have enhanced the participants' sense of professional autonomy and authority as well as accountability and responsibility for their practice and their patients. Critical understanding led to an enhanced capability to learn in, and from, practice.

### **5.9.3 Learning in and from practice**

The improved criticality of practice knowledge and patient centred practice enhanced the participants' capability to learn in, and from, practice. Criticality caused them to question their practice; they no longer assumed that they were effective.

Several participants commented that they were now learning from patients (participants 1, 6, 7, 9, 11) and that this enabled them to develop their practice. One way in which their practice had developed was in their prognostic reasoning; being better able to identify patients they could help and those they predicted they would not be able to help (participants 1, 7, 11). This is reflected in the following two extracts:

*You have the basics and you have the patients and then you've got to learn from that...just reflecting on why things worked or didn't. (Participant 6)*

*I know who I can and can't help. That's become a lot easier. (Participant 7)*

Understanding the role of assessment and reassessment in patient management unlocked a cyclic process that enabled practice knowledge to be enhanced through clinical experience. Three participants (participants 2, 5, 6) increased their evaluation of their practice with patients. They assessed the effects of their treatment interventions<sup>40</sup> on the patients' signs and symptoms; for two participants this occurred much more quickly during the overall management of the patient (participants 2, 6). This was best described

---

<sup>40</sup> Students came onto the course unfamiliar with rigorous objective assessment and reassessment of patients. With improved accuracy and reliability of their subjective and physical examination, they then used these tests to evaluate the impact of treatment on the patient's signs and symptoms.

by one participant who said:

*I treat each problem and see what it does for the overall picture. Each patient then adds to your knowledge and experience so you become more efficient. (Participant 5)*

Four participants (participants 1, 3, 4, 7) commented that they had become more self evaluative as a consequence of completing the course. One was rather different claiming not to evaluate their own performance (participant 8). The following two comments demonstrate the range of responses:

*I'm much more questioning of myself and my own abilities. (Participant 3)*

*I don't really question my ability. I know I practice at a high level. I do get more and more confident I'm afraid! One of my weaknesses! (Participant 8)*

Their improved criticality and perceived self efficacy as well as perhaps an enhanced professional responsibility, led some participants to ask for help from colleagues:

*If I get stuck I can speak to colleagues I might not have done that before the course. (Participant 1)*

*Now when I'm not sure about something, I find it much easier to ask other people what they think. I feel more comfortable about doing that now. (Participant 2)*

*I'm quicker to recognise the patients that I can't do terribly well with. I don't beat myself up so much at not being good with those sorts of patients. I think I'm more willing to refer patients to the other physios. (Participant 11)*

They were more open with colleagues, able to work more interdependently. This suggests they were more self assured in their practice. It also suggests they developed a greater moral responsibility towards their patients.

The enhanced criticality to their practice knowledge caused them to question their practice more. They did not assume that what they were doing with patients was effective; rather, they tested the effect of their intervention on the patient's signs and

symptoms. They therefore became more accountable for their actions, both to themselves and to their patients. They did not automatically assume that research knowledge could be applied in a routine fashion to their patients. They took time to evaluate the research and to determine whether or not it was relevant to practice. They therefore became more judicious. This enhanced criticality of their practice fuelled their learning and further enhancement of their practice knowledge. They became critically reflective practitioners with a greater sense of professional responsibility.

The majority of participants generally became more autonomous; more able to learn on their own (participants 1, 2, 4, 5, 6, 10, 11). Individuals varied however, with the two extreme positions summarised by the following two comments:

*The course teaches you how to learn. (Participant 6)*

*I feel I need someone to make shoulders clear to me, but otherwise I look more inward now - I think I can do my own learning and development. I think I can gain more from reading journals and studying by myself. I think I use courses to sort of miss out that loop, I just want someone to tell me!  
(Participant 11)*

While the first comment suggests an internal locus of control, the second comment suggests a somewhat dependent learner with a preference for a didactic teaching approach.

Attendance at weekend courses had altered with four becoming more discriminative (participants 2, 7, 9, 11) and three not attending any (participants 3, 4, 10). They believed they could learn better on their own (participants 1, 4, 11) and were disillusioned with didactic teaching (participants 3, 11).

Participants continued to learn after completing the course. Almost three quarters talked about how learning was a process that continued after the MSc (participants 1, 2, 4, 5, 6, 8, 10, 11). Whilst one participant (participant 8) considered they were 'still lazy', four others talked enthusiastically about their continual drive to improve their practice. This

was summarised well by one person:

*I strongly believe you can teach yourself. I can always do better and improve myself as a clinician....There is constant learning around my work. Its something I enjoy, I enjoy learning and gathering more knowledge.  
(Participant 10)*

Participants became more self sufficient in their learning. They were able to learn and develop in and through their practice, and so their practice became a learning environment. Moreover, their reduced attendance at weekend courses suggests their practice became *the* learning environment for them. This may indicate that their practice knowledge was fashioned in such a way that it was coherent and consistent with their clinical practice. They were able to not only operate in the messy and unpredictable world of clinical practice, but were able to learn from it. The inference is that there was transparent understanding between their practice knowledge and their clinical practice and that their practice knowledge was more fully integrated and holistic. If the participants were learning autonomously in and through their practice, this implies that they had become reflective practitioners. Gaining the qualification provided evidence of their clinical expertise and this facilitated job promotion for some study participants.

#### **5.9.4 Job promotion**

During or after completion of the course, the following changes in job roles occurred:

- two remained in private practice (participants 1, 11)
- three remained in NHS roles (participants 2, 9, 10)
- one promoted to management (participant 5)
- two promoted to NHS band 8B and 8A (participants 7, 8)
- two promoted to ESP (participants 4, 9)
- three promoted to consultant level (participants 3, 4, 10).

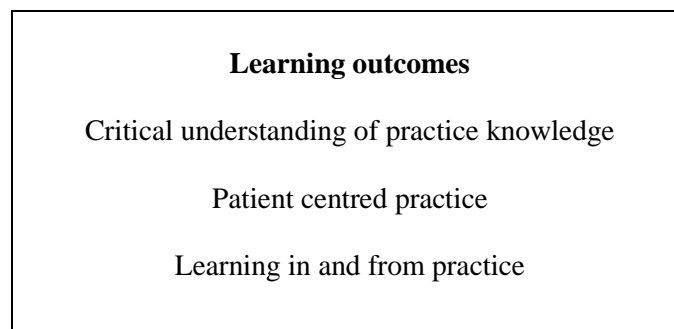
For half of the participants, the MSc qualification was considered vital to securing promotions (participants 3, 4, 5, 7, 8, 10). This was well summed up by one participant

who said:

*The MSc definitely opened up the doors because I had something substantial to prove that I had the level of competence they were looking for.  
(Participant 7)*

Direct scrutiny of practice knowledge with critical discourse and observational learning from the clinical tutor led to an enhanced critical understanding of practice. This fostered patient centred clinical practice which in turn increased the ability to learn in, and from, practice.

A summary of the learning outcomes is given below.



## **5.10 Moderating factors**

The individual moderating factors that appeared to influence the learning transition are summarised in Table 5.4 overleaf.

The learning transition framework described earlier in Figure 5.1, showed that individual moderating factors influenced antecedent conditions, expectations of the learning experience, learning contradiction, reaction to the learning contradiction and learning outcomes. Within each stage of the learning transition discussed in this chapter, moderating factors have been identified. The key process within the transition was the

<b>Moderating factor</b>		<b>Description of moderating factor</b>
Attitudes and beliefs	Conception of clinical practice	From technical-rationality to professional artistry
	Epistemology of practice knowledge	From dualistic/received to relativist/constructed
	Conception of teaching and learning	Didactic, teacher-centred transmission of knowledge or student centred facilitation of learning
	Achievement motivation	Continuum between learning goals and performance goals
	Locus of control	Continuum between internal and external
	Self efficacy in practice knowledge	Judgment of ability in practice knowledge held by an individual. Continuum from low to high; and from under- or over-estimation in relation to course tutor expectations
	Professional self esteem	Professional worth as a physiotherapist. A continuum from low to high; and also from under- or over-estimation in relation to course tutor expectations
Intrapersonal skills	Emotional control	Continuum from learning satisfaction and pleasure to learning anxiety and stress
Interpersonal skills	Learning relationships	Significant relationships included student peers, tutors and clinical tutors. Relationships described as adult-adult; child-parent; or parent-child
Cognition	Learning styles	Preference when learning and creating meaning from experience. Includes concrete experience, abstract conceptualisation, active experimentation and reflective observation

Table 5.4 Description of each moderating factor

reaction of the individual to the learning contradiction; it was here that an individual either embraced and changed or defended and stayed the same. These reactions were influenced by moderating factors and help to explain variation among study participants. A summary of the way in which moderating factors influenced whether a study participant embraced or defended against critical evaluation of their practice knowledge is provided in Table 5.5 overleaf.



	<b>Defend against critical evaluation</b>	<b>Embrace critical evaluation</b>
Conception of clinical practice	Technical rationality	Professional artistry
Epistemology of practice knowledge	Dualistic, received knowledge	Relativist, constructed knowledge
Conception of teaching and learning	Didactic transmission of knowledge	Student centred facilitation of learning
Achievement motivation	Performance goals	Learning goals
Locus of control	External	Internal
Perceived self efficacy	Under- or over-estimation	Realistic estimation
Professional self esteem	Under- or over-estimation	Realistic estimation
Emotional control	Learning anxiety and stress	Learning satisfaction and pleasure
Learning relationships	Child or parent stance	Adult stance
Learning styles	Active experimentation with concrete experience	Reflective observation and abstract conceptualisation

Table 5.5 Moderating factors and reaction to critical evaluation of practice knowledge

The following section summarises how each moderating factor may have influenced the reaction of participants to the learning transition. While the first four moderating factors have been described earlier within the antecedent conditions and expectations, they are again referred to here, to highlight the fact that these attributes will vary between individual practitioners.

### **5.10.1 Conception of clinical practice**

Participants who interpreted clinical practice as professional artistry may have sought to enhance their understanding and may have embraced critical evaluation of their practice knowledge. Learning in clinical practice may have been considered superior to university classroom-based learning. Participants who saw practice as technical

rationality may have believed that they needed to improve their knowledge and skills. They may have thought that classroom-based learning was more appropriate than the messy and uncertain world of clinical practice.

#### **5.10.2 Epistemology of practice knowledge**

Participants with dualistic, received knowledge may have preferred didactic teaching, seeking 'right' answers from the tutor, and may have adopted a child stance towards others. Such a stance would hamper attempts to critically evaluate their practice knowledge.

Participants with more relativist, constructed knowledge may have preferred student centred facilitation, critical discussion with peers and tutors, and may have adopted an adult stance towards others. This stance would enhance their capability to critically evaluate their practice knowledge.

#### **5.10.3 Conception of teaching and learning**

Participants who conceived learning as memorising, reproducing and applying knowledge may consider teaching as the transmission of knowledge from the tutor. It may be associated with dualistic, received knowledge. This stance would tend to defend against critical evaluation of practice knowledge.

Those who conceived learning as understanding, seeing something in a different way, and changing as a practitioner, may have favoured a student centred approach where learning is facilitated. It may be associated with relativist, constructed knowledge. This stance would tend to embrace critical evaluation of practice knowledge.

#### **5.10.4 Achievement motivation**

Motivation towards learning goals may have facilitated engagement in critical evaluation and discussion of practice knowledge with peers and tutors, while motivation towards performance goals may have hindered engagement, focussing instead on the formal module assessment and expectations of the tutor to ensure success.

### **5.10.5 Locus of control**

Study participants with an internal locus of control may have looked within themselves to find resolution to their cognitive dissonance when faced with critical evaluation of their practice knowledge. They may have actively sought engagement to make meaning and create new cognitive structures for themselves when faced with new practice knowledge. Their ability to look within themselves may have created learning satisfaction and pleasure. They may have been motivated to learn and prepare for the examination, believing this would produce a successful outcome. This control over their success may have dampened test anxiety.

Study participants with an external locus of control may have looked external to themselves to find resolution to their cognitive dissonance when faced with critical evaluation of their practice knowledge. This may have created high levels of anxiety and stress where help was not forthcoming. They may have focused on the examiner's control and not on their own ability to enhance their performance. This may have inhibited their preparation and emphasised instead a dependency on the tutor. In this scenario, successful completion of an examination may not have resulted in enhanced perceived self efficacy; they may have attributed this to the low standards of the tutor. If they believed their success depended on luck or something outside their control, they may have remained passive and adopted a learned helplessness. A belief that external factors controlled their success may have created higher levels of test anxiety.

### **5.10.6 Perceived self efficacy in practice knowledge**

Perceived self efficacy in practice knowledge refers to participants' judgment of their ability (Bandura 1997) in relation to their practice knowledge. Of relevance was the accuracy of this judgment compared to the ability required by the course tutor. Over-estimation could be due to an over-inflated perception of ability and/or under-estimation of the course requirements. The opposite would occur with under-estimation.

Very low perceived self efficacy appeared to be associated with a number of other moderating factors that included: a preference for didactic teaching, a child-parent relationship with tutors, dualistic thinking, learning anxiety and a focus on learning for

the assessment. These factors may have inhibited participation in critical evaluation of practice knowledge with tutors and peers.

By contrast, over-estimation of ability was associated with motivation for performance goals related to qualification and career development. Study participants with an over-estimation of perceived self efficacy in their practice knowledge expected positive affirmation from tutors and peers. When this was not forthcoming and instead they were questioned and challenged, they faced an unexpected contradiction. They defended against critical evaluation of their practice knowledge. However, where this risked assessment failure, adjustment was made.

An over-estimated perception of ability may have arisen from errors in feedback from self-evaluation and/or from others (patients, colleagues) in the workplace. For instance, a strong need to be successful with patients and/or working only alongside less experienced colleagues may have promoted over-estimation of their ability. Additionally, isolated clinical practice may have fostered errors in self evaluation as colleagues did not provide independent feedback of clinical decisions and interventions that might have facilitated a more accurate judgment of their ability. An alternative explanation was that at enrolment, they may have received insufficient information and underestimated the demands of the course.

#### **5.10.7 Professional self esteem**

The professional self-worth as a physiotherapist was considered to be a continuum between high and low (Fennell 1999). Professional self esteem was associated with self efficacy in practice knowledge; high perceived self efficacy was associated with high professional self esteem and vice versa. The impact of professional self esteem on critical evaluation of practice knowledge has been discussed within self efficacy.

#### **5.10.8 Emotional control**

The emotional response towards learning demonstrated by study participants may have ranged from disinterest and boredom to pleasure and satisfaction to fear and anxiety. Low levels of challenge were considered uninteresting, while challenge beyond

perceived self efficacy triggered fear and anxiety. Those who considered the challenge within their capability may have felt pleasure and satisfaction, which may have assisted them to overcome the challenge. What constituted a challenge and the subsequent emotional response varied between study participants, although test anxiety was common to all. Accurate anticipation or even partial anticipation of challenges helped dampen learning anxiety; unexpected challenges created the most acute response. Heightened levels of stress and anxiety were associated with low professional self esteem and low perceived self efficacy in practice knowledge. Learning relationships (tutors and peers) within a challenging environment were powerful agents that magnified or diminished anxiety and stress. Learning relationships that engendered a safe and supportive learning environment helped diminish learning anxiety related to fear of ridicule or harsh judgment.

Participants varied in their ability to control their emotions related to learning. This may be related to their undergraduate programme and the culture of physiotherapy clinical practice.

Study participants awareness and control of their emotions related to learning may have been limited. Undergraduate programmes may give little attention to the softer skills of emotional awareness and control. A crammed syllabus may focus on a didactic approach and factual information may be prioritised over the development of self awareness and the control of emotions. Within the workplace, little emphasis may have been given to the development of these skills.

The culture of neuromusculoskeletal physiotherapy may emphasise technical mastery with minimal attention to the emotions. The nature of physiotherapy practice often involves motivating patients to do things that they do not want to do, because of pain and discomfort. While empathic persuasive skills are needed, the focus is on physical not emotional change. The biopsychosocial model of health as well as the dismantling

of the technical approach<sup>41</sup> may lead to a more rounded and holistic practice. However, even here the focus is on the emotions of the patient not the practitioner. Gaining self awareness and control of one's emotions is a reflective activity and in an action orientated and busy department this may prove difficult. The relevance of emotions to clinical practice and decision-making has hardly been addressed by the profession. Weekend courses advertised nationally do not provide training in intra- or inter-personal skills. Clinical practice revolves around developing a rapport with patients and critical to this are intra- and inter-personal skills. Evidence based practice emphasises the use of propositional, quantifiable knowledge. Emotional intelligence and the social engagement between the patient and therapist are difficult to articulate or quantify and as such may be ignored and devalued as a form of 'evidence'.

#### **5.10.9 Learning relationships**

This includes support within the learning environment from student peers and university and clinical tutors as well as family, friends, work colleagues and line managers. Most study participants found support from student peers helpful when faced with the learning contradiction to critically evaluate their practice knowledge. Learning relationships (tutors and peers) within the challenging environment were powerful agents that magnified or diminished learning anxiety and stress.

#### **5.10.10 Learning style**

The learning style of the study participants, while not formally assessed, suggested they learnt and created meaning through active experimentation with concrete experience rather than reflective observation and abstract conceptualisation. This would be reinforced by previous action-orientated practical learning experiences common within in-service training and weekend courses.

The ability to critically evaluate practice knowledge would be facilitated by a preference for abstract conceptualisation and reflective observation; perhaps the very opposite of

---

<sup>41</sup> This started in the mid 1980's following a landmark paper by Matyas and Bach (1985) which explored the reliability of physical testing procedures. While the paper received criticism from a number of highly influential physiotherapists, it paved the wave for further studies that have supported the findings.

the learning style familiar to the study participants. Those with limited flexibility to adjust their learning style would find this learning contradiction difficult. They may react by defending against critical evaluation of practice knowledge. They might limit their participation in critical discussion and analysis that dealt with abstract ideas and concepts. They might become impatient with long discussion and prefer to spend class time on practical hands on skills.

### **5.11 Summary of the learning transition**

The learning transition of the study participants is now fully summarised in Figure 5.5 overleaf.

This analysis has presented a learning transition from hidden, received practice knowledge and therapist centred, routine clinical practice to critical understanding of practice knowledge, patient centred practice and capability to learn in, and from, practice. The process that facilitated this learning transition was critical evaluation of practice knowledge. Individual moderating factors help to explain the difference between study participants. Each of these moderating factors influenced, to a greater or lesser extent, the antecedent conditions, expectations, learning contradiction, reaction to the contradiction and learning outcomes. The major focus influence of these moderating factors was on participants' reaction to the learning contradiction as it was this that triggered learning. This is depicted in Figure 5.5 by a larger arrowhead.

### **5.12 Conceptual grouping of study participants**

While a substantive theory of the learning transition has been put forward, the findings can also be portrayed in the form of three conceptual groups of study participants. Social learning theory (Bandura 1977, 1997) provided the most powerful framework with which to view the learning transition of study participants. The conceptual groups are not mutually exclusive but offer a crude differentiation of experiences by study participants.

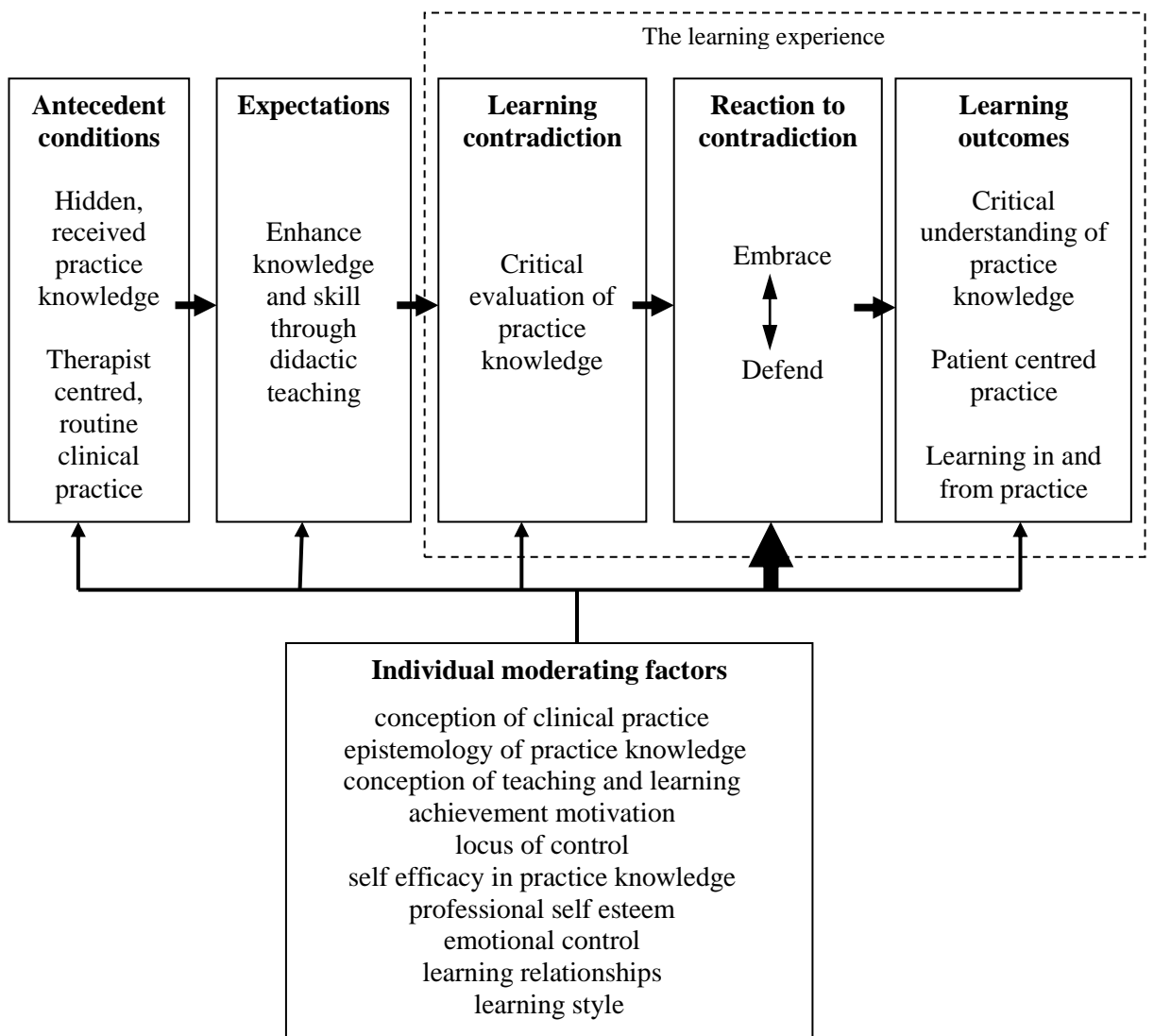


Figure 5.5 The learning transition towards clinical expertise

### 5.12.1 Doing better

Participants in this group had particularly low perceived self efficacy in their practice knowledge, coming onto the course because they felt ‘completely confused’ and ‘needed to relearn it all again’. They were distinguishable from the other participants because of their self-deprecating language. Their low professional self esteem and low self efficacy in their practice knowledge influenced their learning in a number of ways.



They maintained their dependency on others to learn, particularly the tutor; they relied on others to tell them how to think and act. They were very strongly motivated to learn and develop their practice and welcomed direction and critical feedback from others. Initially they found it difficult to participate in classroom discussion and demonstration, but over a period of time and with increased understanding, they gained some confidence in participating. Their participation remained somewhat limited because they considered their contribution would be of little value to others; they tended therefore to listen rather than contribute. Their dependency on tutors limited their development as independent thinkers. Their limited contribution to the co-construction of practice knowledge with peers and tutors restricted their personal ownership of such knowledge and their ability to generate knowledge. Their knowledge was received from and legitimised by others and they defended against the co-construction of knowledge with peers and tutors. They were not strongly disposed towards theorising about practice; they preferred action orientated activities. Their learning style was predominantly as accommodators. They were more orientated toward apprehension than comprehension.

Their determination to enhance their practice fuelled their capacity to learn, but their low confidence caused them to focus their learning towards assessment. They needed to direct their attention to the development of skills and knowledge that would ensure success, taking on 'survival tactics' and learning strategically. Their learning was bounded by the requirements of the assessment. Their focus was more on seeking acceptable ways to demonstrate practice knowledge than on abstract theorisation; this limited the development of their understanding of practice knowledge.

These participants enhanced their practice knowledge but their development was limited in terms of the extent of their understanding of practice knowledge and their capacity to generate knowledge. They remained somewhat dependent receivers of knowledge with limited criticality towards others. This restricted the extent to which they developed enhanced professional autonomy, responsibility and accountability. They were limited in their capacity to become a critically reflective learning professional.

### **5.12.2 Gaining status**

Participants in this group had particularly high confidence in their practice knowledge, coming onto the course to gain the qualification and develop their career. They were differentiated from other participants by their very positive presentation of themselves and apparent lack of critical self-reflection. Their high professional self esteem and high self efficacy in their practice knowledge influenced their learning in a number of ways.

They remained independent learners focused on assessment. They did not think there was a problem with their practice and were therefore not motivated to change it. They were confident to contribute to class demonstrations and discussions but were less inclined to listen and learn from others. This limited the expansion of their understanding and their ability to generate knowledge. Peers were of little relevance to their learning. They defended against critical self evaluation and against co-dependence with peers and tutors to co-construct knowledge. They did not have a strong disposition towards theorising about practice, they preferred action orientated activities; their learning style was predominantly as accommodators. They were more orientated towards apprehension than comprehension.

Their determination to gain the qualification caused them to focus on the module assessment. Their learning was bounded by the requirements of the assessment. They directed their attention to the development of skills and knowledge that would ensure success, learning strategically. Tutors were authority figures who would judge their performance; they therefore needed to know their expectations for the assessment. They were shocked if they received critical feedback from tutors, but made the necessary adjustments to avoid failure. Their commitment towards the goal of qualification ensured their perseverance and success gave them a sense of achievement. Their focus was more on seeking acceptable ways to demonstrate practice knowledge than on abstract theorisation; this limited the development of their understanding of practice knowledge. Public recognition of their practice knowledge was gained through qualification.

The practice of these participants was enhanced, but their development was limited in terms of the extent of their understanding of practice knowledge and their capacity to generate knowledge. They remained somewhat independent subjective knowers rather than interdependent, with limited criticality towards themselves and their practice. This restricted the extent to which they developed enhanced professional autonomy, responsibility and accountability. They were limited in their capacity to question their practice and to become a critically reflective learning professional.

### **5.12.3 Knowing better**

This group of participants came onto the course uncertain of their practice knowledge. They had a strong internal drive to enhance their clinical practice and/or career development; they were motivated to learn and understand. This influenced their learning in a number of ways.

Initially they found it difficult to participate in classroom discussion and demonstration, but over a period of time and with increased understanding, they gained sufficient confidence to participate. They began to realise that peers were no better than themselves; they each had something to offer. They valued sharing knowledge and hearing alternative perspectives; peers were crucial to their learning. Their determination to gain more certainty and enhance their practice fuelled their capacity to learn. Tutors were considered a valuable resource to facilitate and guide their learning. They sought a respectful and collaborative relationship with tutors within the limits of the power relationship. They learnt through rational argument and negotiation within a mutually respectful relationship; promoting interdependence. They had a strong disposition towards theorising; they were characterised by a predominantly convergent learning style. They were more orientated towards comprehension than apprehension.

They embraced the opportunity for abstract theorisation; deepening understanding relieved their uncertainty and promoted their ability to generate knowledge. Their active participation in co-constructing practice knowledge with peers and tutors gave them personal ownership of such knowledge. Knowledge was created with others and legitimacy was a shared responsibility. Assessments were helpful to drive them to

higher standards, but were somewhat resentful for the way in which they restricted and bounded their learning.

These participants gained enhanced understanding of their practice knowledge that informed and changed their practice. They improved their capacity to generate knowledge. They moved from being received knowers to procedural and constructivist knowers. They were independent with a greater ability to work interdependently with others. They were more critical toward themselves and their practice. This developed enhanced professional autonomy, responsibility and accountability. This increased their capacity to habitually question their practice and to become a critically reflective learning professional.

### **5.13 Conclusion**

This chapter has presented the findings of the study which resulted from three rounds of data collection and analysis from the eleven study participants. Analysis was facilitated by the reading of literature which enabled an explanatory matrix to be created. Further reading and writing up of the matrix enabled it to be transformed into a substantive explanatory theory of the learning transition of neuromusculoskeletal physiotherapists towards clinical expertise. The learning transition has been presented in relation to antecedent conditions, expectations, learning contradiction, reaction to learning contradiction, learning outcomes and moderating factors. Each stage of the transition has been supported by quotations from the interview data. The final section of the chapter presented a description of three broad conceptual learning transitions identified within the group of study participants. The next chapter critically evaluates the theory in relation to current literature.

---

## Chapter 6: Discussion

---

### 6.1 Introduction

This chapter revisits the aim of the study and the research questions posed at the end of Chapter 2 exploring the degree to which they have been addressed. It then discusses the study findings with regard to the learning transition of neuromusculoskeletal physiotherapists in relation to the current literature. It examines the theory and highlights the contribution of the study to physiotherapy professional knowledge. A critique of the study follows which looks at the authenticity of the findings, the transferability of the theory and my influence on the study findings. This enables the reader to judge the merits of the study. The implications of the findings for practice, education and research are then considered.

The aim of the research study was to develop a substantive theory of the learning transition of neuromusculoskeletal physiotherapists on completion of an MACP approved MSc. The learning transition presented in Chapter 5 and summarised in a conceptual framework (Figure 5.5) has addressed the research questions (from Section 2.5) in the following way:

- Do practitioners experience a learning transition?

*The findings identified that study participants experienced a learning transition; that is, a change in attitude, knowledge and behaviour as a consequence of the learning experience.*

- What is the nature of the learning transition?

*Critical evaluation of practice knowledge led to a critical understanding of practice knowledge that enabled practitioners to become more patient centred and to learn in, and from, their clinical practice; together these changes constituted a development towards clinical expertise.*

- What factors facilitate or hinder learning?  
*Direct observation and critical evaluation of practice knowledge provided the most powerful learning experience. A host of moderating factors influenced learning.*
- Do learning transitions differ amongst practitioners?  
*Learning transitions differed amongst practitioners and depended on a mix of moderating factors.*
- What is the nature of any variation in learning transition?  
*Three conceptual groupings (doing better, gaining status and knowing better) broadly identified the different learning transitions of study participants.*
- What factors determine differences in learning transitions?  
*A host of moderating factors explained differences in learning transitions between study participants.*
- What are the outcomes of the learning transitions?  
*The broad outcomes for all study participants were critical understanding of practice knowledge, patient centred practice and a capability to learn in, and from, clinical practice. The variation between study participants is identified within the three conceptual groups.*
- To what degree do practitioners develop clinical expertise?  
*Three characteristics of expertise were identified: critical understanding of practice knowledge, patient centred practice and a capability to learn in, and from, practice.*

## **6.2 The learning transition in relation to the literature**

This study provides the first account of the learning transitions of physiotherapists completing an MACP approved MSc in Neuromusculoskeletal Physiotherapy. It is also the first account of the developmental process of neuromusculoskeletal physiotherapists towards clinical expertise.

The learning transition described in this current study has similarity to the learning transition of nurses completing a conversion programme from enrolled to registered general nurse (Scholes 1995, 2006). The trigger for learning was the experience of contradiction to expectations, and the learning outcomes were dependent on the reaction of the individual in embracing or defending against the experience. While some nurses changed their personal styling and relationships, this was not apparent in the current study. The reason for this may be related to differences in academic achievements; study participants in this current study had been successful while some nurses had a history of academic failure.

### **6.2.1 Summary statement 1**

**Prior to enrolment, neuromusculoskeletal physiotherapists had hidden received practice knowledge.**

Study participants did not share or critically evaluate their practice knowledge with colleagues in the workplace; it remained hidden. Transformation of their practice knowledge may then be difficult as they remain trapped within their existing understanding (Dall'Alba and Sandberg 2006) where theories-in-use are 'self-sealing'<sup>42</sup> (Argyris and Schon 1974 p26).

Study participants tended to uncritically accept knowledge from others in the workplace and from teachers; they had dualistic, received practice knowledge (Belenky et al. 1986, Perry 1970) and had limited disposition and capability to critically evaluate that

---

<sup>42</sup> Self sealing refers to the situation where our theories limit what we do and therefore limit our opportunities to see something different.

knowledge. This finding is deduced from the enhanced criticality (i.e. critical evaluation and judgment) gained from completion of the MSc and is in agreement with previous studies (Conneeley 2005, Green, Perry and Harrison 2007, Smith, Tichenor and Schroeder 1999, Stathopoulos and Harrison 2003). Uncritical acceptance of practice knowledge as right or wrong was associated with a belief that the application of this knowledge was used to solve simple predictable clinical problems (technical rationality). Teaching required unproblematic knowledge to be transmitted, accepted and applied by the learner.

Practitioners with a technical rational view of clinical practice may consider practice knowledge as permanent, certain and unproblematic and thus reject the need for critical evaluation. However, the ability and disposition to critically examine, evaluate, create, develop and transform practice knowledge and clinical practice is considered essential to learning in, and from, practice (Billett 2001, Eraut 1994, Fish and Coles 1998, Kennedy 1987, Rolfe 1998). Limited capability to critically evaluate practice knowledge would therefore impede their ability to learn in, and from, practice and develop clinical expertise prior to the MACP approved MSc. No association was found in this current study between ability to learn in, and from, practice and years of experience. This concurred with the findings of other researchers (Boud Cohen and Walker 1993, Criticos 1993, Usher and Bryant 1987).

### **6.2.2 Summary statement 2**

#### **Prior to enrolment, neuromusculoskeletal physiotherapists engaged in routine therapist centred clinical practice.**

This is deduced from the enhanced patient centred practice gained from completion of the MSc. A study that explored the impact of an MACP approved MSc also identified a large improvement in patient centred practice (Stathopoulos and Harrison 2003).

While a great deal of clinical practice needs to become automatic, fluid and skilful (Eraut 1994, Jarvis 1999), it needs to be accompanied by conscious, deliberate critical



reflection. The finding of routine, therapist centred practice may reflect a lack of this conscious regulation and critical control of practice (Eraut 1994, 2005) to trigger learning (Argyris and Schon 1974). It may be associated with uncritical acceptance of practice knowledge acquired from previous learning experiences.

The study participants had limited disposition for patient centred practice. This may be related to their view of clinical practice as the application of unproblematic practice knowledge for solving simple predictable problems. This view may be reinforced by the NHS drive for standardised patient care (NHS Quality Improvement Scotland 2008) and by competency frameworks (Chartered Society of Physiotherapy 2007b, Skills for Health 2007). Such a stance would focus on the ability of the practitioner to accumulate and apply knowledge (Fish and Coles 1998). Furthermore, post-registration educational experiences that emphasise manual skill development and occur away from clinical practice with patients, may also promote therapist centred practice.

A work culture that values efficiency and productivity rather than quality and patient care may also promote the use of routine therapist centred practice (Eraut 1985, Eraut 1994). Practitioners may choose routines and a trial and error approach using pattern recognition rather than reflective deliberation and abductive reasoning (Blaikie 1993, Rolfe 1998). This current study found no association between routine, therapist centred, practice and years of experience.

### **6.2.3 Summary statement 3**

**Neuromusculoskeletal physiotherapists held a technical rational conception of clinical practice. They expected to improve their clinical practice as recipients of didactic teaching of knowledge and skills.**

These findings have some resonance with the literature. Some newly qualified physiotherapists' emphasised clinical practice as the application of technical skills and of knowledge found in research literature for the treatment and management of patients (Lindquist et al. 2006); this description echoes technical rationality. In contrast,

neuromusculoskeletal physiotherapists with high levels of expertise emphasised the need for critical evaluation and patient centred practice (Jensen et al. 1999), an approach which appeared more akin to professional artistry. In relation to their overarching view of clinical practice, study participants appeared closer to novice physiotherapists than those with expertise.

The finding that clinical practice would be improved through enhanced knowledge and skill learnt through a didactic teaching approach is consistent with a technical rational view of clinical practice (Fish 1998). This view of learning and teaching appears consistent with the literature (Marton, Dall’Alba and Beaty 1993, Ng, Murphy and Jenkins 2002). Learning consisted of increased knowledge and the ability to memorise, reproduce and apply skills which had been taught using the didactic approach (Ng, Murphy and Jenkins 2002).

#### **6.2.4 Summary statement 4**

##### **The contradiction that triggered learning was critical evaluation of practice knowledge.**

Critical evaluation of practice knowledge was the key trigger for learning and was fundamental to the transition towards clinical expertise. The literature also argues that the initial and essential trigger for learning is critical reflection and evaluation (Argyris and Schon 1974, Boud, Cohen and Walker 1993, Criticos 1993, Dall’Alba and Sandberg 2006, Eraut 1985, Mezirow 1991, 2000, Scholes 1995, 2006, Schon 1991, Titchen and Ersser 2001b). While confirmatory experience may consolidate previous knowledge (Dewey 1938/1997, Eraut 2003a), contradictory experience that is arrested and critically examined, may transform knowledge and understanding (Boud, Cohen and Walker 1993, Criticos 1993, Fish and Coles 1998, Jarvis 1999, Rolfe 1998). Facilitated critical reflection and evaluation has the potential to create a learning contradiction, which creates high intellectual interference that challenges past assumptions, offers new knowledge and shifts thinking (Scholes 1995, 2006). Through critical evaluation, personal theory and theories-in-use are modified and this is

considered to change practice knowledge (Argyris and Schon 1974, Dall'Alba and Sandberg 2006, Schon 1991).

### **6.2.5 Summary statement 5**

#### **The most powerful learning experience occurred within the clinical practice setting facilitated by a critical companion.**

The most powerful learning experience occurred within the clinical practice setting. This finding is consistent with the literature on situated learning; in this case learning in and from practice (Billett 2004, Dall'Alba and Sandberg 2006, Eraut 1994, Eraut 2003b, Fish and Coles 1998, Rolfe 1998, Titchen 2001, Usher and Bryant 1987). The importance of the critical companion as someone with expertise guiding a less experienced practitioner is well rehearsed in the literature (Bandura 1997, Daloz 1999, Eraut 1994, Eraut 2003b, Fish and Twinn 1997, French 2006, Jones 1999, Kolb 1984, Martin, Siosteen and Shepard 1999, Schon 1987, Tharp and Gallimore 1988, Titchen 2001). This has been supported by a variety of physiotherapy experts who consistently recalled the powerful impact of learning in practice with patients in the presence of an expert guide and teacher (Jensen et al. 1999). Supervised clinical practice with a mentor was considered critical to the development of expertise for neuromusculoskeletal physiotherapists (Jensen et al. 1999).

Following direct observation of clinical practice with patients, the critical companion questioned and challenged assimilated, hidden, taken-for-granted uncritical practice knowledge (Titchen 2001). The practitioner became aware of their hidden knowledge and this awareness allowed them to critique it and identify learning needs. As their needs were addressed through critical enquiry their practice knowledge was enhanced in breadth and depth and became more open and justified. In addition, the critical companion provided an alternative model of clinical practice and practice knowledge that may have freed them from their circular experience (Dewey 1938/1997) and understanding (Heidegger 1926/1962). The critical companion who articulated their own apprehension and comprehension of the observed clinical encounter may have

facilitated in the practitioner an enhanced critical appreciation and understanding (Fish 1998, Kolb 1984). The critical companion may therefore have facilitated transformation (Mezirow 1991, 2000) of practice knowledge so that it became more discriminating, integrated, differentiated, open (Mezirow 1991), dependable and justified (Cranton 2000). This enabled the practitioner to develop more complex and comprehensive understanding (Dall'Alba 2004, Dall'Alba and Sandberg 2006) of their practice knowledge and clinical practice.

The learning relationship between the practitioner and the critical companion powerfully influenced the learning process. A student-centred approach that engendered respect and trust was considered highly beneficial by participants. This concurs with the literature related to the facilitation of learning (Brookfield 1986, Eraut 2006a, Hager 1996, Felder and Brent 1996, Lea, Stephenson and Troy 2003, Locke 1964, Ng, Murphy and Jenkins 2002, Patel 2003, Rogers and Freiberg 1994, Sumser 1993, Tynjala 1999) and the suggestion that challenge without sufficient support is toxic, while support without challenge is boring (Kegan 1994).

The practitioner learnt from observation of the critical companion. This observation took two forms, observation of the companion with patients and observation of the companions questioning their own practice. Observation of the companion with patients provided an opportunity to observe the actions and consequences of a higher level of practice. Observation of the companions questioning their practice following a patient encounter not only triggered learning and demonstrated the structure of the clinical reasoning used by the companion, but also provided exemplars of questioning and reflection on clinical practice. The practitioners learnt a repertoire of questions to critically reflect on their practice. Over time these questions became internalised so that they automatically and habitually asked themselves about their practice and therefore became learning professionals (Eraut 1994). This process whereby the companion models a way of learning that is then incorporated into the learner has been described elsewhere (Bandura 1997, Daloz 1999, Kolb 1984, Mezirow 2000). This 'growth of the inner teacher' enabled them to learn to critique and judge their performance, ask and answer their questions; in short they learnt how to learn, guide and teach themselves

(Daloz 1999 p218). The learning transition enabled study participants to critique their practice and autonomously learn in, and from, practice.

#### **6.2.6 Summary statement 6**

**Neuromusculoskeletal physiotherapists embraced, tolerated, or defended against critical evaluation of their practice knowledge with associated emotions that ranged from learning pleasure and satisfaction to learning anxiety and stress.**

The finding that neuromusculoskeletal physiotherapists embraced, tolerated or defended against the learning contradiction, and that integral to this were associated emotional reactions, is consistent with the literature (Dirkx 2006, Eraut 2004, Eraut 2006b, Griffiths 1981, Scholes 1995, 2006) and the importance of emotions in learning (Boekaerts 1997, Bolhuis 2003, Wolfe 2006). Anger and frustration may be felt as practitioners test out new ways to think and practice (Eraut 2004, Hopson 1981), while positive and optimistic feelings may be associated with the letting go of past thinking and habits (Hopson 1981). Positive feedback from tutors and peers may lead to feelings of pleasure and satisfaction, while negative feedback may lead to feelings of embarrassment and humiliation (Eraut 2006b). Becoming aware and critically evaluating one's practice knowledge may reveal gaps and errors which may trigger strong negative emotions of guilt, shame and anxiety (Dirkx 2006).

This current study found that learning satisfaction and pleasure were associated with those who embraced the situation. Anxiety and stress were associated with those who tolerated or defended against critical evaluation. The exception to this was formal critical evaluation of practice knowledge during practical and clinical examinations; this triggered test anxiety in all study participants.

### **6.2.7 Summary statement 7**

**Learning outcomes depended on the degree to which an individual embraced, tolerated or defended against critical evaluation of their practice knowledge.**

Study participants who embraced critical evaluation of their practice knowledge experienced a more radical transformation than those who tolerated or defended against it. This finding is illustrated within the three conceptual groupings described in Section 5.12. The 'doing better' group tolerated, the 'gaining status' group tended to defend, while the 'knowing better' group tended to embrace the process.

This finding is consistent with Scholes (1995, 2006). Nurses who defended against learning contradictions showed no sign of change; those who tolerated change demonstrated an incremental change to their capability (similar to single loop learning described by Argyris and Schon 1974) but were intolerant to a more in-depth critical evaluation of their understanding (similar to double loop learning, Argyris and Schon 1974). Nurses who adapted to the learning contradiction and embraced critical evaluation and reconstruction of their understanding, experienced a radical change to their professional and personal identity as well as to their capability (Scholes 1995, 2006). Having experienced the positive benefits of such a radical transformation, they then sought out further contradictory experiences. This echoes the circular nature of experience (Dewey 1938/1997) and understanding (Heidegger 1926/1962).

The association between an individual's reaction to critical evaluation and the impact on learning outcomes can be explained from the perspective of constructive-developmental theory. Individuals who explicated their practice knowledge caused it to become an object separated from the self (Kegan 2000). Gaining distance allowed critical evaluation by self and others and an opportunity to enhance or gain alternative understanding of practice knowledge that was less personally embedded; it became 'object'. Taken-for-granted assumptions had created them but had held them captive; by bringing the assumptions out into the open, they were liberated from themselves, gaining choice and self-empowerment (Mezirow 2000). Thus, the degree to which an individual genuinely and comprehensively embraced and engaged in critical evaluation of their practice knowledge was the degree to which they changed and liberated

themselves from themselves. The greater the breadth and depth of ‘object’ (Kegan 2000) practice knowledge, the greater the potential for an ongoing critique and further development of that knowledge.

Furthermore, perhaps the more study participants embraced and engaged with critical evaluation of practice knowledge, the more they implicitly understood knowledge to be temporary, uncertain and problematic. Active engagement therefore may have led to greater movement from dualism to relativism (Perry 1970), received knowledge to constructed knowledge (Belenky et al. 1986, Belenky and Stanton 2000) or from a socialised epistemology to a self authoring epistemology (Kegan 2000). Where the experience was considered personally valuable, an individual may then seek out further opportunities to critically evaluate practice knowledge and may habitually create and recreate their knowledge base; this repetitive process would further emphasise the temporary and creative nature of knowledge, creating greater openness and flexibility for further change and thus setting in motion the foundations for lifelong learning.

#### **6.2.8 Summary statement 8**

**Critical evaluation of practice knowledge led to enhanced critical understanding of practice knowledge. Critical understanding of practice knowledge led to patient centred practice and a capability to learn in, and from, practice. These changes constituted a development towards clinical expertise.**

The finding that critical evaluation of practice knowledge led to enhanced critical understanding of practice knowledge is consistent with the literature. Critical evaluation of taken-for-granted assumptions, beliefs, values, expectations, perceptions, judgments and actions is considered to generate new perspectives, actions and meanings for practice knowledge (Titchen 2001) that become more discriminating, integrated, differentiated, open (Mezirow 1991), dependable and justified (Cranton 2000). This is believed to lead to more complex and comprehensive embodied understanding<sup>43</sup>

---

<sup>43</sup> The notion of embodied understanding is similar to that of ‘theories-in-use’ proposed by Argyris and Schon (1974 p5), where behind all action is theory that explains, predicts or controls action.

(Dall'Alba 2004, Dall'Alba and Sandberg 2006). Implicit within the activity of critical evaluation is the temporary, dynamic and constructed nature of knowledge. Practice knowledge (and clinical practice) is shifted from the 'high hard ground' of certainty and permanence to the 'swampy lowlands of uncertainty, unpredictability and messiness' (Schon 1987 p33-34). Engagement in critical evaluation may therefore foster a tentative, experimental and sceptical attitude towards practice knowledge (Argyris and Schon 1974) and thus enhance criticality. Thus critical evaluation of practice knowledge may enhance both understanding of, and criticality towards, practice knowledge. Furthermore, McPeck (1990) argues that subject specific knowledge and understanding is required prior to any development of criticality towards that knowledge. This reflects the notion that criticality is dependent on an existing experiential knowledge (Bethune and Jackling 1997, Eraut 1985, Gerrish, Ashworth and McManus 2000, Stenhouse 1967).

The finding that critical understanding of practice knowledge led to patient centred practice (replacing therapist centred practice) is in agreement with other authors. Patient centred practice is used here to refer to the conscious, deliberate, creative, individualised and collaborative clinical care of patients (Eraut 1994, Higgs and Titchen 2000, Johns 1998, Martin, Siosteen and Shepard 1999, Titchen 2001). Critical evaluation has resonance with what Eraut (1994) describes as conscious regulation and critical control of clinical practice and this is considered essential for patient centred practice that is deliberate and creative.

The finding that critical understanding of practice knowledge led to a capability to learn in, and from, practice is reflected in the literature. To learn in and from clinical practice requires practitioners to be capable of and well disposed towards the critical examination, evaluation, creation, development and transformation of their practice knowledge and clinical practice (Billett 2001, Eraut 1994, Fish and Coles 1998, Kennedy 1987, Rolfe 1998). It is the questioning and challenging of practice knowledge that leads to its transformation (Cranton 2006). The practitioner therefore needs to be critically reflective and reflexive (Rolfe 1998) and this may have been learnt from the critical companion.



It is posited here that critical understanding of practice knowledge led to patient centred practice and the ability to learn in, and from, practice. This relationship, depicted in Figure 5.4, is echoed in the literature. Critical understanding is considered essential for patient centred practice (Fish 1998, Fish and Coles 1998, Higgs and Titchen 2000, Johns 1998); indeed lack of critical understanding is thought to lead to therapist centred practice (Eraut 1994). Patient centred practice, in turn, is considered dependent on the capability to learn from clinical practice experience (Argyris and Schon 1974, Eraut 2004); conversely, not learning from clinical practice experience is thought to promote routine therapist centred practice (Argyris and Schon 1974, Eraut 2004).

The learning outcomes of this study were identified as critical understanding of practice knowledge, patient centred practice and capability to learn in, and from, practice. These are considered key elements of clinical expertise (Boshuizen 1999, Caney 1983, Eraut 1994, Fish and Coles 1998, Glaser 1999, Higgs and Titchen 2000, Kennedy 1987, Martin, Siosteen and Shepard 1999, Milidonis, Godges and Jensen 1999, Rolfe 1998, Sandberg 2000, Titchen 2001, Tynjala 1999). Other studies which have explored the impact of an MACP approved MSc have also discovered amongst their learning outcomes, enhanced patient centred practice (Stathopoulos and Harrison 2003) and an ability to learn how to learn (Conneeley 2005, Stathopoulos and Harrison 2003).

The findings of this current study contribute to the understanding of how practitioners develop clinical expertise. The trigger towards clinical expertise was critical evaluation of practice knowledge facilitated by critical companionship. This led to critical understanding of practice knowledge that enabled patient centred practice and a capability to learn in, and from, clinical practice experience. The steps in this transitional process for physiotherapists with previously successful academic achievement, has not been specifically described in the literature. Therefore this study offers an original contribution to the professional practice literature related to the development of expertise.

### **6.2.9 Summary statement 9**

**A host of moderating factors influenced the degree to which an individual embraced, tolerated or defended against critical evaluation of their practice knowledge. These factors influenced the learning transition.**

A number of the moderating factors identified in this study are in agreement with the literature. These factors included: conception of teaching and learning (Ng, Murphy and Jenkins 2002), motivation towards achievement (Dweck 2000), emotional control (Goleman 1996, Hopson 1981), perceived self efficacy (Bandura 1997), centrality of role to self (Allen and van de Vliert 1984), locus of control (Weiner 1974), and learning style (Kolb 1984).

This study identified additional moderating factors that influence a learning transition that have not been found in the literature. These were:

- conception of clinical practice
- epistemology of practice knowledge
- professional self esteem
- learning relationships

Factors that facilitated learning and encouraged study participants to embrace or tolerate learning compared to factors that hindered learning and engendered a defence against critical evaluation of practice knowledge are summarised in Table 6.1 overleaf.

The key points from this study are that prior to enrolment onto the MACP approved MSc, neuromusculoskeletal physiotherapists had hidden received practice knowledge and engaged in therapist centred practice. The course involved facilitated critical evaluation of their practice knowledge which was particularly challenging in clinical practice with critical companions. The reaction of individuals to this contradictory learning experience was influenced by a number of personal moderating factors and was associated with different learning outcomes. Study participants gained, to varying degrees, critical understanding of practice knowledge, patient centred practice and a capability to learn in, and from, practice; this resulted in enhanced clinical expertise. This explanatory theory of the learning transitions of neuromusculoskeletal

physiotherapists towards clinical expertise offers an original contribution to the physiotherapy knowledge base.

<b>Factors that facilitated learning</b>	<b>Factors that hindered learning</b>
Conception of clinical practice as professional artistry	Conception of clinical practice as technical rationality
Constructed epistemology of practice knowledge	Dualistic received epistemology of practice knowledge
Teaching and learning as student centred facilitation for understanding	Teaching and learning as transmission and replication of knowledge
Achievement motivation towards learning goals	Achievement motivation for performance goals
Internal locus of control	External locus of control
Realistic perceived self efficacy in practice knowledge	Under or over-estimation of perceived self efficacy in practice knowledge
Realistic professional self esteem	Under or over-estimation of professional self esteem
Emotional control with learning satisfaction and pleasure	Limited emotional control with learning anxiety and stress
Adult–adult learning relationships	Parent-child or child-parent learning relationships
Reflective observation and abstract conceptualisation learning style	Active experimentation and concrete experience learning style

Table 6.1 Moderating factors that facilitated or hindered learning

This section has compared and contextualised the findings of this study with those in the literature. To test the merits of the findings, their authenticity and transferability now need to be explored.

### 6.3 Authenticity

The study findings are judged in terms of fairness, ontological, educative, catalytic and tactical authenticity (Erlandson et al. 1993).

Fairness guided the interpretation and analysis of data so that each study participant was given appropriate status. This is, in part, demonstrated by a balance and range of participants' responses within the findings chapter of this thesis. The focus of this study on the experience of alumni meant that the critical companions who guided the alumni through the learning process on clinical placement were not represented. Strong and emotive comments were sometimes made by study participants and were related to their relationship with the critical companion; I chose to analyse this data carefully to remain fair to the silent companions. I consistently remained self-critical and reflexive, as well as cognisant of the inter-subjectivity at play during data collection and analysis, to enhance fairness to the study participants. This involved weighing alternative interpretations of the data and cross-referencing each interview, before decisions on understanding were made.

Some study participants commented, without prompting, that participation in the research process had been valuable to them and had helped them understand what the experience meant. A typical comment was:

*Talking makes you realise why you've got where you've got to and what has happened. (Participant 10)*

This suggests the interviews were valuable to study participants and is indicative of ontological authenticity.

Some study participants appeared to demonstrate a greater capacity to make sense of the learning experience as a consequence of the series of interviews. For example, some appeared to gain an enhanced understanding of difficult learning situations. This was revealed by more sober self-reflective statements made in subsequent interviews. This suggests there was an element of educative authenticity.

Sharing the explanatory framework with one participant, led to an interesting exchange of ideas related to facilitation of postgraduate students on clinical placement. On hearing the idea of working with students according to their style of learning and personality, they commented enthusiastically:

*Yeah I think that was a light bulb moment for me then, that idea of couching language for a particular person. I don't think I'm very good at it, but you've got to find what makes the student tick and go with that. (Participant 10)*

It appeared to trigger future action and empowerment to act, suggesting both catalytic and tactical authenticity.

My overall impression was that study participants enjoyed and valued their involvement in the study. In retrospect, I could have specifically asked participants about this at their final interview to strengthen evidence of authenticity.

## **6.4 Transferability**

The transferability or naturalistic generalisation (Stake 1995) of the learning theory forms part of the trustworthiness of this study (Erlandson et al. 1993). Transferability of the theory was, in part, articulated and tested with critical comparison to the literature (Section 6.2). Transferability needs to be judged in relation to the methodological assumptions of this study. At best, the learning theory is imprecise, uncertain, personalised and provisional (House 1980, Robotham 2004). In relation to generalisation to other situations, it is petite and particularised (Stake 2004), 'fuzzy' (Bassegy 1999) and inconclusive (Simons 1977).

Relevant contextual information, research data and a detailed account of the findings of the study have been provided to enable the reader to make judgments on transferability. The learning transitions, while specific to this case, may have relevance in other situations. It is up to the reader to consider its relevance, for example, to other MACP

approved MSc courses in this country and abroad. Readers may also consider its relevance to other clinically orientated MSc programmes. The theory remains as work in progress and suggestions for further research to test and refine it are provided later in Section 6.8.

## **6.5 Critical reflective and reflexive account**

A critical account of my influence on this study, as researcher, enhances transparency and enables the reader to judge the merits of the study. My beliefs, values and prejudices, albeit superficial (Cutcliffe 2003), have been articulated within this thesis. In the introduction, I explained the context of my professional practice and the way in which I developed the research questions for this study. Later, within the methodology and methods chapters, I critically reflected on my influence during data collection and analysis. What remains to be examined here, are a review of the study as a whole and a critical exploration of the key issues for me as the researcher. My influence on the emergent explanatory theory is considered first. What then follows is an account of my learning and role transitions during the research process, which highlights not only the way in which I influenced the study, but also how it influenced me.

My motivation as module and course leader of the MSc programme was fuelled by my own learning experience at undergraduate level. Within a few months of starting my initial physiotherapy training in 1976, I had experienced repeated bouts of disillusionment with physiotherapy. Clinical practice seemed to be governed by unquestioned routines that had virtually no theoretical or scientific basis. A memorable example was the declared wisdom that patients with an osteoarthritic hip were treated with short wave diathermy and exercises. Why this was done was not questioned let alone critiqued. The postgraduate course in Australia provided an opportunity to enhance my clinical practice as well as my theoretical and scientific understanding. It radically transformed my professional identity and clinical practice, and without this experience I am sure I would have left the profession. These experiences and subsequent attitudes and beliefs are echoed within the learning transition identified by this study. Before the start of the study, I already considered the teacher-student

relationship to be critical to the learning experience; I had personally experienced a radical learning transition in my own clinical practice and I was conscious of a lack of criticality within physiotherapy. It could therefore be argued that I simply created the theory from these biases (Steinke 2004). However, I do not believe this was the case. My analysis and development of theory evolved out of an iterative process of immersion in the data and study of the literature. Furthermore, study participants were involved throughout the process of analysis, and this enabled rigorous testing of the early explanatory matrix and of the final substantive theory. Ideas were also tested out with current students of the MSc programme. These checks sought to enhance the credibility and confirmability of the findings of the study.

The process of completing this research study resulted in a number of learning transitions. I moved from being a post-positivist quantitative researcher to a subjectivist, qualitative researcher. While I thoroughly enjoyed the learning process, the paradigm shift created a number of challenges related to coding the data, abstracting from the data, identifying the central dimension to create an explanatory matrix, and writing up the findings; these are now discussed in turn.

The initial challenge was coding the data and involved trying a variety of methods. I used nodes and trees with NVivo but found this did not allow me to come close enough to the data. In addition, I found it difficult to decide on terms for the nodes and trees. In the early interviews, I tried provisional pre-interview coding, but that quickly became unwieldy with too many codes to make sense of, and with data that could fit more than one code. Following the initial round of interviews, the exploratory research questions became more focused explanatory questions (Section 2.5) and the study shifted from illuminative evaluation to a theory seeking case study. For this reason, the constant comparison method of data analysis was then utilised with initial, focused and axial coding. I found this very difficult as I became so focused on the activity of coding and making coding decisions at different levels of abstraction that I failed to engage with the data. In an intuitive attempt to analyse the data, I divided it into broad sections and summarised it onto spreadsheets and this instantly helped me to make better sense of it. This approach, and a review of the literature on methods of data analysis, led to the use

of dimensional analysis. It provided a strategy that helped to capture the data and facilitated the analytical process. In retrospect, I am uncertain whether these difficulties could have been avoided as it was mainly due to my inexperience as a novice qualitative researcher.

The second challenge was learning to abstract from the interview data. While I embraced the notion of a subjectivist epistemology for this study, its application to data analysis proved difficult. I found myself reluctant to interpret and abstract from what the participants had told me. The supervisory process facilitated critical self reflection of this learning contradiction. I lacked confidence to interpret the data, preferring to remain at a descriptive level. Slowly and with encouragement, I gradually became more comfortable and confident to take risks and abstract from the data. During the analysis I reached a number of theoretical dead-ends and had to keep returning to the literature to enhance my theoretical sensitivity. I believe the main reason for these theoretical dead-ends was my limited theoretical sensitivity to the issues emerging from the data, particularly in relation to moderating factors. However, I also suspect that my position as an insider-researcher had an influence on this process. My familiarity with the course and the learning process may have led me to take some aspects for granted and to not see their relevance. For example, my 10 year memory observation of clinical examinations gave me a very clear grasp of what I considered to be the learning outcomes from the course. This detailed and concrete knowledge may have caused my initial difficulties interpreting the perspectives of study participants and in analysing the interview data at a more conceptual level. Continued iteration between the literature and the data enhanced my theoretical sensitivity and, facilitated by dimensional analysis, enabled me to interpret and abstract from the data at a more theoretical level.

The third major learning challenge was identification of a central dimension to create an explanatory matrix. In an attempt to facilitate the analysis, two neuromusculoskeletal physiotherapists were theoretically sampled for their high level of clinical expertise. On a continuum between novice and 'expert', the current study participants were considered to lie somewhere between the two ends of the spectrum. By deliberately including participants at the 'expert' end of the continuum, it was hoped that this stark



contrast would generate significantly different data and lead to the identification of a central dimension. This, however, did not happen. The continued iteration between the data, analysis and the literature was what finally led to the identification of a central dimension.

The last major challenge related to the writing up of the findings chapter. I initially found it very difficult to write my own interpretation and analysis alongside the quotes from participants. My past experience of quantitative research had taught me to keep interpretation quite separate from the results of a study. I overcame this block by writing several drafts of the findings chapter, each time introducing a greater degree of analysis. The writing process itself facilitated theoretical insights and enabled the explanatory matrix to become a substantive theory. This concentration on theorising also helped to overcome my initial reluctance to integrate interpretation with data.

The process of completing the study also involved a gradual role transition from course and module leader to researcher. During the first round of interviews, my identity as course leader and module leader remained strong. This was evidenced by my reaction to receiving negative feedback from study participants; I was not the detached researcher. The exploration of participants' experience of the course and the impact the course had had on them, which was the focus of the initial interviews, provided very valuable feedback to me as the course leader. This perhaps made it difficult for me to consider the study anything other than evaluation research. It took time, coupled with my immersion in data collection and analysis, for my identity as researcher to come to the fore. This was evidenced by my sense of emotional detachment from the course, and a heightened focus on the learning process as experienced by study participants as well as current students. This disentanglement and enhanced awareness of the learning process, as well as my encounter with the learning challenges, has changed my behaviour as course and module leader in a number of ways.

When interviewing prospective students I take time to explore their expectations of the course and explain the learning process and its potential impact on their clinical practice. During the introduction to the neuromusculoskeletal management modules, I

explain the underpinning reasons and potential impact of the teaching and learning approach adopted by tutors. I explore the nature of practice knowledge and the value of critical evaluation to enhance understanding. My appreciation of the social construction of knowledge has enabled me to become more comfortable with uncertainty and ambiguity and this has helped me facilitate students with divergent views. Group dynamics in the classroom and the need to create a safe and supportive, yet challenging environment have become much more important to me. In the past I suspect I have tended to challenge students too strongly and not provided sufficient support. I have become more aware of the situated nature of learning and the limitations of university classrooms in changing clinical practice. My hope, at the inception of this research study, was to see through the learners' eyes and thereby teach more responsively (Brookfield 1998); this summarises well the changes to my professional practice.

This section has critiqued the study findings in relation to authenticity and transferability. It has also critically explored my position as researcher and the way in which I have influenced, and been influenced by the study. What now follows are the possible implications of the study findings for physiotherapy clinical practice, education and research.

## **6.6 Implications for practice**

The finding that neuromusculoskeletal physiotherapists exhibit routine therapist centred clinical practice is disturbing. High quality care requires examination, treatment and management strategies to be adapted to meet the needs of the individual patient. If therapists lack this capability then it will be difficult to provide high quality patient centred practice. Furthermore, limited capability to learn in, and from, practice suggests practitioners may be at risk of professional obsolescence since new practice knowledge will not be generated from clinical practice.

The finding that study participants had hidden received practice knowledge suggests that current informal CPD (weekend courses and in-service training) is ineffective in

developing criticality in neuromusculoskeletal physiotherapists. This indicates that practitioners may be limited in their capability to judiciously use evidence informed practice. Greater attention to the development of criticality may be needed to enable practitioners to learn in, and from, their clinical practice, enhance their clinical expertise and engage with evidence informed practice. In-service training programmes could include sessions specifically aimed to facilitate critical evaluation of practice knowledge.

The view of clinical practice as the application of knowledge and skills in a simple mechanistic way to solve predictable clinical problems (technical rationality) may have implications for clinical practice development. Practitioners may focus on the development of their knowledge and skills away from the workplace with limited impact on the enhancement of their practice with patients. In contrast, a professional artistry view would focus learning within clinical practice and this may be more effective in enhancing clinical expertise. Physiotherapy departments that seek to effectively and efficiently enhance the clinical expertise of practitioners may benefit from consideration of the very nature of clinical practice. Such reflection may result in a more deliberate and evaluative approach to CPD.

The powerful learning experience of the clinical placement highlights the value of learning in and from clinical practice. It identifies the valuable and effective role of a practitioner with high levels of clinical expertise to facilitate the learning of less experienced colleagues. It also implies that workplace learning with direct observation of clinical practice may effectively enhance clinical expertise. The findings suggest workplace learning advocated by the CSP should additionally state the value of direct observation (Chartered Society of Physiotherapy 2005a, 2005b).

The model of critical companionship described by Titchen (2001) may be helpful to guide workplace learning. It offers a collaborative, mutually respectful relationship that provides high levels of both challenge and support. Where observation and critical evaluation of practice knowledge are unfamiliar to practitioners, critical companions need to be aware of the potential learning anxiety and stress that may be felt by the

practitioner. In this situation, positive and constructive feedback may be particularly important to facilitate the engagement of the practitioner undergoing such a challenge.

This notion of collaborative learning between someone with expertise and a less experienced colleague may be beneficial for all levels of practitioners within a department. Peer observation, such that juniors observe seniors, seniors observe juniors, and peer observes peer, may be helpful as a way to expose practitioners to alternative ways to practice and with subsequent critical discussion, may lead to enhanced practice knowledge. Such a system assumes all practitioners at all levels are constantly learning and developing their practice and may create a healthy, supportive cooperative community of learners within the workplace. It provides opportunity for colleagues to learn from each other, in practice and from practice and is inclusive of all aspects of practice knowledge needed for patient care. Maximising workplace learning between practitioners may enhance clinical expertise throughout the workforce and thereby enhance the quality of care provided to patients.

This interdependency of colleagues in the workplace may promote critical self-reflection and evaluation, realistic professional self esteem, and realistic perceived self efficacy in practice knowledge, as well as providing a trigger for further learning. The implementation of such a scheme would require mutual respect and a genuine desire to learn from each other with minimisation of the imbalance of power and status.

Employers need to financially invest in the development of their workforce if they want to enhance the quality of their service to patients. Practitioners need time to learn. The implementation of critical companionship and interdependent clinical practice may be a more cost effective way to meet practitioners' learning needs than providing funding for external, skills based weekend courses. Enhanced clinical expertise may also provide a more effective and efficient service and thus strengthen its potential to survive in a competitive market.

Interdependent clinical practice may also help to explicate, critique and generate practice knowledge which at the moment tends to remain hidden to individual

practitioners. This interdependency would involve practitioners working and learning together with respect to a particular patient, to trigger more comprehensive sharing and critique of their practice knowledge. Evidence based physiotherapy practice is informed by this practice knowledge<sup>44</sup>, just as much as by patient preferences and high quality clinical research (Herbert et al. 2005). The professional knowledge of physiotherapy could be enhanced by developing the capability of practitioners to generate knowledge not just through research but through day to day clinical practice.

## **6.7 Implications for education**

The findings of this study suggest that physiotherapists have received dualistic practice knowledge, are dependent learners, and conceive of clinical practice as technical rationality. This may undermine professional identity, self esteem and perceived self efficacy, since practice knowledge is seen to lie outside the individual practitioner and outside clinical practice.

This finding has implications for informal and formal physiotherapy education. Undergraduate physiotherapy programmes and informal CPD do not appear to foster criticality in physiotherapists. This suggests that the dominant approach within physiotherapy education may be didactic and teacher-orientated. Educational programmes where tutors facilitate more holistic and student centred learning may be beneficial in engendering constructivist knowledge that fosters a capacity in the individual to both critically evaluate and to generate knowledge; both pre-requisites for autonomous learning.

Practitioners enrolling onto an MACP approved MSc may not be familiar with, or capable of, articulating or critically evaluating their practice knowledge and clinical practice. High levels of support may be needed to facilitate this process. A student centred approach that acknowledges and respects the practitioner, and embraces feelings within learning, may be beneficial to learners.

---

<sup>44</sup> 'Practice knowledge' here refers to knowledge derived from professional practice and experience.

The finding that neuromusculoskeletal physiotherapists had a technical rational view of clinical practice has implications for informal CPD. Such a view may cause practitioners to focus on the development of their knowledge and skill away from the workplace and this may limit their ability to develop clinical expertise. This may hinder the effective and efficient use of resources for CPD by neuromusculoskeletal physiotherapists.

The findings emphasise situated learning. To learn and develop clinical expertise requires learning to occur with patients in clinical practice. Learning in clinical practice may be critical to the development of clinical expertise.

Learning away from the clinical practice setting may not enhance clinical practice. Weekend courses and in-service training that focus on handling skill development may facilitate handling skills but may not necessarily facilitate appropriate application of these skills in clinical practice with patients. Similarly, learning theory away from the clinical practice setting may enhance knowledge but may not necessarily facilitate appropriate application of this knowledge in clinical practice with patients. Furthermore, a gradual and piecemeal accumulation of knowledge and skills may lead to fragmentation of knowledge rather than integration and understanding.

## **6.8 Implications for research**

The learning transition was generated from one MSc programme and cannot be automatically generalised to students on other MACP approved MSc programmes.

A similar study design carried out on alumni from other MACP approved MSc courses could be undertaken, so that the findings of a number of cases could be combined to strengthen the theory. Exploration of exiting MSc students prior to completion of an MACP approved MSc may also highlight and refine this theory. This could then be

further extended to different clinically-orientated MSc courses for instance in nursing, podiatry or occupational therapy.

The theory could be further developed by a longitudinal study following neuromusculoskeletal physiotherapy students as they journey through an MACP approved MSc. This may give more detailed and emotionally charged data on the learning transition as it occurs and enhance understanding of the transition. In addition, the further development of neuromusculoskeletal physiotherapists *after* completion of the MACP approved MSc, may further explicate the ongoing development towards clinical expertise.

This study has explored the learning transition from the perspective of the individual practitioners. Other perspectives could be explored, such as those of the manager, work colleagues and patients.

Action research could potentially investigate the development and use of critical companionship to develop clinical expertise within the workplace setting.

## **6.9 Conclusion**

In the current socio-political climate, health professionals are being challenged to demonstrate effectiveness and efficiency. The marketplace is now competitive and only professions who are able to provide strong evidence will survive. A profession is only as strong as its individual members; a collective response by all members is required. Within neuromusculoskeletal physiotherapy, the provision of high quality, patient centred practice is needed, that is both effective and efficient. From a patient perspective, this is largely judged on the care they receive from their physiotherapist; the coalface of practice where clinical expertise is everything.

The standard and expectation of clinical practice, and what might be considered expertise by both professionals and society has significantly risen over the past 20

years. The physiotherapy management for people with neuromusculoskeletal conditions has become more holistic, complex, and refined. In addition, clinical practice has expanded to higher and more extended roles within the NHS. Future reforms will see physiotherapists working more autonomously within the community, with blurred professional boundaries and perhaps greater responsibility for patients. This will require flexibility and creativity.

This current climate therefore demands, perhaps more than at any other time, an effective process by which physiotherapists can enhance their clinical expertise. Physiotherapy departments can no longer survive market forces through efficiency measures; the effectiveness of their service must also be addressed (Department of Health 2008a, 2008c, 2008d). A balance between productivity and high quality care has to be found and this means that professional development of the workforce has to take high priority. The quality of health care is predicated on quality professional education (Ellis and Lee 2005). Effective and efficient professional development is needed and fundamental to this is an understanding of the developmental process that leads to clinical expertise.

This study provides the first documented theoretical explanation of how neuromusculoskeletal physiotherapists develop clinical expertise within an MACP approved MSc. The key trigger to the change was identified as critical evaluation of practice knowledge, facilitated by a critical companion in clinical practice. Direct observation of clinical practice provided an opportunity to reveal previously hidden, uncritical assumptions of practice knowledge. The critical companion also provided a model of clinical practice expertise which enabled the practitioner to learn through observation. This process resulted in critical understanding of practice knowledge that led to patient centred practice and a capability to learn in, and from, practice; practitioners thus moved towards clinical expertise. A host of moderating factors influenced and explained the differing learning transitions of practitioners. This theoretical explanation of learning transitions offers an original contribution to physiotherapy practice knowledge.



At the heart of this learning transition was the development of criticality towards practice knowledge. Criticality impedes professional obsolescence and promotes professional development of both the individual practitioner and the profession as a whole. Clinical practice needs to be saturated with critical, reflective physiotherapists.

*No simplicity of mind, no obscurity of station,  
can escape the universal duty of questioning all that we believe*  
(William Kingdom Clifford 1999)

---

## References

---

Allen V L, van de Vliert E (1984) *Role Transitions, Explorations and Explanations*. Plenum, New York

Anaf S, Sheppard L A (2007) *Physiotherapy as a clinical service in emergency departments: a narrative review*. *Physiotherapy* 93(4): 243-252

Archbold P (1986) *Ethical issues in qualitative research*. In: Chenitz W C, Swanson J M (eds) *From Practice to Grounded Theory*. Addison-Welsey, California

Argyris C, Schon D A (1974) *Theory in Practice, Increasing Professional Effectiveness*. Jossey-Bass, San Francisco

Ashton H (2002) *Continuing education: should it become compulsory for practising physiotherapists?* *New Zealand Journal of Physiotherapy* 30(3): 34-38

Audit Commission (2001) *Hidden Talents: Education, Training and Development for Healthcare Staff in NHS Trusts*. Audit Commission, London

Backman K, Kyngas A (1999) *Challenges of the grounded theory approach to a novice researcher*. *Nursing and Health Sciences* 1(3): 147-153

Bandura A (1977) *Social Learning Theory*. Prentice-Hall, Englewood Cliffs

Bandura A (1997) *Self Perceived Self Efficacy, The Exercise of Control*. W H Freeman and Co, New York

Barclay J (1994) *In Good Hands. The History of the Chartered Society of Physiotherapy 1894-1994*. Butterworth Heinemann, Oxford

Bassey M (1999) *Case Study Research in Educational Settings*. Open University, Maidenhead

Beaty E, Morgan A (1992) *Developing skill in learning*. *Journal of Open and Distance Learning* 7(3): 3-11

Beer D W (1997) *'There's a certain slant of light': the experience of discovery in qualitative interviewing*. *Occupational Therapy Journal of Research* 17(2): 110-129

Beeston S, Higgs J (2001) *Professional practice: artistry and connoisseurship*. In: Higgs J, Titchen A (eds) *Practice Knowledge and Expertise in the Health Professions*. Butterworth Heinemann, Oxford Ch14 p108-117

- Beeston S, Rastall M, Hoare C (1998) Factors influencing the uptake of taught master's programmes among physiotherapists. *Physiotherapy* 84(10): 480-486
- Belenky M F, Clinchy B M, Goldberger N R, Tarule J M (1986) *Women's Ways of Knowing*, 10th edn. Basicbooks, New York
- Belenky M F, Stanton A V (2000) Inequality, development, and connected knowing. In: Mezirow J (ed) *Learning as Transformation. Critical Perspectives on a Theory in Progress*. Jossey-Bass, San Francisco, Ch 3 p71-102
- Benner P (1984) *From Novice to Expert, Excellence and Power in Clinical Nursing Practice*. Addison-Welsey, California
- Benner P (2004) Using the Dreyfus model of skill acquisition to describe and interpret skill acquisition and clinical judgement in nursing practice and education. *Bulletin of Science, Technology and Society* 24(3): 188-199
- Benner P, Tanner C A, Chesla C A (1996) *Expertise in Nursing Practice: Caring, Clinical Judgment, and Ethics*. Springer, New York
- Berger P, Luckmann T (1967) *The Social Construction of Reality*. Penguin, Harmondsworth
- Bethune E, Jackling N (1997) Critical thinking skills: the role of prior experience. *Journal of Advanced Nursing* 26(5): 1005-1012
- Billett S (2001) Knowing in practice: re-conceptualising vocational expertise. *Learning and Instruction* 11: 431-452
- Billett S (2004) Workplace participatory practices, conceptualising workplaces as learning environments. *The Journal of Workplace Learning* 16(6): 312-324
- Blaikie N (1993) *Approaches to Social Enquiry*. Polity, Cambridge
- Boekaerts M (1997) Self-regulated learning: a new concept embraced by researchers, policy makers, educators, teachers, and students. *Learning and Instruction* 7(2): 161-186
- Bolhuis S (2003) Towards process-orientated teaching for self-directed lifelong learning: a multidimensional perspective. *Learning and Instruction* 13: 327-347
- Boshuizen H P A (1999) Medical education: or the art of keeping a balance between science and pragmatics. In: McCormick R, Paechter C (eds) *Learning and Knowledge*, Paul Chapman, London Ch 13, p185-197
- Boud D, Cohen R, Walker D (1993) *Using experience for learning*. The Society for Research into Higher Education and Open University, Buckingham

Breuer F, Roth W-M (2003) Subjectivity and reflexivity in the social sciences: epistemic windows and methodical consequences [30 paragraphs]. Forum: Qualitative Social Research 4(2). Retrieved from <http://www.qualitative-research.net/fqs-texte/2-03/2-03intro-3-e.htm>

Brookfield S (1986) Understanding and Facilitating Adult Learning. Jossey-Bass, San Francisco

Brookfield S (1998) Critically reflective practice. Journal of Continuing Education in the Health Professions 18: 197-205

Brown S, McIntyre D (1993) Making Sense of Teaching. Open University, Buckingham

Burke P J, Kirton A (2006) The insider perspective: teacher-as-researchers. Reflecting Education 2(1): 1-4 Retrieved from <http://reflectingeducation.net/index.php/reflecting/issue/view/2/showToc>

Caney D (1983) Competence – can it be assessed? Physiotherapy 69(8): 302-304

Carr J, Shepherd R (1996) Clinical physiotherapy specialisation in Australia: some current views. Australian Journal of Physiotherapy 42(1): 9-14

Carr-Saunders A M, Wilson P A (1933) The Professions. Clarendon, Oxford

Charmaz K (2006) Constructing Grounded Theory. A Practical Guide Through Qualitative Analysis. Sage, London

Chartered Society of Physiotherapy (1998) Expectations of M level programmes for chartered physiotherapists (CPD 24). Chartered Society of Physiotherapy, London

Chartered Society of Physiotherapy (2001a) Specialisms and specialists: guidance for developing the clinical specialist role (PA 23). Chartered Society of Physiotherapy, London

Chartered Society of Physiotherapy (2001b) The academic status of physiotherapy qualifications and opportunities to gain academic awards (Information paper CPD 18). Chartered Society of Physiotherapy, London

Chartered Society of Physiotherapy (2002a) Chartered physiotherapists working as extended scope practitioners (ESP) (Information paper PA29). Chartered Society of Physiotherapy, London

Chartered Society of Physiotherapy (2002b) Physiotherapy consultant (NHS): role, attributes and guidance for establishing posts (Information paper PA56). Chartered Society of Physiotherapy, London

Chartered Society of Physiotherapy (2002c) Rules of professional conduct. Chartered Society of Physiotherapy, London

Chartered Society of Physiotherapy (2005a) Workplace learning, evidencing through reflection and evaluation (Information paper CPD 31) Chartered Society of Physiotherapy, London

Chartered Society of Physiotherapy (2005b) A guide to implementing clinical supervision (Information paper CPD 37). Chartered Society of Physiotherapy, London

Chartered Society of Physiotherapy (2007a) Policy statement on continuing professional development (CPD). Chartered Society of Physiotherapy, London

Chartered Society of Physiotherapy (2007b) Competence-based career framework for allied health professionals (AHPS) report to identify physiotherapy-specific competencies and gaps. Chartered Society of Physiotherapy, London

Chartered Society of Physiotherapy (2008) iCSP. Retrieved from: <http://www.interactivecsp.org.uk>

Chartered Society of Physiotherapy and Royal College of Midwives (2007) NHS reforms and the working lives of midwives and physiotherapists. Royal College of Midwives and Chartered Society of Physiotherapy  
[http://www.rcm.org.uk/info/docs/RCM\\_CSP\\_Report\\_June\\_07.pdf](http://www.rcm.org.uk/info/docs/RCM_CSP_Report_June_07.pdf)

Chartered Society of Physiotherapy Research Development Group (1996) Physiotherapy research and continuing professional development. *Physiotherapy* 82(1): 58-62

Chiplin J R, Bassett S F (2002) Continuing education programmes: their effectiveness in the maintenance of physiotherapists' professional competency. *New Zealand Journal of Physiotherapy* 30(3): 24-31

Christians C G (2000) Ethics and politics in qualitative research. In: Denzin N K, Lincoln Y S (eds) *Handbook of Qualitative Research*, 2<sup>nd</sup> edn. Sage, Thousand Oaks. Ch5, p 133-155

Clarke A (1999) *Evaluation Research, An Introduction to Principles, Methods and Practice*. Sage, London

Clifford W K (1999) *The Ethics of Belief and Other Essays*. Prometheus Books, New York

Clinical Standards Advisory Report (1994) Report of a CSAG Committee on Back Pain. HMSO, London

Cohen L, Manion L, Morrison K (2000) *Research Methods in Education*, 5th edn. Routledge-Falmer, London

- Conneeley A L (2005) Study at master's level: a qualitative study exploring the experience of students. *British Journal of Occupational Therapy* 68(3): 104-109
- Council of Deans and Heads of UK University Faculties for Nursing and Health Professions (2007) Briefing on the Funding and Commissioning of Nursing, Midwifery and Allied Health Profession Education in England (June). Retrieved from: <http://www.councilofdeans.org.uk/Default.aspx?pageid=37>
- Cranton P (2000) Individual differences and transformative learning. In Mezirow J (ed) *Learning as Transformation, Critical Perspectives on a Theory in Progress*. Jossey-Bass, California Ch 7 p181-204
- Cranton P (2006) *Understanding and Promoting Transformative Learning*, 2nd edn. Jossey-Bass, San Francisco
- Criticos C (1993) Experiential learning and social transformation for a post-apartheid learning future. In: Boud D, Cohen R, Walker D (eds) *Using Experience for Learning*. The Society for Research into Higher Education and Open University, Buckingham. Ch 11, p157-168
- Crosbie J, Gass E, Jull G, Morris M, Rivett D, Ruston S, Sheppard L, Sullivan J, Vujnovich A, Webb G, Wright T (2002) Sustainable undergraduate education and professional competency. *Australian Journal of Physiotherapy* 48(1): 5-7
- Cross V (1998) Framing experience, towards a model of CPD outcomes. *Physiotherapy* 84(11): 531-540
- Crotty M (1998) *The Foundations of Social Research*. Sage, London
- Cutcliffe J (2000) Methodological issues in grounded theory. *Journal of Advanced Nursing* 31(6): 1476-1484
- Cutcliffe J R (2003) Reconsidering reflexivity: introducing the case for intellectual entrepreneurship. *Qualitative Health Research* 13(1): 136-148
- Dall'Alba G (2004) Understanding professional practice: investigations before and after an educational programme. *Studies in Higher Education* 29(6): 679-692
- Dall'Alba G, Sandberg J (2006) Unveiling professional development: a critical review of stage models. *Review of Educational Research* 76(3): 383-412
- Daley B J (1999) Novice to expert: an exploration of how professional learn. *Adult Education Quarterly* 49(4): 133-147
- Daloz L A (1999) *Mentor, Guiding the Journey of Adult Learners*. Jossey-Bass, San Francisco

Dame Carol Black (2008) Working for a Healthier Tomorrow. Department of Health, London

Denzin N K, Lincoln Y S (eds) (2000) Handbook of Qualitative Research, 2<sup>nd</sup> edn. Sage, Thousand Oaks

Department of Health (1997) The New NHS: Modern, Dependable. Department of Health, London

Department of Health (1999) Continuing Professional Development, Quality in the New NHS. Department of Health, London

Department of Health (2000a) Meeting the Challenge: A Strategy for the Allied Health Professions. Department of Health, London

Department of Health (2000b) The NHS Plan: A Plan for Investment, A Plan for Reform. HMSO, London

Department of Health (2000c) A Health Service of All the Talents. Department of Health, London

Department of Health (2001a) Working Together- Learning Together. A Framework for Lifelong Learning for the NHS. Department of Health, London

Department of Health (2001b) Shifting the Balance of Power within the NHS: Securing Delivery. Department of Health, London

Department of Health (2005) The NHS Knowledge and Skills Framework (NHS KSF) and the Development Review Process. Department of Health, London

Department of Health (2006) The Musculoskeletal Services Framework a Joint Responsibility: Doing it Differently. Department of Health, London

Department of Health (2007a) Trust, Assurance and Safety- The Regulation of Health Professionals in the 21st Century. Department of Health, London

Department of Health (2007b) Stakeholder Conference for the Professional Regulation Reforms: Implementation. Non Medical Revalidation. Department of Health, London

Department of Health (2007c) Agenda for Change Terms and Conditions of Service Handbook, version 2. Department of Health, London

Department of Health (2007d) Self Referral Pilots to Physiotherapy; Information Pack. Department of Health, London

Department of Health (2008a) High Quality Care for All. NHS Next Stage Review Final Report. The Stationary Office, London

Department of Health (2008b) Modernising Allied Health Professions (AHP) Careers. A competence Based Career Framework. Department of Health, London

Department of Health (2008c) A High Quality Workforce. NHS Next Stage Review. Department of Health, London

Department of Health (2008d) Framing the Contribution of Allied Health Professionals: Delivering High-Quality Healthcare. Department of Health, London

Department of Health (2008e) Self-Referral Pilots to Musculoskeletal Physiotherapy and the Implications for Improving Access to other AHP Services. Department of Health, London

Department of Health and Social Security (1973) The Remedial Professions. Her Majesty's Stationery Office, London

Dewey J (1938/1997) Experience and Education. Touchstone, New York

Dickens V, Ali F, Gent H, Rees A (2003) Assessment and diagnosis of knee injuries. *Physiotherapy* 89(7): 417-422

Di Fabio R P (1999) Clinical expertise and the DPT: a need for residency training. *Journal of Orthopaedic and Sports Physical Therapy* 29(2): 80-82

Dirkx J M (2006) Engaging emotions in adult learning: a Jungian perspective on emotion and transformative learning. *New Directions for Adult and Continuing Education* 109: 15-26

Dohrenwend B S, Dohrenwend B P (1974) Stressful Life Events: Their Nature and Effects. John Wiley, New York

Donaghy M E, Gosling S (1999) Specialization in physiotherapy: musings on current concepts and possibilities for harmonization across the European Union. *Physical Therapy Reviews* 4: 51-60

Dreyfus H L, Dreyfus S E (1986) Mind Over Machine: The Power of Human Intuition and Expertise in the Era of the Computer. Free, New York

Dubin S S (1972) Obsolescence or lifelong education: a choice for the professional. *American Psychologist* 27: 486-498

Dweck C S (2000) Self-Theories: Their Role in Motivation, Personality and Development. Psychology Press, Philadelphia

Dyson S, Brown B (2006) Social Theory and Applied Health Research. Open University, Maidenhead



Eisenhardt K M (2002) Building theories from case study research. In: Huberman A M, Miles M B (eds) *The Qualitative Researcher's Companion*. Sage, Thousand Oaks Ch 1, p5-35

Eisner EW (1985) *The Art of Educational Evaluation, A Personal View*. Falmer, London

Ellis L B, Lee N (2005) The changing landscape of doctoral education: introducing the professional doctorate for nurses. *Nurse Education Today* 25: 222-229

Ely M, Anzul M, Friedman T, Garner D, Steinmetz A M (1991) *Doing Qualitative Research: Circles Within Circles*. RoutledgeFalmer, London

Engestrom Y, Engestrom R, Karkkainen M (1995) Polycontextuality and boundary crossing in expert cognition: learning and problem solving in complex work activities. *Learning and Instruction* 5: 319-336

Eraut M (1985) Knowledge creation and knowledge use in professional contexts. *Studies in Higher Education* 10(2): 117-133

Eraut M (1994) *Developing Professional Knowledge and Competence*. RoutledgeFalmer, London

Eraut M (2000) Non-formal and tacit knowledge in professional work. *British Journal of Educational Psychology* 70: 113-136

Eraut M (2003a) Editorial. The many meaning of theory and practice. *Learning in Health and Social Care* 2(2): 61-65

Eraut M (2003b) Editorial. *Learning in Health and Social Care* 2(3): 117-122

Eraut M (2004) Editorial, learning to change and/or changing to learn. *Learning in Health and Social Care* 3(3): 111-117

Eraut M (2005) Editorial, continuity of learning. *Learning in Health and Social Care* 4(1): 1-6

Eraut M (2006a) Editorial, learning contexts. *Learning in Health and Social Care* 5(1): 1-8

Eraut M (2006b) Feedback. *Learning in Health and Social Care* 5(3): 111-118

Ericsson KA (2006) The influence of experience and deliberate practice on the development of superior expert performance. In: Ericsson K A, Charness N, Feltovich P J, Hoffman R R (eds.) *The Cambridge Handbook of Expertise and Expert Performance*, Cambridge, Cambridge University Ch 38, p683-703

- Erlanson D A, Harris E L, Skipper B L, Allen S D (1993) *Doing Naturalistic Inquiry, A Guide to Methods*. Sage, Newbury Park
- Felder R M, Brent R (1996) Navigating the bumpy road to student-centered instruction. *College Teaching* 44(2): 43-47
- Fennell M (1999) *Overcoming Low Self-Esteem. A Self-Help Guide Using Cognitive Behavioural Techniques*. Robinson, London
- Finlay L (2002) 'Outing' the researcher: the provenance, process, and practice of reflexivity. *Qualitative Health Research* 12(4): 531-545
- Finlay L, Gough B (2003) *Reflexivity. A Practical Guide for Researchers in Health and Social Sciences*. Blackwell Science, Oxford
- Finley C (1988) Mandatory continuing education-a survey of current activity. *Physical Therapy* 68(3): 374-377
- Fish D (1998) *Appreciating Practice in the Caring Professions*. Butterworth-Heinemann, Oxford
- Fish D, Coles C (1998) *Developing Professional Judgement in Health Care*. Butterworth-Heinemann, Oxford
- Fish D, Twinn S (1997) *Quality Clinical Supervision in the Health Care Professions. Principled Approaches to Practice*. Butterworth-Heinemann, Edinburgh
- Fitch F (2008) *Personal Communication*. Chartered Society of Physiotherapy
- French H P (2006) Continuing professional development: a survey of Irish staff grade physiotherapists. *International Journal of Therapy and Rehabilitation* 13(10): 470-476
- Gerrish K, Ashworth P D, McManus M (2000) Some dilemmas of master's level nurse education. *Journal of Advanced Nursing* 32(4): 834-841
- Gibbs G R (2002) *Qualitative Data Analysis, Explorations with NVivo*. Open University, Buckingham
- Gillham B (2000a) *Case Study Research Methods*. Continuum, London
- Gillham B (2000b) *The Research Interview*. Continuum, London
- Glaser B (1992) *Emergence vs Forcing: Basics of Grounded Theory Analysis*. Sociological, California
- Glaser R (1999) Expert knowledge and processes of thinking. In: McCormick R, Paechter C (eds) *Learning and Knowledge*. Paul Chapman, London Ch 7, p88-102

- Glaser B G, Strauss A L (1967) *The Discovery of Grounded Theory, Strategies for Qualitative Research*. Aldine de Gruyter, New York
- Goffman E (1959) *The Presentation of Self in Everyday Life*. Doubleday Anchor, New York
- Goleman D (1996) *Emotional Intelligence*. Bloomsbury, London
- Gosling S (1997) *Physiotherapy and Postgraduate Study*. *Physiotherapy* 83(3): 131-135
- Gosling S (1999a) *Physiotherapy and Postgraduate Study. A Follow up Discussion Paper*. *Physiotherapy* 85(3): 117-121
- Gosling S (1999b) *CPD and competence: related but different*. *Physiotherapy* 85(10): 536-540
- Grant R (1992) *Obsolescence or lifelong education: choices and challenges*. *Physiotherapy* 78(3): 167-171
- Grant M (2002) *Change or disappear – a critical point for our profession*. *Australian Journal of Physiotherapy* 48(2): 152-153
- Green A, Perry J, Harrison K (2007) *The influence of a postgraduate clinical master's qualification in manual therapy on the careers of physiotherapists in the United Kingdom*. *Manual Therapy* 13(2): 139-147
- Griffiths D (1981) *Stress*. In: Griffiths D (ed) *Psychology and Medicine*, British Psychological Society and Macmillan, London, Ch 14, p296-322
- Guba E G, Lincoln Y S (1981) *Effective Evaluation: Improving the Usefulness of Evaluation Results through Responsive and Naturalistic Approaches*. Jossey-Bass, San Francisco
- Gunn H, Goding L (2008) *Continuing professional development of physiotherapists based in community primary care trusts: a qualitative study investigating perceptions, experiences and outcomes*. *Physiotherapy* doi:10.1016/j.physio.2007.09.003
- Hager P (1996) *Relational realism and professional performance*. *Educational Philosophy and Theory* 28(1): 98-116
- Haggis T (2002) *Exploring the 'black box' of process: a comparison of theoretical notions of the 'adult learner' with accounts of postgraduate learning experience*. *Studies in Higher Education* 27(2): 207-220
- Harris T A (1973) *I'm Ok-You're Ok*. Pan Books, London
- Hattam P (2004) *The effectiveness of orthopaedic triage by extended scope physiotherapists*. *Clinical Governance: An International Journal* 9(4): 244-252

Health Professions Council (2006) Continuing Professional Development and Your Registration. Health Professions Council, London

Heidegger (1926/1962) Being and Time. Blackwell, Oxford

Herbert R, Jamtvedt G, Mead J, Hagen K B (2005) Practical Evidence-Based Physiotherapy. Churchill Livingstone, Edinburgh

Heron J (1996) Co-operative Inquiry, Research into the Human Condition. Sage, London

Hickey G (1997) The use of literature in grounded theory. NT Research 2: 371-379

Higgs J, Andresen L (2001) The knower, the knowing and the known: threads in the woven tapestry of knowledge. In: Higgs J, Titchen A (eds) Practice Knowledge and Expertise. Butterworth Heinemann, Oxford. Ch 2 p10-21

Higgs J, Jones M (2000) Clinical Reasoning in the Health Professions, 2nd edn. Butterworth-Heinemann, Oxford

Higgs J, Richardson B, Dahlgren MA (2004) Developing Practice Knowledge for Health Professionals. Butterworth-Heinemann, Edinburgh

Higgs J, Titchen A (2000) Knowledge and reasoning. In: Higgs J, Jones M (eds) Clinical Reasoning in the Health Professions, 2nd edn. Butterworth Heinemann, Oxford. Ch 3 p23-32

Higgs J, Titchen A (2001) Practice Knowledge and Expertise in the Health Professions. Butterworth-Heinemann, Oxford

Higher Education Funding Council for England (1996) Review of Postgraduate Education. Reference M 14/96. Retrieved from:  
[http://www.hefce.ac.uk/pubs/hefce/1996/m14\\_96.htm](http://www.hefce.ac.uk/pubs/hefce/1996/m14_96.htm)

Holdsworth L K, Webster V S, McFadyen A K (2007) What are the costs to NHS Scotland of self-referral to physiotherapy? Results of a national trial. Physiotherapy 93: 3-11

Holstein J A, Gubrium J F (1995) The Active Interview. Sage, London

Hopson B (1981) Transition: understanding and managing personal change. In Griffiths D (ed) Psychology and Medicine. British Psychological Society and Macmillan, London, Ch 15, p323-348

House E R (1980) Evaluating with Validity. Sage, Beverly Hills

House of Commons Health Committee (2007) Workforce Planning, 4th Report of Session 2006-07 Vol 1. HMSO, London

Huberman M (1995) Professional careers and professional development: some intersections. In: Guskey T R, Huberman M (eds) Professional Development in Education, New Paradigms and Practices. Teachers College, Columbia University Ch 9, p193-224

Huberman A M, Miles M B (2002) The Qualitative Researcher's Companion. Sage, Thousand Oaks

Hunt A, Higgs, J, Adamson B, Harris L (1998) University education and the physiotherapy professional. *Physiotherapy* 84(6): 264-273

International Federation of Orthopaedic Physical Therapists (2008) Vision Statement Retrieved from: <http://www.ifomt.org/ifomt>

Jarvis P (1999) The Practitioners-Researcher. Developing Theory from Practice. Jossey-Bass, San Francisco

Jensen G M, Gwyer J, Hack L M, Shepard K F (1999) Expertise in Physical Therapy Practice. Butterworth Heinemann, Boston

Jensen G M, Gwyer J, Shepard K F, Hack L M (2000) Expert practice in physical therapy, *Physical Therapy* 80(1): 28-43

Johns C (1998) Becoming a Reflective Practitioner, 2nd edn. Blackwell, Oxford

Johns C, Freshwater D (1998) Transforming Nursing through Reflective Practice. Blackwell, Oxford

Johnson A (2008) Patients to Refer Themselves for NHS Treatment. Retrieved from: [http://www.dh.gov.uk/en/News/Recentstories/DH\\_089524](http://www.dh.gov.uk/en/News/Recentstories/DH_089524)

Jones MA (1999) Orthopedic expert practice. In: Jensen G M, Gwyer J, Hack L M, Shepard K F (eds) Expertise in Physical Therapy Practice. Butterworth Heinemann, Boston, Ch 11 p264-270

Jones M A, Rivett D A (2004) Clinical Reasoning for Manual Therapists. Butterworth Heinemann, Edinburgh

Jordan S (2000) Educational input and patient outcomes: exploring the gap. *Journal of Advanced Nursing* 31(2): 461-471

Jull G, Moore A (2008) Editorial: specialization in musculoskeletal physiotherapy - the Australian model. *Manual Therapy* 13: 181-182

- Kegan R (1994) *In Over our Heads, The Mental Demands of Modern Life*. Harvard University, Cambridge
- Kegan R (2000) What “form” transforms? A constructive-developmental approach to transformative learning. In: Mezirow J (ed) *Learning as Transformation, Critical Perspectives on a Theory in Progress*. Jossey-Bass, San Francisco Ch 2, p35-69
- Kell C (2006) An analysis of entry-level postgraduate students’ readiness for student-centred, masters level learning. *Learning in Health and Social Care* 5(3): 133-141
- Kennedy M M (1987) Inexact sciences: professional education and the development of expertise. *Review of Research in Education* 14: 133-167
- Kinchin I M, Cabot L B, Hay D B (2008) Using concept mapping to locate the tacit dimension of clinical expertise: towards a theoretical framework to support critical reflection on teaching. *Learning in Health and Social Care* 7(2): 93-104
- Kings Fund (2007) *Realising the benefits? Assessing the Implementation of Agenda for Change*. Kings Fund, London
- Kolb D A (1984) *Experiential Learning*. Prentice-Hall, Englewood Cliffs
- Kools S, McCarthy M, Durham R, Robrecht L (1996) Dimensional analysis: broadening the conception of grounded theory. *Qualitative Health Research* 6(3): 312-330
- Kushner S (2000) *Personalizing Evaluation*. Sage, London
- Lea S J, Stephenson D, Troy J (2003) Higher education students’ attitudes to student-centred learning: beyond ‘educational bulimia’? *Studies in Higher Education* 28(3): 321-334
- Limb M (2005) *Where are the consultant physios?* *Frontline*, London August 3:15
- Lindquist I, Engardt M, Garnham L, Poland F, Richardson B (2006) Physiotherapy students’ professional identity on the edge of working life. *Medical Teacher* 28(3): 270-276
- Locke J (1964) *Some thoughts concerning education*, edited by Garforth F W, Heinemann, London
- Maitland GD, Hengeveld E, Banks K, English K (2005) *Maitland’s Vertebral Manipulation*, 7th edn. Butterworth-Heinemann, Edinburgh
- Manipulation Association of Chartered Physiotherapists (2004) *Members Directory*. Retrieved from: <http://www.macpweb.org/home/index.php?p=18>
- Manipulation Association of Chartered Physiotherapists (2008) *Home Page Information*. Retrieved from: <http://www.macpweb.org>

- Marton F, Dall'Alba G, Beaty E (1993) Conceptions of learning. *International Journal of Educational Research* 19(3): 277-300
- Martin C, Siosteen A, Shepard K F (1999) The professional development of expert physical therapists in four areas of clinical practice, In: Jensen G M, Gwyer J, Hack L M, Shepard K F (1999) *Expertise in Physical Therapy Practice*. Butterworth Heinemann, Boston
- Matyas T A, Bach T M (1985) The reliability of selected techniques in clinical arthrometrics. *Australian Journal of Physiotherapy* 31(5): 175-199
- Maxwell M (1995) Continuing education in physiotherapy. *Medical Teacher* 17(2): 189-197
- McClellan C M, Greenwood R, Bengner J R (2006) Effect of an extended scope physiotherapy service on patient satisfaction and the outcome of soft tissue injuries in an adult emergency department. *Emergency Medicine Journal* 23: 384-387
- McCormick G, Marshall E (1994) Mandatory continuing professional education, a review. *Australian Journal of Physiotherapy* 40(1): 17-22
- McEwen I R (1999) Paediatric expert practice, In: Jensen G M, Gwyer J, Hack L M, Shepard K F (eds) *Expertise in Physical Therapy*. Butterworth Heinemann, Boston Ch11, pp247-252
- McGhee G, Marland G R, Atkinson J (2007) Grounded theory research: literature reviewing and reflexivity. *Journal of Advanced Nursing* 60(3): 334-342
- McGreal Y (2006) Personal Communication, Postgraduate Administrator, University of Brighton
- McPeck J E (1990) *Teaching Critical Thinking, Dialogue and Dialectic*. Routledge, New York
- Measor L (1985) Interviewing: a strategy in qualitative research. In: Burgess R G (ed) *Strategies of Educational Research: Qualitative Methods*. Falmer, London
- Mercer J (2007) The challenges of insider research in educational institutions: wielding a double-edged sword and resolving delicate dilemmas. *Oxford Review of Education* 33(1): 1-17
- Merton R K (1972) Insiders and outsiders: a chapter in the sociology of knowledge. *American Journal of Sociology* 78 (1): 9-47

Mevarech Z R (1995) Teachers' paths on the way to and from the professional development forum. In: Guskey T R, Huberman M (eds) Professional Development in Education, New Paradigms and Practices. Teachers College, Columbia University Ch 7, p151-170

Mezirow J (1991) Transformative Dimensions of Adult Learning. Jossey-Bass, California

Mezirow J (2000) Learning as Transformation, Critical Perspectives on a Theory in Progress. Jossey-Bass, San Francisco

Miles M B, Huberman A M (1994) Qualitative Data Analysis, An Expanded Sourcebook, 2<sup>nd</sup> edn. Sage, Thousand Oaks

Milidonis M K, Godges J J, Jensen G M (1999) Nature of clinical practice for specialists in orthopaedic physical therapy. Journal of Orthopaedic and Sports Physical Therapy 29(4): 240-247

Moos R H (1986) Coping with Life Crises, An Integrated Approach. Plenum, New York

Morgan J (1994) Learning to live with emotion. Educational Philosophy and Theory 26(2): 67-81

Musselwhite K, Cuff L, McGregor L, King K M (2007) The telephone interview is an effective method of data collection in clinical nursing research: a discussion paper. International Journal of Nursing Studies 44: 1064-1070

Ng K C, Murphy D, Jenkins W 2002 The teacher's role in supporting a learner-centred learning environment: voices from a group of part-time postgraduate students in Hong Kong. International Journal of Lifelong Learning 21(5): 462-473

NHS Quality Improvement Scotland (2008) An Audit of Physiotherapy Management of Patients with Low Back Pain.  
[http://www.nhshealthquality.org/nhsqis/controller?p\\_service=Content.showandp\\_applic=CCCandpMenuId=0andpElementID=0andpContentID=4057](http://www.nhshealthquality.org/nhsqis/controller?p_service=Content.showandp_applic=CCCandpMenuId=0andpElementID=0andpContentID=4057)

Nicholson N and West M (1988) Managerial Job Change: Men and Women in Transition. Cambridge University, Cambridge Ch 1 p1-20

Nicolson P (2003) Reflexivity, 'bias' and the in-depth interview: developing shared meanings. In: Finlay L, Gough B (eds) Reflexivity, A Practical Guide for Researchers in Health and Social Sciences. Blackwell Science, Oxford Ch 10 p133-145

Novick G (2008) Is there a bias against telephone interviews in qualitative research? Research in Nursing and Health 31: 391-398



O'Brien M A, Freemantle N, Oxman A D, Wolf F, Davis D A, Herrin J (2001) Continuing education meetings and workshops: effects on professional practice and health care outcomes. Cochrane Database of Systematic Reviews Issue 2. Art. No: CD003030. DOI: 10.1002/14651858.CD003030

Opdenakker R (2006) Advantages and disadvantages of four interview techniques in qualitative research. Forum: Qualitative Social Research 7(4), Art 11, <http://nbn-resolving.de/urn:nbn:de:0114-fqs0604118>

O'Sullivan J (2003) Unlocking the workforce potential: is support for effective continuing professional development the key? Research in Post-Compulsory Education 8(1): 107-122

O'Sullivan J (2004) Continuing professional development – is it beneficial? Physiotherapy 90(4): 174-175

Parlett M, Dearden G (1977) Introduction to Illuminative Evaluation: Studies in Higher Education. Pacific Soundings, California

Parlett M, Hamilton D (1977) Evaluation as illumination: a new approach to the study of innovatory programmes. In Hamilton D, Jenkins D, King C, MacDonald B, Parlett M (eds) Beyond the Numbers Game. McMillan Education, Basingstoke, ch 1, p6-22

Patel N V (2003) A holistic approach to learning and teaching interaction: factors in the development of critical learners. International Journal of Educational Management 17(6): 272-284

Patton M Q 1997 Utilization-Focused Evaluation, The New Century Text, 3<sup>rd</sup> edn. Sage, Thousand Oaks

Patton M Q (2002) Qualitative Research and Evaluation Methods, 3<sup>rd</sup> edn. Sage, Thousand Oaks

Pearse E O, Maclean A, Ricketts D M (2006) The extended scope physiotherapy in orthopaedic out-patients – an audit. Annals of the Royal College of Surgeons of England 88(7): 653-655

Perry W G (1970) Forms of Intellectual and Ethical Development in the College Years. Holt, Rinehart and Winston, New York

Petty N J (2004) Principles of Neuromusculoskeletal Treatment and Management – A Guide for Therapists. Churchill Livingstone, Edinburgh

Petty N J (2006) Neuromusculoskeletal Examination and Assessment - A Handbook for Therapists. 3rd ed. Churchill Livingstone, Edinburgh

Polanyi M (1983) The Tacit Dimension. Peter Smith, Gloucester

- Powell A (1997) A Framework for Continuing Professional Development. Chartered Society of Physiotherapy, London
- Quality Assurance Agency for Higher Education (2001) Framework for Higher Education Qualifications in England, Wales and Northern Ireland. Retrieved from: <http://www.qaa.ac.uk/academicinfrastructure/FHEQ/EWNI/default.asp>
- Radnor H (2001) Researching Your Professional Practice, Doing Interpretive Research. Open University, Buckingham
- Ramsden P (2003) Learning to Teach in Higher Education, 2nd edn. RoutledgeFalmer, London
- Reason P (1998) Co-operative inquiry as a discipline of professional practice. *Journal of Interprofessional Care* 12(4): 419-436
- Resnik L, Hart D L (2004) Influence of advanced orthopaedic certification on clinical outcomes of patients with low back pain. *Journal of Manual and Manipulative Therapy* 12(1): 32-43
- Review Body for Nursing and Other Health Professions (2007) Twenty-second Report on Nursing and Other Health Professions. HMSO, London
- Richardson B (1996) Paradigms of Practice in Physiotherapy and the Implications for Professional Development. Unpublished PhD East Anglia University
- Richardson B (1999a) Professional development, professional knowledge and situated learning in the workplace. *Physiotherapy* 85(9): 467-474
- Richardson B (1999b) Professional development, professional socialisation and professionalization. *Physiotherapy* 85(9): 461-467
- Richardson L (2000) Writing, a method of inquiry. In Denzin N K, Lincoln Y S (eds) *Handbook of Qualitative Research*, 2nd edn. Sage, Thousand Oaks Ch 36, p923-948
- Richardson B, Dahlgren M A, Higgs J (2004) Practice epistemology: implication for education, practice and research. In Higgs J, Richardson B, Dahlgren M A (eds) *Developing Practice Knowledge for Health Professionals*. Butterworth Heinemann, Edinburgh Ch 12 p201-220
- Rischel V, Larsen K, Jackson K (2008) Embodied dispositions or experience? Identifying new patterns of professional competence. *Journal of Advanced Nursing* 61(5): 512-521
- Rivett D (2008) Changes in the Australian musculoskeletal educational system. International Federation of Orthopaedic Manipulative Therapists Congress, Rotterdam

Robertson V J, Oldmeadow L B, Cromie J E, Grant M J (2003) Taking charge of change: a new career structure in physiotherapy. *Australian Journal of Physiotherapy* 49: 229-231

Robotham D (2004) Using interviews in researching student learning: a true and valid account? *Teaching in Higher Education* 9(2): 225-233

Robrecht L C (1995) Grounded theory: evolving methods. *Qualitative Health Research* 5(2): 169-177)

Robson C (2002) *Real World Research*, 2nd edn. Blackwell, Malden

Rogers C R, Freiberg H J (1994) *Freedom to Learn*, 3<sup>rd</sup> edn. Prentice Hall, New Jersey

Rolfe G (1998) Beyond expertise: reflective and reflexive nursing practice. In: *Transforming Nursing Through Reflective Practice*. Johns C, Freshwater D (eds), Blackwell Science, Oxford Ch 2 pp21-31

Rushton A, Petty N (2002) The course approval board of the manipulation association of chartered physiotherapists. *Manual Therapy* 7(4): 222-228

Ryle G (1949/2000) *The Concept of Mind*. Penguin, London

Sandberg J (2000) Understanding human competence at work: an interpretative approach. *Academy of Management Journal* 43(1): 9-25

Sastry T (2004) *Postgraduate Education in the United Kingdom*, Higher Education Policy Institute, London. Retrieved from: <http://www.hepi.ac.uk/pubdetail.asp?ID=164andDOC=reports>

Scally G, Donaldson L J (1998) Clinical governance and the drive for quality improvement in the new NHS in England. *British Medical Journal* 317(7150) 4 July: 61-65

Schatzman L (1991) Dimensional analysis: notes on an alternative approach to the grounding of theory in qualitative research. In: Maines D R (ed) *Social Organisation and Social Process*. Aldine De Gruyter, New York Ch 17, p 303-314

Schein E H (1978) *Career Dynamics: Matching Individual and Organizational Needs*. Addison-Wesley, Reading.

Scholes J (1995) *An Exploration of Role Transition in Students Converting from Enrolled Nurse (General) to Registered General Nurse*. Unpublished DPhil, Sussex University

Scholes J (2006) *Developing Expertise in Critical Care Nursing*. Blackwell, Oxford

Schon D A (1987) *Educating the Reflective Practitioner*. Jossey-Bass, San Francisco

Schon D A (1991) *The Reflective Practitioner, How Professionals Think in Action*. Ashgate Arena, Aldershot

Shah S (2004) The researcher/interviewer in intercultural context: a social intruder! *British Educational Research Journal* 30(4): 549-575

Shepard K F, Jensen G M, Hislop H J (1990) Physical therapist curricula for the 1990s: educating the reflective practitioner. *Physical Therapy* 70(9): 566-577

Silverman D (1993) *Interpreting Qualitative Data, Methods for Analysing Talk, Text and Interaction*. Sage, London

Silverman D (2000) *Doing Qualitative Research, A Practical Handbook*. Sage, London

Simmel G (1950) *The Sociology of Georg Simmel*. Free Press, New York. Retrieved from:

<http://ia331330.us.archive.org/3/items/sociologyofgeorg030082mbp/sociologyofgeorg030082mbp.pdf>

Simons H (1977) Case-studies of innovation. In: Hamilton D, Jenkins D, King C, MacDonald B, Parlett M (eds) *Beyond the Numbers Game*. McMillan Education, Basingstoke Ch 4.2, p178-180

Simons H (1980) *Towards a Science of the Singular*. Centre for Applied Research in Education, University of East Anglia, Norwich

Skills for Health (2007) *A Competence Based Career Framework for Allied Health Professionals (AHPS) Project information bulletin 3*. Retrieved from:

<http://www.skillsforhealth.org.uk/page/competences/competences-projects-in-development/list/allied-health-professions>

Smith K L, Tichenor C J, Schroeder M (1999) Orthopaedic residency training: a survey of the graduates' perspective. *Journal of Orthopaedic and Sports Physical Therapy* 29(11): 635-655

Stake R E (1995) *The Art of Case Study Research*. Sage, Thousand Oaks

Stake R E (2000) Case studies. In: Denzin N K, Lincoln Y S (eds) *Handbook of Qualitative Research*, 2nd edn. Sage, Thousand Oaks Ch 16, p435-454

Stake R E (2004) *Standards-Based and Responsive Evaluation*. Sage, Thousand Oaks

Stathopoulos I, Harrison K (2003) Study at master's level by practising physiotherapists. *Physiotherapy* 89(3): 158-169

Steinke I (2004) Quality criteria in qualitative research. In: Flick U, von Kardorff E, Steinke I (eds) *A Companion to Qualitative Research*. Sage, London Ch 4.7 p184-190

Stenhouse L (1967) *Culture and Education*. Nelson, London

Sternberg R J, Horvath J A (1995) A prototype view of expert teaching. *Educational Researcher* 24(6): 9-17

Strauss A, Corbin J (1998) *Basics of Qualitative Research*. 2nd edn. Sage, Thousand Oaks

Sumser R (1993) John Locke and the unbearable lightness of modern education. *Educational Philosophy and Theory* 25(1): 1-15

Tharp R G, Gallimore R (1988) *Rousing Minds to Life: Teaching, Learning, and Schooling in Social Context*. Cambridge University, Cambridge.

The Working Time Amendment Regulations (2003) Statutory instruments 2003 No 1684. The Stationary Office, London. Retrieved from:  
<http://www.opsi.gov.uk/si/si2003/20031684.htm>

Titchen A (1987) Continuing education: a study of physiotherapists' attitudes. *Physiotherapy* 73(3): 121-124

Titchen A (2001) Critical companionship: a conceptual framework for developing expertise. In: Higgs J, Titchen A (eds) *Practice Knowledge and Expertise in the Health Professions*. Butterworth Heinemann, Oxford Ch10 p80-90

Titchen A, Ersser SJ (2001a) The nature of professional craft knowledge. In: Higgs J, Titchen A (eds) *Practice Knowledge and Expertise in the Health Professions*. Butterworth Heinemann, Oxford Ch5 p35-41

Titchen A, Ersser S J (2001b) Explicating, creating and validating professional craft knowledge. In: Higgs J, Titchen A (eds) *Practice knowledge and expertise in the health professions*. Butterworth Heinemann, Oxford Ch7 p48-56

Tynjala P (1999) Towards expert knowledge? A comparison between a constructivist and a traditional learning environment in the university. *International Journal of Educational Research* 31: 357-442

Usher R S, Bryant I (1987) Re-examining the theory-practice relationship in continuing professional education. *Studies in Higher Education* 12(2): 201-212

van de Meene L W (1978) Can and should physiotherapists specialize? *Australian Journal of Physiotherapy* 24(2): 60-62

van de Meene L W (1988) Towards the effective use of the specialist physiotherapist. *Australian Journal of Physiotherapy* 34(2): 83-87

Vygotsky L S (1978) *Mind in Society: The Development of Higher Psychological Process*. Harvard University, Cambridge, MA

Weiner B (1974) *Achievement Motivation and Attribution Theory*. General Learning, Morristown

Wellington L (2002) Physiotherapists risk losing their identity. *Australian Journal of Physiotherapy* 48(2): 153-154

Wengraf T (2001) *Qualitative Research Interviewing*. Sage, London

White K (2001) Professional craft knowledge and ethical decision-making. In: Higgs J, Titchen A (eds) *Practice Knowledge and Expertise in the Health Professions*. Butterworth Heinemann, Oxford Ch18 p142-148

Willig C (2008) *Introducing Qualitative Research in Psychology, Adventures in Theory and Method*, 2nd edn. Open University, Maidenhead

Wolfe P (2006) The role of meaning and emotion in learning. *New Directions for Adult and Continuing Education* 110: 35-41

Yin R K (2003) *Case Study Research, Design and Methods*, 3rd ed. Sage, Thousand Oaks

## Appendix 1: Timeline of data collection methods and analysis

Dates	Time	Published literature	Interviews	Dimensional analysis
Sept 03 –Dec 04	8 months	Adult learning Student-centred learning versus didactic teaching Professional learning Learning in clinical practice Situating learning		
Jan 05-Sept 05	8 months		Round one	Identification of dimensions and properties
Oct 05-March 06	5 months	Role transition theory		
March 06-April 06	2 months		Round two	New and adapted dimensions and properties
April 06-Feb 07	10 months	Learning transition theory Social learning theory		New and adapted dimensions and properties  Identification of relationships between dimensions.  Conceptual grouping of study participants  Differentiation identified an explanatory matrix
March 07-April 07	2 months		Round three	Clarify and test explanatory matrix. Theoretical sampling of two 'expert' participants
April 07-Aug 08	16 months	Experiential learning Learning styles Transactional analysis Emotions Expertise Clinical practice Practice knowledge Critical companionship		Integration  Formal presentations to test explanatory matrix  Writing up explanatory matrix to create substantive theory

## Appendix 2: Letter of invitation to participants

Home address

date

Dear

I would like to invite you to take part in a research study, which is in part fulfilment of a Professional Doctorate in Physiotherapy that I am undertaking at the University of Brighton.

I enclose a research contract which contains the details of the study and what is involved, as well as a consent form. If, having read the information, you are willing to participate in the study please would you complete the enclosed consent form and return it to me using the stamped addressed envelope.

If you do return the consent form, agreeing to take part, I will then contact you to arrange a suitable time and place.

Thank you for your time and I look forward to hearing from you in due course.

Best wishes

Yours sincerely

Nikki Petty

Telephone numbers:

AH

AW 01273 643775

Email at home:

Email at work: [N.J.Petty@bton.ac.uk](mailto:N.J.Petty@bton.ac.uk)



### Appendix 3: Request for 2nd interview

Date

home address

Dear

Thank you so much for your input so far into my research study entitled 'The impact of a postgraduate manipulative physiotherapy course on the practice of the alumni'.

You will remember that I discussed with you the impact of the course on your clinical practice and that I transcribed the interview and sent it to you for checking. I have now carried out a total of seven interviews with ex-students.

Having analysed all the data collected so far, I would now like to clarify some other areas related to the impact of the course on your clinical practice; this will further illuminate the perspective of students and substantially enhance my understanding of the data collected so far. Areas I am particularly interested in are your prior CPD activities before the course, your expectations of the course before starting and a little more detail about how you coped with the experiences during the course.

I would like, with your permission, to re-interview you but this time on the telephone. I would anticipate the interview would take up to 30 minutes. Once again, I would then send you the transcript to check for accuracy and after that I would like to send you my interpretation of all that you have told me from both interviews to check that I am correctly interpreting all that you have said.

You are under no obligation to do this, please do feel free to say no; I am already grateful for your input and time into this research study. However, if you are willing, then I wonder whether one of the following days would be convenient to you:

Wednesday 1<sup>st</sup> March sometime between 9am and 3pm.

Friday 10<sup>th</sup> March sometime between 9am and 8pm

Saturday 11<sup>th</sup> March sometime between 9am and 5pm

Monday 20<sup>th</sup> March sometime between 2pm and 4pm.

Friday 24<sup>th</sup> March sometime between 9am and 3pm.

Monday 27<sup>th</sup> March sometime between 2pm and 4pm.

I look forward to hearing from you in due course.

Best wishes

Yours sincerely

Nikki Petty

Email at work: [N.J.Petty@bton.ac.uk](mailto:N.J.Petty@bton.ac.uk)

Email at home:

## Appendix 4: Request for 3rd interview

date

Home address

Dear

Thank you so much for your input so far into my research study entitled ‘The impact of a postgraduate manipulative physiotherapy course on the practice of the alumni’.

You will remember that we have discussed the impact of the course on your clinical practice. I am currently developing a conceptual framework of the impact of the course on professional practice and in order for me to finalise this, I would very much like to interview you again.

Areas I am particularly interested in are your prior experiences of learning especially within clinical practice, processes during the course that enhanced your professional and clinical confidence and self esteem, and your current career aspirations. This information will help to explain the differing experiences of students completing the course.

I would like, with your permission, to re-interview you either face to face or on the telephone – whichever you would prefer. I would anticipate the interview would take up to 30 minutes. Once again, I would then send you the transcript to check for accuracy.

You are under no obligation to do this, please do feel free to say no; I am grateful for the input and time your have already invested into this research study. However, if you are willing, then I wonder whether one of the following days would be convenient to you:

Thursday 15th March    Monday 26th March  
Friday 16th March    Wednesday 28th March  
Saturday 17th March    Saturday 31st March  
Thursday 22nd March    Monday 2nd April  
Friday 23rd March    Tuesday 3rd April  
Saturday 24th March    Wednesday 4th April

If none of the dates above are convenient, but you would like to participate, please let me know what would suit you, and I will make every effort to fit in with you. Please let me know whether you would prefer a telephone or face to face interview. I look forward to hearing from you in due course.

Best wishes

Yours sincerely

Nikki Petty

Email at work: [N.J.Petty@bton.ac.uk](mailto:N.J.Petty@bton.ac.uk)    Email at home:

## **Appendix 5: Research contract with the study participants**

**Title of the study:** The impact of a postgraduate manipulative physiotherapy course on the practice of the alumni

I would like to invite you to take part in this research study. The aim of this study is to develop an explanatory theory of the learning transition of alumni following successful completion of an MACP approved MSc Neuromusculoskeletal Physiotherapy. This is valuable information that will enable me to begin to understand the triggers that lead someone to enrol on the course, their learning experience completing the course, and the impact of the course on their clinical and professional practice. You have been chosen because you have successfully completed a MSc/PGDip in Neuromusculoskeletal/Manipulative Physiotherapy.

The data collection and analysis is planned to take place between January 2005 and April 2007. The nature of the study means that there will be several points of contact with participants in relation to data collection and data analysis. Participation will involve a telephone or face to face tape-recorded interview, which will last no longer than one hour. I will ask for some factual information regarding your career progression to date and your present post. A few open-ended questions will be asked to trigger your thoughts on the following areas:

- Reasons for enrolling on the course
- Learning experience during the course
- Impact of the course on practice

A face to face interview will require a private and quiet room. The researcher (NP) will travel to meet you at a convenient time and place. A telephone interview will require a quiet place at a convenient time. The researcher will take brief notes during the interview to guide the process.

The taped interview will be transcribed by the researcher and returned to you for checking. The researcher will then analyse the data and create a summary and again, this will be returned to you for checking.

As data is collected from participants, the researcher may contact you again for a face to face or telephone interview to discuss aspects of your experience in greater depth. This is typical of the methodology chosen, where certain issues are explored in-depth, but only become apparent during the process of data collection and analysis. Once again a second interview would be transcribed, returned to you for checking, analysed and summarised and again returned to you for checking. A final version of the whole study may be sent to you for comments.

Participants play a vital role not just in the generation of research data but also in the analysis of the data. The opportunity of participants to comment and evaluate on the researcher's interpretation of the data, is a vital part of ensuring the trustworthiness of the study findings. The participant is given the opportunity to check the accuracy of the

interview and analysis, add further comments, request a part of the transcription is deleted and ensure that the anonymity of the participant is safeguarded.

Communication with participants will be by post or email, whichever the participant prefers; stamped addressed envelopes will be provided by the researcher. All telephone calls will be initiated by the researcher. At any time, if you wish, we can discuss any aspect of your involvement, either face to face or by telephone or email.

All recordings and transcriptions will remain the responsibility of the researcher and will be used only for this research study. They will remain confidential at all times and will be stored in a locked room.

Extracts of the anonymised data may be shown to my research supervisors to help me in my data analysis; both are nurse educationalists/researchers in higher education institutions. Quotations of alumni will be used in the final research thesis, conference presentations by the researcher and in research papers for publication. Additionally, I may give excerpts of the data to current students seeking to know the experiences of other students; this may be helpful and encouraging to students. In all cases where quotations and excerpts of data are given publicly this will be done in such a way to ensure they cannot be attributed to any individual participant.

All the data will be kept in locked storage for 10 years following completion of the study and will then be destroyed. The researcher will maintain the confidentiality of the individual participants at all times; participants will be referred to by a pseudonym in transcripts, thesis and any reporting of the study. No-one other than the researcher will have access to all the information generated by this study. At all times, the research will be carried out in line with University of Brighton Interim Guidance on Research Governance in Health (2004/5) for undertaking research.

Abstracted issues from the data that have immediate implications for the management of the MSc/PGDip in Manipulative Physiotherapy course, will be shared with the Head of School. Where issues arise that create a conflict of interest with the line management of the School of Health Professions, the researcher will discuss the issues in principle with Professor Ann Moore, Director of Clinical Research Centre for Health Professions, and from this discussion, action will be taken as appropriate. In both situations, raw data from individuals will not be passed on, rather, it will be the issue that is considered. Confidentiality will be maintained unless the issue is viewed as harmful to others; if this occurs the CSP Code of Professional Conduct will be followed. The researcher is accountable to the Thesis Outline Panel of the School of Health Professions, University of Brighton.

If you decide you would like to take part, please would you read and sign the attached consent form and return in the enclosed stamped addressed envelope. There is absolutely no detriment by not taking part. If you choose to take part, you can still withdraw from the study at any time without giving a reason. If during the interview, for whatever reason, you become distressed, you are free to stop the interview at any time. You may discuss, in confidence, any aspect of the study with Professor Julie Scholes, my research supervisor. Her contact details can be found below.

Professor Julie Scholes  
Institute of Nursing and Midwifery  
University of Brighton  
Mayfield House  
Village Way  
Falmer  
Brighton BN1 9PH

Email: [J.Scholes@bton.ac.uk](mailto:J.Scholes@bton.ac.uk)  
Telephone: 01273 644078

The information from this study will provide valuable information on the perceived impact of completing a MSc/PGDip in Neuromusculoskeletal/Manipulative Physiotherapy on the practice of alumni. The research study will shed light on the expectations, experiences and impact of the course on a group of alumni. If you would like to discuss this study further, please do not hesitate to contact me.

Nikki Petty

At home:

At work:  
School of Health Professions  
University of Brighton  
Robert Dodd Building  
49 Darley Road  
Eastbourne BN20 7UR

Email:  
Telephone:

Email: [N.J.Petty@bton.ac.uk](mailto:N.J.Petty@bton.ac.uk)  
Telephone: 01273-643775

## Appendix 6: Returning transcript for checking

Date

Home address

Dear

Thanks so much for your valuable comments on the impact of the MSc/PGDip in Manipulative Physiotherapy on your practice.

I have now transcribed the interview and attach it here for you to:

- Check the accuracy of the text
- Add further comments as you see fit
- Check whether you want any of the text removed
- Check that there is no information that might threaten your anonymity

You will see I have not transcribed some names or details as this may threaten your anonymity. These notes are at the moment 'raw data'. Once you give me clearance to use this data, it will then become 'research data'. The text will never again appear as a full transcription. The next stage is to analyse the data and to do this only small portions will be used. For reporting in the thesis, for any submitted papers for publication or in any conference presentation, only particular quotes will be used. At all times I will make every effort to ensure your anonymity is secured.

I would be very grateful if you would read and comment on the transcript and return it to me by *date* in the envelope provided. Your thoughts and comments are vital in ensuring the trustworthiness of the data collected. If I do not hear from you, I will assume that you are happy for me to use the information in my study.

Thank you again for your help with this study and for your valuable time.

Yours sincerely

Nikki Petty

## **Appendix 7: Participant consent form**

UNIVERSITY OF BRIGHTON

The impact of a postgraduate manipulative physiotherapy course on the practice of the alumni

- ◆ I agree to take part in this research which is to explore the impact on practice following successful completion of a MSc/PGDip in Neuromusculoskeletal/Manipulative Physiotherapy
- ◆ The researcher has explained to my satisfaction the purpose of the study.
- ◆ I have had the principles and the procedure explained to me and I have also read the information sheet. I understand the principles and procedures fully.
- ◆ I am aware that I will be required to discuss my learning with the researcher and that this discussion will be audio-taped.
- ◆ I understand that any information will be seen only by the researchers and will not be revealed to anyone else.
- ◆ I understand that I am free to withdraw from the study at any time for any reason.

Name (please print) .....

Signed .....

Date .....

## **Appendix 8: Reflections following an interview**

Interview date:            Venue:            telephone:            Participant:

Start time:                End time                Length of interview

1. Pre-interview goals
2. What were the main issues or themes that struck me in this interview?
3. Summarise the information I got (or failed to get) on each of the target question
4. Anything else that struck me as salient, interesting, illuminating or important?
5. Anything of interviewee relevant: environment, non-verbal behaviour, discomfort with any topic, emotional responses, impact of researcher?
6. Anything of interviewer relevant: environment, my non-verbal behaviour, discomfort with any topic, emotional response, impact of interviewee (positive or negative)?
7. Are there any questions, hunches, explanations, speculations, hypotheses, familiar themes, emerging patterns? Are there any alternative explanations, interpretations, problems, discrepancies or gaps in the information being obtained?
8. Are there any problems, discrepancies, or gaps in the information being obtained?
9. How do I feel about the research now?
10. What new (or remaining) target questions do I have for the next interview?
11. Is there anything I now need to do?



## Appendix 9: Excerpt of interview transcription

From round one interviews with identification of dimensions

Dimensions	Interview transcript
<p>clinical reasoning challenging self challenging others</p> <p>recipe treatment patient centred</p> <p>research or theory guided treatment</p> <p>understanding how making clinical decisions</p> <p>has justification for decisions</p> <p>can argue case with anyone</p>	<p><b>I'm talking to a number of ex-manip students to find out what effect the course has had on their professional practice. So, what difference, if any, has the course made to you?</b></p> <p>The biggest difference is my approach I take clinically. It has made me more confident with my reasoning and therefore more confident to challenge myself and other people on diagnosis or progression or those sorts of things. Doing that helps me in my role as educator to then challenge other people and to facilitate their thinking; it's changed my mindset around clinical approach.</p> <p>I've moved away from recipe treatments and moving away from pathology based treatment, I now use the evidence from the patient rather than relying on research evidence or theoretical knowledge to guide my treatment per se. In a way this has made treatment of patients a lot easier because I base the evidence on what's there in front of you. For me, that's been quite powerful and quite a strong tool to develop my confidence, because I can clearly see why and clearly relate why I'm making decisions and base it on what is in front of me, rather than basing it on all the stuff I'm supposed to know. I'm very confident in the structure I use as a result of the course, I'm very confident I can then argue my case with anyone over any subject, over any patient, based on that evidence. That's probably the biggest thing, the clinical reasoning.</p>

## Appendix 10: Comparison of clinical practice experience of participants

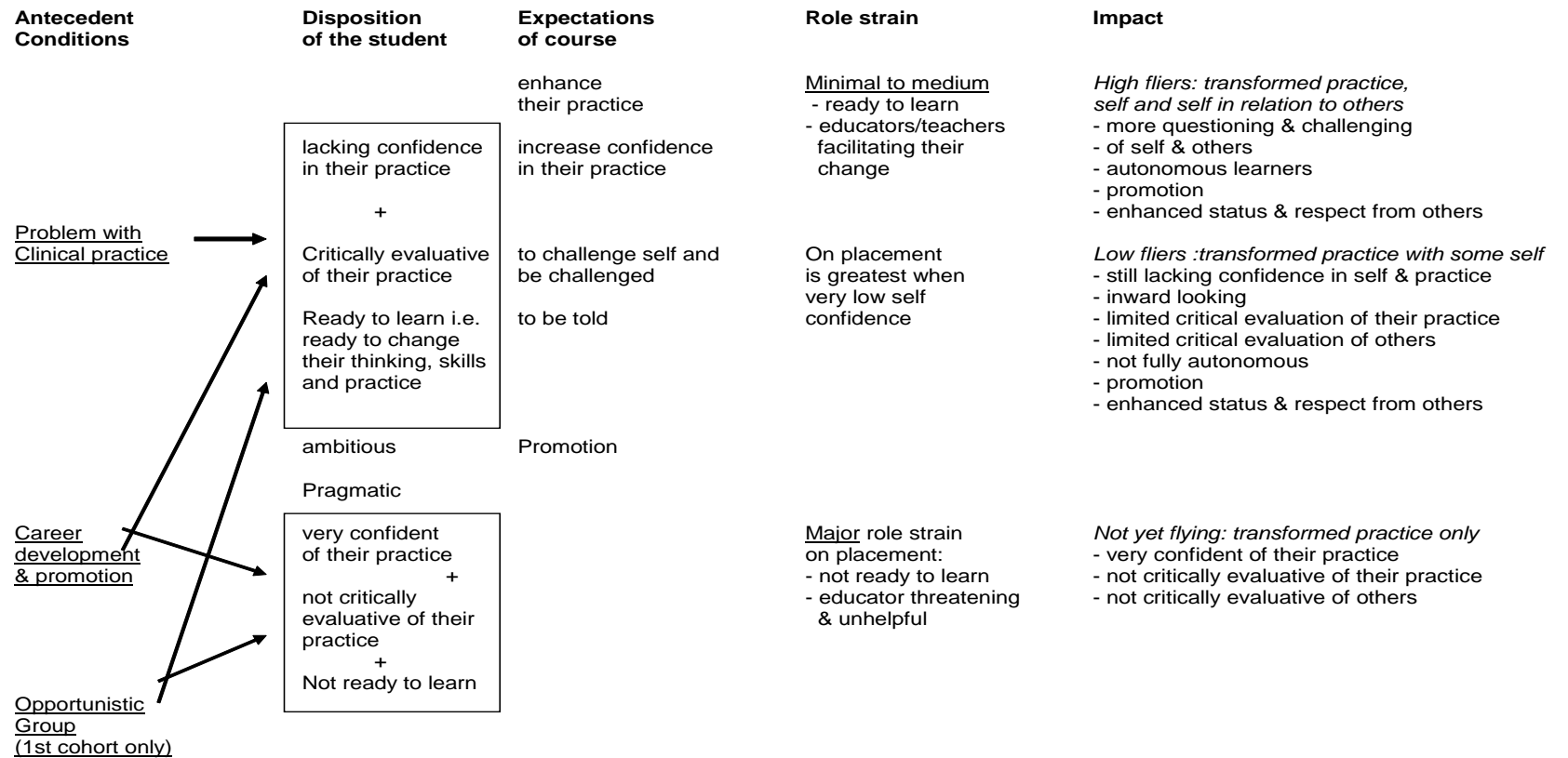
Participant	Quotes from participants in relation to clinical practice before enrolment
1	I use to think all shoulders are the same and all hips are the same. I then saw each patient more as an individual with many facets and going more into the biopsychosocial side of things. If a patients not answering my questions then they aren't fitting into my boxes, and then I'd be having problems. But then I was able to accept whatever the patients was telling me and instead I'd be thinking 'Ok, so it's not fitting, so why isn't it fitting?' Life is a continual change, you just keep growing everyday; it's a growing process. Before the MSc it might not have been like that, because you weren't learning from yourself, reflecting, so learning isn't going on.
2	Not able to put examination findings together
3	Sitting on fence. Not sure what approach to take with patient, when to apply what treatment. Had lots of fancy techniques and lots of background knowledge but wasn't clear when to use what. I've moved away from recipe treatments and moving away from pathology based treatment.
4	Not able to make sense of findings. Routine examination as taught, not thinking, not reasoning.
5	Sling the kitchen sink in approach, not sure what got them better.
6	Ineffective treating patients; painful spot treater. Patients only got better if they were getting better anyway.
7	Pressed on where it was sore. Didn't know what was wrong with the patient. Jumped/flicked from one thing to another. My handling skills were OK.
8	I didn't have much confidence. I use to go through a list of tests when I examined patients, like I was taught as an undergrad. I felt dissatisfied with my practice because some of my practice was really poor.
9	I was very confident with my skills and was fairly pleased with my assessment skills. I remember another student saying the course completely changed the way she assessed patients and I remember being slightly envious of her because I couldn't say that. I had already made a lot of transitions by doing all the MACP weekend courses. The course did change a lot of things about my practice and how I reasoned but I never saw it because it was small incremental steps.
10	Dread to think actually! Similar to now but a lot less insight into what I was doing and why I was doing it. Before, it was based on, does this work, is it making you better, if not then change to something else I know and if no good changed to something else. If nothing worked, then couldn't do anymore. No insight into why, how, if, but. Didn't take into account the evidence base, the person and the presentation. Might have got patients better, but not sure why. There was only one way to do something.
11	I would treat someone and throw a bit of muscle balance at it. I'd lost the core of my clinical practice, the Maitland assessment process. I had all these skills but didn't know how to use them. I had lost all guidance. When treating, I would just go for quit a few joints and try and mobilise. I tended to think 'oh lets throw a bit of ANT at it, if it's wasn't getting better'.

## Appendix 11: Examples of three dimensions and properties

This is an excerpt from a large spreadsheet that supported data analysis. Each column represents some examples of dimensions. Each row represents a study participant. The properties are found within the cells and were identified by comparing between participants. For example, the reason why participants enrolled onto the course was identified as career development, practice development or a mix of both.

<b>Reason for course</b>	<b>Role strain (contradiction)</b>	<b>Impact on patient assessment</b>
career	yes+++ clinical. Very confident of clinical - but not doing well clinically. Anxiety and fear of failure	Can eliminate alternative diagnoses and know why I've done it.
career and practice	yes++ clinical. Not communicating well - needing to improve communication. Travelling long distances each day. One educator giving destructive feedback.	
career and practice	yes+ referred in essay. First module, giving view and being shouted down. Environment not safe to expose self.	Identify problems quicker; patients get better quicker. More accurate assessment. More able to understand examination findings and within evidence base.
career and practice	yes+ clinical. Anxious educator would think practice was 'crap'; told it was fine. Fear of failure for exam and what people would think. Exam stressful (detracted from learning).	Tailor examination to patient.
career and practice	yes++ practical and clinical exams and modules, petrified. Patient listened to educator and not me: status difficulty with patient.	More specific assessment of patients. Zone in more, can see whole problem.
practice	yes++ practical exam. Thinking handling OK - not OK. Anxiety++, fear of failure after huge investment. Thinking PT ok - questioning if PT ok.	new examination skills. Can do more examination with patients, finding more things than before. Able to prioritise pt examination. Because done course, Problem solve patients quicker.

## Appendix 12: Round two analysis



## **Appendix 13: Invitation to ‘expert’ participants**

### **Title of the study: The impact of a postgraduate manipulative physiotherapy course on the practice of the alumni**

I would like to invite you to take part in this research study, which is in part fulfilment of completing a professional doctorate award at the University of Brighton. The aim of this study is to explore the impact of completing a MSc/PGDip in Neuromusculoskeletal/Manipulative Physiotherapy on the professional practice of the alumni. This is valuable information for me as course leader, but also for the profession. You have been chosen because you have experience of completing all or part of a MSc/PGDip in Neuromusculoskeletal/Manipulative Physiotherapy, or because you are a chartered physiotherapist.

The study involves a series of interviews, each no longer than one hour in duration. The number of interviews is likely to be two to three, and you will be invited to participate in each subsequent interview. The interview will be audio-taped, which will then be transcribed. The interviews will be either a face to face or telephone interview. If we have a face to face interview, then we will need a private and quiet room, and I will travel to meet you at a convenient time and place.

If you have experience of the manipulative physiotherapy course, I will ask you a few open-ended questions on your experience of completing the course, what you think you learnt and how this has been useful to you, in terms of your clinical and professional practice. Subsequent interviews are likely to focus more deeply on one or two of these aspects.

If you are a chartered physiotherapist, I will ask you a few open-ended questions on your professional and career development since qualifying. I will ask you about the important steps involved in these developments. Subsequent interviews are likely to focus more deeply on one or two of these aspects. This information will help to inform the interpretation of data obtained from the alumni of a MSc/PGDip in Neuromusculoskeletal/Manipulative Physiotherapy.

I will send you the transcribed data, either by post or email, for you to check for accuracy; any quotes that you are uncomfortable with or that threaten your anonymity will be deleted. A stamped addressed envelope will be enclosed, if appropriate. At a later date, I may invite you to check the analysis of the data collected.

If you decide you would like to take part please would you read and sign the attached consent form and return in the enclosed stamped addressed envelope. There is absolutely no detriment by not taking part. If you choose to take part, you can still withdraw from the study at any time without giving a reason. If during the interview, for whatever reason, you become distressed, you are free to stop the interview at any time.

You will be invited to take part in each subsequent interview and in the analysis of the data, and you are free at any point to decline the invitation. You may discuss, in confidence, any aspect of the study with Professor Julie Scholes, who is my supervisor of this study. Her contact details can be found below.

Professor Julie Scholes  
Professor of Nursing  
Institute of Nursing and Midwifery  
University of Brighton  
Mayfield House  
Falmer  
Brighton BN1 9PH

email: [J.Scholes@bton.ac.uk](mailto:J.Scholes@bton.ac.uk)  
Telephone: 01273-644078

Any information obtained will remain the responsibility of the researcher and will be kept confidential. All recordings will be kept in a locked drawer and destroyed on completion of the study; codes will be used to identify people instead of names. No-one other than the researcher will have access to all information generated by this study. All electronic copies of the data collection and analysis will be password protected.

The findings of this study will provide an insight into the impact of a postgraduate neuromusculoskeletal/manipulative physiotherapy course on clinical and professional practice. It will not only be useful locally to inform the delivery of the course at Brighton, but will also add to the body of knowledge on professional development within physiotherapy. The researcher expects to present the findings of this study in various professional meetings and conferences as well as submit research articles to professional journals; however in doing this, the anonymity of participants will be upheld. If you would like to discuss this study further, please do not hesitate to contact me.

Nikki Petty    [N.J.Petty@bton.ac.uk](mailto:N.J.Petty@bton.ac.uk)  
School of Health Professions Telephone: 01273-643775  
University of Brighton  
49 Darley Road  
Eastbourne BN20 7UR

## Appendix 14: MACP approved MSc course aims and objectives

<p><b>Aims of the course were to:</b></p> <ul style="list-style-type: none"> <li>• enhance the student's knowledge and understanding of neuromusculoskeletal physiotherapy and the concepts underpinning its practice.</li> <li>• enhance the student's expertise in the examination, assessment, treatment and management of patients with neuromusculoskeletal dysfunction.</li> <li>• enhance the students professional and academic development.</li> <li>• develop the students own life long learning skills and enhance their ability to facilitate learning in others.</li> <li>• provide an opportunity for students to contribute to the research base of neuromusculoskeletal physiotherapy (MSc only).</li> </ul>																	
<p><b>Learning objectives of the course</b></p> <p>By the end of the course of study the student should be able to:</p> <ul style="list-style-type: none"> <li>• critically evaluate the theoretical basis underpinning the examination, assessment, treatment and management of patients with neuromusculoskeletal dysfunction</li> <li>• examine, assess, treat and manage patients with neuromusculoskeletal dysfunction with a high level of clinical expertise.</li> <li>• critically evaluate their own clinical practice and that of others.</li> <li>• demonstrate skills in facilitating learning with patients' and with peers.</li> <li>• identify, justify, formulate, plan, implement and document an appropriately high level research project (MSc only).</li> </ul>																	
<p><b>Modules and M level credit rating</b></p> <table> <tr> <td>Neuromusculoskeletal (NMS) Management - Lower Quadrant</td> <td>20</td> </tr> <tr> <td>Neuromusculoskeletal (NMS) Management - Upper Quadrant</td> <td>20</td> </tr> <tr> <td>Clinical Placement 1- Lower Quadrant</td> <td>20</td> </tr> <tr> <td>Clinical Placement 2- Upper Quadrant</td> <td>20</td> </tr> <tr> <td>Research Methods for Health Professionals</td> <td>20</td> </tr> <tr> <td>Optional module</td> <td>20</td> </tr> <tr> <td>Dissertation</td> <td>60</td> </tr> <tr> <td style="text-align: right;"><b>Total</b></td> <td><b>180</b></td> </tr> </table>		Neuromusculoskeletal (NMS) Management - Lower Quadrant	20	Neuromusculoskeletal (NMS) Management - Upper Quadrant	20	Clinical Placement 1- Lower Quadrant	20	Clinical Placement 2- Upper Quadrant	20	Research Methods for Health Professionals	20	Optional module	20	Dissertation	60	<b>Total</b>	<b>180</b>
Neuromusculoskeletal (NMS) Management - Lower Quadrant	20																
Neuromusculoskeletal (NMS) Management - Upper Quadrant	20																
Clinical Placement 1- Lower Quadrant	20																
Clinical Placement 2- Upper Quadrant	20																
Research Methods for Health Professionals	20																
Optional module	20																
Dissertation	60																
<b>Total</b>	<b>180</b>																

*A student successfully obtaining 120M level credits is then eligible for full membership of the MACP*