

**A case study to evaluate the introduction of Objective
Structured Clinical Examination (OSCE) within a School of
Pharmacy**

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service in Northern Ireland.

“Tell me and I forget, teach me and I remember, involve me and I will learn”. Benjamin Franklin, 1750.

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Declaration

No portion of this work has been submitted to any other educational establishment in part or total fulfillment of a higher degree or qualification.

About the author

I obtained my BSc in Pharmacy from the University of Strathclyde in 1997, registered with the Royal Pharmaceutical Society of Great Britain (RPSGB) in 1998 and the Pharmaceutical Society of Northern Ireland (PSNI) in 2000. I returned to Strathclyde in 1999 to complete my MSc in Clinical Pharmacy full time. I have worked in hospital pharmacy since registering as a pharmacist and as a clinical pharmacist since 2000. I specialised in Cardiology in 2001 and I have participated in local audit and research in this field since then. After establishing a pharmacist-led pulmonary arterial hypertension (PAH) clinic in my Trust in 2004, I completed my prescribing qualification to aid in the management of these patients and improve the clinic efficiency. As a specialist clinical pharmacist I provided local training for pharmacists, technicians, nurses and medical staff on disease management, new therapeutic approaches and updates on clinical trial evidence on a regular basis. I also attended and participated in national and international cardiology conferences presenting my work on PAH and was a finalist for the Hospital Pharmacist of the year for Northern Ireland in 2005 and 2007, winning in 2007 for my work with PAH patients.

During this period, I became interested in education and I began lecturing in cardiology at Queens University Belfast (QUB) to undergraduate students in 2001. I co-wrote a distance learning course in cardiovascular disease for the Northern Ireland Centre for Postgraduate Learning and Development (NICPLD) in 2004. In 2005, I co-authored the cardiology chapters of QUB distance learning clinical pharmacy MSc programme and have examined these students from this date. In 2007 I took up a new position as Team Leader to establish a Northern Ireland Network of Teacher-Practitioner (TP) pharmacists based at QUB. To develop my knowledge regarding the theory and practice of teaching, I completed the Postgraduate Certificate in Higher Education and Training (PGCHET) in 2008. Our remit is to develop, deliver and assess clinical skills

for undergraduate pharmacy students and we were awarded a QUB Education award for our teaching last year (2013). As a TP, my job is 50% University and 50% Trust based and I work between QUB and Craigavon Area Hospital. In Craigavon, I work with the cardiology team both on the acute wards and as a prescriber in the heart failure clinic.

My experience as a clinical pharmacist has shaped the teacher that I have become. My undergraduate course provided few opportunities to develop and practice clinical skills, I have developed personal tools for clinical practice such as medication history taking, patient interview skills and counseling as well as examination skills from working closely with multi-professional colleagues in the cardiology team as well as completing the prescribing qualification. I began to develop an interest in developing a strong base in clinical pharmacy skills for undergraduate students so that they could enter the workforce, both in hospital and community pharmacy, with more confidence in patient management. The opportunity to lead and develop the TP Team has enabled undergraduates from QUB and more recently from the University of Ulster to interact with patients from the start of their MPharm and to build upon their clinical skills throughout the degree course alongside their scaffolding of knowledge of therapeutic management.

Although the TP Team provide opportunities for undergraduates to learn both at University and at the hospital sites, assessment throughout the QUB MPharm followed a traditional written examination route. Written examinations are vital to enable students to demonstrate their core knowledge and understanding of a topic, however, I believed that the use of practical examinations of clinical competence such as the Objective Structured Clinical Examination (OSCE) would provide examiners at the School of Pharmacy with a more holistic view of a student's clinical skills. OSCEs are well established in medicine and also more recently nursing and other healthcare professions such as dentistry but are relatively novel for pharmacy. Cogniscent of the enormity of this change for academic staff as well as undergraduates, I was keen to embed the concept of OSCE within the School of Pharmacy and gain support from University colleagues so I developed a bank of OSCEs, a system of developing pass marks for scenarios (based on Angoff), a training package for examiners and also a study guide and DVD for students prior to using OSCE.

Whilst there is some emerging data to support the use of OSCE in pharmacy in recent years, there was no research considering the views of the service users (academic staff and undergraduate students) on the introduction of OSCEs to a School of Pharmacy. I believed that the use of competency assessment was vital in order to establish the ability of newly graduated pharmacists to work effectively in clinical practice. I was aware that more experienced academic staff would be able to provide a unique perspective on the use of this type of examination and suggest changes to the approach, content or even style of assessment. Inclusion of the opinion of undergraduates was vital to this research as students were able to provide real-life experiences of not only the practicalities of the OSCE set-up but also the usefulness of the resources and workshops provided prior to the OSCE itself.

Participation in this research has improved both my working relationship with the academic team at QUB, particularly the community pharmacy practice team who are keen to engage with OSCE, but also research colleagues and also my appreciation of student workload and attitude to both studying and assessment in general. The aim of introducing OSCE to QUB was to develop an assessment which would enable the School of Pharmacy to gain a more holistic view of the ability of QUB graduates to put their therapeutic knowledge into practical patient scenarios. This study is the first step in the introduction of a programme of OSCE throughout the MPharm, starting with first year, in order to produce a pharmacy graduate who is fit to practice safely as a pharmacist on graduation from QUB.

Abstract

Introduction

Healthcare education is continually evolving to reflect therapeutic advances in patient management. Society demands assurances regarding the ongoing competence of HCPs including pharmacists. The use of OSCEs to evaluate competence of medical staff as well as nurses is well documented in the literature however evidence of its use with undergraduate pharmacy students is still sparse.

Aim

The overall aim of this research study is to identify and explore the expectations of stakeholders to the use of Objective Structured Clinical Examinations (OSCEs) with fourth year undergraduate pharmacy students at Queens University Belfast (QUB) and academic staff at the School of Pharmacy in relation to demonstration of competence in applied clinical pharmacy skills.

Method

A case study is the study of “*an instance in action*” (Cohen, Mannion & Morrison; 2003) and one of its strengths is believed to be its ability to observe the participants in context, that is, the research participants are not separated from the research environment as would be the case with a controlled experiment. Case study data was gathered via focus groups (n=11), individual interviews (n=2) and a documentary analysis of the MPharm curriculum documentation as well as a thorough literature review. All data collected was analysed using thematic analysis (Miles & Huberman, 1994). A second researcher reviewed all analysis conducted to enhance the trustworthiness of the findings. Respondent validation ensured that the transcribed focus group data and researchers interpretations reflected the views of the participants interviewed.

Results and discussion

Focus groups were conducted with undergraduate students (22 out of 123 students) and academic staff (18 out of 29 staff) revealed that participants believed that there was a role for OSCE within the MPharm. Four overarching themes emerged from the documentary analysis and focus groups.

1. Teaching, Learning and Assessment

The majority of students (n=18) perceived that the existing MPharm did not provide sufficient opportunities to develop and practice clinical skills with patients or other healthcare professionals, and that there was a strong science focus in the first two years, a shortcoming identified by other Schools of Pharmacy (Nation & Rutter, 2011). Participants supported a curriculum review to promote the 'integration' of science and practice as well as an increased emphasis within practice itself from community pharmacy skills to clinical skills should enhance student competence on graduation. Benefits of OSCE were not limited to undergraduates; academic participants valued the unique feedback on individual student performance as well as feedback on student understanding of the curriculum (Byrne & Smyth, 2008) which in turn will facilitate more effective teaching.

2. Acculturation to the profession

Acculturation to the profession was identified from the documentary analysis as a key goal of the QUB MPharm. Participants interviewed revealed concerns regarding student collusion and unprofessional behavior during OSCE. Student grades were not the only consideration as it could be assumed that individuals who are sufficiently morally lax to cheat at high stakes University examinations may be more inclined to display professionally questionable behaviour in the workplace (Parks, et al, 2006).

3. Factors influencing OSCE performance

All stakeholders interviewed accepted that unfamiliarity with the OSCE format may have hindered student preparation and performance (Fitzgerald, White & Gruppen, 2003). Since their inception, OSCE stations have been time-limited (Harden, 1975). Student participants viewed a time limit as artificial and unrealistic, believing they would have more time to interact with a patient in real life, Sleath (1996) however, found the average pharmacist-patient interaction to be just under 2 minutes. The presence of other students and a knowledge of the examiner or patient actor were also cited as influencing factors.

4. Redesigning the MPharm

The QUB MPharm is constructed along the traditional design of core science in the early years followed by clinical application in third and fourth year, similar to many

traditional pharmacy degrees in the UK (Sosabowski & Gard, 2008). All participants interviewed recognised that the MPharm structure could hinder students ability to integrate science into clinical practice effectively. The key to having a dual 'persona' appears to be the generation of clear objectives for students including regular opportunities to integrate their science knowledge into clinical practice (Marshall & Nykamp, 2010). Participants briefly debated the benefits of the proposed integrated MPharm degree where the integral pre-registration year is expected to promote vertical and horizontal integration (Dahle et al, 2002). Academic participant had reservations regarding the impact of such a change on the workforce whereas student participants were either delighted with the concept of an additional year to achieve competence or horrified by the thought of a five year degree.

Conclusion

A number of authors have described the implementation of OSCE into various healthcare professions from the student perspective (Allen et al, 1998; Anderson & Stickley, 2002; Awaisu, Mohamed & Mohamed, 2007); few have considered the opinions of all key stakeholders; students and academic staff, both of whom are integral to sustaining a culture change within the School of Pharmacy (Kotter, 1995). This study adds to the evidence base supporting the use of OSCE as a viable assessment of competence for pharmacy undergraduates and highlights areas for improvement of the OSCE delivery within the QUB MPharm and for other Schools of Pharmacy and HCP colleagues.

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I would also like to thank my colleagues in the Teacher Practitioner (TP) Team as well as QUB academic staff and undergraduate students for their active participation in this study. Without your engagement this work would have been impossible. I greatly appreciate your candour throughout the focus groups and interviews as well as the respondent validation process.

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Chapter 1

An introduction to the study

Chapter 1

1.1 An overview of the chapter

This chapter describes some of the reasons which led to this study. It takes the reader back to the development of the profession of pharmacy including the establishment of the modern Masters of Pharmacy (MPharm) degree course in the United Kingdom. It illustrates the landscape in which the contemporary pharmacist exists via illumination of some of the consequences of a changing political environment on the development of the profession. This chapter briefly describes some public expectations of the pharmacist in society as well as the implications of the impending integrated MPharm degree as proposed by the Modernising Pharmacy Careers (MPC) board (MPC, 2011). As this study serves as the first step in a programme of change towards competence-based assessment in the School of Pharmacy at Queens University Belfast, this chapter also outlines some considerations when introducing a change to an organisation.

This chapter describes the aims and objectives for the study and addresses some of the key issues affecting pharmacy education, student learning as well as the implications of change on the teaching strategy of the School of Pharmacy.

1.2 Why was this study needed?

The inspiration for this study was based on personal observation of the struggles of newly graduated pharmacists to apply their considerable theoretical knowledge into clinical practice and the desire to investigate the cause; lack of ability or a dearth of opportunities to develop and practice? Practicing pharmacists in both primary and secondary care have questioned the widening gap between the product of the pharmacy degree (the pharmacy graduate), and the demands of the pre-registration year, for some time (Guile & Ahamed, 2011). Pre-registration students interviewed by Willis and Hassell (2007) believed that their undergraduate education was not harmonious with the demands and expectations of their pre-registration year. Respondents agreed that more time should be devoted to practicing clinical skills during their undergraduate course. Is this observed phenomenon due to a lack of opportunities to *develop* clinical skill, *practice* clinical skill or were there insufficient methods for undergraduates to *demonstrate* clinical skill in suitable assessments?

This study has been designed to evaluate the impact on stakeholders (undergraduate students and academic staff of Queens University, Belfast) of the introduction of an Objective Structured Clinical Examination (OSCE) for final year MPharm students as well as considering the influence this change on the MPharm curriculum and teaching.

1.3 The evolution of the profession of pharmacy

Pharmacy as a profession has been in existence for hundreds of years. Our appreciation of the role of the early pharmacists is reliant upon the written histories they left behind. Illustrious forebears include Galen, Avicenna and Paracelsus. Pharmacists and physicians have a shared ancestor in the alchemist however our contemporary distinct professional roles began to emerge in the middle of the 19th century. From this time a clear distinction emerged between the pharmacist (apothecary) as a 'compounder' of medicines and the physician as a 'diagnostician'. This divergence or 'rebranding' paved the way for the formation of the Pharmaceutical Society in 1841 (Cowen & Helfand, 1990; Anderson, 2005).

Industrialisation, as well as the formation of the NHS in 1948, heavily influenced the development of the pharmacy profession (Anderson, 2005). These modernisations brought with them an unprecedented increase in free patient-physician consultations and subsequent free prescriptions to be *dispensed* in place of traditional over-the-counter sales from the pharmacist. Acceleration in automation and pharmaceutical compounding was mirrored by the exponential growth in pharmaceutical research and the development of new drug entities. This rapid growth of pharmaceutical development opened up new avenues for the pharmacist, particularly in hospital pharmacy where specialist drug knowledge alongside an understanding of disease provided a unique perspective in patient care.

More recently, technology has again transformed the practice of medicine and pharmacy in hospitals with the use of electronic prescribing, robotic dispensers and other 'smart' decision support systems (Donyai, et al, 2008; Jha, et al, 2008). These advances have reduced traditional errors identified by clinical pharmacists (whilst introducing new selection errors) and have necessitated a change in practice as well as a re-engineering of pharmacy staff skill mix. This re-engineering has enhanced the

role of the pharmacy technician to include tasks such as medication history taking, patient counseling and has facilitated pharmacists' pursuit of more complex clinical roles.

1.4 Pharmacy education

The path to qualifying as a pharmacist was traditionally via an apprenticeship, it was first studied to degree level in the 1960s. Pharmacy is a 'regulated' profession; the General Pharmaceutical Council (GPhC) is the regulatory body for pharmacists and pharmacy technicians in England, Scotland and Wales and the Pharmaceutical Society of Northern Ireland (PSNI) is the professional leadership body and regulator for pharmacists in Northern Ireland. The regulator is responsible for ensuring that those pharmacists who attain status on the pharmaceutical register are appropriately trained initially (at University) and participate in continuing education and professional development in order to maintain their position on the register.

Prior to 1997, the Royal Pharmaceutical Society of Great Britain (RPSGB) established standards for all undergraduate pharmacy degrees in the UK, which at that time was a 3 year taught degree with 1 year pre-registration, the "3 plus 1" model (with one exception, the Bradford model – which incorporated the pre-registration period within a 4 year degree model). Since 1997, bringing the UK in line with European Directive requirements the degree was expanded to a 4 year taught programme followed by the 1-year pre-registration. All Schools of Pharmacy in the UK restructured their degree programmes from a Bachelor (BPharm) to a Masters of Pharmacy (MPharm) (Guile & Ahamed, 2011).

Feedback from employers in all sectors of the pharmacy profession suggests that pharmacy graduates are insufficiently prepared to enter the workforce; lacking interpersonal and professional behaviour skills as well as entrepreneurial and business related knowledge required for some pharmacy environments (MPC, 2011). Many Schools of Pharmacy have revised the traditional "front loaded" curriculum; science for 2 years followed by disease and therapeutic management, in order to introduce clinical pharmacy training earlier in the undergraduate degree (Winch & Clarke, 2004). The traditional course structure created challenges for student

contextualisation; they struggled to incorporate knowledge from one module to another. Guile and Ahamed (2011) suggest that students' understanding of a drug's use will evolve as they appreciate its multiple applications in various contexts. They believe that student comprehension will be enhanced via participation in work-shadowing and clinical placements during their undergraduate degree.

Currently all pharmacy students complete one year of pre-registration training, usually immediately post-graduation, prior to registration with the regulator. This year is a practice placement in community, hospital or industrial pharmacy or a combination of these to constitute 52 weeks. During the pre-registration year, students are evaluated via in-practice observation and the completion of a portfolio of evidence to demonstrate their competence at key tasks. The year culminates with two formal examinations, one open book and one closed book prior to registration with the appropriate accrediting body (General Pharmaceutical Council (GPhC) in GB and Pharmaceutical Society of Northern Ireland (PSNI) in NI). If students successfully complete all of these elements, they are allowed to practice in the UK. However, a change is imminent. In May 2011; the Modernising Pharmacy Careers (MPC) workstream 1 group proposed that a 5 year continuous undergraduate degree programme where pharmacy students graduate and register contemporaneously was the ideal method to generate a pharmacist ready to enter practice (MPC, 2011). They suggested that the division of the pre-registration training period throughout the 5 year course is left to the discretion of the individual Schools of Pharmacy, only stipulating that the final 6 months prior to registration must be in pharmacy practice and not University.

1.5 Societal view of pharmacy

Recent events, including the Shipman Inquiry (Smith, 2003), the Elizabeth Lee case (Chemist & Druggist, 2010) and the Mid Staffordshire Public inquiry (Francis, 2013) support the growing public demand for heightened accountability from healthcare professionals, with an increasing emphasis on the attainment and maintenance of competence. The introduction of mandatory continuing professional development (CPD) and the separation of the regulatory and professional leadership arms of the Royal Pharmaceutical Society of Great Britain (RPSGB) have occurred as a direct

consequence of increased public and governmental scrutiny on the ability of the pharmacy profession to guarantee sustained competence from its members (DOH, 2006; DOH, 2007a; DOH, 2007b).

Since the early 1980s, promotion of the profession of Pharmacy and the MPharm itself has been largely unnecessary as the student demand for places has always outstripped supply. However a negative byproduct of this lack of public relations, coupled with a diminishing patient-pharmacist interaction in a community setting due to increasing prescription numbers, is the erosion of public awareness of the role of the pharmacist (Jesson, et al, 2008). Gidman, Ward and McGregor (2012) found that patients had little understanding of the 'clinical' role of the pharmacist, perceiving this to the GP's job. Despite this, many patients appear to regard the pharmacist as a respected healthcare professional whilst perhaps regarding many of their practices as mysterious (Varnish, 1998). Pharmacists have always held public confidence; the Gallup poll of trustworthy professions (Gallup, 2013) consistently reveals pharmacists second only to Nurses out of 22 professions polled. Gidman, Ward and McGregor (2012) found that their small sample (n=26) contradicted this international poll, viewing general practitioners as more trustworthy citing the difference in qualification and knowledge between the professional groups. One of the implications of this lack of societal awareness of the role of the pharmacist is that potential and actual pharmacy students' perceptions of the profession into which they are being trained may not match with the reality of a pharmacist's job in the 21st Century. Jesson, et al, (2008) interviewed a number of final year school students, who were considering pharmacy amongst their University choices. They questioned the students regarding their understanding of the role of the pharmacist and without exception the students' first impressions were that it was a "*boring occupation*" with members of the profession being described as "*reclusive*" and "*unsociable*". Societal comprehension of the pharmacist's role is currently limited to what they observe in their personal interaction as little reliable rebuttal information to the contrary is available. Jesson, et al (2008) reported that at the time of their study there was no readily available information package on pharmacy for secondary schools or their careers advisors. The views of undergraduate and newly graduated pharmacists on their profession have long been sought and a persistent theme of disillusionment on progression through the curriculum is apparent (Kritikos, 2003; Jesson et al, 2006).

In the 1990s, the RPSGB launched a vision for pharmacy, known as 'Pharmacy In A New Age' or PIANA (RPSGB, 1996), to raise the profile of the profession and to demonstrate that pharmacists were not only prepared but are qualified to provide increasing contributions to the wider NHS agenda. PIANA was expanded in the 'Fit for the Future' programme (RPSGB, 2004a) which spearheaded improvements in pharmacy education including investment in research and development, the development of a pharmacy student code of conduct, fitness to practice systems as well as standards for education and training. When the Royal Pharmaceutical Society (RPS) established as a separate organisation from the GPhC in 2010, they embraced the need to rebrand and address the 'image problem' of pharmacists; actively promoting the diverse role of pharmacists in the welfare of patients across all sectors. This is particularly apparent with the increasing appearance of expert pharmacists commenting on medicine related news items on television news channels whereas these roles had previously been filled by our Medical colleagues (RPS, 2013).

1.6 Political context

Pharmacy in the UK has undergone an enormous change following the Government paper, 'Trust, Assurance and Safety' (DOH, 2007b) which supported the separation of regulation and professional leadership from the jurisdiction of one organisation, the RPSGB to the development of two new bodies; the GPhC and the RPS. The Foster Review (DoH, 2006) had requested clarification regarding the RPSGB's role as regulator and professional lead and the Clarke Inquiry (DOH, 2007a) consulted the profession on the roles it expected the new professional body should adopt. In 2010, the RPSGB handed over its regulatory role to the GPhC and retained the duties of a Professional Leadership Body for pharmacy in Great Britain. The Pharmaceutical Society of Northern Ireland retains both professional and regulatory functions for Northern Ireland at this time (DoH, 2007a). Concurrent with these changes pharmacy as a profession, in the wake of the aspirations for practice described in the Pharmacy White Paper (DoH 2008), has reflected upon the existing undergraduate course and its ability to deliver competent practitioners. This work is ongoing as part of MPC work stream 1, who support the integration of the pre-registration year within the current four year degree, extending it to five years, in order to facilitate an increasing focus on practice based activities (MPC, 2011).

In Northern Ireland, two recent changes have affected the profession of pharmacy and the employability of graduates;

a. Economic collapse in the Republic of Ireland (RoI)

Due to the strong Celtic Tiger economy of the early years of this century, the RoI was a significant employer for recent graduates from Queens University Belfast at very competitive salaries. Due to the recent recession, which has affected the RoI more significantly than Northern Ireland (NI) and the rest of the United Kingdom (UK), many pharmacists have returned across the border leading to wide scale unemployment amongst newly qualified pharmacists and huge competition for even short term contract positions.

b. The establishment of a new School of Pharmacy, the University of Ulster (UU), in NI

Historically, Queens University Belfast (QUB) offered the only pharmacy course in NI. A new undergraduate pharmacy course opened in September 2009 and the first set of graduates matriculated from UU in June 2013. The formation of a new School of Pharmacy in the province has increased the pressure on the QUB to continue to attract the best local candidates and also on the graduating students to achieve local pre-registration places and in future, permanent jobs due to increased competition.

It is evident that these social, political and pharmacy related influences have shaped the profession of pharmacy and the practice of pharmaceutical care in the UK. This research studies the impact on stakeholders of a change to the assessment of clinical skills in the School of Pharmacy at Queens University Belfast (QUB) via the use of Objective Structured Clinical Examination. It is also important to consider the ripple effect that such a change could generate within the School of Pharmacy and how this could be managed.

1.7 Change

Van de Ven and Sun (2011) argue that;

“Change is an ongoing and never ending process of modern organisational life”.

Organisations are influenced by an enormous variety of stimuli which have exponentially increased since the advent of the World Wide Web. The need to innovate, reskill and realign educational objectives, attitudes and processes in order to keep the MPharm relevant has always been essential, however, advances in technology have altered the pace of change dramatically. How an organisation reacts to these stimuli is critical to the success of the change. Beer and Nohria (2001) found in their review of large scale change programmes that 70% of all change programmes fail to deliver their intended benefits, highlighting the need to carefully craft the approach to change within QUB and to be aware of the potential pitfalls.

All organisations have a number of component parts that contribute to the success or failure of the intended change. Leavitt (in Martin, 2001) suggests that these fall into; people, tasks, technology, structure and the environment in which the organisation exists. This study seeks to introduce and review the impact of a change in the 'process' of assessment but it requires the engagement of the 'people' and influences the beliefs and behaviours of both the student and academic staff in order to achieve success. It also strives to illuminate the environment in which the change occurs by describing the curriculum as *written* by educational leads, as *taught* by academic staff and as *lived* by students.

Stages of change

At the outset, no-one deliberately goes out to fail. The early stages of any change project are commonly characterised by an enthusiastic zeal and a firm belief that the change will be transformative. Unfortunately, positivity alone will not result in meaningful and measurable change. If the change is to be truly revolutionary it is likely to be long and hard fought with each phase unique in how it affects the organisation and its people (Kotter, 1995). Claim victory too early or take too long to embed and the change may fail. Ultimately organisations, including Universities, need to evolve to remain relevant.

Change theorists often describe 'stages' of a change as well as transitions from one stage within the process to another. Burnes (2004) describes Lewin's process of creating a '*suitable environment*' for change to blossom within. He illustrates a method of '*unfreezing*' existing behaviour and then '*refreezing*' new behaviour in order to

implant change. The process of change is clearly outlined by the Lewis-Parker Transition curve (Parker & Lewis, 1981);

- Immobilisation (shock)
- Denial of change
- Incompetence
- Acceptance of reality
- Testing (new ways to deal with reality)
- Search for meaning
- Integration

When considering how to maximise success for a process of change, it is important to consider how stakeholders view change for example; academic staff compared to students. Kotter (1995) believed in strong leadership and clear communication, detailing 8 reasons why change can fail (Table 1).

Reasons		Reasons	
1.	Not establishing a sense of urgency	5.	Not removing the obstacles to the new vision
2.	Not creating a powerful guiding coalition	6.	Creating short-term wins
3.	Lacking a vision	7.	Declaring a victory too soon
4.	Under-communicating the vision	8.	Not anchoring changes in the organisations culture

Table 1. Eight reasons why change fails.

Applying the theories of Kotter (1995) and Lencioni (2002) to the introduction of OSCE in to the School of Pharmacy at QUB, a clear introductory message is essential to support a clear vision and to articulate the aims of the proposed change; improved student competence on graduation as well as the role of stakeholders in achieving success.

Kotter (1995) omitted one element vital to this process of change; clear methods of *measuring* success in order to demonstrate to stakeholders that the upheaval was worth it. Clear demonstration of success may also stimulate adherence to the change and may aid the conversion of reluctant participants (Aiken & Keller, 2009). Recognisable leaders who support the change are also critical to success providing

both credibility and reassurance that change is required and achievable. Their identity and position in the organisation is of great importance. Gans (2011) believes that the identification of '*change champions*' with appropriate status and influence is crucial to the success of a change intervention. Leadership is not only the domain of senior staff or the project leader and 'champions' should represent each stakeholder group to support change from within. Pilot OSCEs during the third year clinical placement one year prior to this study were used to demonstrate the viability and achievability of this type of assessment within the setting of the School of Pharmacy to the Director of Education and Head of School. It was vital to gain their support prior to this research. Student views were captured in a small pilot research study (Appendix 1).

Finally, the type and level of training and support provided for stakeholders to prepare them for the new process is fundamental to project success. Aiken and Keller (2009) argue for the need to provide workshops and 'learning forums' as well as experiential opportunities. They highlight the need to avoid 'one-off' training events with stakeholders then left to their own interpretation. They propose an ongoing approach to training providing stakeholders with the opportunity to discuss their experiences preferably in a 'pilot' stage prior to full implementation. In order to maximise the chance of success for this project, key stakeholders were involved and the academic staff and undergraduates were prepared for the impending change with the use of workshops, lectures, online resources as well as bespoke DVDs and sample OSCEs.

Aims and objectives of the study

The aim of this research study

The overall aim of this research study is to identify and explore the expectations of stakeholders to the use of Objective Structured Clinical Examinations (OSCEs) with fourth Year undergraduate pharmacy students at Queens University Belfast (QUB) and academic staff at the School of Pharmacy in relation to demonstration of competence in applied clinical pharmacy skills. This study was designed following a small, ethically approved, pilot study of a questionnaire conducted with Level 3 QUB undergraduate students in 2010 after completion of a formative OSCE during their clinical pharmacy placement (Appendix 1).

The specific objectives are:

1. To explore with stakeholders their vision with regard to the current challenges regarding the assessment of competence of undergraduate pharmacy students with particular reference to applied clinical pharmacy skills.
2. To explore with stakeholders the contemporaneous critical issues impacting upon the provision of an undergraduate clinical pharmacy at QUB.
3. To determine the views and experiences of pharmacy undergraduate students participating in OSCE assessment with regard to the use of this type of examination to evaluate competence in clinical pharmacy skills.
4. To determine the views and experiences of Teacher Practitioner pharmacists and academic teaching staff in the School of Pharmacy participating in the OSCE assessment on the use of this type of examination to evaluate competence in clinical pharmacy skills.
5. To identify what pharmacy undergraduate students and teaching staff consider to be the main challenges and/or benefits to the use of OSCEs as an assessment method.

Prior to discussing the views of the identified stakeholders on their perceptions of the use of OSCEs in pharmacy education, it is important to consider the impact of assessment on student learning, the use of different types of assessment and as well as the impact of OSCE on student learning. Chapter 2 is a literature review which will consider these issues as well the advantages and disadvantages with the use of this type of assessment strategy.

Chapter 2

The Literature Review

Chapter 2

2.1 Rationale for the literature review

The published literature related to objective structured clinical examinations (OSCEs) is immense and broad ranging. This assessment format has captured the imagination of the health professions since its first use by Harden in 1975. In order to determine the views of stakeholders on the use OSCEs, a comprehensive literature review was essential to provide background information to inform the topic guide. The review of the literature also supported the development of the OSCE assessment itself which students completed in December 2010.

Although OSCE has been in use in Medicine since 1975 few authors have determined the opinions of stakeholders via a qualitative method regarding the use of this type of assessment. A vast literature exists relating to the use of OSCE in various formats and settings, however due to its relative innovative status in pharmacy no time restrictions were applied. A small number of studies relating to Medical, Nursing and allied healthcare colleagues were used to provide a historical perspective from the instigators of OSCE. Inclusion and exclusion criteria (Appendix 2) were used to determine which studies to be considered. The data collected was fully evaluated in order to gain a comprehensive understanding of the theoretical underpinnings.

2.1.1 Approach for literature review

The literature review was focused on the investigation of the use of OSCE as an assessment method of clinical skills in the education of undergraduate pharmacy students. Overall, an international view has been taken regarding the use of OSCE in Pharmacy with colleagues from Malaysia, the USA and the UK publishing work in this area. This literature review was crafted to be open and descriptive in style however a systematic approach was taken in the searching and analysis of the literature as outlined in Figure 1.

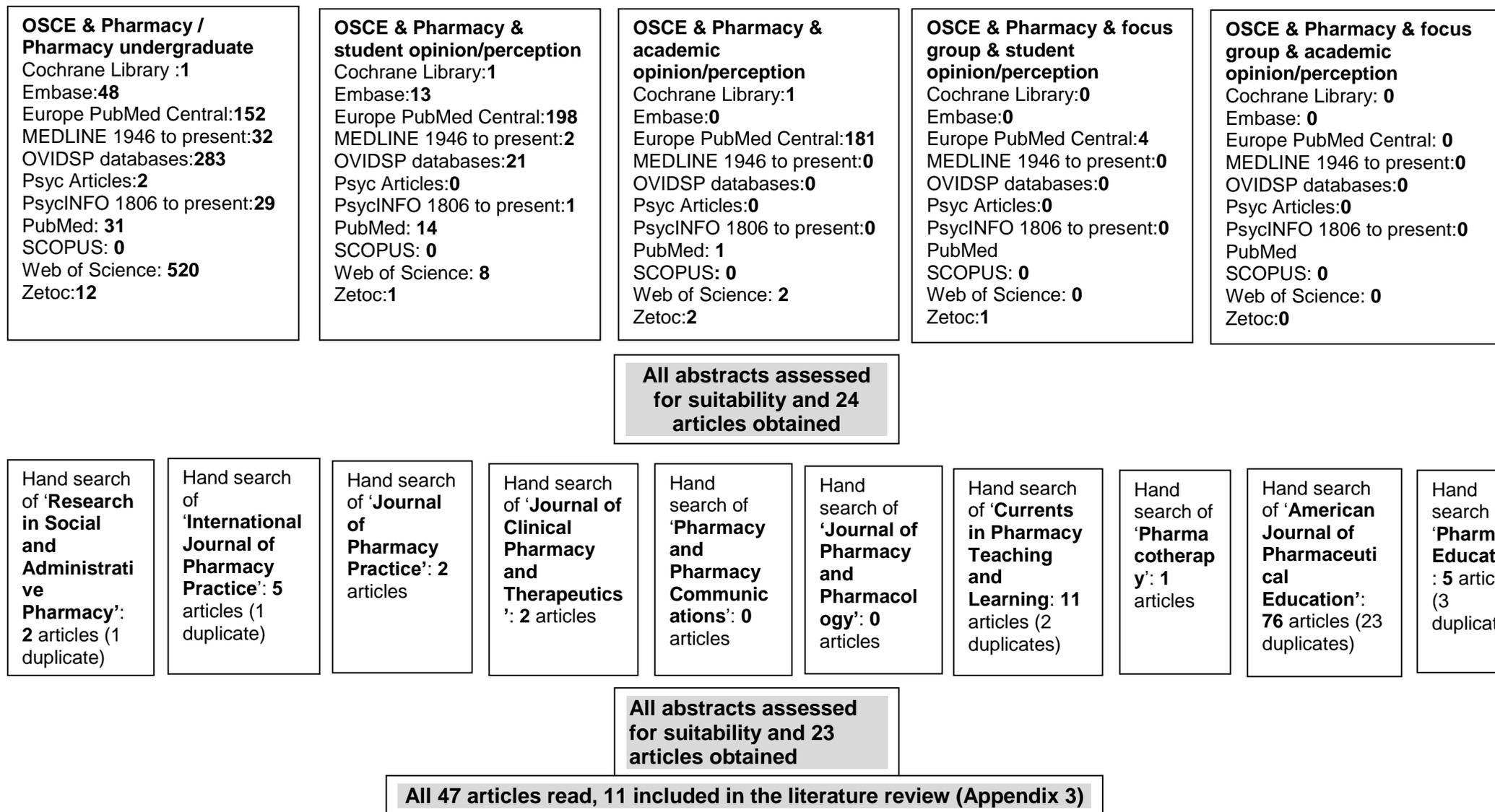


Figure 1. The Literature Review Process

To ensure all relevant papers were sourced, key ('OSCE' AND 'Pharmacy', 'Pharmacy Undergraduate') and catchment ('OSCE' AND 'Focus Group', 'OSCE' AND 'student opinion/perception', 'OSCE' AND 'academic opinion/perception', 'OSCE' AND 'faculty opinion/perception') terms were used to search fourteen electronic databases. All databases were accessed via Queen's Online (Table 2).

Databases		Databases	
1.	Cochrane Library	8.	Psyc INFO 1806 to present
2.	EMBASE	9.	Psyc INFO 2002 to present
3.	Europe PubMed Central	10.	PubMed
4.	MEDLINE 1946 to present	11.	SCOPUS
5.	MEDLINE 2008 to present	12.	SPORTDiscus
6.	OvidSP databases	13.	Web of Science
7.	Psyc Articles	14.	Zetoc

Table 2. Databases searched for the literature review.

A large volume of literature was identified from these searches. A hand search was also conducted using the term 'OSCE' in a selected number of Pharmacy Journals (Table 3) to catch any further literature regarding the use of OSCE in the profession of pharmacy. This yielded 104 papers, including their citations and references, a number of duplicates were identified from both searches and these were removed. Twenty-four full papers were obtained and reviewed for inclusion.

Journal Title	Number of articles (citations/refs)	Journal Title	Number of articles (citations/refs)
Research in Social and Administrative Pharmacy	2	Pharmacy and Pharmacology Communication	0
International Journal of Pharmacy Practice	5 (3)	Currents in Pharmacy Teaching and Learning	11 (8)
Journal of Pharmacy Practice	2	Pharmacotherapy	1
Journal of Clinical Pharmacy and Therapeutics	2 (1)	American Journal of Pharmaceutical Education	76
Journal of Pharmacy and Pharmacology	0	Pharmacy Education	5

Table 3. Results of a hand search of 10 Pharmacy Journals.

Twenty three articles were identified from abstracts as being potentially relevant to the study and the full text were reviewed. As described in Figure 1, 11 papers were included in the final literature review.

In a case study, the path traditionally *begins* with a thorough literature review and a considered interpretation of the research questions in light of opinions which are unearthed (Yin, 2009). The essence of case study research is to illuminate a decision or a set of decisions; why and how they were taken; what were the issues affecting implementation and what was the impact of the decision(s) within the context in which this decision was set (Schramm, 1971 cited in Yin, 2009). A review of the literature prior to commencing a case study approach enables the researcher to have a thorough knowledge of the area under research and during data collection, for example in focus groups, this knowledge will facilitate the development of a robust topic guide. A comprehensive knowledge of the previous work conducted in the pharmacy profession with regard to use of OSCEs as well as the views of undergraduates and academic staff from healthcare disciplines was sought. This core literature base helped to distil key issues regarding the proposed use of OSCEs within an undergraduate pharmacy context in QUB. Eleven papers were identified for inclusion in this literature review (Appendix 3). A summary was made of each paper identified including; the type of study, the main findings, the strengths and weaknesses and a brief summary of how the work contributed to this research project. Finally, each paper was assigned 'labels' to capture the core messages for example; competence, student opinion of OSCE. In the next stage, these labels were 'matched' in order to establish recurrent themes in the literature relating to the research questions.

2.2 Objective Structured Clinical Examination (OSCE)

As with other healthcare professions, student assessment in pharmacy education has evolved over the past 20 years. Educators have striven to adapt an existing tool or develop a novel evaluation method that not only will estimate competence in a wide variety of clinical situations but it also reliable, valid and lacking in subjectivity (Beck, Boh & O'Sullivan, 1995). The Nursing and Medical Schools (Feingold, Calaluce, & Kallen, 2004; Curran, et al, 2007) and more recently Schools of Pharmacy (Seybert & Barton, 2007; Fernandez, et al, 2007; Seybert, Kobulinsky, & McKaveney, 2008; Vyas, et al, 2010) have embraced the use of simulation to provide safe practice environments for undergraduate trainees and to facilitate objective assessment of their clinical skills.

As already described, healthcare professions, including pharmacy, have evolved from the traditional tests of knowledge accomplished via written exams towards a more complex system of evaluating student competence (McRobbie, et al, 2002; Carr, 2004; Goldstein, et al, 2005; Van der Vleuten & Schuwirth, 2005). The profession of pharmacy is increasingly expected to demonstrate the robustness of undergraduate pharmacy training and evidence of graduates' proficiency in upholding patient safety particularly with reference to high profile cases in the media where patient rights are paramount. In recognition of this, the General Pharmaceutical Society (GPhC) launched guidelines for education and training of pre-registration pharmacists (GPhC, 2011) with a strong focus on patient safety. Schools of Pharmacy and employers are also required to demonstrate student competence in key pharmaceutical skills *prior* to graduation/registration. Unlike medicine, pharmacy is at the start of their journey with the use of OSCEs and we do not currently have a "blueprint" for the ideal OSCE structure, content or marking scheme. There are no national courses for students to attend and the first book to guide their preparation for this type of assessment was made available in May 2013 (Evans, Kravitz & Walker; 2013).

The concept of a simulated patient-clinician interaction in order to determine competence was originally developed in the 1970's by the Medical profession. Harden, et al (1975) first describe the OSCE as a reliable method of assessing clinical skills and since that time this method has been widely used to evaluate competence, in a growing number of professions. Participants are assessed via direct observation whilst partaking in an objective, structured time-limited task with each student completing an identical task. Crucial goals in the use of OSCEs as a module of assessment include the improvement of clinical skills evaluation; the identification of individual student's strengths and weaknesses as well as the highlighting of weaknesses in course design or delivery (Mavis, 2000; Schoonheim-Klein, et al, 2006). An additional benefit of the use of OSCE within a programme of evaluation can be the provision of timely formative feedback to students regarding their performance. This has been shown to enhance student learning (Hodden, et al, 1989; Shumway & Harden, 2003).

2.2.1 What can we learn from other professions?

Almost 40 years of experience with OSCE in medicine has established this assessment method as valid and reliable across wide spectrum of learners when determining clinical competence (Aggarwal et al, 2010) although with a number of caveats with regard to its xxxxx (Newble, Noale & Elmslie, 1981; Mazor et al; 2005). Norman (2005) and Barman (2005) both challenged the belief that OSCEs were superior to traditional assessments in the evaluation of competence with Barman (2005) disputing the validity and reliability of OSCE as an assessment. Auerwarakul et al (2005) however found OSCE to be one of the evaluation methods with the most evidence for validity.

Nursing have evolved the traditional medical OSCE and are increasingly reporting differences to Hardens original model; instead of 16-20 five minute stations, nursing OSCEs range from 10-30 minutes in length with the number of stations varying from 2-10 (Khattab & Rawlings, 2001; Bartfay et al, 2004; Rushforth, 2007). Khattab & Rawlings (2001) also describe OSCES which offer links between stations; for example students being asked to write up the findings from a previous station or answer questions on a previous station and these can serve to promote a holistic approach to patient care.

As a profession, pharmacy can learn from medicine and nursing and adopt some of their strategies in relation to station design and content as well as to ensure robust reliability and validity in our OSCE. Van der Vleuten & Slawson (1990) describe a number of methods to enhance the reliability including ensuring an appropriate number of stations (15-20) in order to minimise the impact of individual stations. They also mention student fatigue, high anxiety and memory loss as factors to address by increasing student familiarisation with the assessment format as well as the inclusion of rest stations (van der Vleuten & Slawson, 1990). Iramaneerat & Yudknowsky (2007) describe common issues with rater reliability including leniency, consistency, the halo effect as well as grade ranges despite intensive training and rater experience. Medicine have also evaluated the reliability of OSCE in relation to specific clinical skills, for example, Swanson & Norcini (1989) determined that it took just 2 hours of total OSCE testing time to achieve a reliability coefficient >0.7 when evaluating communication skills whereas when testing data gathering and history taking, almost

6 hours of testing is required. Duerson et al (2000) advise caution when interpreting such psychometric tests; they found significant student, curricular and Faculty development outcomes after review their 9 year programme of OSCE including a renewed interest in clinical skills teaching by Faculty as well as student appreciation of the time commitment given to OSCE by staff.

Although widely used in Medicine since the early 1980s, adaptations of the original OSCE format have facilitated their global expansion to other healthcare disciplines including Dentistry (Brown, Manogue & Martin, 1999) Nursing (O'Neill & McCall, 1996; Alinier, 2003; Franklin, 2005; Kurz, et al, 2009), Midwifery (Rennie & Main, 2006; Jay, 2007), Physiotherapy (Nayer, 1993) and Dietetics (Lambert, Pattison & de Looy, 2010). Pharmacy has also developed and implemented OSCEs in undergraduate and postgraduate training as well as high stakes registration examinations (Austin, et al, 2003; Corbo, 2006; Hastings, 2010; Sturpe, 2010). The following literature review focuses on the use of OSCE in pharmacy to date describing the content, logistics as well as evaluation of the assessment method.

2.2.2 OSCE logistics

As the use of OSCE expands in pharmaceutical education it is important to establish whether the original method is applied in a way that preserves the integrity of the examination, particularly if it is being used for “high stakes” assessment, that is, that the assessment is used to determine advancement to the next academic year (Sturpe, 2010). Harden (1990) outlines guidance for general examination procedure when establishing and implementing an OSCE program, however no definitive standard is available in the literature to support minimum standards in any healthcare profession (Patrício et al, 2009).

OSCEs require students to rotate through multiple ‘stations’ where they are asked to demonstrate their competence in tasks representing a range of clinical areas (Figure 2). The number of stations which candidates complete varies from paper to paper, however at least 10-12 stations are required for ideal examination reliability particularly in high stakes evaluations (Harden, 1990). Sturpe (2010) proposes that 15 tasks are preferred in order to reduce the influence of student familiarity with a specific subject. Few of the pharmacy OSCEs implemented an adequate number of stations by this

benchmark, although many were not describing high stakes assessment. Most authors describe the use of 3 or 4 active stations (Awaisu, Mohammed & Mohammed, 2007; Salintri et al, 2013). A number of researchers who described sufficient stations, such as Awaisu et al (2010), admitted that of their 13 station OSCE, only 7 were active stations with 3 preparation and 3 rest stations included. Only two papers describe an appropriate number of stations; Kirton and Kravitz (2011) who used 13 stations in their Pharmacy Practice OSCE comparing it to traditional assessment methods and Evans et al (2013) who described the use of 17 stations in a pilot formative OSCE followed by 20 stations in subsequent formative and summative assessments.

Tasks or 'stations' are required to be time-limited, although time allocated in reported OSCEs varies from 5 – 30 minutes. Each student is allocated the same time to complete the task. OSCEs are commonly used to assess a range of clinical competencies which are difficult to evaluate using other available methods such as communication skills and professional behaviour (Dupras & Li, 1995; Jeffries et al, 2007; Schwartzman et al, 2011). Tasks can include; interpretation of patient results; medication history taking; checking prescriptions; patient education; conflict resolution (Adamo, 2003; Langford, et al, 2004; Arnold & Walmsley, 2008; Evans et al, 2013; Schwartzman, et al, 2011). Sturpe (2010) in her review of American colleges offering OSCE reported that the majority were using this method in laboratory courses (14 / 32) with only a small number utilising OSCE to evaluate competence in therapeutics (4 / 32).

Many OSCE stations utilise "props" such as antibiotic guidelines, patient's medication to be checked or a person with whom the candidate must interact. These 'people' are known as standardised patients (SPs) or standardised healthcare professionals (SHPs) depending on the role they perform. There is a need to maintain the 'reality' of the scenario with the use of realistic props without using guidelines or references with which the candidate is unfamiliar, however these details are absent from the literature searched.

2.2.3 Use of standardised patients (SPs) / standardised healthcare professionals (SHPs)

Tasks which require interaction with another person will use standardised patients (SPs) or standardised health professionals (SHPs); individuals who have been trained to portray a patient or a healthcare professional in a specific scenario. Barrows and Abrahamson (1964) described the importance of adequately measuring healthcare student performance with patients; not least to determine the effectiveness of teaching delivery methods but also to identify individual student difficulties so that remedial action can be taken. They argued that although experiential learning provides students with the *opportunity* to develop effective clinical skills, the use of an SP compared to a written or even an oral examination provided an enriched measure of their true performance with a patient. They also believed it enabled “bedside manner” to be observed. However there are detractors of the use of OSCE as a measure of clinical performance with Norman (2005) stating;

“At best, performance assessment is about as good at predicting actual performance as a multiple-choice test based on relevant knowledge, but no better”.

2.2.4 Training of SPs

There is no doubt that the use of ‘real’ patients in a clinical setting is complicated by a range of issues not least their availability due to ongoing procedures and even their level of consciousness. There is also the requirement for standardisation of patient ‘performance’ from student to student. Healthcare professions have resolved this issue via the use of standardised patients or healthcare professionals in OSCE who are; actors, real patients or members of the faculty. SP presentation does not vary from student to student so that a direct comparison can be made between student performances and SPs are trained to project a passive role and not to ‘lead’ the student (Barrows & Abrahamson, 1964; Salinitri et al, 2012). Adamo (2003) clarified that although a standardised patient encounter is *simulated*, a simulated patient encounter is not automatically standardised. The ‘patient’ only becomes standardised when they have been trained to provide consistently identical responses to multiple student questioning. SP encounters should be designed to simulate actual student-patient interactions with a high degree of authenticity. There is no agreement in the literature regarding how much training SP’s should receive prior to participating in an OSCE however some models and standards exist in practice (Austin, Gregory & Tabak, 2006). Crucial aspects of training include the need to ensure SPs and SHPs are able

to demonstrate an ability to adapt their responses to variations in student interview styles, to be able to deliver naïve responses to reflect the patient's perspective and to refrain from prompting even if the student is on the wrong track (Adamo, 2003). The extent (if any) of training received by SPs is not always mentioned in the Pharmacy OSCE literature (Ragucci, Fermo & Mazur, 2005; Kirton & Kravitz, 2011). Sturpe (2010) found that 20 out of 32 colleges using OSCE hired SPs and in 47% of these cases, the SP was also the examiner. She reports that 63% provided training for SPs whilst the remainder of Schools report minimal, no training or the interviewee was unsure of what was provided to SPs. In 50% of training, SP performance was videotaped to facilitate student queries. Adamo (2003) as well as Ragan, Virtue and Chi (2013) also described videotaping SPs' performances in order to benchmark SP performance and to establish acceptable proficiency with the OSCE tools. Those who provided training varied from sending the script to SPs in advance and meeting with their examiner (Salinitri et al, 2012) to role-plays with faculty including poor, good and excellent student performance (Awaisu et al, 2010; Hastings et al, 2010; Ragan, Virtue & Chi, 2013) to standardise and benchmark performances between SPs. The longest training, 10 hours, was described by Ragan, Virtue and Chi (2013) and comprehensively included role-play, a standardised script emphasising the importance of passivity as well as videotaping, to further improve standardisation. The 'Association of Standardised Patient Educators' (ASPE) was founded in the USA in 2001 to improve consistency of SP training and development. There does not appear to be a UK equivalent at this time.

2.2.5 Who should the SP be?

Comparable to other novice OSCE users from other professions, many published pharmacy OSCEs either did not specify or utilised academic or clinical staff to portray SPs and SHPs (Ragucci, Fermo & Mazur, 2005; Salinitri et al, 2012), perhaps demonstrating a lack of confidence in their ability to train actors to deliver the scenario without leading or disadvantaging students with a non-standard performance. Quero-Munoz et al (2005) concluded in their study that there was insufficient reliability to enable patient-actors to replace pharmacist-actors in their high-stakes OSCE. Sturpe (2010) found that 20 out of 32 colleges hired actors whilst 6 used faculty, 5 used non-pharmacy volunteers, 4 residents and a further 4 used pharmacy students to portray SPs in OSCE. OSCEs are staff-laden exercises even without the use of faculty to

portray patients in stations and there is a risk that staff presence may bias student performance. McWilliams and Botwinski (2010) found that using professional nurses as SPs weakened their OSCEs. They report their findings that nurse-SPs provided more information than was required during the encounter and, due to uneven and varying experience in specific areas, were not always able to produce a *standardised* performance. Gallimore, George and Brown (2008) asked 155 pharmacy students about their preferences for simulated patient portrayal; respondents (107/155) chose community volunteers followed by students, faculty and finally administrative staff. The community volunteers in this study also received the highest rating for the reality of their performance.

2.2.6 Psychometric properties of OSCE

Fundamental aspects of every assessment include the ability to demonstrate the reliability and validity of the method as well its objectivity. Many authors have investigated the psychometric properties in relation to the OSCE in a variety of diverse clinical fields. The terms 'reliability' and 'validity' are widely associated with a positivist approach to research and quantitative methodologies. In relation to qualitative research it is also important to consider how to increase the quality of the information collected in order to generate understanding of the concepts identified. Healthcare education, both undergraduate and postgraduate, can be used to dynamically affect change in the behaviour of professional groups in real life practice. Use of OSCEs alone is unlikely to engender a sustained behavioural change, however, an alignment of teaching, learning as well as assessment in order to support clinical skills and performance would appear to have a greater chance at success (Hodges 2003a). The degree of validity of an assessment is a method of establishing that the evaluation reflects what it has been designed to measure (Corbo, et al, 2006). An examination should measure what is intended (face validity) and include the assessment of relevant areas and skills representative of up-to-date clinical pharmacy practice (content validity) (Crossley, Humphries & Jolly, 2002; Turner & Dankowski, 2008).

2.2.6.1 Content validity

Content validity is essential in any assessment. Educationalists describe the development of a blueprint or 'matrix' against which the content and competencies to be assessed during the examination are mapped to achieve content validity. The use

of a blueprint also supports sufficient specification of examination contents as opposed to random topic selections. In order to maximise content validity, OSCE tasks are often developed by a team of clinical experts instead of one individual to include an element of peer review and to provide a broader view of daily practice and pre-testing with student groups, and junior practitioners in the field of practice will help achieve face and content validity (Jeffries et al, 2007; Sturpe, 2010). Reported validity in pharmacy OSCEs is scarce with few studies describing their authorship process in detail. However, Awaisu et al (2007), Hughes et al (2013) as well as Ragan, Virtue and Chi (2013) describe the use of a 'blueprint' for their station development although only Awaisu et al (2007) explain how their station content was 'mapped' against the learning outcomes of the module. Evans et al (2011) delineate a robust authorship method where each new station developed has 4 versions, all of which are piloted, albeit with the authors, for feasibility of completion within the 5 minute timeframe. The use of standard setting either via borderline regression or the Angoff method was described by Awaisu et al (2010) alone.

Another aspect of validity which was not addressed by any of the papers evaluated is the concept of "contextual fidelity", that is, the importance of the *setting* in which the task is set and along what lines the student is expected to progress compared to content validity alone (Hodges, 2003a). For example; taking a medication history from a patient who is blind would be an entirely different task from taking a medication history from a patient who does not have this disability and this "context" will completely alter the approach that the student is trained to take and perhaps the level of success they will achieve.

2.2.6.2 Reliability

An ideal evaluation tool should be objective and strive to remove assessor (and patient, if relevant) variability (Swanson & Norcini, 1989; Corbo, et al, 2006). Assessor bias can result in differences in ratings given by the *same* assessor, that is, intra-rater variability. Differences between assessors can lead to inter-rater reliability (Tamblyn, et al, 1991). The reliability of an examination is its ability to differentiate consistently between ideal and poor performance in a reproducible manner. Due to the context specificity described above under validity, OSCEs require a large number of stations to enable examiners to determine student competence over a number of tasks with a

number of different examiners. Quero-Munoz (2005) in their high-stakes OSCE to facilitate pharmacy graduates entering the Canadian Pharmaceutical Register compared 26, 20 and 15 stations determining that 15 stations were sufficiently reliable for this type of assessment. For lower stakes undergraduate assessment, the number of stations reported in the studies evaluated varies from 3 (Hastings et al, 2010) to 17 (Evans et al, 2011). Few authors considered inter-rater reliability although Evans et al (2011) describe the use of OSCE specific software implemented to identify variances in assessor performance.

2.2.7 Feedback

Schultz, et al (2004) found that the overwhelming majority of medical students questioned believed that feedback was essential for learning. OSCEs are valuable formative teaching tools, providing the opportunity for immediate feedback to students on performance as well as to teachers in relation to the level of student understanding of material delivered (Jeffries, et al, 2007). Using OSCEs to inform both individual students learning as well as to expose areas of weakness in the course curriculum, or delivery, via student performance embeds the value of OSCEs as an integral aspect of the assessment program. Despite this, only Evans et al (2011), Ragan, Virtue and Chi (2013) and Hughes et al (2013) describe their procedure for feedback to students on their performance and few papers evaluated describe the remedial actions taken if a student should 'fail' the OSCE. Ragan, Virtue and Chi (2013) required candidates to complete a personal development plan (PDP) to address the domains failed within their OSCE and Quero-Munoz et al (2005) required a resit as their paper described registration with the Canadian Pharmaceutical Society.

2.2.8 Stakeholder opinions on the use of OSCE

Only three of the eleven papers included in this review did not consider the views of any stakeholders to the use of OSCE. All eight of the remaining studies used quantitative methods, usually via questionnaire to determine student opinions on the types of stations used, the set-up of the rooms and the general running of the OSCE assessment. Evans et al (2011) asked students to complete a reflective account describing their experiences and also evaluated staff perspectives in a post-OSCE debrief, although this largely focused on student performance and also consistency of standardised patient and doctor performance. None of the papers used a qualitative

approach to the evaluation of student or staff perspective on the use of OSCE in a pharmacy setting.

2.2.9 Pros and cons of OSCE

OSCE has been demonstrated to be objective, reliable (if sufficient stations are undertaken to determine reproducibility) and valid (if appropriate recognition of content and context are observed). It has been shown to be acceptable to students and lecturers as a fair method which demonstrates student ability in the practical aspects of the healthcare professions. It is also a feasible, if expensive and time-consuming, tool and the educational impact is undeniable, even without extensive feedback. In addition to an increased objectivity, advantages of OSCE are cited as an ability to control the complexity of the examination as well as the opportunity to provide feedback to students on their performance.

Some of the negative considerations when preparing to implement an OSCE program include the cost of training academic staff to prepare and examine OSCEs as well as the training of standardised patients/doctors to adequately perform their roles. It is a huge organisational undertaking, usually requiring engagement from the entire academic team in order to examine all students in a timely manner. It also requires appropriate facilities and strict timetabling within the student's existing curriculum (Patricio et al, 2009).

Some evidence also suggests that, although OSCE have proven reliability and validity as an assessment method capable of evaluating a wide variety of clinical problems, there is little data to support that a student's *competence*, as established during and OSCE examination, is reflective of their future *performance* in routine clinical practice (Beck, Boh & O'Sullivan, 1995). Some authors challenge the reliability of OSCE for certain clinical skills including data collection and history taking, arguing that the number of stations as well as skills assessed must be carefully designed in the OSCE blueprint (Turner & Dankowski, 2008).

Chapter 3

Research Strategy and Methods

Chapter 3

3.1 Introduction

This chapter will present the overall strategy and methods used to evaluate the introduction of OSCE, within the School of Pharmacy at Queens University Belfast. It will defend the rationale for choice of research strategy as well as the methods chosen and provide evidence to support the quality of the study results. Qualitative data will

be obtained via focus groups and semi-structured interviews with undergraduate pharmacy students and academic pharmacy staff as well as from a thorough documentary analysis of curriculum documentation relating to the QUB undergraduate pharmacy course. This approach will support the researcher in describing the rich and multi-layered environment in which the research will occur (Patton & Patrizi, 2005). The chapter will also outline the need for ethical approval from a number of corporate bodies due to the range of stakeholders interviewed. A description of the stages of the study undertaken and the timescale in which it was completed will also be included.

Limitations in the research method and analysis will be discussed as well as description of the rigour of the method and analysis considered in this case study. The description will be as transparent as possible in relation to the methods and techniques of analysis to be used in order to maximise the credibility of the data presented.

The environment and the culture in which the educational change occurs are fundamental to success. When considering the traditional positivist approach these are largely ignored while researchers focus on intervention success. Patton and Patrizi (2005) propose that whilst experience and reflection are the best teachers, rich cases which provide the opportunities to stimulate the discussion and reflection which are essential in applied professions such as pharmacy. The same can be argued for the most suitable method for evaluation; a quantitative approach would facilitate the measurement of the opinions of a large number of people to a limited number of questions whereas a qualitative approach will generate a wealth of information about a smaller number of people, that is, it would describe a 'case' (Patton, 1990). In order to consider how a traditional School of Pharmacy, where assessment is predominantly via written examination, would react to the introduction of OSCE a case study approach was chosen to illuminate the environment in which the change would occur. The reasons for choosing a case study approach are discussed in this chapter.

3.1.1 The research strategy

A strategy for research is a framework to guide the study and the starting point includes establishing which methodological paradigm the research will sit within. There are broadly there are two fundamentally opposing inquiry paradigms:

1. Positivism/post-positivism; use of quantitative and experimental methods to test hypotheses
2. Naturalism; use of qualitative methods to holistically understand human experience in context (Patton, 2002).

Within naturalism, the researcher's role is to construct a holistic synopsis of the subject studied as well as the environment in which it exists. The goal of this type of research is to unearth participant behaviours and practices in relation to their unique lived experience (Miles & Huberman, 1994). An understanding of both positivism and naturalism is essential when choosing the correct epistemological approach.

3.1.1.1 Positivism / post-positivism

Traditional positivism assumes the existence of an objective reality which is independent of observers and which, by using the correct method, can be accurately captured and replicated. Post-positivism is more pragmatic and accepts the influence of multiple biases however still believes that objectivity is worth aspiring for (Patton, 2002). Post-positivists still rely upon scientific method to gather and analyse data but the end goal is tempered from traditional positivism to an achievement of an approximation of reality, linked to what is actually observed (Miles and Huberman, 1994).

3.1.1.2 Naturalism

Walsham (1993, p.5) proposes that naturalistic methods start from the position that our knowledge of reality is;

“a social construction by human actions...”.

With this assumption, he supports the concept that there is no objective reality which can be 'uncovered' by research and 'replicated' in further research. Ultimately naturalism is based on the belief that qualitative research should strive to reveal multiple realities as opposed to searching for one objective reality (Miles, Huberman & Saldana, 2013).

3.1.1.3 Choosing a methodology

In relation to the aim of this research, from a theoretical and philosophical standpoint, it is difficult to support a truly objective reality of such a multifactorial and evolving

social phenomena and so a naturalistic approach will be undertaken (Miles, Huberman & Saldana, 2013).

Within the naturalistic paradigm, there are a number of methodologies;

- a. Ethnography
 - The study of individuals or groups and their interpersonal behaviours and beliefs within their own culture, mainly via observation
- b. Phenomenology
 - Study desiring to understand the social phenomena under investigation from the perspective of the population studied
- c. Constructivism
 - The study of how people in the observed setting have constructed their reality by uncovering their beliefs, perceptions and truths (Patton, 2002).

3.2 Methodology

Methodology in traditional quantitative research is used to describe research *method* and is simply a descriptive term for 'data collection and analysis'. *Methodology*, however, has a much broader meaning in many social science disciplines, referring to the philosophical and epistemological underpinnings of knowing about the world. Methodology differs from methods because it addresses the philosophical assumptions of particular research methods. This research will be undertaken with the epistemological stance of phenomenology (Crotty, 1998) to investigate the variable views of all stakeholders in the School of Pharmacy, Queens University Belfast (QUB). Phenomenology seeks to determine, via systematic reflection, the essential properties of the phenomena under investigation (Miles & Huberman, 1994). Its focus is on understanding the *unique* lived experience of individuals who experience a phenomenon.

Husserl developed core concepts of phenomenology which fundamentally support a process of reflection which would expose the individual's "*lived experience*". Heidegger later modified Husserl's concept of phenomenology, he did not accept Husserl's belief that human opinion is constituted by their conscious thought and proposed that consciousness was peripheral to one's existence. In doing so, Heidegger enabled the migration of phenomenology from psychology (consciousness)

to ontology (existence) (Crotty, 1998).

A descriptive method is most suitable to explore this research question as it is the first time this phenomenon has been examined in this setting (Koch, 1995), and a phenomenological methodology was chosen. Heidegger's Hermeneutic phenomenology was selected over Husserl's transcendental phenomenology in order to facilitate investigation of stakeholder's *experience* regarding the use of OSCE. Husserl's phenomenology proposes that mind and body are separate, whereas Heidegger's belief supports that mind and body do not exist in isolation but are in fact inseparable from each other. Husserl believed that the 'meanings' of the world exist apart from human beings and that we need to uncover these meanings in our reality. Heidegger supported the concept that human beings constructed meaning from their interaction with the world in which they exist. In relation to this study, it is important to appreciate that students and academic staff will experience very different realities in relation to the concept and experience of the use of OSCE. Academic staff will have to construct the examination, ensure it is fair, valid and reliable as well as reproducible; however students have to participate in the examination and therefore will have a different interpretation of validity of content, for example. The differences between stakeholders' views may reflect their experience with the MPharm course formulated as a result of the "*curriculum as lived*" as opposed to the "*curriculum as taught*". As Heidegger's hermeneutic phenomenology suggests, the interpretations of OSCE as an examination are not set prior to undertaking the OSCE (either via its development or completion), although some preconceptions may exist. They are constructed via an immersion in the process of developing and implementing the examination as well as participating within it. Much of both the student and academic staff's view will depend on their interaction with the process alongside their preparedness for and understanding of OSCE as well as the context in which they are participating in the examination.

3.3 Method

There are a myriad of definitions of case study research in the literature with Stake (1995; pg 8) summing up the essence of this approach to research;

“The real business of case study is particularisation, not generalisation. We take a particular case and come to know it well...There is emphasis on uniqueness...”.

Case study data is gathered from documentation, archival records and interviews (Yin, 2009). Yin (2009) and Stake (1995) promote different approaches to the use and application of case study. Yin (2009) believes that case study design must include 5 key parts; the research question (s), its propositions; its unit(s) of analysis, a determination of how the data are linked to the propositions and criteria to interpret the findings.

Stake (1995) emphasised that the type of case study chosen depended on the purpose of the inquiry;

- An *instrumental* case study is used to provide insight into an issue.
- An *intrinsic* case study is cherry picked to facilitate a deeper understanding of the case.
- A *collective* case study is a number of cases offering alternative views on a particular phenomenon.

However, Feigin, Orum and Sjoberg (1991) argue that rigour is the fundamental concern in case study research and that the use of more than one case can dilute the significance of the single case. Stake (1995) proposes a more naturalistic approach to case study research with an increased focus on the philosophical bedrock with an emphasis on the environment in which the case lives. Zucker (2009) outlines a roadmap for the case study novice, promoting 3 distinct stages recognising that method and analysis are an iterative process and encouraging the researcher to move in and out of the literature throughout the process;

Stage 1; describing experience

Zucker (2009) recommends creating an interview script (or topic guide) encouraging revisiting the literature between subsequent interviews to hone questions and direct interviews if necessary. Mapping of data from multiple sources is recommended in order to cluster concepts and recurring themes.

Stage 2; describing meaning

Interpretation begins when clear connections are established between the research questions and the philosophical framework for the study (Zucker, 2009). He also describes the need for the researcher to remain true to the data and to represent participants' meanings honestly. This requires the researcher to have an appreciation of the participants' experiences and how they would influence their beliefs.

Stage 3; focus of the analysis

Zucker (2009) concludes with a discussion of the generalisability of the findings, which some argue are limited to the case(s) under evaluation. Yin (2009) argues that theoretical generalisation from a case study perspective is comparable to statistical generalisation in a quantitative experiment providing the data is trustworthy. He suggests that the use of a negative or 'deviant' case can assist with this description.

Zucker's (2009) approach will be adopted in this research (Figure 2).

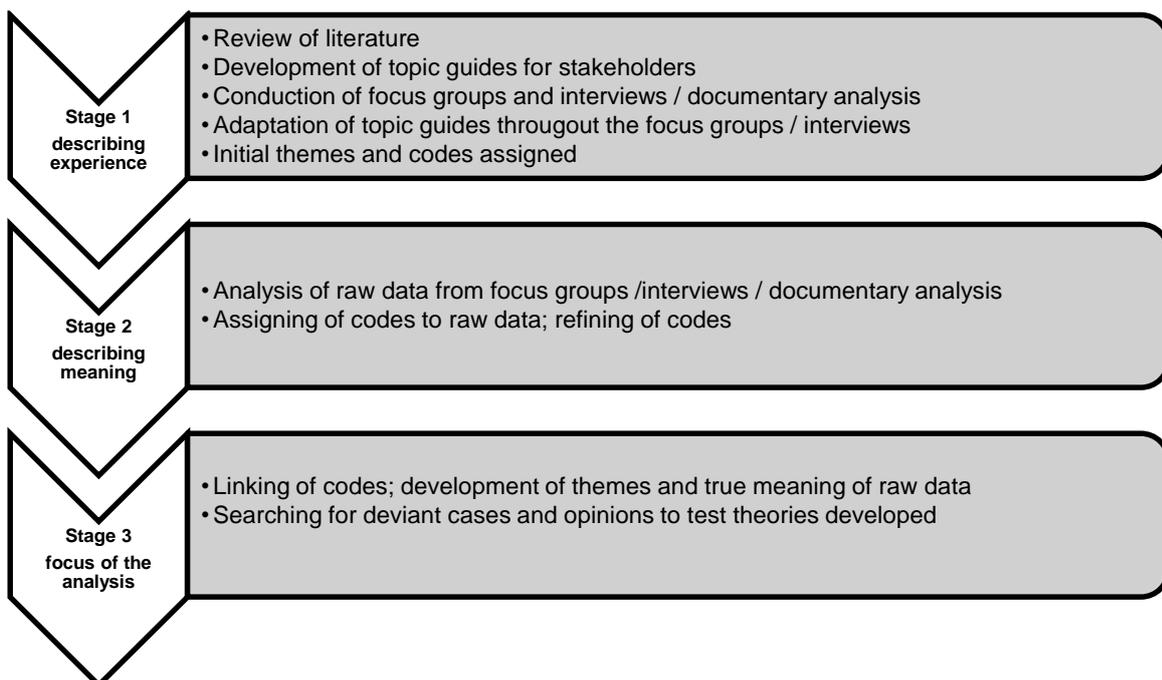


Figure 2: The case study approach adopted in this research study (Zucker, 2009).

A case study approach was chosen in order to explore a real-life phenomenon in greater depth and within the context in which its stakeholders interact, whereas in contrast a positivist experimental design would consciously 'divorce' the situation from its context as it would occur in a controlled environment. The student and academic

staff's experience will be evaluated as integral with delivery of the course, they are symbiotic.

The motivation for using qualitative methods is to understand naturally occurring phenomena in their native environment (Patton, 2002). Whilst a controlled environment would increase the transferability of the results achieved, this study will evaluate the influences of the context of *this* University and *this* School of Pharmacy as opposed to other Universities and Schools of Pharmacy. However, given the standardised approach adopted by many Schools of Pharmacy in the UK due to the rigorous accreditation process, it is possible that some of the findings may be generalisable to other Universities.

A case study is the study of “*an instance in action*” (Cohen, Mannion & Morrison; 2003) and one of its strengths is believed to be its ability to observe the participants in context, that is, the research participants are not separated from the research environment as would be the case with a controlled experiment. The development of pharmacy students' clinical skills cannot be evaluated in isolation of the learning environment or 'learning milieu' (Parlett & Deardon, 1977) of the School of Pharmacy at QUB and so the researcher endeavoured to choose a method which would enable the recognition of the context in which the stakeholders existed. The learning milieu is defined by Parlett and Deardon (1977, pg 15) as;

“A socio-psychological and material environment where teachers and students work together or a network or nexus of cultural, social, institutional and psychological variables”.

It is evident that the “*milieu*” is unique to each educational environment however common structures exist within each teaching and learning environment such as; organisation of the teaching and syllabus. Faculty assumptions and characteristics including teaching style, experience, individual goals as well as a consideration of the perceptions of the students themselves provide a unique personality to the learning environment. The reality of the “*curriculum as lived*” by the staff and students of the School of Pharmacy, QUB, is reliant upon their own practices as well as the influences of other pharmacy bodies such as the PSNI, RPS, GPhC and large employers of pharmacists. This approach enables an in-depth evaluation of the participants' reality

via interaction with all key stakeholders and the materials which they use within the School (Crotty, 1998). Triangulation will be achieved via the use of a documentary analysis, focus groups alongside a literature review and a reflective diary. The researcher's diary will be used throughout the research process and will display the reflexivity of the researcher in order to aid corroboration of the findings (Mays & Pope, 2000).

3.3.1 *Documentary analysis of curriculum documentation for School of Pharmacy, QUB*

Hsieh and Shannon (2005, pg. 1278) define documentary analysis;

“A research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes and patterns”.

Documentary analysis can be employed as a quantitative or a qualitative method. In keeping with the naturalistic approach taken elsewhere in this research study, a qualitative approach will be used. A documentary analysis will be undertaken of literature relevant to the QUB undergraduate Masters of Pharmacy (MPharm) curriculum in the academic year 2010-2011. This evaluation will provide a rich bedrock from which to establish the “*curriculum as taught*”, that is the MPharm as viewed through the eyes of the academic staff who designed the curriculum.

Green and Thorogood (2009) describe the use of content or documentary analysis as a cornerstone of qualitative research; the researcher conducts a thematic analysis of the selected documentation in order to illuminate an aspect of the research topic. In this study, the focus will be on the document meaning, purpose as well as its influence on the participants of the research study. Documentary analysis is not a single method and the specific type of approach used is dependent upon both the theoretical stance of the researcher and the phenomenon under investigation (Weber, 1990). This flexibility of approach has led to criticisms of its trustworthiness as a research method (Hsieh & Shannon, 2005). There are three distinct approaches to content analysis described in the literature; conventional, directed or summative documentary analysis. All three methods are used to elucidate meanings from text and all adhere to the naturalistic paradigm however differences arise in the approaches taken to the

development of coding frames as well as origins of codes and categories identified (Miles & Huberman, 1994);

- *conventional* – codes are derived directly from the text
- *directed* – the researcher has a thorough knowledge of the literature and an established theory against which codes are determined from the text
- *summative* – the derivation of codes centres around the process of counting the appearance of certain codes.

The conventional approach will be used in this case study and codes and themes will be derived directly from the reviewed documents. This approach is recommended where existing theory and literature are limited such as the use of OSCEs in an undergraduate pharmacy context. All approaches follow a process of seven steps;

- a. formatting the research question to be answered
- b. selecting the documents to be analysed
- c. defining the categories to be applied (except in conventional analysis)
- d. describing the coding process
- e. developing coding frames
- f. determining trustworthiness
- g. analysing the results of the coding process (Hsieh & Shannon, 2005).

The documents will be critiqued as if they were research instruments in their own right. The researcher will immerse herself in the data via reading all 15 documents repeatedly to achieve engagement with the data and to allow new insights to emerge. After this, the data will be reread, word by word to derive codes (Miles & Huberman, 1994) initially by identifying exact phrases in the text which capture key concepts. Descriptive codes will be identified from the text reviewed and relationships between the codes and themes will be sought from the data. The documents to be reviewed were not written for the purposes for this research and so they will vary in style, content and intent. The context will be used to inform the interpretation of the code's meaning. A reflective diary will be kept throughout the data collection and analysis in which initial impressions of the text including basic analysis will be recorded. Using both the diary notes and the initial codes, more advanced codes such as axial and theoretical can be developed in order to reduce the codes to a more manageable number (Saldana, 2009). To aid the reporting of the documentary analysis, the coding frame will be

illuminated with example codes to illustrate the emerging themes. The advantage of this approach is the ability to develop themes from the raw data without the potential for preconceived ideas from the literature to prejudice the emergence of new concepts (Hsieh & Shannon, 2005). In order to increase the trustworthiness of the data, a second researcher (KP) will review a sample of the documents and also develop a coding frame so that comparisons can be made between the themes identified by the two independent researchers. This will enhance trustworthiness of the themes generated. During the documentary analysis the researchers will ask a number of questions including;

- What does this information relate to?
- Who is this information written for?
- How does this information link with other information provided elsewhere in the curriculum?
- What is the key message within this code?
- What is the 'mood' that this code suggests? For example tone; is it supportive, didactic, angry, imperative or does it invoke some other emotional response in the reader (Miles & Huberman, 1994).

A documentary analysis is commonly undertaken prior to the use of focus groups in order to inform the topic guide however due to time constraints with the structure of the final year of the MPharm course and the timing of the OSCE examination in early December, it will not be possible to complete the document analysis until after the focus groups are completed.

The documents

Undergraduate pharmacy degrees in the UK are subject to accreditation by the Regulatory body. With QUB, a joint delegation from both the General Pharmaceutical Council (GPhC) and the Pharmaceutical Society of Northern Ireland (PSNI) evaluate the course against the indicative syllabus and current standards for pharmacy education. One of the documents to be reviewed in this analysis (Table 4) is the accreditation document produced by QUB for the accreditation in 2006. All of the other documents relate to the curriculum in 2010/2011.

	Document title	Author(s)	Date written	Date of review
1.	Level 1 Semester 1 Guide 2010-2011	Multiple	Aug 2010	Aug 2011
2.	Level 1 Semester 2 Guide 2010-2011	Multiple	Dec 2010	Dec 2011
3.	Level 2 Semester 1 Guide 2010-2011	Multiple	Aug 2010	Aug 2011
4.	Level 2 Semester 2 Guide 2010-2011	Multiple	Dec 2010	Dec 2011
5.	Level 2 hospital placement booklet 2011	TP Team	Feb 2011	Jan-Feb 2012
6.	Level 3 Semester 1 Guide 2010-2011	Multiple	Aug 2010	Aug 2011
7.	Level 3 Semester 2 Guide 2010-2011	Multiple	Dec 2010	Dec 2011
8.	Level 3 clinical placement booklet 2011	TP Team	Dec 2010	Nov-Dec 2011
9.	Level 4 Semester 1 Guide 2010-2011	Multiple	Aug 2010	Aug 2011
10.	Level 4 Semester 2 Guide 2010-2011	Multiple	Dec 2010	Dec 2011
11.	Level 4 Clinical placement booklet 2010	TP Team	Aug 2010	July-Aug 2011
12.	Level 4 Responding to symptoms practical booklet 2011-2012	Practice Team	Aug 2011	Aug 2012
13.	Level 4 OSCE handbook 2010	TP Team	Nov 2010	Oct-Nov 2011
14.	School of Pharmacy accreditation booklet (pages 111 – 180 omitted as superseded by more up to date module descriptors found in the semester guides - documents 1 – 4, 6,7, 9, 10).	Accreditation Team 2006	Sept 2005 - May 2006	Sept 2011 – May 2012

15.	School of Pharmacy accreditation booklet - appendices	Accreditation Team 2006	Sept 2005 - May 2006	Sept 2011 – May 2012
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Table 4. Documentation included in the content analysis.

Trustworthiness

Concepts of validity and reliability are embedded in the positivist tradition. Trustworthiness, a concept first proposed by Guba and Lincoln (1981), supports the need for document analysts to defend the authenticity of their work and that it reflects a genuine interpretation of their reality. Qualitative studies do not ‘control’ the number of factors under investigation as they hope to gain a global view of the phenomenon. The use of this data, along with subjective opinions from focus groups and individual interviews, will enrich the understanding of the context in which undergraduates and academic staff exist.

3.3.2 Focus groups

The chosen method to gain participant perception of the use of OSCE in this study is the focus group. If key stakeholders are not available for focus group attendance and wish to participate, semi-structured interviews will be conducted. Powell and Single (1996, page 499) define focus groups as;

“Groups of individuals selected and assembled by researchers to discuss and comment on, from personal experience, the topic that is the subject of the research”.

A focus group discussion is a qualitative research technique and is characterised by the use of open questioning, guided by a topic guide. It is conducted in a relaxed and ideally familiar environment in order to facilitate exploration into attitudes and beliefs regarding the subject under investigation. Focus groups are designed to reflect the experiences and perceptions of the participants as opposed to validating the preconceptions of the researcher (Kitzinger, 1994; Kitzinger, 1995). The interplay between participants’ acts to stimulate discussion and to generate a more diverse range of opinions than would usually arise in one-to-one interviews. This environment supports the study aim of increasing the emphasis on the agenda of the participants as opposed to the researcher (Kitzinger, 1995; Gibbs, 1997). Interaction may also

enable participants to ask questions of each other and to re-evaluate and even reconsider their own beliefs. There are also potential benefits to the participants of a focus group – they have the unique opportunity to participate as a key stakeholder in a review of the MPharm curriculum, to voice their opinions and shape the course for future undergraduates. The opportunity to have their opinion heard and valued as that of an expert can be empowering for some participants (Race, Hotch & Parker, 1994) however, conversely, focus groups can be intimidating for less eloquent or more reticent participants. Focus groups are thought to be useful where there is a 'power difference' between participants and decision-makers (Bhavsar, Bird & Anderson, 2007) such as education settings, providing a unique glimpse into the world of the student (Lie, et al, 2008). They can provide staff with rich feedback from the users of the curriculum and enable changes to the curriculum to represent all stakeholders' perspectives (Bhavsar, Bird & Anderson, 2007), particularly the rarely sought student view (Lie, et al, 2008).

There are some caveats to the use of focus groups which are important to acknowledge;

- The moderator has less control over the data produced than from one to one interviews as they have to allow participants to interact in an open-ended manner
- The moderator, a key figure in the process, can influence the results via a loss of objectivity
- The researcher cannot assume that individuals in the focus group are expressing their definitive view, they are speaking in a specific context and so may feel constrained
- The impact of a dominant individual
- Material produced is not entirely confidential as it is shared with others in the group (Krueger & Casey, 2009).

In order to reduce the impact of these caveats, the researcher must be a skilled moderator and able to identify participants who would benefit from additional probing and also to bring the conversation back to the topic guide if required. In addition to the moderator, an observer (a final year undergraduate pharmacist) will be used for all of the student focus groups but not the academic staff focus groups (as it is believed

that the presence of a student may blunt academic honesty during the focus groups). A suitable observer will not be available for academic focus groups. The role of the observer will be to observe non-verbal interactions, comment on the group dynamic and also to document which statements are made by which participants in order to supplement the audio files and to facilitate a more in-depth analysis of the data (Rabiee, 2004).

This method was chosen for the study in order to provide a greater understanding of the diverse opinions regarding the use of OSCEs particularly with those who were relatively unfamiliar with their use. A topic guide (Appendix 4) was developed after a thorough review of the literature to help shape discussion although all participants will be encouraged to elaborate on any comments raised during the dialogues in order to gain greater insight into their meaning during analysis. Supplemental questions will be posed by the moderator if necessary in order to either clarify or expand on statements recorded.

Eleven focus groups will be conducted in this study; 6 with undergraduates and 5 with academic staff. Focus groups with stakeholders will be undertaken prior to and also after the first summative OSCE assessment at QUB. The purpose of these interviews is to encapsulate the views of the undergraduate students and academic staff including teacher practitioners (community and hospital) who will use OSCEs for the first time in the QUB undergraduate pharmacy course. The chief investigator (acting as moderator in all groups) will explore how stakeholders prepare for OSCE and will also expect participants to compare the use of an OSCE assessment to more traditional methods of evaluating clinical pharmacy knowledge and skill such as essays. Non-participation in the pre-OSCE focus groups will not preclude participation in the post-OSCE focus groups. All fourth year undergraduate pharmacy students in the School of Pharmacy, QUB will be invited to participate (n = 123).

3.3.2.1. Focus group / semi-structured interview format

Prior to each focus group / interview, participants will be reminded that the discussion will be audio-recorded and that everything discussed will remain confidential. The focus groups will be initiated with participant introduction as an ice-breaker followed by a general discussion about clinical skills, competence and the use of assessments including OSCEs to generate a relaxed, non-threatening atmosphere. The

discussions will be guided by the topic guide (Appendices 4 and 6) however groups will progress independently according to participant debate. The researcher, acting as moderator / interviewer, will intervene as required to redirect the discussion using the topic guide.

3.3.2.2 Running the focus groups

Participants will be allocated according to their availability and the size of the focus groups, ideally between 5 and 8 participants (Krueger & Casey, 2009). The room will be arranged prior to participants' arrival ensuring that chairs are organised into a horseshoe shape with a table in the centre to support the audio-recorder (Pickering & Watts, 2005). This format has been chosen to highlight the lack of hierarchy in the group and to support the impression that the participants views are as highly valued as the moderator's. Only the observer will sit outside the horseshoe so that she can observe all participants including the moderator. A diagrammatic representation of the room set up and participants' placement in the room will be described for each focus group and individual interviews. This diagram will be included with respondent validation summaries which all participants shall receive post focus group participation to aid their recall of the discussions. An example of room layout is described in Figure 3.

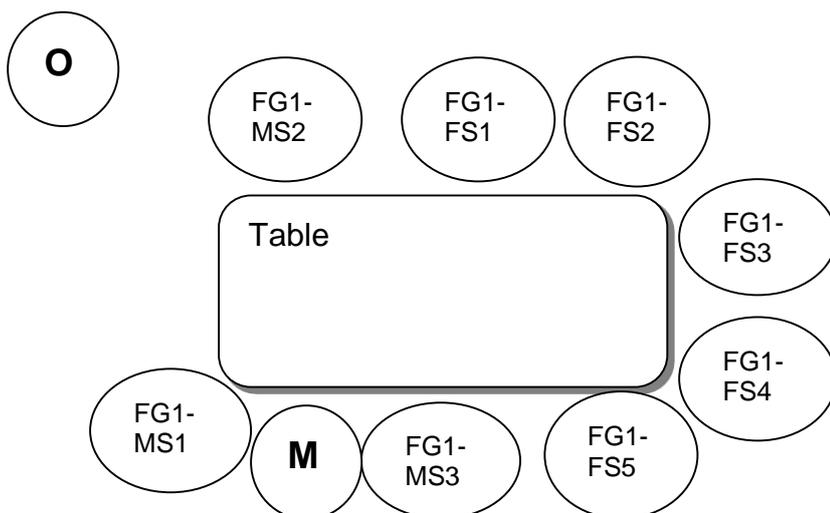


Figure 3. Room layout of a focus group, FG1.

All groups will conform to a standard focus group conduct, specifically the

establishment of an informal, conversational environment, urging participants to express opinions at variance with others in the group as well as encouraging participation of quieter group members (Hansen, et al, 1998). The group will be acquainted with the ground rules for the discussion including;

- the level of moderator involvement,
- the 'one person speaking at a time' rule due to difficulties in interpretation of the audio recording with multiple voices.

The focus group topic guide (Appendix 4) consists of a number of open questions with additional prompts if required to gain information from participants who do not volunteer this information readily (Holliman, 2005; Krueger & Casey, 2009). The topic guide will be developed from the pharmacy literature on OSCEs as well as a pilot qualitative research study undertaken in the previous academic year (Appendix 1).

The focus group discussions will be audio-taped and transcribed verbatim. The observer will make notes during the focus groups to supplement translation of the audio transcripts. The moderator and observer will meet as soon as possible after each focus group to record impressions of the 'mood' of the group as well as general observations regarding relevant body language. The moderator will complete each transcription personally, using the same format for each transcript in order to facilitate easy cross-comparisons within transcripts (Kvale, 1996). Transcripts will not identify participants and codes will be allocated to enable researchers to identify different participants. Poland and Pederson (1998) argue that what is not said is as significant as what is said during interviews, hence the transcription will include nonverbal or background sounds where possible (for example laughter, sighs, coughs, claps, snaps of fingers and pen clicking). Observer comments regarding facial expressions and body language of the speaker and other participants will also be included in order to illuminate the mood of the discussion. Transcription will adhere to Mergenthaler and Stinson's (1992) 7 principles. (Appendix 5a), however, transcripts must also be readable. The "ums," "ahs," "uh huhs," and "you knows" were retained (McLellan, MacQueen & Neidig, 2003) but a 'phonetic' transcript and transcription symbols will not be used. To reduce the impact of potential transcription errors, the observer (RM) will proofread a random selection of transcripts paying particular attention to 'inaudible segments'. In order to ensure consistency with each transcription over time, a protocol

will be developed to improve interpretation of short-hand used. This will be based on the work of McLellan, MacQueen and Neidig (2003) (Appendix 5b).

Data will be collected and analysed in iterative cycles using thematic analysis. All data will be coded manually by the moderator and secondary coding will be conducted by the observer (RM) as well as by a qualitative researcher at the University of Derby (LE). An audit trail will be established via audio-tapes, transcripts and written interpretations of the groups by the moderator (ROH) and the observer (RM) as well as the reflective diary.

3.3.3 Semi-structured interviews

Semi-structured interviews are a qualitative research technique which facilitates the exploration of participants' perspectives on the topic under investigation using a broad topic guide (Appendix 6). Semi-structured interviews involve a series of open-ended questions on the topic areas the researcher wants to investigate. This approach is less time intensive for the interviewee than focus groups which is an important consideration for undergraduate students and academic staff. Interviews are commonly used in place of focus groups, as in this case where potential participants are unavailable for focus group sessions or where they feel uneasy speaking openly in a group context a one to one interview will be offered. Some researchers choose to use both focus groups and individual interviews in order to explore some concepts raised in a group context in more depth with an individual (Krueger & Casey, 2009). Although there is the advantage of a more relaxed and potentially a more verbose interviewee in an individual setting, there is also a greater risk of biased responses if the interview is a negative experience. There is greater emphasis on the actions of the interviewer during a one-to-one setting with the requirement for appropriate language (both verbal and non verbal) to stimulate and encourage discussion and avoiding leading questions or yes/no questions where possible.

3.3.4 Participant recruitment (focus groups and semi-structured interviews)

A multiple-category design will be chosen (Figure 4) for the focus groups. They will be conducted with both types of participants sequentially to enable comparison of opinion *between* both participant groups as well as *within* the groups (Krueger & Casey, 2009). A focus group is usually characterised by homogeneity and the

researcher decided to create two homogenic groups, (by virtue of ‘activity’) although mixed gender groups, to facilitate natural discussion of shared experiences and from which to recruit the stakeholders. Participants will be recruited from either group 1 or group 2 to join the focus groups;

- **Group 1:** final year (year 4, n= 123) pharmacy students at Queen’s University, Belfast
- **Group 2:** (n = 27) all pharmacists on the academic staff (13), QUB; all Teacher Practitioner (TP) pharmacists (Community and Hospital) working with QUB (10); all demonstrators, regardless of academic background, who participated in the OSCE examination, December 2010 (4).

Types of participant	Pre OSCE	OSCE examination	Post OSCE
Group 1 (students)	3		3
Group 2 (academic staff)	3		2

Figure 4. Multiple-category design for focus groups.

3.3.5 Ethical considerations

Ethical approval is granted by;

- a. The Southern Trust Research Governance Committee (Appendix 7)
- b. The Office of Research Ethics Committees Northern Ireland (ORECNI) (Reference no: 10/NIR01/54) (Appendix 8).

The ethical issues relevant to this type of research study are those which demand acceptable codes of conduct from the researchers in relation to informed consent and confidentiality (Moule & Goodman, 2009). Appropriate ethical research interview technique encouraged trust and disclosure, promoting the respect of and protecting the interests of the participants striving to uphold their agenda as opposed to the agenda of the interviewer.

Students and employees who will be recruited as research participants are more vulnerable to coercion because of the possibility that they may receive grades, employment or other benefits as dependent upon their participation in research. No

incentives will be offered to participate in this study to any participants. The lead researcher is a teacher on the undergraduate pharmacy course at QUB and consequently, the undergraduate participants are potentially in a vulnerable position, however the ethics committees were reassured that all participation is voluntary and non-incentivised, leading to approval of the research. Participants will be informed of the purpose of the research and will be encouraged to ask questions or seek clarification prior to and during the study period. Participants will be reminded of the voluntary nature of their involvement with the freedom to withdraw from the study at any time without penalty. Contributors will be advised that at any time during the interview they can decline to answer any question, request that the tape recorder be turned off or terminate the interview. The focus groups/semi-structured interviews will be conducted in the familiar environment of the School of Pharmacy to encourage engagement by participants. The lead researcher is also Team Leader for the TP pharmacists consequently these potential participants will also be in a vulnerable position. The participant information sheet (Appendix 9) notifies academic staff, including the TPs, prior to gaining their consent of the voluntary nature of their participation and provides assurances that non-participation will not affect their future careers in any way. Academic staff will also be interviewed in the School of Pharmacy as this is a familiar environment which will help to off-set any power-balance.

3.3.6 Consent

An information session will be conducted for all potential participants to explain the purpose and nature of the research study on October 22nd 2010. This will be followed up with an email inviting the undergraduates and academic staff to take part in the research study (Appendices 10a, 10b, 11a, 11b). The email contains information regarding the purpose of the research, the need to audio-record the focus groups, why they have been chosen to participate and how their contribution will support the research and future developments in pharmacy education. Participants will be given 48 hours to complete and return the consent form (Appendix 12) to the Chief Investigator after agreeing to enter the study. The investigator will countersign the consent forms and return a copy to the participant. Successful applicants will be informed of dates for focus groups pre-OSCE in November, December and post-OSCE in January, February. Confidentiality will be outlined in the letter (Appendix 10a, 11a) and re-iterated to participants prior to each focus group and interview. All

participants will be informed that the Chief investigator is contactable if further clarification or information is required or if they have any other queries or complaints. The letter further outlines that participants can withdraw from the research at any stage and they do not have to give any reasons for their withdrawal.

3.3.7 Confidentiality

Written consent will be obtained from participants to audio-record the interviews. Each participant will be assured that the Chief Investigator is the only person who is able to link names with the interviews undertaken. Every precaution will be taken to ensure the confidentiality and privacy of the participants of this study. As this case study names the site where the evaluation occurred (QUB), retaining confidential the identity of the participants is paramount and will be discussed with all participants prior to their consent and during the study. All participating students will be referred to as; 'student, male 1 (MS1)' or 'student, female 3 (FS3)' and all participating academic and TPs will be referred to as; 'academic, female 1 (FA1)' and 'academic, male 6 (MA6)' and so on. Participant-specific data and all audio files will be stored in a NHS password protected computer in a locked office in the pharmacy department of Craigavon Area Hospital (CAH). This office is accessed only by a security pass held by pharmacy staff of CAH. All interview transcripts will be destroyed five years after the completion of the study.

3.3.8 Rigour

In relation to case study research, traditional positivist concepts of internal and external validity are substituted by notions of trustworthiness and authenticity (Zucker, 2009) . Guba & Lincoln (1981) propose that case reliability is displayed by the dependability or '*auditability*' of the data collected, that is, reliability is reliant upon the consistency of the researcher's methods over time. Reliability of the data collected will also be enhanced by the use of triangulation. Methodological triangulation will be achieved via the use of literature review, a documentary analysis of the MPharm curriculum and focus group interviews with stakeholders. Time triangulation will be achieved as the focus groups were undertaken prior to and post the OSCE assessment. Investigator triangulation will be accomplished as an observer (RM) was in attendance for all undergraduate focus groups to reduce the potential biases which an individual researcher may bring to data collection and analysis (Cohen, Mannion &

Morrison, 2003). A second researcher (undergraduate, RM; academic, LE) developed a separate coding frame for all data collected from interviews and focus groups as well as for the documentary analysis (KP).

Internal validity can be confirmed by asking if the findings are plausible and if they represent the views of the participants (Mays & Pope, 2000) – this will be established via the use of respondent validation with all participants. Respondent validation, where participants are informed of the analysis of the data collected in their focus group and afforded the opportunity to comment on its accuracy as a reflection of the proceedings as well as to provide additional comments. This acts to confer face validity on the data reported. Peer debriefing will be conducted with a number of participants to test the working hypotheses after initial analysis. The use of a structured interview guide promotes the reliability of the data collected from multiple focus groups (Cohen, Mannion & Morrison, 2003).

3.3.9 Sampling

Stakeholders will be identified via purposive sampling within the School of Pharmacy at QUB (lecturers and students) and with the pharmacy departments of hospitals in Northern Ireland. Focus groups with stakeholders will be conducted prior to and after the OSCE assessments moderated by the Investigator. Stakeholders who are unavailable for focus groups will be offered the chance to participate in a semi-structured interview.

3.4 Analytical approach – Thematic analysis

Thematic analysis is a common form of descriptive analysis used in qualitative studies. Data familiarisation is vital to the success of thematic analysis and for this reason the chief investigator will conduct the data collection; focus groups and individual interviews as well as the documentary analysis. After becoming acquainted with the data, the chief investigator will begin to code the lines of text. Codes will be attributed to sentences, phrases, paragraphs or lines. After coding the whole interview, codes will be compared to identify variations, similarities, patterns and relationships and a coding frame will be established which will be used to guide future coding. Throughout the inductive process of data collection and analysis, the chief investigator will keep a reflective diary to note reflections and ideas related to sections of data.

This diary will support deeper analysis and will facilitate the testing of 'theories' in subsequent focus groups (theoretical sampling). At every stage of analysis, the chief investigator will work to alter and modify the codes generated to achieve as close a match as possible between codes and data meanings. In tandem with the investigator's coding, RM will code the data and develop a separate coding frame. Both coding frames will be discussed to produce the final frame for use. The process will be both inductive and deductive as it requires movement back and forward between emerging theory and data collection. The early data from focus groups and interviews will be intensely coded using a process of 'open coding' where the transcripts are analysed line by line in order to explore the data and to generate as many hypotheses as possible. Initial codes will be largely descriptive and occasionally conceptual. Once a provisional coding frame is established, more conceptual coding such as the use of 'in vivo' codes which reflected contributors' "world view" and finally 'selective coding' where relationships between the codes will be sought in order to knit the data back together again.

Data collection and thematic analysis occur simultaneously and early open coding is vital in future data collection and the identification of "deviant" cases. Continuous memo writing throughout analysis will be crucial and will serve to support the final write up (Miles & Huberman, 1994). The investigator and RM/LE will work together to identify themes which will integrate a number of the codes discovered and will illustrate these with examples from the transcribed text. Each theme will be evaluated to confirm that it represents the quote attributed to it and the mood of the data set. Relationships between themes will be identified and connections drawn in order to develop mind maps. The process is not linear or sequential and researchers will move through the stages a number of times before the mind maps will be finalised. Respondent validation and triangulation will help to minimise the impact of individual researcher subjectivity and preconceptions clouding the data interpretation.

3.4.1 Credibility

To ensure the credibility of the findings, respondent validation will be conducted at every stage; the transcription of the data, initial coding frames as well as final themes and mind maps. This strategy will enable participants to check interpretations (triangulation) and to verify findings or contradict themes identified. It will also

establish to what extent study participants believe the findings and agree that they truly represented their views (Petty, Thomson & Stew, 2012).

Figure 5 pictorially demonstrates the data handling in this research study;

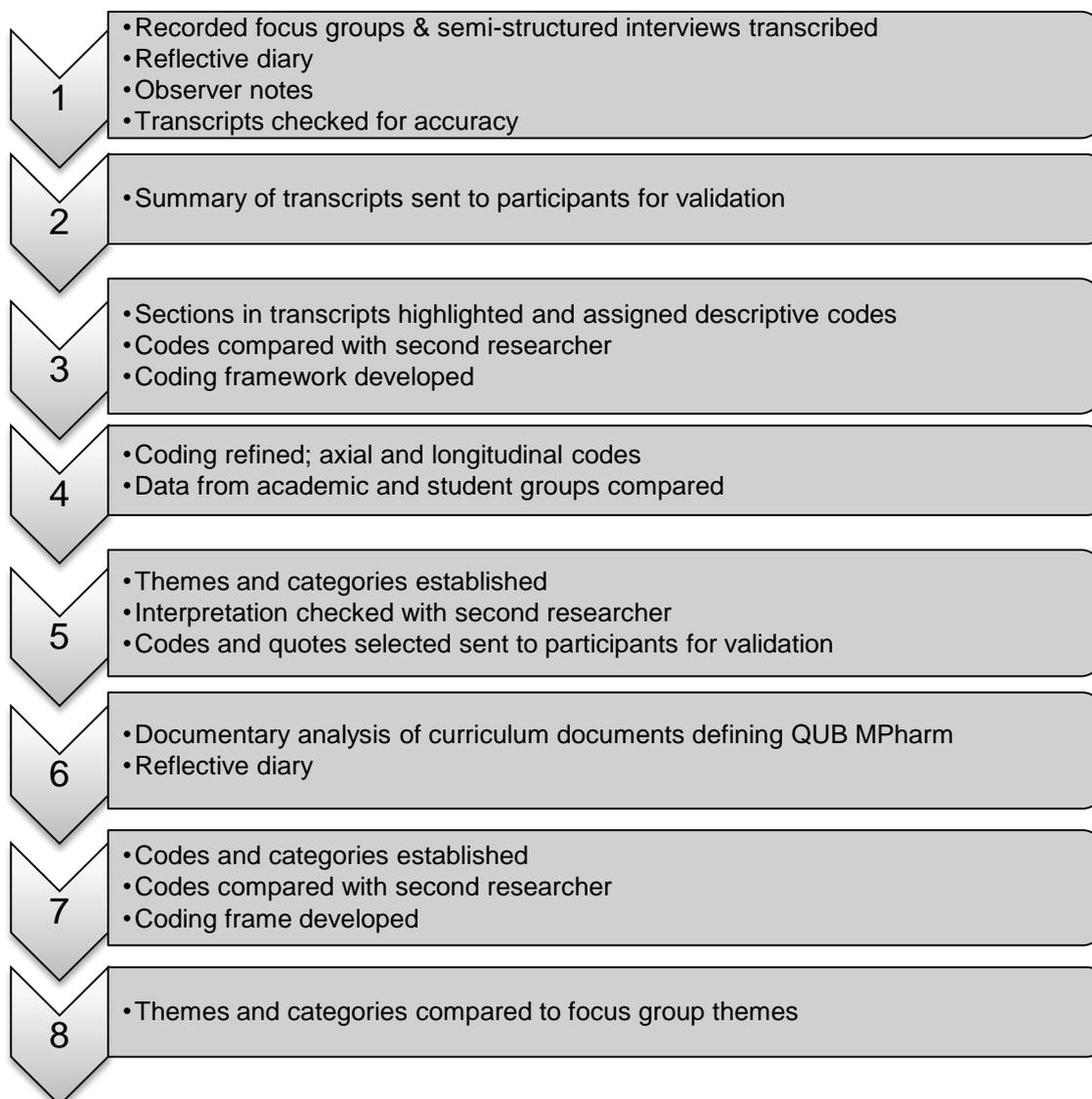


Figure 5. Method, data handling and analysis in this research study.

3.5 Stages of the research study

After approval had been gained from the various ethics and governance committees listed in 3.3.7, the research study was divided into seven discrete and overlapping stages (Figure 6).

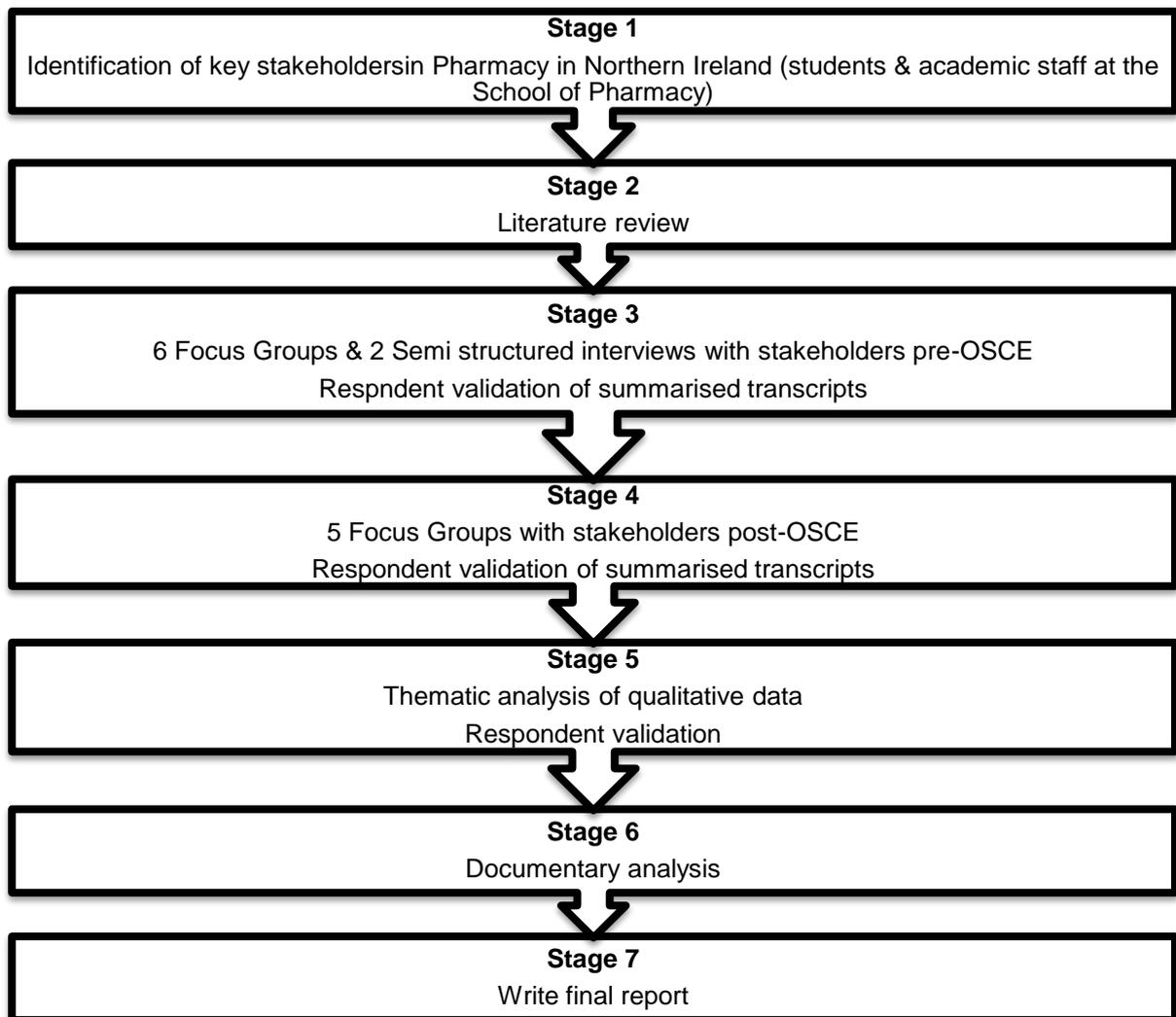


Figure 6. Stage 1 to stage 7 used in this research study.

3.6 Timescale of the study

A Gantt chart was produced (Appendix 13) to guide the phases of the case study. Although some overlap of these phases due to student and academic staff commitments and the timing of the OSCE examination on December 8th and 16th 2010.

3.7 Summary of the chapter

This chapter has described the approach to be undertaken in this research study and has defended the methodologies chosen; a case study and phenomenology, as well as the methods employed; documentary analysis, focus groups and semi-structured interviews in order to answer the research questions raised. The qualitative data presented in the next two chapters obtained from QUB MPharm teaching resources representing the “*curriculum as written*” and from QUB stakeholders identified as the students on the MPharm and academic staff teaching the students illuminate the “*curriculum as lived*”.

Chapter 4

Findings of focus groups and individual interviews

Chapter 4

4.1 Introduction

This chapter presents the findings of the focus groups and interviews conducted with all stakeholders, both before and after the OSCE, in the academic year 2010/2011. Chapter 5 will provide detail of the content analysis conducted of the MPharm documentation and course materials. This will provide context to illuminate the “*curriculum as lived*” by the undergraduate students and academic staff, as well as the philosophy of the School of Pharmacy at Queens University, Belfast.

4.1.1 Numbers of focus groups / interviews

In total, eleven focus groups were conducted in this study; six with undergraduates and five with academic staff and two individual interviews were completed, both with undergraduate students. All fourth year undergraduate pharmacy students in the School of Pharmacy, QUB were invited to participate (n = 123), 22 responded (Table 5).

Pre/ Post	Interview duration	Participant details
Pre	Focus group No 1 (undergraduate) - 85.11mins	8 participants; 3 male, 5 female
Pre	Focus group No 2 (academic) – 77.37mins	5 participants; all female
Pre	Focus group No 3 (undergraduate) – 75.43mins	4 participants; 2 male, 2 female
Pre	Focus group No 4 (undergraduate) – 74.08mins	2 participants; both female
Pre	Focus group No 5 (academic) – cancelled	Cancelled
Pre	Focus group No 6 (academic) – 87.16mins	5 participants; 1 male, 4 female
Pre	Interview No 1 duration (undergraduate) – 50.03mins	1 participant; female
Pre	Interview No 2 duration (undergraduate) – 49.51mins	1 participant; female
Pre	Focus group No 7 (academic) – 77.20mins	4 participants; 1 male, 3 female
Mean	71.98 minutes (49.51 – 87.16mins)	
Post	Focus group No 8 (undergraduate) – 74.52mins	6 participants; 5 male, 1 female

Post	Focus group No 9 (undergraduate) – 42.47mins	6 participants; 1 male, 5 female
Post	Focus group No 10 (undergraduate) – 61.58mins	7 participants; 2 male, 5 female
Post	Focus group No 11 (academic) – 59.36mins	5 participants; all female
Post	Focus group No 12 (academic) – 49.44mins	6 participants; 2 male, 4 female
Mean	57.47 minutes (42.47 – 74.52mins)	

Table 5. Pre and Post OSCE focus groups and interviews including participant description.

Following the completion of six pre-OSCE focus groups, two individual interviews and five post OSCE focus groups, no significant new themes emerged and the investigator took the decision that a sufficient number of interviews had been undertaken to determine the views of stakeholders.

Participants in the pre-OSCE focus groups were asked to complete a demographic information form (Appendix 14); results are displayed in Table 6.

Focus group number	Sex ratio F/M	Age range: number of participants	Familiarity with OSCEs
FG1	3 male, 5 female (n = 8)	21 – 25: 8	All participants had participated in formative OSCE
FG2	All female (n = 5)	26 – 30: 3 31 – 35: 2	All participants had developed and/ or delivered OSCEs
FG3	2 male, 2 female (n = 4)	21 – 25: 4	All participants had participated in formative OSCE
FG4	2 female	21 – 25: 2	All participants had participated in formative OSCE
FG6	1 male, 4 female (n = 5)	31 – 35: 2 36 – 40: 1 41 – 45: 1 46 – 50: 1	All but one participant had developed and/or delivered OSCEs
FG7	1 male, 3 female (n = 4)	31 – 35: 2 36 – 40: 1 56 – 60: 1	2 participants had developed and/or delivered OSCEs, 2 had no experience of OSCEs
Summary of table contents			
Age range (total)		OSCE experience	

21 - 60	No experience – developed and delivered OSCEs previously
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Table 6. Participant demographic information in pre-OSCE focus groups.

4.1.2 Sample characteristics

4.1.2.1 Undergraduate students

A small number of students responded to the initial email invitation (7). A further email was sent with a number of suggested dates and times included which yield an improved response (13). In total twenty students participated in one or two of six pre and post-OSCE focus groups (Table 5) and two individual interviews depending on their availability. Students were difficult to recruit, as demonstrated by the low number of participants (19%). Participation in the pre-OSCE focus group was not a pre-requisite for attendance in the post-OSCE focus group although most students attended both groups.

In this study, semi-structured interviews were offered to potential participants who were unable to attend the focus group dates and times. Two interviews were conducted with two undergraduate students, no observer was present. A detailed interview guide was developed for the consultation (Appendix 6).

4.1.2.2 Academic staff

After the initial email invitation to participate, further recruitment was encouraged by participating peers via informal, word-of-mouth recruitment. Some academic staff declined to participate on grounds of lack of experience with OSCE or knowledge of the use of this type of assessment despite being reassured that this was not a pre-requisite for contribution.

All participating staff were allocated to focus groups. No semi-structured interviews were required. All staff who expressed an interest in taking part were recruited and sent a personal email which included details of the focus group date, time and location to which they were assigned (according to their availability), as well as a reminder email the day prior to the focus group. Recruited staff were largely from a practice (community or hospital) background as opposed to a pharmaceutical sciences background. In total, 18 members of staff participated in one or two of five focus

groups (Table 5). The response from academic staff was high (63%) which may reflect that staff were interested on the potential use of OSCEs or that staff wished to support a colleague in her research. Student response was significantly lower than academic staff, however a sufficient proportion (19%) participated to provide a broad overview of student opinion from the MPharm.

4.1.2.3 Participant recruitment and respondent validation

It is documented that this method of participant recruitment may have unintentionally introduced bias; participants' agreement to contribute to the research may have represented a positive attitude towards the use of OSCE. Review of both undergraduate and academic transcripts demonstrated a broad range of opinions from apathy, apprehension to enthusiasm. After the focus groups, all participants were emailed an anonymised summary of the focus group / semi-structured interview transcript (Appendix 15) in which they participated. They were asked to comment on the researcher's initial interpretation of their discussion as well as the analysis and discussion at later stages. A copy of a number of participant responses is included in Appendix 15. This process fulfilled the intention of respondent validation, that is verification of the conclusions drawn by the researcher, whilst also providing participants with the opportunity to clarify or even expand on their initial comments after a period of reflection (Mays & Pope, 2000).

4.1.3 Running the focus groups

Participants were allocated according to their availability and the size of the focus groups, ideally between five and eight participants (Krueger & Casey, 2009). A number of mini focus groups, between four and six participants, were undertaken due to student and staff availability on the day of the focus groups and one very small group of two students (a dyad) was also completed. Only two participants attended focus group 4 on the day, however the researcher decided to continue as these participants were keen to voice their opinions, both positive and negative towards clinical teaching and the use of OSCEs. This group can also be termed a 'dyad' rather than a focus group (Edmunds, 2000). Each focus group lasted between 42 and 87 minutes.

4.1.4 Linking study and objectives with identified themes

During the focus groups, the topic guide did not solely focus on the aims and objectives of the research study, but encouraged a wider discussion on the concept of competence, clinical pharmacy skills and assessment during the MPharm as a whole. During analysis of the transcripts, the researcher mapped the key themes and sub-themes with the aims and objectives of the research study (Table 7).

Identified theme	Link with aims and objectives
1. Teaching, learning and assessment strategy	
1.1 Preparation for OSCE	Objectives 3, 4 & 5
1.2 OSCE set-up	Study aim & objectives 3, 4 & 5
1.3 Reality versus simulation	Study aim & objective 2, 3 and 5
1.4 Fairness of assessment	Study aim & objective 1
1.5 Impact of OSCE on Teaching and Learning	Study aim & Objective 1
Identified theme	Link with aims and objectives
2. Acculturation to the profession of Pharmacy	
2.1 Effective communication skills	Study aim & objectives 3, 4 & 5
2.2 Inter-professional skills	Study aim & objectives 3, 4 & 5
2.3 Collusion	Objectives 2 & 4
Identified theme	Link with aims and objectives
3. Factors influencing OSCE performance	
3.1 Familiarity with OSCE format and content	Objective 3, 4 and 5
3.2 Learning styles	Objective 3, 4 and 5
3.3 Time limit	Objective 4 and 5
3.4 Influence of other students (overhearing others)	Objective 1 and 3
3.5 Influence of assessor and standardised patient/doctor	Objective 1, 3, 4 and 5
3.6 Feedback	Objective 3, 4 and 5
Identified theme	Link to aims and objectives
4. Redesigning MPharm curriculum	
4.1 Science versus Practice	Objective 2, 4 and 5
4.2 Primary versus secondary care	Objective 2
4.3 Value of OSCE	Objective 1 and 5
4.3 The integrated degree	Objective 2

Table 7. Linking the aims and objectives of the study with the identified themes.

The themes and sub-themes detailed above were raised by the academic and student stakeholders during the focus groups and interviews pre and post QUB OSCE 2010/11 for fourth year students. These themes will illustrate both the '*curriculum as taught*' and the '*curriculum as lived*' aspects of the evaluation. The themes (Table 7) will be discussed in the order listed to reflect both the significance of the topics raised in relation to the research question as well as the importance placed upon the concepts by participants interviewed. In order to graphically illustrate the arising concepts, five mind maps are included, (Appendices 16 – 20), of the themes and sub-themes, graphically representing the inter-connections within and between themes.

4.2 Teaching, Learning and Assessment (TLA)

The overarching theme of "Teaching, Learning and Assessment", as it relates to the use of OSCE in the QUB MPharm. This was introduced to the participants via a series of questions from the topic guide related to the use of OSCE. The sub-themes categorised under TLA reflect the breadth of the discussion regarding the use of OSCE; from academic and student preparation for the exam, to the impact of using OSCE on the revision of teaching and learning materials. The theme "Reality versus Simulation" was debated widely in each of the focus groups and transverses a number of themes including impact on teaching and learning as well as inter-professional and communication skills.

4.2.1 Preparation for OSCE

All pre-OSCE focus group participants were asked how prepared they felt (undergraduates) or how prepared they thought the students would be (academics) for OSCE. Post-OSCE participants suggested additional interventions which they believed would enhance student readiness for OSCE. Academic participants largely (n=16) agreed that academic colleagues had provided ample opportunities and resources for student skill development with the handbook, formative OSCEs and DVD. One academic participant suggested that a mock OSCE under exam conditions might reduce student anxiety regarding the process of the OSCE. Conversely, another academic group, with a similar mix of participants (n=4) discussed a mock exam but disregarded it, concluding that it would be too much effort for staff given the low value of the assessment;

FG6:FA8 *“The only other thing that we could do for them is to give them a mock but that is just far too much, it’s too much”*

FG6:MA1 *“You need to remember that it is only counting towards a very small percentage of their coursework mark...”*

One student group also raised the value that a mock exam would have provided particularly if individualised feedback was provided;

FG3-FS7 *“...like a practice one beforehand cause even though you did one in your third year hospital placement we just got general feedback for everyone. It would have been good to (do), even though it was our first doing a proper OSCE, you know, different stations and stuff but if you had got individual marks and feedback just to see how well or how horrifically you were doing...”*

Academic participants described feeling well prepared for delivery of the OSCE, particularly those who had been involved in writing stations. They believed familiarity with station content had prepared them for their role as an examiner. Staff acting as standardised patients (SP) appreciated having SP training as well as viewing stations and props in advance of the OSCE and although some academic participants admitted that the stations did not always ‘run’ as intended and ad-libbing was required, they did not feel this detracted from the standardisation of the OSCE. In pre-OSCE focus groups, students requested more practice with OSCEs to improve their preparation, however, post-OSCE they described the value of the DVD for preparing for oral stations and the OSCE handbook for overall preparation;

FG8-MS8 *“It was good, within the booklet the wee scenarios at the end of it...they sorta helped you and you were sorta hoping you were going to get one of them!”*

4.2.2 OSCE set-up

Focus group participants had little or no experience with the organisation required to develop, pilot, set-up and run successful OSCE’s and few commented on this. They did have concerns pre-OSCE regarding the examination structure in relation to the number of stations and also variability between stations. Discussions arose regarding the quality assurance methods undertaken to ensure that the stations were of equal difficulty as not all students were going to complete the same tasks;

FG6:FA10 *“I do worry about that and also because they (OSCEs) are written by four different people and you know even when you look through them you can see that there are differences so...yeah I don’t know how you can control it but...how you get around it, how you standardise them, but it will be interesting to see from week one to week two actually...”*

Other participants (n=5) were less concerned with quality assurance, arguing that, with experience, the OSCE assessment team would be able to mirror the stations used with greater accuracy. They suggested the development of a template from which all subsequent stations could be built, to further guide standardisation, particularly in relation to mark allocation. Students were accepting of academic staff’s ability to standardise the stations to ensure equity of experience but were anxious regarding the equivalence of available topics for OSCE with one participant voicing concerns regarding a specific therapeutic area;

FG10-MS2 *“...now maybe I wouldn’t have on the day wanted to get one ...if I had seen a warfarin packet I’d definitely have been out the door!”*

In relation to the number of stations required to produce a valid assessment, academic participants considered the impact on increasing station numbers on the student experience as well as their own workload, preferring to keep the numbers small. This was considered to be more achievable given the large number of students per year group;

FG6:FA9 *“It depends probably on how much is involved. Our Pharmacy Practice ones take seven minutes so we can do five or six and the students aren’t that tired and the extemp (OSCE) it takes them at least twenty minutes so we only do four...”*

As this was the first time OSCEs had been used in the School, four stations were used. To ensure appropriate validity and reliability of the examination, particularly if it becomes higher stakes in the future, this number will need to increase. Academic staff were pragmatic about the requirements for increased stations although retained concerns regarding the feasibility of this given the demand on staff time. Students were content that their first summative OSCE would contain a small number of stations (four). A small number of student participants (n=2) proposed that the number of

stations should increase with student experience although perhaps not all in the same venue;

FG10-FS4 “...for first attempt, four was good, but we could maybe do, like four written and four oral but do the written elsewhere, you know, aye you know, space out that way because the four in a circle did go really fast and you could have easily done four written and four oral..”.

And

FG6-FA11 “How many stations can somebody survive before they pass out...?”

FG2-FA1 “And so, I don’t think it matters how many stations you know, I think anything that gets them into the way of changing their behaviour from being sponges that absorb and dispensers that process into pharmacists that think for themselves and are aware of what their role, is useful...”.

4.2.3 Reality versus Simulation

One of the benefits of the use of role-play within health-care education is the opportunity to encourage students to apply their knowledge to patient scenarios in a safe environment; safe for students and for patients. Performance based teaching methods provide a chance for students to bring together knowledge, skills and professional behaviour in a unique way. Academic participants had mixed opinions towards the use of standardised simulations using lecturers in the role of patient and doctor, (occasionally in the same scenario), as is currently used in the MPharm modules, Pharmacy Practice and Responding to Symptoms. Most (n=10) conceded the value gained in the providing students with opportunities to practice their skills was significant but some (n=4) had concerns regarding the ‘reality’ and hence the validity of the examination to determine students real-life performance;

FG6-FA10 “I am just thinking...personally, if I was doing that (**role-play**) and I knew it was to my TUTOR, but yet I was doing it to a patient, I think I would be more comfortable with the patient?”

FG6-MA3 “I think you are probably right”.

Some student participants (n=6) agreed that their performance in role-plays (outside of OSCE) was not how they behaved in a ‘real’ patient-pharmacist interaction. They suggested this was due to their awareness of being assessed;

FG1-MS3 *"I don't think it is (like real life)...it (the role-play) tries to be but I don't think it's close enough to a real life scenario...because it's so...you know what is going on, you know what it's not...you are not thinking 'this is real', that the person in there is not a real patient...you know I don't go in there thinking, this is just another day in the pharmacy, I know this is an exam and that [pause] and you know, you go in there and in a completely wrong state of mind, well I do anyway. Not relaxed at all. And if it was to...you know, someone came up to you in a shop or someone came up to you in a ward and asked you a question you would behave in a COMPLETELY different way".*

Students believed that it was difficult to determine their real-life performance however one group suggested that their interactions should be recorded by video and then marked, as in their Responding To Symptoms (RTS) module. Participants also discussed the use of specially trained actors, pharmacy students and also real patients to portray the scenarios in OSCE. A wide range of opinions towards these measures was recorded across both sets of stakeholders. One participant commented that he was relieved that real patients were not used regularly in role play, despite the reality that this would achieve, as this could add to student stress as opposed to reducing it;

FG1-MS2 *"It probably helps that they AREN'T real patients...I think sometimes that would add more stress if you thought you were, like I dunno, it will be interesting to see if this, if taking a medication history here (in the OSCE) is as bad as what it was on the ward..."*

A few student participants (n=7) praised the regularity of the simulation that they experienced during the Pharmacy Practice and RTS modules but did not agree that this type of interaction prepared them for OSCE. They believed they would require more and regular practice to achieve competence at OSCE scenarios;

FG8-MS7: *"When you say RTS and stuff like that...more TIME, you have more flexibility...you have 40 minutes but see when you come in here (for OSCE) and it's like 10minutes you are under pressure like"*

Moderator: okay

FG8-MS9: *"...plus you are constantly practicing it again (in RTS) so its second nature, and that's the way I learn things as well, by just constantly*

sort of practicing and getting comfortable with them. That how I felt and that how I got decent dispensing and RTS and..."

Moderator: okay, you just keep doing it and then eventually it becomes second nature really?

FG8-MS9: "Yeah".

Apropos the use of a 'standardised' patient, academic participants concurred that this would provide each student with a near identical experience. This standardisation would support objectivity which OSCE is based upon. It was generally accepted that whilst a pre-defined role play scenario exposed students to the clinical environment, it was in a manner which aided their development of core clinical skills with patients with less complex therapeutic or communication issues, that is, a 'good' patient;

FG6-FA11 *"...So it's those, those are the key skills you want them to develop with the, the difficult patient and you know, it's nice to see them build it up...you start with a 'good' patient".*

One academic participant disagreed, recounting his own experiences from undergraduate pharmacy where a lecturer had not used a script. He preferred the 'off-piste' approach, believing it helped him prepare for real-life practice. This approach is still used in QUB practice modules however other academic colleagues (n=2) had concerns regarding the *objectivity* of this approach suggesting that a number of different lecturers ad-libbing would mean that each student had an entirely subjective experience, which could lead to questions about examination validity;

FG7:FA13 *".....you are obviously depending on the individual...teacher practitioner em, personality and so on, a lot, so it's not set. There is obviously a lot of ad-libbing goes on and it can be very subjective really I think".*

One academic participant described the struggle she felt to remain impartial during student assessment after building a rapport with students throughout the module. She felt that her relationship with her students and her knowledge of their previous performances also affected her ability to accurately react as a 'real-life' patient would;

FG2:FA2 *"I think that it is quite difficult to assess because a lot of it is.... there's two elements to it, it's very hard to be impartial, you know we have*

developed quite a good relationship with these students the whole way through and it is sometimes quite hard to take that step back you know because we can't come at it as the public no matter how much or hard you try. You can't assess as a member of the public would assess because we have that background knowledge and we can read between the lines of what they are trying to say, so that is hard for us to assess, you know, you can say, yes it is right or wrong, but how would a patient perceive that?"

Her apprehensions were echoed by a number of other stakeholders present who participated in these modules (n=4) although this was not raised in any other focus group.

Another concern raised by academic participants regarding the use of role play as a mainstay of student teaching was the risk that it may limit student ability to develop empathy and coping mechanisms with 'real' patients. They argued that real-life situations were unique and often presented nuances that simulations cannot recreate and ;

FG6-FA9 *"You learn the hard way sometimes you know if you go out there"*

FG6-FA10 *"It's sometimes the best way to learn something!"*

FG6-FA9 *"Sometimes it's the shock factor of the patient talking back to you and you learn to adapt very quickly"*

FG6-FA11 *"Those are the students who worry me the most, who are academically very good at regurgitating knowledge (in an exam) and all that side of things but when you put them in front of a patient, they freeze".*

Academic participants discussed the value of student interaction with 'real' patients in order to learn from not only ideal scenarios but also from the mistakes which they will inevitably make;

FG6:FA10 *"You are quite right, it's when they make mistakes and when they go to work and they make mistakes and they see the reaction of a patient or a doctor that they suddenly reassess themselves and reflect on it".*

Pharmacy students interviewed believed that an interaction with a 'real' patient was generally more straightforward than role-play and although academic participants believed that OSCEs presented *good* patients, they perhaps did not present 'good' doctors. All student participants (n=22) perceived that for the majority of the time in their simulated interactions with 'medical staff', the doctor was portrayed as obstructive which did not reflect their experiences from clinical practice;

FG8-MS1 *"There is just (an) emphasis in OSCEs and in general like in Pharmacy Practice that the doctor is always mean, like every time you speak to them they always have an issue, I don't know how, maybe doctors are like that sometimes but they are not ALWAYS like that, so why is it always the worst case scenario? Each time you speak to....cause there is 'dead on' doctors you know..."*

And

FG10-FS7 *"...I got a 'I thought yous are meant to be the experts' [laughs] I was like 'oh yeah, we are!' [group laughs] I forgot that bit! And I know, like, if someone was busy or in a rush or whatever, like they could say something like that but I just thought for an OSCE situation that was a bit...harsh! too much role play!"[group laughs].*

Largely, students (n=16) felt role-plays failed to place them in a 'real life' situation. They believed that staff were unable to portray a patient response as they, the students, would expect a patient to react. This concern echoes the worry raised earlier by academic colleague **FG2:FA2** in relation to staff's ability to remain impartial;

FG1-FS5 *"...you know, they (lecturers) will let you go on ahead with a false scenario if you don't ask....and if you give something and it's contraindicated or whatever...they hold back a certain amount of information to try and get you to PROBE but in real life a patient would probably tell you..." [FS4 mouths the word 'yeah'].*

Another option discussed was the use of simulation models and virtual patients. Academic and student participants alike had very little knowledge or experience of these types of simulation, associating them with other healthcare professions. Participants acknowledged a benefit from the use of computer aided simulations and

patient simulators but ultimately felt more, earlier practice in real-life environments was preferable if this was within University resources;

FG3-FS7 *"I think they (virtual patients) probably...they would help you ...I don't think you would realise it at the time but..."*

FG3-MS4 *"... anything is going to help... you know, if you could throw us all into hospital early on....on placement, if great but if that's if... the resources aren't there if there aren't enough places then something like that you know...any help or any sort of..."*

FG3-MS5 *"...it's practice that you want you know, its practice that we want and you know we need em...it could be a lot more useful doing that (practice)...."*

Due to the difficulties for the OSCE coordinator in staffing the OSCE, participants were questioned regarding the use of fellow pharmacy students or actors to portray their patients and doctors during the OSCE. Students had mixed views regarding the use of fellow pharmacy students in this way; some student participants (n=10) acknowledged that involvement in OSCE early in the degree course, even as a patient, would support student familiarity with the assessment, would not be as intimidating for examinees as a lecturer and may even be more reflective of a 'real' patient response. A few participants (n=4) were apprehensive that student standardised patients would be less inclined to prepare for OSCE due to their lack of world experience and overall lack of responsibility for the successful running of the assessment could limit their value in these roles;

FG8-MS9 *"I dunno, that (use of students) might have been a bit of a hindrance in terms of the whole...cause their knowledge might not have been enough to be able to discuss things, they would have had to really stick to a script. So I don't know, it might have been a bit of a drawback"*

[MS7 nods]

And

FG3-FS7 [looks shocked] *"No, this sounds awful, I wouldn't trust them to be fair with everyone"*.

Also with regard to student role-playing, other student participants (n=2) had misgivings including that they may know the student from their course and this could

be distracting and intimidating, particularly during an assessment. Interestingly, one student thought that student colleagues would not be able to *interpret* what he meant in an OSCE;

FG3-MS4 “...*cause if you knew them it might put you off and you might feel more conscious about, you know...if I well, you know, they might not pick up if you do something stupid because they might not know what they are looking for but you might have that in the back of your head*”.

This comment may actually *support* the use of non-staff in these roles as it displays an element of student reliance upon staff interpretation during role play whereas ‘*real-patient*’ encounters will not provide the luxury of interpretation and ‘*reading between the lines*’ to pharmacy undergraduates. Additional to these reservations, student participants in one focus group (n=6) believed staff would experience difficulties in persuading students to volunteer to be standardised patients. Student participants remarked that even if some students did offer to participate they had concerns regarding their ability to perform the tasks as described, suggesting that it would be difficult to hold them to account for inappropriate behaviour if they were participating voluntarily;

FG9-FS13 “*I don’t know how you would get first year students to volunteer for it!*” [laughs]

FG9-FS3 “...*and it’s your exam like...if they weren’t taking it seriously or if they were saying something to confuse you...it would be very hard to audit them and say pull them up on it and say ‘you were doing this voluntarily but...you led the student astray’...*”.

Similar to the student stakeholders, a number of academic participants (n=3) were unconvinced that first year pharmacy students would have the skills to portray patients but for different reasons; their lack of life experience and general pharmaceutical knowledge. In contrast, one academic argued that because of this, first year students would probably provide a more accurate reflection of the general public than that simulated by their lecturer. Interestingly he was the same academic who supported an ‘*off-piste*’ approach to the role-play which perhaps is what he envisaged in this scenario with first year undergraduates;

FG7-FA8 "...they (**first years**) don't know very much I suppose, that is the only thing, they don't know very much..."

FG7-FA12 "...but then you know you could argue that the person who is coming in and is saying 'I don't know anything about my medication'"

FG7-MA1 "...maybe that's what you need!"

FG7-FA8 "...that could be a typical patient in a way..."

One student pointed out that no matter who portrayed the scenario, it was still an exam and he would never be completely relaxed or feel that it was just another day at work; it would always be a pressurised situation. He argued that in a real-life environment he feels less anxiety about having the answer right away and is confident that he would know how to get the information compared how he is expected to behave during the OSCE. He concluded by accepting that assessment of real-life performance was difficult to gauge;

FG1-MS3 "...if someone came up to you in a shop or someone came up to you in a ward and asked you a question you would behave in a **COMPLETELY** different way. You would be ok...well maybe you don't know it (**the answer**) but I know where to find it...I know where I can go....it tries (**OSCE**) to be a real life scenario but it's not...but the other thing is, how can you get it close to real life?"

4.2.4 Fairness of assessment

Some academic staff (n=4) were apprehensive, largely due to their own lack of experience in the development of OSCE stations, regarding the quality assurance of stations. They were eager that the OSCE was 'fair' and not designed to confuse or trick students. One participant commented;

FG6-FA9..."the OSCE is **TESTING** them (**pharmacy students**) on what they have learnt so it has to test what they have learnt, so you can't throw in any surprises".

Students recalled being confused by some stations either due to perceived lack of task clarity, the number of resources present and occasionally the clinical content. It was apparent that some tasks had inadvertently assumed some nuances of clinical practice which students had not yet absorbed, such as the need to record adverse

drug reactions on a medication “kardex”, similar to an allergic reaction to medication, which would be second nature to a practicing pharmacist;

FG10-FS5 “...I thought that too, about the drug history and as well...about it...em, there was like, aspirin that she said she’d tried or something and it made her feel sick..”

Moderator “ok”

FG10-FS5 “...but I didn’t really think that was an allergy, I thought it was just...and then I think I got marked down for not recording it, cause I put in the box saying that she didn’t have any allergies as such...”.

Academic staff also discussed the use of ‘essential criteria’ within the OSCE format, to ensure that students did not gain sufficient marks from their performance alone to pass whilst missing key aspects of patient safety or even causing patient harm. In pre-OSCE focus groups, some academic staff (n=5) expressed concerns regarding the use of essential criteria describing fear of student failure. Other participants (n=6) described how, in Pharmacy Practice, a legal error or patient safety issue would earn a student a mark of zero in order to emphasise the seriousness of the mistake, to attempt to prevent a repeat of the same event in the future;

FG6-FA11 “...and again it flags it up to them, you know, you didn’t do anything! You know, you did it wrong and you have been told exactly what went wrong, you will not do that in practice now or hopefully...a zero is very harsh and you have tears after a zero...”

FG6-FA9 “but if they overdose a patient, they don’t spot a black dot interaction those are serious patient safety things”.

This type of marking scheme (using essential criteria) is already in use in other modules of the MPharm, however the academic stakeholders interviewed decided that as this group of students were essentially guinea-pigs to the OSCE format, it would be unfair to include essential criteria at this stage. Academic participants recognised that the inclusion of essential criteria may soon be non-negotiable, not least due to the General Pharmaceutical Council (GPhC) Education standards (2011) which display an increased emphasis on patient safety;

FG6-FA10 "... You are trying to train people to be very focused on... **(Patient safety)**... You have got patient safety to think about and that is the thing, you know so..."

FG6-MA3 "Educationally I think you need it, you need to have a validation in there about how you are giving marks out... I think... and the whole new standards it's probably going to be less a choice than you almost have to..."

Post-OSCE, a number of academic participants (n=2) had altered their views and were more keen to enforce patient safety, perhaps after observing students' performances and noting the scale of omissions and lack of comprehension displayed during the examination which did *not* lead to student failure;

FG12-FA8 "I think essential criteria would be good definitely. I think if we had essential criteria there would have been more failures than what there were... em... I think it's just we have got to try and make things more realistic for when they are qualified in the future..."

One participant was more reticent, preferring increased focus on patient safety required for certain high risk medications, for example those with narrow therapeutic indices or with particular patient safety concerns which students should develop 'triggers' for;

FG11-FA5 "... I definitely think there should be some of those **(essential items)** because there are some points that are just so critical and... but I wouldn't want to see us going mad over it either... so I think that approach... where the key things that everybody knows are really critical that you cannot miss..."

4.2.5 Impact of OSCE on Teaching and Learning

The Objective Structured Clinical Examination (OSCE) as an assessment of competence in clinical pharmacy skills taught during the MPharm practice modules was a novel concept for both academic and undergraduate participants. The introduction of this assessment method presented challenges to all stakeholders in relation to the design, development and piloting of the OSCE stations and props. One

academic participant believed that the standard setting meeting for OSCEs provided additional benefits in relation to ensuring consistency of the stations to be used;

FG12-MA2 “...going back to the prep stage, em... I thought it was good whenever we were writing all the OSCEs I think the whole benchmarking as a group you know almost making sure everything was pitched right was really necessary cause you know if you are writing it in isolation... but then you know doing as much of the work as a group that day that we sat and compared...”

Moderatorthe Angoff day?

FG12-MA2 “...yeah I think that [pause] that is probably really crucial for getting everything up to a sort of consistent you know...(level)”.

Academic participants were accustomed to traditional written methods of assessment. They believed it was important to retain assessment of core knowledge via written examinations whilst acknowledging a role for OSCE in the assessment of an amalgam of knowledge and skills. Academics viewed OSCE as a method of evaluating students' ability to put knowledge into daily practice;

FG2:FA2 “...I think where the OSCEs come into play is the APPLICATION of the knowledge so it's not just short term learning, it's how you then apply that into real life. So it's moving those cholesterol lectures where they hear this...the advice that you should be giving and this is the dose, to 'I've got a prescription and its only for simvastatin 10mg, I've learnt in a lecture and I memorised it and I wrote it in an exam paper that it actually should be simvastatin 40mg..now, do I actually do anything with that knowledge' ... whereas...maybe with OSCEs they (will) support and back it up and make it real life...”.

Staff appeared to view OSCE as a method of determining aspects of student application that were difficult to determine by more traditional methods, particularly relating to student performance. Some participants (n=5) were apprehensive that good 'performance' may mask poor knowledge;

FG6:FA9 “but you could have the best communication skills in the world but unless you have the core knowledge which you could assess via a written exam...then it kinda works both ways”.

Academic staff suggested that this type of assessment would change not only student learning but also how they would teach students in order to prepare them for this type of examination. It was believed that the OSCE would provide useful feedback on student performance at a certain point in the degree which, in turn, could help guide future curriculum integration in the MPharm;

FG2:FA2 *"...One thing that we didn't mention was that OSCEs, we have mentioned students and the student learning but its brilliant learning for us"*

Group "yes"

FG2:FA2 *"because actually you start to see that their level of understanding isn't there...when you are marking it".*

And

FG2:FA3 *"I think it (OSCE) would be a very good idea to get an idea of where they are at because ...they don't know what they don't know...and we don't know potentially what they don't know...so it is really useful to get a snapshot because you might assume that after they have done x, y and z then that should be a lovely little easy workstation for them when actually it's not being... and a lot of that comes back to the fact that they are not being able to learn it off or regurgitate it".*

4.3 Acculturation to the profession of pharmacy

When designing the OSCE tasks, the OSCE Development Group agreed that the assessment of professionalism should be incorporated into as many of the stations as possible. This ensured that student competence was evaluated not only regarding their knowledge but also their ability to interact appropriately with patients and the wider healthcare team. Professional behaviour is taught in all of the pharmacy practice modules of the QUB MPharm and is assessed during clinical placements. Students were expected to dress professionally for the OSCE and marks were awarded for patient empathy as well as the ability to develop a rapport with healthcare colleagues. The topic guides (Appendix 4 and 6) introduced the topic of clinical skills, however participants provided subtle unforeseen insights for example the risks of good communication without a strong knowledge foundation.

4.3.1 Effective communication skills

Many patients are increasingly knowledgeable about their condition and medications. The highly accessible resource of the World Wide Web has created a newly informed patient populations who often bring the results of their research to consultations with healthcare professionals which can increase the complexity of a patient interaction. All participants identified the need for effective communication skills in relation to patient care as essential in the development of a professional with some stakeholders identifying this attribute as a future selection criteria for entry onto the course, as is currently exercised elsewhere in the University;

FG6-MA3 “.....I know that was part of my own son’s interview in Dentistry was communication skills and being able to relate information in simple terms to a patient”

FG6-FA10 “Right?”

FG6-MA3 “you know there was ‘somebody has tooth decay, how would you explain to them what they had and what that was?’ Very simple because they still hadn’t done the course. But there is that part, I know of people on our course already who think that ‘I don’t want to be a pharmacist, I don’t want to talk to people, I just want to go and do science type thing’ and you can’t get through our degree doing that”.

Both academic and student stakeholders identified the importance of developing nuanced communication skills such as being able describe complex concepts relating to medication commonly referred to as ‘layman’s terms’, to increase patient understanding without increasing patient anxiety;

FG1-FS5 “...How you take... like... em clinical information and put it in words for a patient”

FG1-MS2 “Yeah...because by third year you do learn all that as well as clinical stuff and it’s like now I have to not use the word...Gl...it’s like ‘oh my goodness’ or LESION...you just can’t use that word or someone would shout at you...”.

Some students were thought to have developed communication skills beyond that of their knowledge and were able to confidently provide inaccurate information to the patient. This was a particular concern for non-Pharmacist academic staff (n=2) who aided in delivery of the OSCE. They described feeling less able to identify student

mistakes when students were very convincing (although only the examiner was responsible for the student grade) and persuasive;

FG11-FA14 *"...There were some students... who as you know with someone with no knowledge what so ever... with some students I could just have taken whatever they had said to me because the way they came across, they were so confident in what they were saying, you know? They could have prescribed arsenic and I would have been like 'yeah, great that is fine'".*

Other students, who did possess adequate knowledge, were not able to impart this to the standardised patient in a manner which inspired confidence. This conflict between communication skills and knowledge was also identified by the student groups;

FG3-MS4 *"...at the end of the day once you go out in practice, be it hospital...and community you are going to be spending most of your time talking to patients or other healthcare professionals and if you don't have them skills (interpersonal) and you can't build up that sort of rapport with healthcare professionals or patients then you know... obviously your knowledge is important but people aren't going to, you know, be as inclined to come to you as a pharmacist if they don't think....your interpersonal skills are that good, they are going to go elsewhere".*

Academic and student groups identified a lack of opportunities within the MPharm to develop patient-focused skills, including communication skills. This was thought to be particularly evident early in the MPharm, where communication skills were limited to oral presentations of assignments to student peer groups, as opposed to interpersonal skills with patients or healthcare professionals. A few academic participants (n=3) feared that this inexperience could lead to a lack of appreciation of the subtleties of the pharmacist-patient relationship;

FG6-FA11 *"I think they are quite naive in that they think people are just going to do what they tell them!"*

FG6-FA10 *"that's right!"* [laughs]

FG6-FA11 *"you know, if they tell them 'take it three times a day' they will".*

OSCEs were viewed by all stakeholders (n=40) as being an appropriate method of evaluating communication skills, similar to other role-play within the course. Pre and post-OSCE, students rarely commented on their communication skills, with participants displaying confidence in their ability after weekly practice during formative role plays in other practice modules. Post-OSCE academic participants described a wide variety in student performance at the OSCE communication stations despite their weekly role plays although these students were often known to staff;

FG11-FA10 “...quite variable from the really good, empathetic, lots of eye contact and...em...interaction to the...just the grots you know basically! [laughs] but mainly on the good side I would say...so it was more the ones who weren't good stood out because there was such fear off them...”

FG11-FA11 “I think I noticed the folk who are not generally that good in RTS classes who struggle with the communication side still struggled whenever they got us in OSCEs so that was not real surprise to me...”.

4.3.2 Inter-professional skills

Stakeholders unanimously agreed (n=40) that the ability to communicate effectively with their healthcare professional colleagues was an essential skill for future pharmacists. One academic participant identified that communication was too broad a definition for this type of interaction, believing it was negotiation skills which are vital to the success of inter-professional relationships in the workplace, particularly in order to ensure patient safety;

FG2-FA4 “...negotiation...so then if they are giving advice to em...an SHO or a GP, they are able to defend their position and you know they believe in what they are saying strongly enough so that the GP, even if he is wrong is saying ‘no I don't believe in what you are saying’ even if they **(the student)** are correct that they are able to stand up and say ‘well actually...’ and you know argue their point a bit...so that they **(the GP)** will take their advice...”.

Whilst recognising that inter-professional skills were essential, pharmacy students have traditionally been taught in a didactic and largely uni-professional environment, consequently a number of participants (n=4) expressed reticence regarding interactions with other healthcare professionals. They perceived that other

professions, particularly medicine and nursing, were more familiar with the hospital environment than they were and would subsequently be better equipped to deal with inter-professional interaction. They believed that in this situation they would 'take a back seat' and wait until invited to participate;

FG3-FS7 *"I think if you had a situation, like it was going to be in a hospital or you were going to have to work with medics and nurse and say if you threw any of us in now we would probably just stand in the corner and wait until you were asked something or like told what to do, you know? ..."*

Moderator **"Because you think they know more? Or what is it?"**

FG3-FS7 *"It's because they are more used to ...being in that situation, they know how to deal with it and what is going on".*

Student reticence to participate may display their awareness of the hierarchy of healthcare professionals, absorbed via the 'hidden curriculum' from student peers and academic staff alike. Despite this awareness of social hierarchy, some student participants (n=5) believed that although opportunities for interaction with healthcare professionals were available during placements, they were insufficient to develop student competence in inter-professional relationships. They identified a need for an increased focus on inter-professional education for pharmacy undergraduates in order to improve future working relationships;

FG9-MS4 *"I think that to an extent we would need more interaction with doctors and nurses... you don't really get interaction if you are on placement too much because you are really just like... you might bump into them on the ward but it's not like the... eh the interaction that you are meant to or expected to haveeven if you are not going to hospital and you are going into community, you are going to be interacting with a GP and eh sorta community nurses to an extent so you know it would be nice to have sort of built up more of a sorta rapport...".*

Academic staff had concerns regarding how inter-professional skills could be appropriately nurtured throughout the undergraduate degree, displaying hierarchical deference to medical staff particularly regarding the teaching of pharmacy undergraduates. One participant preferred to consider increasing in-house simulation rather than 'bother' medical colleagues in the hospital environment;

FG6-FA11 *“On a placement, with a real F1 or F2, you know, honestly, I am very supportive of inter-professional education etcetera but you....you know that F1 doctor is very busy and they are looking after quite a lot of wards and they don't want some fourth year student coming up and saying ...talking about an interaction that isn't that significant! [laughs] and you know, you could just imagine how it could go you know, go wrong I suppose in places, but again maybe we could simulate it more?”.*

4.3.3 Collusion

One fundamental tenet of the Code of Conduct for Pharmacy Students and for Pharmacists (PSNI, 2012) is patient confidentiality. Students are reminded of the need for confidentiality whilst on hospital and community placement; however the development of professional behaviour and acculturation with the profession of pharmacy also requires students to behave professionally with regard to examination requirements. Due to the large numbers of students as well as the resource intensive nature of the OSCE itself it was necessary to conduct the examination over two days, one week apart. Many academic participants (n=10) interviewed had participated in the authorship and piloting of the OSCEs used for the student cohort. A few (n=3) had lingering concerns regarding the parity of the stations used;

FG6:FA10 *“I do worry about that (**consistency**) and also because they (**the OSCEs**) are written by four different people and you know even when you look through them you can see that there are differences so...yeah I don't know how you can control it but...how you get around it, how you standardise them, but it will be interesting to see from week one to week two actually...”.*

All stakeholders, academic and student alike, expressed concerns regarding students' ability to maintain confidentiality regarding examination content over this period of time. Some students (n=5) described the benefit they gained when discussing an examination with a colleague and that the requirement for confidentiality would strip them of this;

FG1-MS3 *“...I always find its really good to, you know, get it all out...you come out of something and you always just tell everybody, look this is what happened to me and you try to...you always gauge opinion on..”.*

FG1-MS2 *"Yeah...I know what you mean..."*

FG1-MS3 *"Did I do that right, do you think?"*

FG1-FS5 *"Yeah, 'did you do the same'?"*

FG1-MS3 *"And it's...I think that's just natural that you do that with everything, after an exam....I don't think you should be penalised for...you know..."*.

Some academic staff (n=3) also acknowledged the reflective power of post-exam discussion and viewed it as 'natural student instinct' to wish to discuss the OSCE stations and that many students would be unaware that this constituted unprofessional conduct regardless of information provided in advance regarding confidentiality. One member of staff commented that they may view it as 'team work' to support their colleagues by informing them of the station content in advance, as opposed to collusion;

FG12-FA13 *"They don't think they are being...they don't think 'this is unprofessional' or anything they just think 'why wouldn't you help them if you could'?"*.

A small number of academic staff (n=2) thought that the time between OSCE sittings was irrelevant and that the only way to eliminate collusion was either to have completely different stations for each day or have all of the assessment on one day. A few staff (n=2) also believed that social media played an increasing role in inter-student communication greatly increasing the risk of confidentiality breach for this type of examination;

Moderator **"What about if they are closer together? (the OSCEs) so if they are not a week apart?"**

FG12-FA12 *"I just think it would speed up their phone calls!"*

Group laugh

FG12-FA8 *"They are all on Facebook® you see as well you know? And I think that is what they tend to do".*

A few academic participants (n=2) believed that a breach in confidentiality would not influence the student's overall performance and that 'good' students would always outperform their 'poorer' peers regardless of information leaked;

FG7-FA13 “...but even sometimes when you do, when they do know what to expect it doesn't help!”

FG7-MA1 “...doesn't make any difference...that's why obviously you would have different questions, you know **(but)** you don't need to...you could just tweak them ...because the good ones **(students)** will still answer it well and the crap ones will...**(perform poorly)**”.

One student's experience would appear to support the theory that leaked information would not influence student performance. She admitted that she had asked a peer about the OSCE prior to her own examination and she had prepared the discussed topics. Consequently when alternative subjects arose in her OSCE she felt a bit unsettled by this;

FG8-FS9 “To be honest before I went in I had heard what was coming up and then something completely different did, so [laughs] that threw me off a bit”.

4.4 Factors influencing OSCE performance

4.4.1 Familiarity with the OSCE format and content

All stakeholders interviewed agreed that students' lack of experience with this examination format could hinder their performance. Academic staff commented that despite this year group being exposed to a two station formative OSCE during their third year clinical placement and during workshops in pharmacotherapy and prescribing modules, this was their first *summative* OSCE. One academic participant suggested that a mock OSCE, fully representing exam conditions, may more adequately prepare students for all of these issues.

FG6-FA5 “...in an ideal world, I think...em...the more that they can do one **(an OSCE)** that is very closely like it, with it being formative, the better. There is no reason why not. We don't have to spring surprises on them if we are trying to ultimately improve their skills and they need to practice those skills, in that kind of environment where there is a time pressure, they are going to learn from one that is just formative...”.

Careful preparation would be required in order to ensure that a mock examination is valuable for students and academic staff; students need to know what is expected in relation to room layout and station content, academic staff need to be familiar with timings, what can go wrong, how to give feedback and the general running of the examination. During the formative OSCE in their clinical placement in the previous academic year, students were given little information in advance and were unfamiliar with the assessment concept and expectations. One student commented that rather than reducing her fears regarding OSCE, the formative OSCE *created* them;

FG4-FS10 *“Well, I would never really have bothered about OSCEs until the first experience we had last year...”*

Moderator *“Oh, really?”*

FG4-FS10 *“...and I was the first one picked and then I went in and then didn't even have time to read the stuff never mind anything else and then I was just...I was just panicking...and I know it wasn't assessed or anything but I just....didn't have time...”*

Bearing out the belief that 'experiencing' the OSCE in order to reduce anxiety towards this type of assessment, in post-OSCE focus groups most students (n=14) appeared more circumspect towards the exam, reflecting that the experience would prepare them for future OSCEs;

FG8-FS3 *“Em, I think it wasn't as bad as...as I anticipated. I wasn't overly nervous about it but I think once I got into it, it was very self-explanatory. There was nothing shocking about it”*.

And

FG7-MS-6: *“I think it's good that way, it gets you, you know... you know you have done it before so hopefully you will perform better in the future”* [MS-1 and MS-9 yeah].

4.4.2 Learning styles

Participants recognised differences in student learning styles. This is apparent from performance in class tests, examinations where some students possess the ability to memorise and regurgitate material verbatim in a written examination but not necessarily achieving excellent grades in clinical placements or role play assessments. Some academic staff (n=11) welcomed the opportunity to facilitate an

assessment method which offered an alternative technique for evaluating student ability outside of the traditional memorisation of knowledge;

FG2-FA4 “... You know applying that knowledge is as important so I think em within a module for students if you have got like half (**written**) exam based and half of the assessment is OSCE based then those students who maybe aren't that good in (**written**) exams have a chance to do well in OSCE’.

A number of staff (n=4) argued that this type of assessment was a valuable teaching tool for students as it provided students with the opportunity to approach a problem as a pharmacist should. One member of staff suggested that participating in OSCE may uncover additional learning needs for students as they discover gaps in their knowledge or skills;

FG2-FA3 “... I really think they (**OSCEs**) have a very valuable place because em... it really helps them to THINK like a pharmacist and act like a pharmacist and like FA1 has said em they don't really know what they don't know until they start to do it...”.

Student participants recognised that they were more familiar with written examinations but most students (n=17) believed that OSCE offered a valid method of evaluation, which could determine both their possession of appropriate knowledge as well as effective communication skills with which to impart the message;

FG3-MS5 “...at the same time, if you go into an OSCE, and are FANTASTIC at speaking to people and fantastic at dealing with a patient but don't know your clinical knowledge you are going to get the OSCE wrong and you are going to lose marks no matter how...”

FG3-FS7 “Yeah, I think that's true...”.

4.4.3 Time limit

Station length was ten minutes; this included preparation and completion of the task. Academic participants agreed that this was realistic and achievable for the tasks set, although, post-OSCE some participants (n=3) reflected that if students were left with a surplus of time, they were more likely to question their decisions, often losing marks in the process.

FG11-FA5 “...where they did ok, and then they comfortably had about two minutes left which is fair enough...but then they phoned back twice and kept talking and I was thinking ‘you actually did great and now you have just lost two marks!’ [laughs] ...cause they felt like they had to fill the time...”

Pre-OSCE, some students commented that the time limit was unrealistic and hindered their ability to build a rapport with the patient;

FG9-MS3 “In the exam situation you’re not so much thinking about ‘oh let’s try and just be nice to them and try and get a bit of banter’. At the time, I’m thinking ‘right, I need to get them to say this and I need to say that’”.

Post-OSCE, students views towards the time-frame ranged from inadequate, adequate, to excessive time per task. A number of students (n=6) reported reading the task rapidly without due attention, leading to a misunderstanding of what was required. The projected stopwatch itself was also viewed as a distraction, causing some student anxiety;

FG7-MS6 “just whenever the timer starts [uses hands to demonstrate clock ticking] you just feel like, overwhelmed with this information in front of you and you are like ‘where do you start?’ you know...you just see the clock ticking”.

QUB pharmacy students are familiar with more relaxed time-frames when participating in role-play during other practice modules and this may have influenced their attitude towards the more strict approach taken during OSCE;

FG7-MS7 “When you say RTS and stuff like that... **(you have)** more TIME, you have more flexibility...”.

4.4.4 Influence of other students (over-hearing others)

The majority of students (n=18) reported being distracted by other examinees at the nearby oral stations. This is not a factor which has been identified in many other studies although student stakeholders commented anecdotally that their colleagues in medicine (QUB) had reported the same phenomenon. Students admitted that over-

hearing others added to their general anxiety and their feeling of urgency to begin their oral task despite not being fully prepared. A small number of students (n=6) confessed that even whilst they were meant to be completing a written station, they were listening to their colleagues and mentally critiquing their own performance at the same station or even picking up points for the next oral task;

FG9-MS4 *"I did hear that (oral station) in the back and that was sorta what I was thinking and (it) ties in with what I was saying about sorta non-verbal ones where I could hear you know, different things and probably should be more focused but my ears were pricking up every time I heard something I thought might be useful..."*

And

FG10-FS4 *"...I was a bit put off by the fact, just the way mine was set-up, because I, when I was doing my written session there was someone behind me talking the one I had just done, so I couldn't keep my mind from listening to what they had just said and I was just thinking 'I didn't say that!' and I was wasting time..."*

One student however, felt that overhearing others had a constructive effect, particularly in relation to improving her performance and for her overall skill development;

FG9-FS3 *"...but it's kindof positive, hearing what other people were saying as well like... there's negatives if you didn't answer some of the things but it's interesting to see how other people go about taking medication histories and like I think for me it's one of the ways I learn like from what other people do as well. Following them and, like, picking up maybe tips and things, so I think it was positive in that sense..."*

Academic staff were aware that examinees could overhear for a number of reasons; they themselves could hear other students' performances but also because occasionally students paused mid-sentence to listen to a colleague at another station. Some staff (n=5) had concerns that students were deliberately waiting for their colleagues in the parallel OSCE cycle to begin their oral stations and then copy their approach, even if the tasks were entirely different and potentially misleading to them;

FG11-FA14 “....we had one student who took a long time to go through the address, the date of birth you know all the nitty gritty things because they clearly didn’t know how to get on to the actual clinical stuff and then there was another student at the table that was to our left who was absolutely amazing, you know, brilliant, she came in sat down and she was like ‘bam, bam, bam’ and that’s it and then all of a sudden ours was just like you know repeating questions and ‘are you this’ ‘are you that?’ and it wasn’t kind of related to ours but they’d obviously listened in to this other person and thought ‘well, I should ask those things...’”.

Academic stakeholders acknowledged that the noisy atmosphere was reflective of real-life practice and that over-hearing other professionals at ward level was a day to day occurrence. Nevertheless, some participants (n=4) suggested running oral and written stations in separate rooms in order to reduce the noise pollution and hence the risk of distraction for students. Overall academic staff agreed that if even one student was adversely affected by others, the room layout should be altered.

4.4.5 Influence of the assessor and standardised patient/ doctor

In the post-OSCE focus groups, students commented on the presence of both the standardised patient and the examiner at oral stations, which differed from the formative OSCE, where the examiner had played both roles. Students described feeling pressurised into performing before being ready to do so, due to the presence of staff;

FG9-FS10 “I was just really flustered, like you know, because there is people in front of you...there’s like two people maybe sitting and they are directly across the table from you and you just think like even when you are reading it **(the task)** you felt that their eyes were boring into you and they were like ‘I wonder how long it is going to take her’ like you just felt that they were judging you like! It’s probably just paranoia!”.

A couple of academic participants (n=2) sensed students’ discomfort preparing for the station whilst they were present at the table. Other academics (n=6) admitted that, because they had so much preparation prior to the next candidate, they completely ignored the students until they began the OSCE and assumed students would be focused on their task. One group suggested that students could call the patient and

examiner to the station when they were ready to interact. This is not a theme raised in many other studies and it presents new challenges to staff regarding the layout of the OSCE room. This suggestion was echoed by a student group;

FG10-FS11 *“...even if you (the assessor and patient) were sitting at a different desk...it’s because you were sitting RIGHT in front of them and you’re thinking ‘they’re probably looking at me going why are you looking at that resource, that’s not relevant, why?’ d’you know?...”*

Moderator...that’s grand...

FG10-FS5 *“I felt like I was in the situation before I was actually in it...because they were there...”*

One student participant raised concerns regarding his existing relationships with examiners for example from clinical placements and his fear of performing poorly in front of a person with whom he had previously developed a good rapport;

FG8-MS1 *“...she knew me from placements so then you were like...I have already been there (the hospital) I can’t do really really crap here because then I will look really bad and other people had lecturers and stuff...”*

Academic participants raised concerns regarding their ability to remain impartial when judging student performance due to their prior knowledge of students from other aspects of the degree;

FG2-FA2 *“...It’s very hard to be impartial, you know, we have developed quite a good relationship with these students the whole way through (the degree) and it is sometimes hard to take that step back you know...”*

4.4.6 Feedback

As described earlier, the practice modules within the MPharm use role-play in their weekly tutorials to acclimatise students to their future role, with a strong community pharmacy focus. The academic staff provide individualised verbal feedback on student performance directly after their interaction. The use of immediate feedback post-OSCE is controversial given the room set-up (see Figure 3). Neighbouring

students would overhear comments given to colleagues and may use this to their own advantage in their performance. Students however, appreciated the immediacy of this type of feedback on their competence, stating that they were more likely to remember the nuances of their performance and the station content if given suggestions very soon after the event;

FG1-MS2 “[uses hands]...quicker feedback I think...I think feedback is much more beneficial... like in RTS you do your scenario, you say goodbye and they go, ‘okay, you did really good, you did...or that was bad and you didn’t do...’ you know?...”.

A small number of students (n=2) disagreed, believing that this would only be true if the feedback was positive and that negative comments during an exam could hinder their performance at the next station;

FG1-MS3 “but the thing I found in the third year one (**formative OSCE**) was, I did the speaking one first and then I finished and...(someone) said ‘you didn’t say...’ but I had it written down...she sort of questioned, ‘why didn’t you say it?’...well, I don’t know...then I carried that (**comment**) on to the next station, I was sort of thinking ‘why did I not say that? Why did I not say that’ and it was 5 minutes to go and I was like ‘oh right, calculation!’”.

The Teacher Practitioner Team provided a general summary of overall student performance at each station to every student as well as individualised feedback on their oral station from the standardised patient, emailed within 2 weeks of their assessment. Individual marking schemes were not provided as these may be reused in subsequent years. Students in the post-OSCE groups had mixed opinions towards the feedback provided, some (n=7) admitting to having only considered their mark they received whilst others (n=7) felt that the feedback was much more valuable than the mark allocated, as the exam was only worth 5%.

FG7-MS1 “... what about getting a couple of words feedback after you have just done it, each station, you know like people just saying ‘you know, I think you did ok there’ or ‘you could have said..’ because my memory is quite bad and a couple of weeks later trying to think back even to what the OSCEs WERE, I can’t even tell you”.

One academic suggested that an alternative to written feedback was to bring all students back into the exam room post OSCE and show them the stations again, to reinforce the verbal feedback provided, as conducted for RTS assessments;

FG6-FA9 “...we would let them then see the OSCE again once we have told them sort of the answers, we let them walk around and actually see that they could then spot the mistakes...”.

4.5 Redesigning the MPharm curriculum

This theme was not identified by the topic guide but arose naturally in discussions and participants (particularly undergraduates) valued the rare opportunity to suggest changes to the MPharm course in order to ‘improve it’ for the next generation of students. The themes are analysed in order of frequency of occurrence, with a greater emphasis on the science versus the ‘pharmacy’ or practice aspect of the MPharm than any other topic raised.

4.5.1 Science versus Practice

Students expressed disillusionment with the current science emphasis in the degree. The QUB MPharm follows a traditional design with a foundation of science in the first two years intended to underpin the clinical application of pharmaceutical and therapeutic knowledge in the final two years of the degree course. However this concept was not clear to all students interviewed who referred to the initial years of their course as unconnected to the final two;

FG1-FS3 “...really like £6,000 down the drain...[laughs]”.

And

FG4-FS10 “I know you sort of do need the basics and all but [pause] two years of just like science you kinda get disheartened like ‘when are we going to get to do anything with pharmacy’ you know? So even if we had that **(Pharmacy Practice)** throughout and then brought in some other stuff as well you wouldn’t feel like it was such a divide, yeah”.

All academic stakeholders recognised that the course structure had caused some problems with regard to students’ ability to integrate their knowledge from science into clinical practice effectively;

FG6-MA3 “...part of the problem is whenever we set up the degree, it was this, this was the great Miller’s Triangle, I’m sorry [laughing], you know, it was literally where they **(the PSNI)** wanted science, flat science at the bottom and then move into flat practice at the top [using hands and arms to demonstrate the structure he is describing]..so all of a sudden you began to break your degree into two parts...and that’s an issue where people are alienating themselves from one area because they think the other doesn’t need it so to have more integration, that’s what we plan to do...”.

Despite suggesting that pharmacy practice needed to be introduced earlier in the MPharm, some academics had reservations regarding how early the concept of practice could be realistically introduced to undergraduates given the clinical experience of existing students;

FG12-MA4 “...em second year it **(the degree)** started to get a wee...you know with the extemp dispensing and stuff but em it really only was third and fourth year that em it started to feel like a pharmacy degree. So I think em if you...although demonstrating to level 1’s at the minute, I think level 1 would maybe be a bit early for it”.

Students also suggested that there were opportunities to introduce Pharmacy Practice and other practical applications of their learning earlier in the MPharm but that they believed that it would require movement of a number of knowledge modules to support their ability to contextualise the learning;

FG3-MS4 “...you kinda need a bit more sort of background knowledge for it **(RTS)**...well it would depend what way you were....if you were able to change some of the modules around then you could potentially have it earlier..”

FG3-MS5 “I think there is very....like the first two years there is NOT too many transferable skills you can take from them em, you could do more pharmacotherapy **ALONGSIDE** the likes of RTS and Pharmacy Practice in the first two years...”.

One student commented that she would prefer all of the practice aspects of the course earlier, to provide more time to develop competence than the current two years at the end of the degree;

IS1-FS6: *“em [pause] even starting the likes of Pharmacist Prescribing earlier.....second year even...cause...even doing extemporaneous dispensing in first year because it is not as...as big of a...factor really whenever you think about it in the whole scale of things...so you could start that for sure and do Pharmacy Practice for two years...because it was very difficult, I found it very difficult em...there is SO much to cover in such a short space of time...”*

Academic participants had mixed feelings towards the course design. Although all believed that students had difficulties integrating their knowledge from one module to another, not all accepted that this was due to curriculum design but due to student learning styles;

FG12-FA13 *“I think a lot of it is about making connections for them because as someone said earlier they just see a module that has to be passed at the end and they are all separate and they don’t see it. I think a lot of them in isolation mean absolutely very little to them to be honest...”*

Both academic and student participants acknowledged modularisation by student learners, which it was believed was encouraged by the existing MPharm curriculum to some extent. In one focus group, a number of student participants (n=2) viewed modularisation as detrimental to students future performance as pharmacists, although they recognised it as a desirable approach when studying for exams as it limited the requirement to apply knowledge from one module to another. One student suggested that an all-encompassing OSCE was one method of addressing this fragmentation;

FG9-FS12 *“...but I think the way our course is set up anyway....I don’t know cause I think the module thing we tend to just learn something and you don’t really need to keep it in...well you should have to but you know for exams we don’t have to, which is good, but it’s probably not the best way to assess people like...although I am not complaining because its, it is better for us*

but [pause] in the OSCE sort of thing because it could have been on anything, if the course was like that, if we could always be asked on anything, we might be better at OSCEs, you know?”.

However, other student colleagues (n=4) preferred the modular approach and actually requested more regular OSCEs, after each module completed, to not only increase their familiarity with the assessment format but also to limit the content of the OSCEs themselves to a narrower range of topics, similar to what they experience in other modules such as Responding to Symptoms and Pharmacy Practice. Students unanimously agreed that the existing degree was not cohesive with many (n=8) expressing a desire to leave the course in first and second year due its apparent lack of connection with the future profession of pharmacy. One student described how she had become frustrated regarding the science content in first and second year which she felt was entirely unrelated to working as pharmacist;

FG4-FS10 *“I know you sort of do need the basics and all but [pause] two years of just like science you kinda get disheartened like ‘when are we going to get to do anything with pharmacy’ you know? So even if we had that (Pharmacy Practice) throughout and then brought in some other stuff as well you wouldn’t feel like it was such a divide, yeah”.*

4.5.2 Primary versus secondary care

One goal of experiential placements during the MPharm is to contextualise student learning from knowledge modules such as Applied Clinical Pharmacy and Pharmacotherapy, with real patient encounters. Students interviewed associated community pharmacy with a dispensing role and hospital pharmacy as clinically-focused with the opportunity to apply their knowledge and skills more fully than they could imagine in community. Students also perceived the hospital pharmacist role as more prestigious commenting;

FG3-MS5 *“I just think it is more important in hospital to have a good clinical knowledge than in community. I think you can bluff your way through community most of the time without having much clinical pharmacy skills...”*
[Group laugh].

They believed that patients were more likely to respect the hospital pharmacist and accept their advice than that given by a community pharmacist as they are viewed as shopkeepers;

FG1-FS3 *“In hospital people want to listen to you, like... patients in community, if you try to counsel them they don’t take time to listen to you because you are in a shop and they are just rushing or they are embarrassed about what you are saying to them whereas in hospital I think there is more emphasis on counseling. They seem to take you...they seem to think... (you are providing) sort of proper counseling whereas [some agreement, nodding from FS1 and FS5] in community they sometimes kinda look at ya like you’re a shop assistant, you’re in a shop”.*

One student described how he was entirely determined to have a career in hospital. He deemed the knowledge and skills required for this type of work so different than that required for community that he would have preferred to not learn anything about community pharmacy at all during the MPharm;

FG1-MS2 *“...whereas my time would be better focused on like looking at more hospital skills then...and I think in a way it would be better if it was split in some way that you had a choice in what you learnt because most degrees do and you know we don’t really...even medics have like some choice in some of the stuff they get to do and we don’t have any...”.*

Although this theme appears in other healthcare professions, this is an under-researched area in the pharmacy profession. Academic stakeholders agreed that the pharmacy profession was divided up into a number of sectors, particularly community, hospital, industrial and academic pharmacy. Community practitioners interviewed (n=7) admitted that there was a lack of appreciation of the clinical role of the community pharmacist. They admitted to separating the two sectors in their own practice and teaching which could have created difficulties for students to forge links between the experiential teaching delivered in a hospital environment and a future career in community pharmacy;

FG2-FA2 *“...we have community pharmacy and hospital pharmacy in two separate boxes...”*

[Group agrees with ‘yes’]

FG2-FA2 “...and you know I stood up in my class last week, in Pharmacy Practice and I said you know we teach it, we are a community pharmacy background and that is what I am comfortable with, you know I wouldn’t even know how...you know...I am sure the checking process in hospital is exactly the same, but I can’t say that for definite....but they don’t see that the SKILL can be moved from community to hospital...we keep it far too separate...”.

Another academic participant suggested that a more cohesive approach within the School of Pharmacy should help to acclimatise students to the concept of working as one holistic team across the healthcare interface;

FG6-FA11 “...we need to change our perception and then pass that on to the students because the students will pick up on their mentors or whoever they see as you know the people they come into contact with whether it is on placement or in here, and if we separate it and use that language, they will separate it, they will just follow on from what we tell them so...”.

4.5.3 Value of OSCE

As this was the first year in which fourth year MPharm students at QUB were expected to complete a summative OSCE, it represented 5% of one module with no associated consequences of failing. Exams in practice modules to which the OSCE is compared by the participants constitute 50 – 100% of a module with a 70% pass mark. Prior to OSCE, students shrewdly equated the value of the OSCE to the value of other exams, and admitted that they would be focusing their attention on the assessment which awarded the most marks towards their degree classification. Some students (n=8) however conceded that at this stage of their degree, every 5% was significant;

FG1-FS2 “...because even if you don’t do that well in the OSCE, which is only 5%, you can always make up for it with your written exam in June..”

FG1-FS4 “5% is 5%...too...you wouldn’t not answer 5% of questions in an exam, you wouldn’t just bypass...”

FG1-MS3 “not to be scoffed at...”

FG1-FS4 “(shakes head, leans back in her chair as she speaks] no, it’s definitely not, especially at this stage when we are all doing finals and every mark COUNTS”

FG1-FS2 *“yeah, it could be the difference between a class, a degree class”.*

Academic participants felt that 5% was appropriate as this was a new assessment format for teaching staff and students alike, commenting that the students' anxiety may have a greater influence on their performance in this exam due to their unfamiliarity with its format. For future years, a number of academic participants (n=3) felt that this value needed to be increased as it measured student future performance;

FG2-FA4 *“...5% is very, I think it's very low because when you go out to work, the skills you are using are your communication skills, you are not going to be asked on a daily basis to do case studies and stuff...it's how you talk to other professionals and patients so I think that is as important for your job as the knowledge you have...”.*

One academic participant felt strongly that there should not be any difference in the weighting of the OSCE assessment compared to other modules such as Extemporaneous Dispensing, for which the performance examination contributes 100% of the module. Another colleague argued that this emphasis reflected the proportion of time spent on each skill during the MPharm, which was significantly more for other practice modules compared to clinical placements.

Post-OSCE, student views towards the value of the OSCE were mixed; those who performed poorly were relieved that it represented a small percentage, admitting that if OSCE had been worth more they would have increased their study effort. One student felt that it should be worth at least the same as any other piece of coursework;

FG9-MS4 *“well most coursework pieces we do range between what...10 and 20%? So you know, for it to be taken seriously almost it has to be worth the same as another coursework piece really”.*

4.5.4 The integrated degree

In response to feedback from employers and the need to review the traditional degree structure, the Modernising Pharmacy Careers (MPC) board, a subsidiary of Modernising Medical Education England (MEE) has been reviewing evidence for a new MPharm structure. It is proposed to subsume the pre-registration year to achieve a five year integrated degree course (MPC, 2011). As this concept is relatively new

and the focus of the review has been on the English Universities, academic participants were supportive of the *concept* which appeared to promote a better-rounded graduate. They were however skeptical with regards to the requirements for a cohesive approach to experiential training in both primary and secondary care that this style of degree would require and one academic (n=1) felt that there was not the drive for change within the School. Some academic staff (n=8) felt that the profession needed to liaise closely with other healthcare profession colleagues to avoid some of the pitfalls that large amounts of experiential learning could bring;

FG2-FA1 *"I just can't get beyond the logistics of it..."*

[Group agree with 'yeah']

FG2-FA1 *"that's where we are, the logistics...in an ideal world it would probably be really good to bring it all together maybe for them (the students), apply learning..."*

FG2-FA2 *"I think maybe pharmacy should be communicating with nursing over this one and seeing what works there and what doesn't because they are one probably group of people who spend a lot of time on placements and when you speak to anyone who teaches on the nursing in QUB they spend their lives visiting them and going and doing assessments...they have big concerns that they (the students) are not all getting exposed to the same things on placements..."*

Student stakeholders held a range of opinions, with some (n=4) welcoming the extra year to develop their practice and communication skills whilst others (n=2) felt that the length of the course would have put them off applying in the first place, if it had been five years when they were completing their UCAS forms;

IS2-FS11 *"...just whenever they hear five year course, em I don't know if I would have done it! [laughs]"*

Moderator...is that right? Just because of the five years?

FS11 *"yeah..."*

Moderator...okay...even though medicine is five years?

FS11 *"yeah...like em...I ...all the teachers were telling me to do medicine and that was one the reasons that I just didn't want to do it..."*

Other student stakeholders (n=8) were also against the five year structure, but for economic reasons;

FG3-FS7 *“I can see why it is a good idea from a learning point of view but I think if you are losing out on your year pay as a pre-reg and you are going to have to pay another year of fees, especially if the fees are going to go up...”*.

The next chapter (chapter 5) is a documentary analysis of the ‘*curriculum as written*’ for the MPharm at Queens University Belfast. It will provide insights into the stated written intention of the curriculum as conceived by academic staff prior to implementation.

Chapter 5

Documentary analysis; ‘The curriculum as written’

Chapter 5

5.1 Introduction

This chapter highlights the themes which emerged from a documentary analysis of the MPharm curriculum as delivered by Queens University, Belfast (QUB). Analysis of the curriculum was undertaken after the focus groups with stakeholders due to the timing of the OSCE examination in December 2010. These findings serve to assist the reader by offering a contextual background describing the nature of the '*curriculum as written*' in relation to the QUB MPharm course. They offer some insight into the culture of the University itself and its influence upon the School. During conduction of the thematic analysis key concepts arose from the curriculum and this chapter is structured to discuss conflicts arising in the documents as well as to comment on the 'mood' and 'tone' that they convey. In order to set the scene for the findings, a brief account of the culture of the School of Pharmacy at QUB is included.

Background to the School of Pharmacy and its culture

Queen's School of Pharmacy is a research driven, Russell Group University first founded in 1929. It was ranked second amongst all of the UK Schools of Pharmacy in the Guardian University Guide 2012, first in 2013, with an outstanding endorsement from the student cohort. Queen's MPharm curriculum has a traditional structure. The first two years focus on a science foundation, the third and fourth year build an increased pharmacy practice emphasis. The undergraduate component is supported by a fifth year in professional practice prior to registration with the Pharmaceutical Society of Northern Ireland or the General Pharmaceutical Council. It was important to consider the values of the University in which the School lives in order to understand some of the choices in relation to curriculum development within pharmacy.

QUB Mission statement

"Queen's is a broadly-based, research-driven university with a dynamic world-class research and education portfolio and strong international connections. The University promotes the widest possible access to this portfolio of excellence in an environment of equality, tolerance and mutual respect, and it fully embraces its leadership role in Northern Ireland and beyond".

Accreditation document, 2006; page 3.

This statement presents Queen's University as a national and international role model with an emphasis on its research agenda whilst also recognising its educational priorities.

The School of Pharmacy has a specific mission statement which again highlights the importance of research in the School of Pharmacy at QUB whilst still promoting the importance of quality teaching in order to improve pharmacy practice.

School of Pharmacy Mission statement

"To provide excellence in the teaching of pharmacy at both the undergraduate and postgraduate levels, to pursue research of the highest standards and to contribute to the profession of pharmacy locally and internationally".

Accreditation document, 2006, page 5.

The focus of this doctoral study was the academic curriculum as written in 2010/11. The MPharm course consists of four years of study, with six module equivalents per annum or 480 Credit Accumulation and Transfer System (CATS) points. Approximately 160 – 180 students are enrolled in each academic year, 640 – 720 students in the School at any one time.

5.2 Documentary analysis

The documents analysed in this analysis are listed in Table 8.

	Booklets/guides	Author(s)	Date written	Date of review
1.	Level 1 Semester 1 2010-2011	Multiple	Aug 2010	Aug 2011
2.	Level 1 Semester 2 2010-2011	Multiple	Dec 2010	Dec 2011
3.	Level 2 Semester 1 2010-2011	Multiple	Aug 2010	Aug 2011
4.	Level 2 Semester 2 2010-2011	Multiple	Dec 2010	Dec 2011
5.	Level 2 hospital placement 2011	TP Team	Feb 2011	Jan-Feb 2012
6.	Level 3 Semester 1 2010-2011	Multiple	Aug 2010	Aug 2011
7.	Level 3 Semester 2 2010-2011	Multiple	Dec 2010	Dec 2011
8.	Level 3 clinical placement 2011	TP Team	Dec 2010	Nov-Dec 2011
9.	Level 4 Semester 1 2010-2011	Multiple	Aug 2010	Aug 2011
10.	Level 4 Semester 2 2010-2011	Multiple	Dec 2010	Dec 2011
11.	Level 4 Clinical placement 2010	TP Team	Aug 2010	July-Aug 2011
12.	Level 4 Responding to symptoms 2011-2012	Practice Team	Aug 2011	Aug 2012
13.	Level 4 OSCE handbook 2010	TP Team	Nov 2010	Oct-Nov 2011
14.	School of Pharmacy accreditation (pages 111 – 180 omitted as superseded by more up to date module descriptors found in the semester guides - documents 1 – 4, 6,7, 9, 10).	Accreditation Team 2006	Sept 2005 - May 2006	Sept 2011 – May 2012
15.	School of Pharmacy accreditation - appendices	Accreditation Team 2006	Sept 2005 - May 2006	Sept 2011 – May 2012

Table 8. Documents included in the documentary analysis.

During the analysis the investigator evaluated each document individually, asking a number of questions as the information was reviewed. Table 9 displays the results of the questions asked including who the information was intended for; what the document related to and the mood of the document. A thematic analysis was conducted in order to identify key aspects of the curriculum to illustrate the world in which the stakeholders live.

All	Booklets/guides	What does this information relate to?	Who is this information for?	What is the mood of the document?	
1.	Level 1 Semester 1 2010-2011	Curriculum, timetable and assessment details	Student	Didactic	
2.	Level 1 Semester 2 2010-2011				
3.	Level 2 Semester 1 2010-2011				
4.	Level 2 Semester 2 2010-2011				
5.	Level 2 hospital placement 2011	Hospital placement, tasks and assessments		Supportive	
6.	Level 3 Semester 1 2010-2011	Curriculum, timetable and assessment details		Student	Didactic
7.	Level 3 Semester 2 2010-2011				
8.	Level 3 clinical placement 2011	Hospital placement, tasks and assessments			Supportive
9.	Level 4 Semester 1 2010-2011				Didactic

10.	Level 4 Semester 2 2010-2011	Curriculum, timetable and assessment details		
11.	Level 4 Clinical placement 2010	Hospital placement, tasks and assessments		Supportive
12.	Level 4 Responding to symptoms 2011-2012	Details of RTS practical classes and assessments		Supportive
13.	Level 4 OSCE 2010	Tips and pointers to prepare for OSCE examination		Supportive
14.	School of Pharmacy accreditation	Curriculum and school strategy	Accrediting bodies - PSNI and RPSGB	Explanatory, defensive
15.	School of Pharmacy accreditation - appendices			

Table 9. Documentary analysis: context and mood of the documents reviewed.

5.2.1 Specific aims of the Masters of Pharmacy, QUB

The accreditation document for the QUB MPharm, 2006, was developed by the academic team prior to the accreditation in 2006 by the professional leadership bodies. It includes details of every aspect of School function and policy as well as module descriptors for the pharmacy undergraduate course. The study participants were recruited from this academic team as well as the TP Team, who were not in post at the time of the accreditation. The specific aims of the MPharm programme were defined (Table 10):

Specific aims of the MPharm	
1.	Provide a quality education programme for pharmacy students which meets the requirements of the Pharmaceutical Society of Northern Ireland and the Royal Pharmaceutical Society of Great Britain
2.	Prepare students for independent life-long learning by encouraging directed self-study
3.	Provide a strong knowledge base in pharmaceutical and related clinical sciences and in professional aspects of pharmacy

4.	Provide training in those practical skills related to the science and practice of pharmacy
5.	Help students develop a range of key and employability skills
6.	Foster development of research skills
7.	Develop awareness of professional and ethical issues

Table 10. Specific aims of the QUB MPharm (Accreditation document, MPharm 2006, page 67).

The role of the MPharm is to feed three main branches of the profession; community, hospital and industrial pharmacy. All three branches will ultimately provide, directly or indirectly, patients with pharmaceutical care.

The QUB MPharm aims clearly define a programme equipped to produce pharmacy graduates with a robust background in the science of pharmacy, it is less clear whether students will develop to be healthcare professionals who will treat patients on a day to day basis, a role which more than 90% of pharmacists perform. In fact, throughout the document there is a noticeable lack of reference to the fundamental task of the School, building a healthcare professional. The word 'patient' occurs thirty-nine times in the (186 page) document. If we consider that words occurring more frequently have greater significance (Ryan & Bernard, 2000), this provides some indication of the focus of the MPharm, as the word 'drug' appears 314 times and 'research' occurs 101 times. The course aspires to develop the 'professional skills', (there is no mention of patient care in the School objectives), of the pharmaceutical profession, from curriculum review, there appears to be a greater emphasis on the knowledge of medicinal products than of patient care.

5.3 The content taught and teaching methods

The specific MPharm aims and objectives are addressed by four sets of learning outcomes (Table 11).

Learning outcome	
1.	Knowledge and understanding
2.	Subject-specific skills
3.	Cognitive skills
4.	Transferable skills

Table 11. Learning outcomes of the QUB MPharm.

The analysis which follows in this chapter will consider how these learning outcomes inform the detail of the modules taught and how they build throughout the four year degree. The details of all twenty-four modules including their individual learning outcomes and skills is included in Appendix 21.

The next four sections (5.3.1 – 5.3.4) will consider the four key learning outcomes (LO's) for the QUB MPharm (Table 11) in relation to the modules described in Appendix 21. Some LO's are described under the assessment section (5.4) where appropriate.

5.3.1 Knowledge and understanding

In line with the specific aims described at the start of the chapter, the four learning outcomes underpinning 'knowledge and understanding' relate to the science of pharmacy and the practicalities of running a pharmacy business.

Learning outcomes	
1.	The physical, chemical and biological principles relevant to the pharmaceutical sciences
2.	The design, development and delivery of drugs
3.	The clinical sciences relevant to the practice of pharmacy
4.	The organisation of healthcare provision and the social, legal, ethical and economic issues relating to pharmacy practice.

Table 12. Knowledge and Understanding; learning outcomes.

Knowledge of drugs is understandably paramount in the development of a pharmacist. These are appropriately emphasised to ensure a strong knowledge core. The omission of reference to pathological, physiological and therapeutic application of drug knowledge to patient care in this section is stark. Perhaps the 'clinical sciences' mentioned in LO three are intended to encompass disease and its management, however the absence of 'patients' in this set of learning outcomes illustrates a clear science emphasis.

Learning outcomes one and two are addressed by a variety of modules throughout the MPharm from first to fourth year including Pharmaceutics and Drug Delivery. Pharmacy was historically described, and still is in many University prospectuses, as a Science degree however pharmacists are widely recognised to be healthcare professionals. Skau (2007) eloquently reconciles both sides of pharmacy's essential character by describing it as a "Science-based profession", recognising the strength provided by a core of science whilst acknowledging the development of a professional, patient-facing role. Within the QUB MPharm course, modules in first and second year provide students with biological, chemical and physical science designed to underpin clinical teaching later in the course. These subjects are designed to provide a scaffold which will support the development of future pharmacy practice. Many of the modules highlight where aspects of the teaching will support future learning in the MPharm to support curricular integration;

"Having completed this module, the student will have an understanding of the role microorganisms play in infectious disease and contamination of pharmaceuticals..."

Level 1, Semester 1 guide 2010-11, page 13.

By the fourth year of the course, the prominence of science modules wanes and the focus within the remaining science modules is directed towards disease states and their management although patients are still largely omitted from module descriptions;

"On completion of this unit the student will have a knowledge and understanding of the inter-relationships between the pathophysiology of infectious diseases, the immune responses and approaches to prevention and treatment. Students will also have an understanding of the appropriate use and management of medicines relevant to a range of infectious diseases"

Level 4, Semester 2 guide, 2010-11, page 32.

The delineation between science in the first two years and practice in the final two years of the course was highlighted in the previous accreditation meeting of 2001. The Regulatory body recommended that more pharmacy practice modules should be introduced into the earlier portion of the degree in order to provide contextualisation for students and to begin to acclimatise student pharmacists to the profession of

pharmacy. Whilst it is vital that a strong science foundation remain in the pharmacy undergraduate course, what is apparent from the curriculum documentation is that there are few explicit links for students between the science core and application to patient care. The lack of clear signposting towards future professional practice suggests that the authors of the curriculum do not consider this a fundamental aim in the development of pharmacists.

Learning outcome three provides little detail to aid the reader and the term 'clinical sciences' is not defined in the document or referred to again in the syllabus. It would appear to indicate all modules which will support students' future clinical practice, such as Pharmacotherapy 1-3, Applied Clinical Pharmacy and Responding to Symptoms, although this is not obvious to the reader.

Learning outcome four refers to the holistic understanding of future professional practice which the authors of the curriculum expect students to achieve. What is not evident to the reader is how 'practice' is defined. One of the modules of the MPharm is called 'Pharmacy Practice'. It teaches students how to interpret and dispense prescriptions, providing undergraduates with the belief that this defines their future professional 'practice' as opposed to forming an increasingly small proportion of the work conducted by a pharmacist in most sectors of the profession, as these roles are absorbed by pharmacy support workers.

One module of the MPharm, 'Social and Behavioural Aspects of Pharmacy' in third year provides students with a broad understanding of the practice of pharmacy including social and economic perspectives. 'Pharmaceutical Legislation', also in third year, delineates a legal framework for students with cases chosen to reflect ethical dilemmas. Although these modules as well as aspects of other modules such as Pharmacy Practice and Responding to Symptoms, help to achieve this core LO, they appear to focus on community pharmacy practice. There is scant reference to industrial and hospital pharmacy practice throughout the curriculum both of which have different social, legal and economic issues relating to their practice, although admittedly a much smaller proportion of graduates will work in these areas. If it is considered to be beyond the scope of the course, perhaps this LO should be altered to reflect community pharmacy practice alone.

5.3.2 Subject-specific skills

This set of learning outcomes covers a broad range of skills which would be expected of a practicing pharmacist including identification and resolution of drug related problems which are dealt with by numerous modules throughout all four years of the degree. Some of the key learning outcomes will be discussed in relation to how they are identified in the module descriptions (Table 13). Assessment will be discussed separately in 5.4.

Learning outcomes	
1.	Demonstration of knowledge and critical understanding of essential facts, concepts, principles and theories relating to the subject areas identified above.
2.	Ability to apply in practice settings the knowledge and understanding required to meet the needs of other healthcare professionals.
3.	Application of clinical skills in practice settings to the provision of pharmaceutical care to patients.
4.	Recognition and analysis of problems and planning of strategies for their solution.
5.	Critical evaluation, interpretation and synthesis of pharmaceutical information and data.
6.	Production of pharmacy-specific scientific documentation.
7.	Presentation of pharmaceutical science material and arguments clearly and correctly, in writing and orally, to both specialist and lay audiences.
8.	Calculation of medicine doses and dosage regimens.
9.	Interpretation of patient and clinical data, including patient records held within practice settings.
10.	Ability to contribute to the development of healthcare through reflective practice, enquiry and innovation.
11.	Interpretation of prescriptions and other orders for medicines.

Table 13. Subject-specific skills; learning outcomes.

5.3.2.1 Knowledge acquisition and understanding

The first learning outcome promotes the *demonstration* of knowledge and critical understanding of the knowledge LO's. The concept of demonstration implies the need for evidence or proof of the attainment of knowledge – this will be addressed under 5.4.

The next two LO's (two and three) relate to application of knowledge, understanding and clinical skills to patients and other healthcare professionals. These are fundamental skills required for the future professional role of all pharmacists, regardless of their practice setting.

After reviewing the learning outcomes and assessments of all twenty-four modules throughout the four years of the MPharm (Appendix 21) this LO is not addressed in a module description until third year under Pharmacotherapy 1 and Pharmacy Practice which state;

“On completion of this unit the student will have developed the necessary clinical skills to....advise prescribers on rational drug therapy for individual patients...”

And

“Communicate effectively with other healthcare professionals regarding prescription interpretation”.

Level 3, Student booklet, 2010-2011.

Given that the MPharm does state that the early years of the degree focus on establishing a strong foundation of drug knowledge, it is perhaps not surprising that this skill is not focused on until this stage of a student's pharmaceutical education. However what is of concern is that these modules (as well as the subsequent pharmacotherapy 2 and 3 in future semesters) are the *only* place where it is addressed, despite being considered a fundamental subject-specific skill as indicated by its presence in this list of LOs.

5.3.2.2 Developing inter-professional skills

Within module descriptors, no information is provided on how students will acquire the skills to advise prescribers and on review of lecture and workshop material this is not specifically referred to. In Pharmacotherapy 1-3 lectures and workshops, students are

provided ample opportunities to increase their expertise with the actions of a wide range of therapeutic agents but little indication is provided from the module descriptions that prescribers (medical or non-medical) are included in scenarios or are present in workshops to facilitate skill development. In the Pharmacy Practice workshops, which are run weekly for the first semester, students participate in role plays with their demonstrators where they play the role of the pharmacist and the demonstrator (tutor) plays the role of either a patient or a healthcare professional. These scenarios serve to provide the first step towards simulating real life interactions and are a useful method of reminding students that their future career will require them to regularly interact with other health care professionals for optimum patient care.

The 2010-11 MPharm syllabus provides few references to interactions with practicing healthcare professionals (HCPs) or healthcare professional students. One example is described in the fourth year, semester 1 handbook; a multi-professional workshop on clinical governance for which some students are selected to participate.

Effective communication with healthcare professionals is defined as a core learning outcome from the third year clinical placement;

“Communicate effectively and professionally with patients, peers and other members of the pharmacy and wider healthcare team”.

Level 3, Clinical Placement portfolio, 2010-2011, page 3.

Reference to the wider healthcare team in one of the core LO's for the placement, however only one of the tasks describe how students will achieve this LO; writing in medical notes on the first day of the placement. This is indirect communication;

“Know how to enter information into the case notes appropriately”.

Clinical Placement portfolio, 2010-2011, page 10.

Although inter-professional interaction is stated as a key objective of the MPharm and is a recognised daily role of the pharmacist, it is not adequately described in the MPharm curriculum as written.

5.3.2.3 Contextualising drug knowledge

LO 3 refers to the application of clinical skills in practice and also the provision of pharmaceutical care to patients. The introduction section in the second year, first semester handbook describes the clinical placement program, which students will participate in from second to fourth year, starting with a two day course in their second year. It is encouraging that clinical practice is prominent from the outset in second year, a distinct difference from the science emphasis in the first year.

“The clinical placements allow the undergraduate course material to have an increased relevancy and will facilitate the effective application of your clinical knowledge in later years. A structured clinical placement also acts as a means of allowing you to make an informed choice when selecting a career pathway at pre-registration”.

Level 2, Student handbook, semester 1, page 4.

This excerpt suggests that placements will aid students in the application of their clinical knowledge in the future although it is unclear what they will gain specifically from the second year placement. This is compounded by the fact that they receive no teaching on pharmaceutical care or patient disease management in any form prior to the placement. It is interesting to note that despite the suggestion that placements will support future learning, the tone of the text suggests that this is *separate* from other MPharm work. The tone of the text suggests that the role of the placement is to support *career choice* as opposed to representing an integral part of the MPharm course. This impression is reinforced by the positioning of the paragraph directly below information on how to apply for vacation experience in community pharmacy.

The concept of pharmaceutical care is first introduced to students during their hospital placement. It describes the role of clinical pharmacists as opposed to the role that students will undertake on their placement;

“Clinical pharmacy is an integral part of the hospital pharmacy service. It involves the application of pharmaceutical expertise in order to maximise medicines efficacy and minimise toxicity. Clinical pharmacists are concerned with providing effective ‘pharmaceutical care’ to patients, whereby pharmaceutical care ensures that; the correct patient receives the optimum dose of the most appropriate medication for a specific condition via a rational dosage form and regimen over an appropriate time period”.

Level 2, semester 2, Hospital placement booklet, page 2.

Pharmacy students are not expected to ‘apply’ their drug knowledge to patients during their second year placement as they have not yet been taught any of these skills until the start of their third year.

The term ‘clinical skills’ in this LO is not defined in the syllabus and they are appear to be interpreted by teachers on the MPharm as referring to medication history taking, patient counseling and monitoring of patient prescriptions. Although these are valid and appropriate they are not exhaustive. Practicing as a pharmacist in 2013 requires a myriad of knowledge and skills. With the advent of pharmacist prescribing, practical clinical skills, as utilised by other healthcare professionals, such as use of a sphygmanometer to measure blood pressure, venipuncture and patient examination are noticeable by their absence.

In contrast to the first two years of the MPharm, third and fourth year contain a number of modules which highlight both the practical application of knowledge to patients and the resolution of patient-related medication problems as required by LO four and five for example;

“On completion of this unit the student will have developed the necessary clinical skills to enable them to apply clinical laboratory data to disease management; interpret data relating to drug concentrations in body fluids and tissues; identify and resolve drug related problems due to drug interactions; devise individualised feeding regimens for hospitalised patients”.

Level 3, Semester 1 guide, page 23.

Didactic lectures still form the spine of knowledge transmission in the MPharm course as is illustrated by Table 14. These are supported by a blend of workshops and laboratory classes to aid student synthesis and application of knowledge.

Year	Lectures	Workshops	Laboratory classes	Self-directed study	Placement	Group work
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One	221	100	104	398.5	6	-
Two	200	32	136.5	378.5	14	-
Three	257	96	61.6	399	35	36
Four	157	48	55	380	35	200

Table 14. Delivery methods used in QUB Pharm, 2010-11 (hours).

LO's six to eight and eleven are substantially achieved by a number of modules throughout the MPharm with the exception of the use of 'lay' audiences. There is no opportunity for students to present their arguments in relation to any of the modules taught to a lay group at any stage throughout the MPharm syllabus. LO seven is a reasonable aspiration, as pharmacists serve the public on a daily basis and have a responsible to translate complex pharmaceutical data into patient-friendly information. In an estimation of this, Pharmacy Practice, Responding to Symptoms and Extemporaneous Dispensing conduct role-plays with students where academic staff simulate a lay audience, starting from second year through to fourth year.

Learning outcome nine is supported by the clinical placement program; which provides students with the opportunity to interact with patients from the first year of their course.

Taking the fourth year placement overall learning outcomes;

- “- *Further develop and apply clinical pharmacy skills*
- *Communicate effectively and professionally with patients and the multi-professional team*
- *Identify pharmaceutical care issues for an individual patient and recommend management*
- *Develop practice based research skills during the completion of a project in the healthcare setting”.*

Level 4, Clinical Placement portfolio, page 3.

Third year modules such as Pharmacotherapy 1 and 2 and Applied Clinical Pharmacy support knowledge acquisition on drug action, therapeutic application, misuse, side-effects, interactions as well as the development of management plans. Students are able to put this learning into practice during both third and fourth year placements with real patient encounters.

Learning outcome ten supports a reflective approach to the practice of pharmacy. Reflective practice is a fundamental skill required by all healthcare professionals in order to ensure optimal patient outcomes and maintain patient safety. The MPharm introduces the concept of reflection in relation to continuing professional development (CPD) within the first year module, “Introduction to Pharmacy Practice skills”. Whilst it is admirable to introduce this skill as early as possible to students, it is not apparent from the curriculum documentation how this is followed up in subsequent modules in first year and throughout the remaining three years of the MPharm as there is no further reference in the course handbook and module descriptors.

5.3.3 Cognitive skills

Most of the cognitive skills described in Table 15 relate to the knowledge of pharmaceuticals from a laboratory and manufacturing perspective; only two, six and nine relate directly to patient care. This hints at a mismatch between a science and healthcare emphasis in the desired cognitive skills of the QUB MPharm graduate.

Learning outcomes	
1.	The safe handling of chemical and pharmaceutical materials, taking into account their physical and chemical properties, including any specific hazards associated with their use.
2.	The ability to undertake risk assessments concerning pharmaceutical procedures and practices.
3.	Skills required for the conduct of standard pharmaceutical laboratory procedures
4.	The planning, design and execution of self-directed and original research investigations from the problem-recognition stage through to the evaluation and appraisal of results and findings; this to include the ability to select appropriate techniques and procedures
5.	The operation of standard pharmaceutical instrumentation
6.	The ability to evaluate critically and to interpret purposefully data derived from laboratory and clinical observations and measurements, in terms of their significance and the theory underlying them
7.	Preparation and presentation of medicines, by manufacture and extemporaneous dispensing including sterile products
8.	Skills in the analysis of medicines
9.	The ability to advise patients and others on the safe and effective use of medicines

Table 15. Cognitive skills; learning outcomes.

Pharmacy students are expected to develop practical laboratory skills during the MPharm. Both industrial and academic pharmacy practice consider competent laboratory technique essential and it is desirable in hospital practice as it supports indirect patient care. Students are provided with opportunities to develop their technique in a number of science modules from first to third year, demonstrating vertical integration in the degree, and they are expected to not only develop dosage forms but to test them for suitability of use in patients;

“On completion of the module the student will have knowledge of (i) factors that affect absorption, distribution, metabolism and excretion of drugs; (ii) some important mechanisms of drugs...”.

Level 2, Semester 2 guide, 2010-11, page 18

And

“Upon completion of this unit, students will have gained a comprehensive understanding of the use of biotechnological approaches for the generation of human therapeutics...”.

Level 3, Semester 2 guide, 2010-11, page 13.

These module descriptions highlight an intention to scaffold knowledge throughout the MPharm as well as demonstrating a link to patient care and therapeutic application. What is less clear is the links in applied therapeutics modules to pharmaceuticals and dosage form design.

Learning outcomes six and nine require knowledge, evaluation as well as complex patient skills to achieve and are ideally placed in third and fourth year. The Applied Clinical Pharmacy module in third year introduces the concepts of drug absorption, dosage regimen design as well as drug interactions and the evaluation of clinical laboratory data. A large number of lecture (31) and workshop (19) hours support this learning for students. Students also participate in a week long clinical placement immediately following this teaching, deliberately scheduled to facilitate student application of knowledge into practice. The module ‘Pharmacy Practice’ in third and fourth year provides students with the opportunity to simulate dispensing and patient counseling with their tutors and the clinical placement enables real-life patient interaction with medication history taking and patient counseling.

The course design in the third year has a significantly increased spotlight on the patient, right from the start of semester 1. It also appears to provide the student with numerous opportunities to practice their skills in a safe, simulated workshop environment as well as limited scheduled opportunities with patients during the short clinical placements. The lingering concern relates to the realisation that third year is half way through a four year degree course and it may be too late for the MPharm to adopt the mantle of a professional degree when student identity to this point is forged as that of a science student.

5.3.4 Transferable skills

The last set of learning outcomes describes the transferable skills which students are expected to develop during the MPharm (Table 16).

Learning outcomes	
1.	Interpersonal skills; the ability to interact effectively with patients, the public and healthcare professionals; including communication, both written and oral
2.	Team working
3.	Problem solving, relating to qualitative and quantitative information, extending to situations where evaluations have to be made on the basis of limited information
4.	Numeracy and computation, including such aspects as error analysis, order-of-magnitude estimations, correct use of units and modes of data presentation
5.	Acquisition, transformation and interpretation and critical evaluation of data
6.	Information retrieval in relation to primary and secondary information sources, including information retrieval through online computer searches
7.	Information technology skills, including word processing, spreadsheet use, database use, archiving data and information and internet communication
8.	Time management and organisation, as evidenced by the ability to plan and implement efficient and effective modes of working
9.	Independent study skills as preparation for continuing professional development
10.	An ethical attitude and approach
11.	Analysis and critical appraisal of published literature
12.	Application of general, biological and medical statistics
13.	The ability to operate within a quality management framework
14.	Recognition of the need to work within personal limitations

Table 16. Transferable skills; learning outcomes.

LOs two to thirteen are addressed throughout the MPharm. They represent core skills for all pharmacists regardless of their future work environment.

5.3.4.1 Communication skills - oral

Learning outcome one links with some of the subject-specific LOs discussed earlier in this chapter and emphasises the need for pharmacists to be given the opportunity to develop and practice interpersonal skills with a range of people, particularly patients. A number of modules throughout the MPharm mention communication skills in either the module or skill description;

“oral communication skills”.

Level 1, semester 1, Pharmaceutics

“..will have gained communication and team working skills...”.

Level 2, Principles of Drug action

“communicate effectively with other healthcare professionals regarding prescription interpretation; communicate with patients (questioning, listening, explaining)”.

Level 3, Pharmacy Practice (proprietary dispensing)

“interpersonal communication especially questioning, active listening and explaining”.

Level 4, Responding to Symptoms

It is clear that the ‘curriculum as written’ intends that students will develop oral communication skills early in the course and this skill is highlighted clearly in a number of MPharm modules. The main focus of the first year module, ‘An introduction to Pharmacy Skills’, is to develop communication skills in relation to student presentation of their own work such as oral PowerPoint® presentations to a group of peers, not to demonstrate communication with a patient or another professional. This may serve as an appropriate starting point to build up student confidence and experience prior to interaction with patients. The half day community and hospital placements are part of this module however they are described as an ‘orientation’ and introduction to these fields of practice and do not address communication skills in any detail. In subsequent years of the degree course, students are increasingly made aware of the importance of communication skills for their future careers;

“Pharmacists need to integrate and communicate with most of these professionals (listed) and other team members in order to ensure delivery of patient care. If you are starting to work on a ward for the first time, it is important to introduce yourself to the ward sister, staff nurses, doctors and ward clerks etc. in order to help foster good working relationships”.

Level 2, Semester 2, Hospital placement booklet, page 7.

Specific advice and support for students in relation to communication with patients is provided in this placement as well as role play, prior to an actual patient interaction. During the placement, students are expected to communicate informally (and formatively) with at least one patient in their ward based teaching sessions. The sole goal for this interaction is to encourage students to build up their confidence with patients and to help them structure their patient interactions as well as develop a rapport with patients. Goals of these interactions are not therapeutic but include lifestyle and medication concordance.

In the final two years of the MPharm students participate in regular role play with academic staff in both the Pharmacy Practice and Responding to Symptoms modules. They are expected to actively engage in unscripted role plays with academic staff where their interactions (with simulated patients and doctors) are challenged. Students are not however provided with teaching on ideal questioning methods or appropriate listening skills prior to these role plays. Immediate feedback is provided on a one to one basis to all students which is a valuable method of encouraging student learning. Although these role plays occur weekly through both third and fourth year, students have few opportunities for interactions with real patients – these are limited to two week long clinical placements in hospital. Despite this lack of opportunity to practice their communication skills in real life scenarios, students are expected to develop sufficiently to become competent in both negotiation skills with healthcare professionals and counseling patients on the use of medication;

“Communicate effectively with other healthcare professionals regarding prescription interpretation; communicate with patients (questioning, listening, explaining)”.

Level 3, Semester 1-2 guide, page 15.

“On completion of this unit the student will have acquired the ability to: communicate and consult effectively with patients”.

Level 4, Semester 1 guide, page 24.

5.3.4.2 Communication skills - written

Learning outcome one refers to written communication as well as oral, but none of the modules in the MPharm specifically define how they address this. Many refer to written scientific reports but this LO implies patient-focused communication such as patient information leaflets (PIL) or writing in the medical notes. Both of these are achieved formatively during the third year clinical placement where students have the opportunity to develop a PIL and are taught how to write in patient notes. They are not evaluated summatively on these tasks.

Learning outcome fourteen is probably one of the most difficult to define and address within a curriculum but it dovetails with the concept of personal reflection and the development of a reflective approach to practice, discussed earlier in the chapter. The goal is not clearly identifiable from the syllabus in any of the modules or supporting materials. It is not clear how, if at all, this concept is broached with the undergraduate students during the QUB MPharm.

One transferable skill which is alluded to with a number of the LOs described (Table 16) is acculturation to the profession of pharmacy and the development of a professional approach. Pharmacy is a profession, and members of the public, as well as the profession itself, expect its members to behave in a certain manner. As qualified professionals, we are governed by a ‘Code of Ethics’ (PSNI) and pharmacy students are governed by the ‘Code of Conduct for Pharmacy Students’ (PSNI) until their registration with the PSNI at the end of their pre-registration year. The accreditation documentation emphasises the School’s intention to imbue the QUB MPharm undergraduates with a clear sense of professional identity from the first year;

“At the point of entry into the School, students are made aware that they are embarking on a course of study leading towards a professional qualification and that the profession is practiced within a strict ethical code and is governed by law relating to pharmacy and medicines use”.

School of Pharmacy, QUB, Accreditation visit, December 2006, page 81.

Despite omission from the LOs, students are introduced to fundamental aspects of the pharmacy profession as well as core values held by members including ethics, fitness to practice and issues of confidentiality in the module 'Introduction to Pharmacy Practice Skills';

“Development of pharmacy practice-related skills in personal development....professionalism, the code of conduct for pharmacy students, ethics, CPD, fitness to practice and medicines governance...”.

Level 1, Semester 1 guide, page 11.

Students, taught via didactic lectures, learn key skills for their future professional life including communication skills, numeracy, statistics and the code of conduct for pharmacy students is taught via an interactive workshop with illustrative examples of practice. In this module students are also given a number of 'an introduction to...' for example, lectures in community and hospital pharmacy practice, to provide them with an insight into the variety of roles and jobs open to pharmacy graduates. The code of conduct workshops introduce the rules governing pharmacist (and pharmacy student) behaviour and support an altruistic approach to practice. The attitudes of a professional including altruism, empathy and caring are not revisited during the MPharm taught modules but are evaluated during practice modules and clinical placements. By third and fourth year, it is evident that students are expected to have absorbed the acceptable 'professional' approach from their academic supervisors and role models although this is not defined in the curriculum documentation;

“On completion of this module the student should have appropriate knowledge to fulfill all legal requirements of pharmacy practice and have acquired the ability to access appropriate texts and materials to obtain relevant information on pharmaceutical legislation issues. The student will also be able to approach ethical dilemmas using a structured professional approach”.

Level 3, Semester 1 guide, page 19.

The professional behaviour expected by the QUB MPharm students is not limited to the knowledge and attitude which a pharmacist is expected to display but also includes the image that the profession wishes to promote. Responding to Symptoms, a fourth year module, describes the expected dress and overall presentation required by undergraduates when attending tutorials and emphasises a lack of tolerance by academic staff for those not complying with this stipulation;

“Students are expected to dress modestly and in a manner that upholds the image of a healthcare professional (for example a pharmacist or a general practitioner). Clothing should be clean, in good condition and fit properly (this includes your lab coat). Compliance with these requirements is expected at all times, including where personal attire may be covered by a lab coat”.

Level 4, Responding to Symptoms booklet, page 10.

5.4 Assessment

The assessment strategy for the QUB MPharm follows the traditional approach of written examinations bi-annually with some coursework within each module although the emphasis varies from module to module (Table 17).

	Written exam (MCQ & essay)	Scientific logbook	Oral presentation	Class test (written / computer)	Course-work (written)	Group work (written)	Practical course-work / exam	Clinical Placement (patient-based skills)
Year one	64%	14%	4%	7%	4%	-	3%	-
Year two	71%	-	-	3%	-	-	26%	-
Year three	73%	-	-	4%	4%	2%	15%	2%
Year four	66%	-	1%	1%	26%	-	4%	2%

Table 17. Types of assessments used in MPharm per academic year.

At the front of each semester guide for students, details of the length and content of the written examinations is provided, for example; one three-hour written examination

and one one-and-a-half hour multiple choice question (MCQ) examination. Pass/Fail considerations are detailed; stipulating the pass mark for coursework and examinations. Students are also advised as to the percentage that each academic year contributes to their overall degree classification for example, first and second year marks contribute 5% towards the overall degree class whereas third and fourth year contribute 45% each.

Biggs (1999) suggests that students are more likely to be motivated to engage beyond surface learning if the learning outcomes and assessments are explicit and aligned with the assessments employed. The success of Bigg's model hinges upon academic staff designing assessment tasks which directly assess individual learning outcomes as defined in their module. All of the modules of the MPharm are described with both learning outcomes and skills which are expected to be developed during the module (Appendix 21). Modules which contain laboratory classes usually attach a proportion of marks (20 – 25%) for the module to completion of coursework log-books for these practical classes, although participation in a practical examination is unusual. Exemplars are not provided to students on the completion of log books. Modules are evaluated by written examination; essays, short-answer and MCQ type questions are used. Exams used in the MPharm offer students a choice of questions, such as two out of three questions from this section must be completed. Rust (2002) suggests that this approach may foster 'question spotting' where students will only complete a proportion of the learning for a module, predicting which subjects will appear after review of previous exam papers, expecting a subject rotation.

Where assessment other than written papers are used in a module a short description is usually provided in the semester handbooks. It is not clear to the reader why certain assessments have been chosen over traditional written methods and what their advantages are in relation to skills assessed.

Considering the MPharm core learning outcomes, subject specific skills LO two,
“Ability to apply in practice settings the knowledge and understanding required to meet the needs of other healthcare professionals”.

This LO is particularly difficult to assess in a written examination; it expects students to apply their knowledge in a practice setting. This requires a hospital or community setting and also requires the student to address the needs of other healthcare professionals. On review of the syllabus; module descriptors and course materials, it is not evident where this LO is not taught or assessed throughout the MPharm course.

Learning outcome seven;

“Presentation of pharmaceutical science material and arguments clearly and correctly, in writing and orally, to both specialist and lay audiences”.

Students complete both group and individual projects in the MPharm. These are presented orally to their peers and academic staff, but not to lay audiences at any stage of the MPharm course.

Learning outcome nine, subject specific skills,

“Interpretation of patient and clinical data, including patient records held within practice settings”.

Although not clearly signposted for students, this LO is assessed during both the third and fourth year clinical placements. Students are expected to develop a pharmaceutical care plan for individual patients;

“Identify clinical interventions from individual patient’s kardexes and notes”

“Develop a PowerPoint presentation showcasing the pharmaceutical care issues you have identified to the rest of the group”.

Level 3 Clinical Placement Portfolio, page 11.

Prior to their assessment on the identification of care issues, students participate in a workshop where they are expected to develop a pharmaceutical care plan and receive formative feedback on their performance. Students are also supported in the generation of their summative care plan by workplace pharmacist tutors on the ward.

Learning outcome eleven, *“Interpretation of prescriptions and other orders for medicines”* is assessed using summative role play scenarios during the module Pharmacy Practice in both second and third year of the course. Students are expected to gain at least 50% in all practice modules with a legal error or dosing error resulting

in a loss of all marks associated with the scenario. These simulated situations are not termed OSCEs as they are not scripted or timed; students have as much time as they need and staff ad lib throughout so each student experience is individual.

5.5 Evaluation

The School of Pharmacy follows QUB policy and reviews both modules and pathways used in the MPharm on an annual basis. Information is gathered from both student module review and the staff-student consultative committee.

5.5.1 Module review

All students are invited to complete a module review questionnaire at the end of each module in the MPharm. Questions included in the review addressed; Learning Outcomes; Module Content; Feedback to Students; Assessment; Programme Links; Academic Standards; Quality of Learning Opportunities; Identification of Good Practice.

After analysis of student feedback, the module coordinator arranges a meeting with all teaching staff on the module to discuss any comments by students either positive or negative.

5.5.2 Staff-student consultative committee (SSCC)

The SSCC in the School of Pharmacy meets at least three times annually and reports into the School Board. This group acts as a conduit between academic staff and the student body for the provision of feedback and discussion on changes in teaching or School organisation. Elected undergraduate stakeholders represent each year of the MPharm and all minutes from the meetings are published on the School website for other students to access.

With the use of both of these methods of feedback into the curriculum, students are able to effect change in the MPharm with relatively rapid effect.

These findings reflect the “curriculum as written” for the QUB MPharm and along with chapter 4 findings, “curriculum as lived” and “curriculum as taught” serve to provide a holistic view of the course as delivered in the academic year 2010-11.

Chapter 6

Discussion and conclusions

Chapter 6

6.1 Introduction

This chapter discusses the results described in the previous two chapters and presents the findings in conjunction with the literature review in order to provide a greater understanding of the 'whole' in relation to stakeholder opinions of OSCE and the MPharm at QUB (Gadamer, 1975, 1981). The main issues raised are debated with reference to related healthcare literature. This chapter references the teaching philosophy of QUB and the School of Pharmacy as well as contemporaneous influences on the development of undergraduate pharmacy education.

The qualitative data analysed in chapters 4 and 5 demonstrated that staff and students believe that there is a role for OSCE within the QUB MPharm. The documentary analysis identified a number of discrepancies between the "*curriculum as written*" and the "*curriculum as lived*". These included the definition of clinical skills and the assessment of competence in clinical skills. This is explored in section 6.1.1. Fundamental themes which emerged from both chapters are discussed under a number of headings (Table 18), their order is based upon the importance placed upon these topics within the focus groups and interviews conducted as well as their significance in relation to the aims and objectives of this thesis.

Headings	
6.2	Teaching, Learning and Assessment
6.2.1	Use of OSCE to determine competence
6.2.2	What is the role of science in the profession of pharmacy?
6.2.3	Challenges and benefits to using OSCE
6.2.3.1	Station development
6.2.3.2	Staff training
6.2.3.3	Student preparation
6.2.3.4	OSCE logistics
6.2.3.5	The hidden curriculum and the value of OSCE; impact on student preparation
6.2.4	Impact of OSCE on Teaching and Learning
6.3	Acculturation to the profession of pharmacy
6.3.1	Effective communication skills
6.3.2	Collusion
6.3.3	Inter-professional skills
6.4	Factors influencing performance at OSCE
6.4.1	Familiarity with OSCE format
6.4.2	Feedback
6.4.3	Fear of the unknown
6.4.4	Learning and assessment preferences
6.4.5	Influence of other students (over-hearing others)
6.4.6	Influence of the assessor and standardised patient/doctor
6.5	Redesigning the MPharm
6.5.1	Science versus Practice
6.5.2	Community vs. Hospital pharmacy practice
6.5.3	Value of OSCE
6.5.4	The integrated degree

Table 18. Headings of subjects discussed in Chapter 6.

The results of this study will be of interest to not only the School of Pharmacy at QUB but also other Schools who are considering introducing OSCE into their undergraduate curriculum as is supported by the GPhC standards for initial training of Pharmacists (GPhC, 2011). The GPhC standards (GPhC, 2011), coupled with ongoing work of the Modernising Pharmacy Careers (MPC) workstream I board (MPC, 2011), to increase student contextualisation of knowledge supports integration of science and practice throughout the MPharm. MPC propose the introduction of an integrated MPharm where students complete the pre-registration 'year' throughout a five year degree, graduating and registering with the regulator contemporaneously, instead of at the end of the undergraduate degree. One consequence of concomitant registration and graduation will be the shift of responsibility for the quality of pharmacists presenting for registration from the current sole remit of the employer to both employer and University (MPC, 2011). This will place increasing emphasis on the evaluation of *performance* by the University as opposed to an emphasis on demonstration of knowledge acquisition and retention. One School of Pharmacy, Bradford, has offered an integrated course for more than twenty years (Bradford, 2013). A feature of its success has been the establishment of robust alliances with local employers in order to facilitate ongoing student placements. Universities across the UK and Northern Ireland will need to embed employer-relationships within their TLA strategies to ensure that employers are adequately trained and supported to deliver student placements, as well as conduct assessments, which will facilitate student progression to regulator registration.

6.2 Teaching, Learning and Assessment

All universities in the UK are required, by their funding stream, to develop a Teaching and Learning strategy. When the study began, the School of Pharmacy did not have a specific Teaching, Learning and Assessment strategy; academic staff were guided by a detailed syllabus as well as course documentation. The sub-headings below have emerged from an integration of concepts arising from the three aspects of the curriculum evaluated in the study; lived, taught and written.

6.2.1 Use of OSCE to determine competence

In the profession of pharmacy, increasing emphasis is placed upon clinical skills and the development of a more holistic approach to patient care, although as was evident

from the MPharm documentation for QUB, clarity regarding the definition of clinical skills is still required for both academic staff and undergraduate students.

Hand in hand with the introduction of a clinical pharmacy emphasis within the curriculum follows the requirement for appropriate clinical teaching both in the classroom and at the bedside followed by suitable assessments to *judge* student performance (Beck, Boh & O'Sullivan, 1995; Mills, et al, 2011). One of the potential assessments to determine undergraduate pharmacist competence is OSCE (Hastings, et al, 2010; Sturpe, 2010). Within the QUB MPharm accreditation documentation (2006) the School identifies that professional competence will be achieved via student participation in a number of practice modules throughout the course. It is less clear how the '*curriculum as taught*' will specifically achieve competence in any of the modules which students undertake be they scientific or professional subjects. Many learning outcomes in the documentation imply the achievement of competence in skills during a module, for example 'oral communication skills with patients' however the assessments to achieve this competence refer to PowerPoint® presentations within their peer group as opposed to patient-pharmacy student encounters.

All participants interviewed made clear associations between the value of routine role-play interaction simulating patient encounters in preparing students for future dispensing as well as 'over the counter' prescribing and advice roles. Stakeholders acknowledged the limited opportunities for students to interact with real-life patients within the QUB MPharm course, a shortcoming identified by other Schools of Pharmacy (Nation & Rutter, 2011) and other healthcare disciplines (Parry, et al, 2008) and which will only worsen as student numbers continue to increase and budgets shrink. The lack of opportunity to regularly rehearse clinical skills is not isolated to pharmacy. A number of other professions have embraced simulation and role-play, occasionally in specially designed clinical skills suites, in order to both increase student skill and confidence but also to reduce the risk to in-patients when students 'practice' clinical behaviours (Bradley & Bligh, 1999; Junger, et al, 2005; Nikendei, et al, 2005).

After the General Medical Council (GMC) released its report on Tomorrow's Doctors in 1993, Medical Schools undertook radical curriculum changes embracing a problem based learning (PBL) and skills-based approach in response to criticism that graduates were lacking in competence in standard clinical skills (GMC, 1993; 2003). Bradley and Bligh (1999) describe the introduction of weekly clinical skills teaching from the start of first year of the Medical degree in Liverpool University. They report an overwhelming improvement in student performance at OSCE stations as well as the motivating effect of early clinical training on student doctors. It is important to note that the authors did not have a control group and that Bradley and Bligh (1999) do not claim that student knowledge improved. They were also keen to clarify that practical skills are not taught in isolation of basic science. This approach resonates for pharmacy academic staff who face a similar conflict between the traditional emphasis on basic science versus professional subjects and clinical skills whereas the answer lies with an integration of the two. Students who are provided with increased opportunities to practice clinical skills have improved *performance* compared to their peers, but their core knowledge appears to remain the same (Junger, et al, 2005; Nikendei, et al, 2005) demonstrating the need for a spiral approach to curriculum development in order to enhance both knowledge retention *and* performance (Davis, 2003).

Clinical experience throughout the undergraduate pharmacy degree is now a requirement of the accrediting body for pharmacy, the GPhC (GPhC, 2010). The QUB MPharm degree was judged against these criteria in its accreditation in May 2012. Although the need for experiential learning opportunities during the undergraduate pharmacy degree has been acknowledged by the Government (DoH, 2008), funding has not followed for pharmacy unlike medical and nursing colleagues. Medical and nursing undergraduates receive HEFCE A funding and in some cases additional NHS funding which funds experiential training for undergraduate students. HEFCE A funding is approximately 2.5 times HEFCE B funding (a laboratory provision), which does not account for the provision of clinical placements (HEFCE, 2013). This disparity in funding has served to curtail a standardised approach to clinical training across the Schools of Pharmacy with opportunities during the 26 UK degree courses varying from one to two days per annum to 4 weeks depending on local availability (Guile & Ahamed, 2011; RPSGB, 2004a).

Medical students exposed to simulated training compared to standard tutorials have been shown to exhibit improved performance in a broad range of clinical skills, especially communication, as well as skills which require supervision and feedback from staff (Chaikoolvatana & Goodyer, 2003; Junger, et al, 2005). Chaikoolvatana and Goodyer (2003) found that using virtual cases produced similar results to 'real' patient encounters and enabled students to be exposed to a wider range of therapeutic scenarios than could be guaranteed with clinical placements. Performance based teaching methods have been shown to provide the opportunity for students to bring together their knowledge, skills and also professional behaviour in a unique way (Austin, Gregory & Tabak, 2006). Schools of Pharmacy are experienced with the use of role-play within the curriculum (Adamo, 2003) however the use of simulated mannequins are relatively new with few published articles depicting their use in the UK (Branch, Apampa & Gill, 2011;Reape, et al, 2011). Participants interviewed had limited knowledge of how simulation could be integrated effectively within the undergraduate pharmacy curriculum, largely associating it with more technical clinical skills such as the measurement of blood pressure as used by other healthcare professionals such as medicine and nursing. One member of staff was keen to engage with a virtual patient interactive construct such as the Avatar[®] system used by Keele University (Keele, 2013) but this was largely viewed by participants as beyond the current scope of the course due to the cost of such an intervention, no matter how innovative.

The recent accreditation process by PSNI and GPhC for the QUB MPharm in May 2012 facilitated a thorough review of the course and a Teaching, Learning and Assessment strategy was developed. An integrated approach is promoted to encourage students to apply science learnt early in the degree into more patient-based scenarios as early as second year. The use of OSCEs and other competency based assessments are discussed with increasing emphasis as the degree progresses and it is anticipated that the Practice Teams (both primary and secondary care) will gradually increase the MPharm focus on patient care in the formative years of the degree. This has led to the introduction of expert patient-led workshops in 2012-13 where patients from disease support groups such as Chest Heart and Stroke[®] are involved in small group discussion with first year students. This work will not serve to

undermine the core science teaching of the undergraduate degree, but will offer contextualisation for students to help them to embed pharmaceutical science within the care of patients. The use of lay 'teachers' in the form of patients within the MPharm supports the development of students' consultation skills and aids the achievement of many of the core learning outcomes of the MPharm syllabus. It is hoped that this can be extended to utilise lay audiences in the assessment and evaluation of student groups.

In tandem with a requirement for students to develop consultation skills with patients is the requirement for pharmacy graduates to be able to interact, guide and influence the prescribing of other healthcare professionals. Although learning outcome 2 from the Subject-specific skills section of the QUB MPharm syllabus expects students to have cultivated the ability to meet the needs of other healthcare professionals on graduation, there are scant opportunities to develop these skills within the existing curriculum. The use of inter-professional simulation via role play or within workshops may offer students the chance to start to build these skills, but interaction during experiential placements, such as during an integrated MPharm, would provide multiple occasions for valuable learning opportunities (Remington, Foulk & Williams, 2006).

6.2.2 What is the role of science in the profession of pharmacy?

Pharmacy is classified in syllabi as a science degree yet the nature of pharmacy professional practice has dramatically altered over the past thirty years since the modernisation of the NHS and the development of new clinically focused skills within the profession (DOH, 2008). This evolution in practice has stimulated a debate in pharmacy education regarding just how *much* science is appropriate in the development of a twenty-first century pharmacist and if large proportions of science should be replaced by an increasing focus on pharmaceutical care (Jesson et al, 2006). Pharmacists in practice expect new graduates to possess patient focused skills such as counselling on medication usage and medicines reconciliation (McRobbie, 2004). Conversely, scientific academic colleagues argue that science at undergraduate level has been drastically adulterated despite its significance to underpin effective pharmaceutical care and clinical practice (Florence, 2004). The QUB TLA strategy for 2011-16 takes this further, highlighting the need to embed personal reflection within MPharm modules in order to encourage students to develop

this vital skill for their future practice. Science has been the mainstay of the pharmacy undergraduate curriculum since the inception of the pharmacy degree. A review of UK Schools of Pharmacy by Wilson and colleagues (Wilson et al, 2006) confirmed that 50% of the curricula represent science. Academic staff interviewed in this study defended the curriculum content although student stakeholders were less supportive with 36% of students believing that the science emphasis was too much. So what *is* the right balance to strike? In 2002, the Royal Pharmaceutical Society of Great Britain (RPSGB) conducted a consultation with all of the Schools of Pharmacy in the UK regarding the appropriate balance between science and professional aspects within the core curriculum (RPSGB, 2002). The majority of respondents (74%) believed the balance to be about right, although it would be interesting to revisit this consultation in 2013, extending it beyond the academic practitioners to whom it was initially circulated to the wider pharmacy population, including undergraduate and newly qualified pharmacists. Wilson, et al, (2006) also found that 70% of students believed that their Universities placed insufficient emphasis on professional aspects of their career in the first and second year and 80% of students agreed that pharmacy practice and clinical pharmacy should be taught from first year. Participants were supportive of earlier integration of science and practice but some academic participants were cautious regarding students ability to perform professional tasks from the formative years of their degree within the existing curriculum. This view is supported by the documentary analysis where considerable challenges would arise for the curriculum design if students were expected to 'apply' their knowledge prior to third year.

In 2011, the General Pharmaceutical Council Education (GPhC) released their "Standards for future initial education and training of Pharmacists" (GPhC, 2011). This guideline has driven MPharm curricular developments throughout the UK. The GPhC provide Schools of Pharmacy with associated criteria and require the accumulation of appropriate evidence to prove the Schools meet the specified standards. They are not prescriptive in their proposed recommendations, which has disappointed some pharmacists who hoped that this document would help to shape the future of the profession in the same way as the GMC document "Tomorrows Doctors" appeared to in 2009 (GMC, 2009). Medical education was transformed by this vision as it acknowledged the existing situation in Medical Schools where curricula were overloaded with novel developments in healthcare without the required culling of less

relevant information. A predilection for outdated 'passive' teaching methods such as lectures was also identified (Anderson, 2011). The medical profession welcomed the vision that the practitioner of the future would strive to improve the health and care of patients "*as scholars and scientists, practitioners and professionals*" (GMC, 2009) – no conflict was viewed between these roles. If medicine does not foresee a contradiction for their future representatives in embodying multiple roles such as scientist and clinician, should pharmacy? The revised GPhC standards for initial education and training (GPhC, 2011) are currently being developed and have undergone significant transformation although it is unlikely that they will be implemented until the integrated degree is embedded in Schools of Pharmacy.

Considering the "*curriculum as written*" within the QUB MPharm course, it still largely reflects a didactic, knowledge-based teaching approach despite the evolution of the profession towards patient-centred activities and the problem-based learning embraced by other Schools of Pharmacy (El-Awady, 2006; Marshall & Nykamp, 2010). Whilst a strong focus on baseline science is essential to a pharmacist's future practice, some schools have ensured the survival of science by embedding competencies with those which are perceived to be more clinical via curricular integration. Woster (2003) describes an integrated approach in a PharmD program to the teaching of medicinal chemistry, pharmacology and therapeutics. This course aims to 'future-proof' pharmacists' abilities to advise clinicians on increasingly complex therapeutic developments via furnishing graduates with in-depth knowledge of cutting edge scientific research. Although the QUB MPharm degree supports both science and professional practice, consideration of a more systems-based integrated approach introducing professional and clinical applications of science is recommended. Supporting the findings of Wilson et al (2006), the QUB MPharm builds towards an increasing emphasis on professional subjects in third and fourth year. Some educationalists believe that this approach, with a strong science focus in the first two years followed by a strong patient focus in the final two years and the lack of opportunities for practical application of knowledge can lead to issues for student contextualisation of the science content (Guile & Ahamed, 2011). This concept was echoed by students interviewed in this study as well as the feeling of demotivation when they were not exposed to 'practical' professional subjects (Bradley & Bligh, 1999). Academic stakeholders agreed that the modularised course structure

challenged student's ability to make connections between knowledge delivered within different modules as well as different years of the course. Some student participants also acknowledged the impact of modularisation on their ability to integrate their knowledge. It was felt that student lack of integration of knowledge was detrimental to their future performance in practice where patients are unlikely to present in a textbook manner. Gass, Banks and Wilson (2004) debated the impact of modularisation on nursing education, concluding that although it offers much greater flexibility to curriculum design, it may be detrimental to overall professionalisation, as healthcare professionals are required to consider a patient holistically.

Another consequence of frontloading the MPharm course with science means that professional elements of the degree contribute more heavily to the student's degree classification (Wilson et al, 2006) as first and second year of the QUB MPharm contribute only 10% towards the overall degree classification. If the MPharm designers consider that the MPharm is a science degree, weighting assessment heavily towards professional and clinical aspects of the course appears to be at odds with this decision.

6.2.3. Challenges and benefits to using OSCE

There were a number of practical issues to address with the introduction of a novel assessment method, OSCE. These included timetabling, staff training and development and crucially the weighting to place upon the examination and its place in the MPharm . Reviewing the pharmacy literature relating to the use of OSCE as well as authors from other healthcare disciplines offered a wide range of approaches for the introduction of this type of assessment to a traditional curriculum.

6.2.3.1 Station development

Sturpe (2010) describes using a blueprint to define competencies to be evaluated by the various OSCE stations as well as thorough peer review of the scenarios developed and piloting prior to use with students. In QUB, the OSCE development Team mapped the OSCEs against the CODEG General Level Framework (CODEG, 2013) competencies and maintained a matrix of OSCE stations and the competencies they were designed to examine. The OSCE development group also determined the pass mark for each station using the Angoff Method (Hurtz & Hertz, 1999; George, Haque

& Oyeboode, 2006; Fletcher, 2008) which academic staff agreed added to their knowledge of the stations' content and marking grids as well as the standardisation of the process.

6.2.3.2 Staff training

The literature suggests a number of methods of improving OSCE station consistency with one core influence identified - the standardisation of 'patient' and 'doctor' performance. Adequate training is required as well as detailed scripts for patients and doctors to follow and feedback on performance is recommended (Adamo, 2003; Austin, et al, 2006). QUB MPharm staff and demonstrators who were portraying the patients and doctors were emailed the OSCE scripts in advance and then given a one hour training session with the moderator where the props required for each station were available for them to review (Patricío, et al, 2009). Even with the training provided, standardised patients and doctors admitted that the scenarios did not always run as intended and a certain amount of ad-libbing was required although they did not feel that this detracted from the consistency of the stations.

Academic stakeholders did not suggest any further preparation to aid their readiness to perform (all examiners had attended a training workshop, been involved in both OSCE development, review and Angoff score setting as well as marking of OSCEs) however if the examination is to be used for higher stakes examination in the MPharm further consideration will need to be given to both the training of simulated patients and doctors as well as examiners to improve quality assurance (Thistlethwaite, 2002). An interactive website, developed by colleagues at the QUB Medical School (QUB, 2013) presents good, poor and borderline student examples for OSCE examiners to review prior to student assessment. Of particular interest is 'how to deal with nervous students' or 'standardised patients who are not performing in a standardised method with different candidates'. The presence of a new School of Pharmacy in Northern Ireland may enable the OSCE development team to take a more regional approach to OSCE scenario development, including Northern Ireland-wide clinical pharmacy and academic staff in the authorship, piloting and examination of students.

6.2.3.3. Student preparation

As this was a new initiative for the QUB MPharm, time was devoted to the preparation of students for the OSCE assessment including the use of formative OSCEs in a number of workshops and during the clinical placement as well as provision of a handbook and a bespoke DVD prepared to guide student clinical skill development. The participants, both pre and post OSCE, discussed the use of a formal mock OSCE, under examination conditions, as a further step that could be taken to prepare students for the summative assessment. As OSCEs have moved to higher stakes, from 2013-13 formative OSCEs have been introduced into many workshops in the MPharm to signpost student preparation. It is likely that the main benefit that students will achieve from a mock OSCE is feedback which examiners and standardised patients can provide, particularly if this is immediate and specific. O'Sullivan et al (2008), in their study with medical students, reported that students perceived the formative OSCE on interpersonal and communication skills was one of the "*most memorable and powerful of their entire training*". In the academic year 2013-14 for fourth year students in the MPharm, all students had the opportunity to participate in a formative OSCE for oral stations where peer and examiner feedback will be provided on individual performance at a number of stations. The key to success with formative feedback appears to be its specificity and also its timeliness.

6.2.3.4. OSCE logistics

The number of stations required for OSCE reliability has been debated widely in the literature. Experts judge that fewer than ten stations are inadequate for the comprehensive examination of a range of topics whereas more than twenty are considered to be prohibitive to co-ordinate. It is generally accepted that 12 to 15 stations should ensure the reliability and extrapolation of the results achieved (Selby, Osman & Davis, 1995; Smee, 2003; McWilliams & Botwinski, 2010). Stakeholders interviewed were novices to the use of OSCE and were not familiar with the details of OSCE usage requirements such as a large number of stations to increase reliability. Their comments related to the student experience as well as their own workload. They preferred to keep the numbers small as this was more achievable given the large number of students per year group. However, if OSCE's are to be used for a greater proportion of examinations in the QUB MPharm and at higher stakes as is the case in 2013-14, this will need to be revisited and expanded. One proposal suggested by academic participants was the assessment of a number of modules including

Pharmacy Practice, Responding to symptoms, Extemporaneous Dispensing and also Clinical Skills as individual stations under one complete OSCE. In 2012-13 the first integrated eight station OSCE ran for fourth year students incorporating skills taught in 3 separate modules across two academic years of the MPharm.

There is a School perception (students and academic staff) that OSCEs are solely for the assessment of clinical or technical 'hospital' type skills which have no bearing on the work of a community pharmacist, where 90% of graduates will eventually work. Through the focus groups and the discussions which arose within and after this period of research, an awareness has evolved with regards to the untapped potential of OSCEs in a wide range of subjects. The QUB TLA strategy describes the strategy for a gradual increase in the reliance upon competency based assessment over the next four years for all aspects of pharmacy practice.

Similar to the academic staff, student participants were also content that their first summative OSCE would only contain a small number of stations (four) but interestingly suggested that the number of stations should increase with student experience. Researchers, in a number of different professions, have also demonstrated that OSCEs require a large number of stations to enable *examiners* to determine their competence over a number of tasks (Selby, Osman & Davis, 1995; Brosnan, et al, 2005) however, many of these refer to 'high-stakes' OSCE with less information available regarding the minimum number of stations in a non-high stakes summative OSCE (Harden, 1975; Sturpe, 2010).

6.2.3.5 The hidden curriculum and the value of OSCE; impact on student preparation
Assessment is known to drive student learning (Stefani, 2004-5) and often another influence on student emphasis of effort is the '*hidden curriculum*' (Sambell & McDowell, 1998). This encompasses the views of colleagues within the student peer group as well as more experienced student colleagues regarding assessment preparation, including examination spotting. As 2010-11 was the first year that fourth year MPharm students at QUB undertook a summative OSCE, they did not have knowledgeable peers from the year above to turn to for advice regarding preparation for this assessment. Regardless, students clearly identified this examination as having less of an impact on their overall degree classification due to its low percentage (5%)

of the module assessment. Some students, perhaps those competing for the very highest grades, did comment that even 5% was not something they would ignore. Academic staff pre-OSCE felt that 5% was appropriate as this was a new assessment format for both the teaching staff and students alike. They commented that students' anxiety may have a greater influence on performance in OSCE due to their unfamiliarity with its format and their relative lack of experience with the skills being evaluated (Allen, et al, 1998). A number of authors have considered the impact of anxiety on student performance in examinations, with Allen, et al, (1998) researching Medical students' perception of anxiety on their OSCE performance via a post-OSCE questionnaire. Students in this study described being more nervous for the OSCE than for other examinations although they did report becoming calmer as the assessment progressed. Brand and Schoonheim-Klein (2009) found that dental students were also more anxious when completing OSCE than other examinations however they concluded that the level of anxiety was not indicative of performance in the examination.

In QUB, some academic participants believed that for future students the value of OSCE should be increased in order to reflect the importance of the skills evaluated. Post-OSCE, student participants' views were mixed with those who performed poorly feeling relieved that the assessment had a low value attached whilst acknowledging that if it had been worth more marks they would have prioritised this learning to a greater extent (Gibbs & Simpson, 2004-5; Brodie & Irving, 2007). One student felt that it should be worth at least the same as any other piece of coursework for the student population to prepare appropriately for the assessment. When trying to determine the appropriate value to attach to OSCE a few academic staff felt strongly that there should not be such a difference in the weighting of the OSCE assessment as compared to other practice assessments in PP or RTS, both of which carry the weight of a full module. However, one colleague disagreed, highlighting that the existing assessment emphasis reflected the extent of experience which students have within these modules; weekly classes throughout third and fourth year for PP and RTS compared to a total of two and a half weeks in the entire MPharm relating to clinical skills in clinical placements. With a curriculum review and the integration of science and practice, a shift in emphasis within practice itself from community pharmacy skills to include a broader breadth of clinical skills will support student performance throughout

the MPharm. An integrated degree will also provide students with more opportunities to develop and practice their skills in real patient scenarios.

6.2.4 Impact of OSCE on Teaching and Learning

The OSCE was a novel assessment method for both academic and undergraduate stakeholders interviewed in this study, all of whom had only recently either developed OSCEs or participated in them. In most parts of the world, pharmacist competence is assessed via written examination, with observation of practice during the pre-registration year, although Canadian pre-registration candidates must complete an OSCE in order to join the pharmaceutical register (Austin, et al, 2003). In the UK, pharmacists are rarely expected to demonstrate competence in skills via examination except in technical dispensing skills, although this is changing (Munoz, et al, 2005). The academic participants interviewed recognised the benefits of using OSCE, particularly in relation to student demonstration of knowledge acquired and perfection of skills. These aspects are known to be particularly difficult to determine in a written exam.

As well as the learning which students' derive from putting their knowledge into practice and the opportunity for reflection, some academic participants recognised that using OSCE would provide the teaching team with unique feedback on individual student performance. It was believed that this would support the identification of concepts or aspects of the course requiring revision, updating or increased emphasis in order to improve student competence (Byrne & Smyth, 2008) which in turn may facilitate more effective teaching by academic staff. This has been identified by other pharmacy colleagues such as Hastings et al (2010) who describe using OSCE to determine student competence in a 'responding to symptoms' type module. The authors observed that students had retained the information taught within the module but struggled with professional judgement, that is, when it was appropriate to *not* recommend a product and when to refer on to another healthcare professional. Other researchers have identified the vital role that OSCE can serve as a method of providing immediate and detailed feedback on performance as a teaching tool, aside from its role in assessment (Brazeau & Boyd, 2002; Parish, et al, 2006) reinforcing and closing the learning cycle post OSCE.

At QUB, academic staff acknowledged that they would require training and practice in order to develop sufficient skill in OSCE evaluation as the assessment format was novel and they were relatively inexperienced with the nuances of its use. Patrício et al, (2009) describe the need to adequately train assessors as well as standardised patients to ensure reliability of student results in OSCE. As the QUB MPharm OSCE program develops, the School of Pharmacy hopes to liaise with the School of Medicine and Nursing in QUB to share in training resources for OSCE examiners and patients. Schoonheim-Klein, et al, (2005) describe introducing OSCE into a Dental school and report an improved interaction between clinical departments as an unexpected side-effect of the process. This research study has provided a platform for increased interaction between the Pharmacy Practice teams specialising in community pharmacy with those providing experiential learning in hospital pharmacy, where previously little cross-over was observed within the Faculty. Academic stakeholders agreed that even amongst QUB teaching staff, clear distinctions were drawn between the two main practice sectors of community and hospital pharmacy, placing yet more barriers between student understanding of their future workplaces. One solution could be the holistic teaching of professional subjects within the QUB School of Pharmacy, that is, the Pharmacy Practice module which is currently entirely community pharmacy focused, could include scenarios, paperwork and materials from the hospital setting, to encourage students to integrate their knowledge when moving from one sector to the other in experiential placements. Integration in real-world practice is still limited however and, despite successful projects in the UK and elsewhere demonstrating the positive impact of clinical pharmacy practiced in a community pharmacy environment on patient care and healthcare costs (Bernsten et al, 2001; Sturgess, et al, 2003; Noyce, 2007) its' uptake across the profession is patchy and inconsistent (Noyce, 2007). Student participants believed that they would use their clinical skills more in a hospital environment and that they would also have more professional respect in this context. Similar conclusions were drawn by a number of other authors (Lawrence, et al 2004; Scott, Friesner & Miller, 2010). Maynard et al, (2011) conducted an online questionnaire with all final year pharmacy undergraduates in the USA to determine their perceptions on the provision of clinical services in community pharmacy. They identified that students were interested in and believed that they possessed the personal and technical attributes required and planned to deliver clinical services on graduation. Similar to QUB MPharm students, those respondents who had work

experience from a community pharmacy were less likely to consider planning on providing clinical services on graduation and the group identified 3 main barriers to clinical service delivery in community pharmacy; lack of time, support and privacy. Leaders in pharmacy and Government initiatives have driven the curriculum development to adequately prepare students to deliver enhanced services on graduation whilst the uptake and actual endorsement by the profession at large is inconsistent. The lack of cohesion between educational initiatives and professional practice may lead to student dissatisfaction with the profession on graduation. They are trained to a high level and expect to have the opportunities to practice and develop their clinical skills but in reality find the opportunities to be lacking or professional staff attitudes to be unsupportive (Lawrence, et al, 2004). It is vital that experiential learning exposing students to clinical services in both community and hospital settings is introduced early in the curriculum so that students can gain an understanding of how to translate the 'ideal' as taught in the University setting, to what they experience with professional staff in practice. The School of Pharmacy at QUB appointed a community pharmacy placement coordinator to support student learning experiences in the academic year 2012-13. A similar structure to hospital placements has been implemented including reflection on practice, development of core skills including professional behaviour.

Staff interviewed agreed that OSCE would fit into the armamentarium of assessment methods currently used within the QUB MPharm and would offer a way of determining student clinical skills. Some caution was expressed at the chance that students who may possess confidence and pass the OSCE may not have sufficient knowledge to practice safely, and the group agreed that the OSCE would not replace written assessments.

Despite widespread and long term use of role-play in the QUB MPharm curriculum, academic staff had mixed opinions regarding their use particularly with regard to the 'reality' of the scenarios and also their inability to separate their dual role as conduit of student learning and the responsibility for assessment. This was recognised by Schoonheim-Klein, et al, (2005) who found that due to staff unfamiliarity with the OSCE concept, they often helped the student during the stations. The literature supports the use of role play, demonstrating that courses which have incorporated

interactive methods of teaching are more successful in helping students develop effective communication skills (Aspegren, 1999; Lane & Rollnick, 2007). One approach to role play is the use of '*simulated patients*' where staff or professional actors are taught to play the role of a patient with a particular condition. QUB MPharm staff reported that not only did they feel conflicted regarding their desire to help the student, but they also had difficulty in acting as a member of the public would, given their knowledge of the disease process, its management and the student. The literature suggests that student reception to the use of this type of simulation in many healthcare professions is positive and in some cases students have found role play preferable to real patients offering a way of 'easing' in to real patient encounters and also providing students with valuable feedback (Eagles, et al, 2001; Bokken, et al, 2009). Students in the MPharm focus groups agreed that the role-plays were useful but did not adequately represent the reality of a patient interaction (Schafheutle, et al, 2010). Their views on the use of actors, pharmacy students and real patients to portray the scenarios (instead of their lecturers) were disparate. Some participants agreed that student colleagues might provide the most realistic portrayal with the added benefit of developing their own skills in the process, yet others believed that students would be difficult to recruit, train and would be unlikely to take the assessment seriously (Sibbald, 2001; von Below, et al, 2008). Sibbald (2001) found, via questionnaires and psychometric testing, that using suitably prepared first years as patients and assessors of third year pharmacy students produced reliable and valid results compared to previous measures of performance. The use of first year undergraduate pharmacy students was cost-neutral but the added benefit was the impact on both candidate and first year learning with students commenting on their improved communication and professional skills as well as networking with senior students and their ability to observe different levels of skill in their colleagues, all of which increased their own preparation for future OSCE (Sibbald, 2001).

The solution probably lies with a mixture of both simulation and 'real' patient interaction. The simulated or virtual patients and role-plays could be used earlier in the course as a 'safer' alternative and to prepare students for the more complex and unpredictable real patient encounters. The QUB MPharm staff are currently involved in a proposal for a multi-professional skills unit at QUB for medicine, nursing and pharmacy undergraduate and postgraduate training. It is hoped that involvement in

this innovative development will enable the School of Pharmacy to provide uni-professional and inter-professional learning opportunities for pharmacy undergraduates.

The elusive 'ideal' assessment to establish professional competence in clinical pharmacy skills may still be undetermined (Beck, Boh & O'Sullivan, 1995), but the use of OSCEs within the existing portfolio of assessment such as written exams and observation of practice offers another perspective on a students' performance overall and this should help establish graduate preparedness for practice. It is clear from the views of participants that whether OSCE is a valid assessment method or not for pharmacy, a thorough review of the MPharm curriculum at QUB is required to adequately prepare students for future pharmacy practice.

6.3 Acculturation to the profession of Pharmacy

One of the fundamental objectives of experiential education, if not the undergraduate pharmacy degree, is the professionalisation or acculturation of students to their future professional roles (Hammer, 2000; Guile & Ahamed, 2011). Although the definition of 'professionalism' is not clear cut or universally accepted, professional academic staff interviewed have a general understanding regarding desirable characteristics of a practicing pharmacist. Pharmacists' professional behaviour is governed by the Code of Ethics. In Northern Ireland there are 8 principles in the pharmacist code of ethics and failure to abide by these can result in a referral to the Statutory committee. Pharmacy students are expected to adhere to principles one to seven until registration with the PSNI (PSNI, 2013).

The emphasis on nurturing professional behaviour in undergraduate pharmacy students has increased over the past 5-10 years (Hammer, et al, 2003; Chisholm, et al, 2006; Brown & Ferrill, 2009) with a parallel increase in prominence being observed within Medical Education (Wagner, et al, 2006; Buyx, Maxwell & Schöne-Seifert, 2008). The publication of the Francis Inquiry (Francis, 2013) shocked UK society. For the past 12 months, healthcare workers in the NHS have been evaluating their own practices in line with the recommendations from the Francis Inquiry (Francis, 2013) and more recently the Berwick Report (DOH, 2013) with particular reference to the need to nurture empathy and altruism in professional practice. All professional

attributes were considered important to the academic staff interviewed but communication skills were considered vital prior to graduation, particularly in relation to interaction with patients (Brown & Ferrill, 2009; Evans, et al, 2011).

6.3.1 *Effective communication skills*

The traditional characterisation of users of pharmaceutical services as passive recipients of expert advice is outdated (Fox, Ward & O'Rourke, 2005). Many patients are extremely knowledgeable about their condition and medications, being increasingly used to researching the internet and often bringing in the results of their research to consultations with professionals. This concept of the "*patient as an expert*" has been reinforced by Government policy (DOH, 2001), promoting the need for new graduates to build a partnership with their patients where a two way exchange is encouraged as opposed to the traditional paternalistic healthcare model. The pharmacist, as the last healthcare professional to interact with the patient prior to starting their medication, is in a unique position to influence their understanding of the prescription, as well as to support their compliance via allaying any concerns they may have. The success of their intervention is heavily reliant upon how effective their communication is. Hermansen, et al, (2000) describe the pharmacist-patient relationship as a fundamental aspect to the provision of pharmaceutical care as well as "*collaborative decision making regarding medicines use*". However, not all patients wish to take responsibility for their own health and professional judgement is requirement to assess patient's capability and desire for decision making and their ability to adapt to the needs of different patients (Henwood, et al, 2003).

Undergraduate and academic stakeholders agreed on the fundamental importance of competent communication skills for pharmacists, particularly in relation to translating complex medication regimens into 'layman's' language to promote concordance. Research with medical staff found effective communication skills to be linked to improvements in patient outcomes particularly patient satisfaction, adherence to recommendations as well as patient understanding (Yedidia et al, 2003). Focus group participants had concerns regarding the danger of student *over-confidence*, that is, a student who presents to OSCE with excellent interpersonal skills but without the adequate knowledge to back up their performance. This scenario is not well described in the literature and it is unclear how common this situation is. QUB MPharm students

are encouraged to admit when they do not know something and not to 'bluff' even in role-play scenarios.

Aspegren (1999) determined that certain clinical communication skills are not developed spontaneously via exposure to the clinical environment, however a combination of experiential learning as well as university teaching can help to shape interpersonal skills including the use of silence, not interrupting the patient and keeping the discussion on track. All focus group participants described a lack of opportunities for students to develop patient-focused communication skills especially in the first two years of the MPharm. This was coupled with concerns that this could affect some students' ability to adequately recognise patients' requirements. These concerns were supported by the documentary analysis which described a traditional science based MPharm with a clear emphasis on drug knowledge as opposed to patient care. Participants agreed that OSCEs were an appropriate method of evaluating communication skills in addition to other formative role-plays within the MPharm. Although students interviewed were less likely to comment on their communication skills, this may not imply over-confidence as Mort & Hansen (2010) describe pharmacy student's lack of self-awareness in relation to their limitations in relation to communication, finding that students who were least skilled were more likely to over-estimate their abilities.

6.3.2 Collusion

Aspects of student professional behaviour including the ability to respect rules and also maintain confidentiality in relation to patient care are widely accepted (Jha, et al, 2008). It was expected that as an extension of student professionalism, students would maintain the confidentiality of exam content, as it was necessary to conduct the examination over 2 days, which were 1 week apart. All stakeholders expressed concerns regarding student collusion, however some viewed a certain degree of discussion regarding the examination as beneficial to student learning. Some academic staff believed that students would not consider a breach in confidentiality regarding OSCE content as unprofessional but would believe they were being 'team players' by sharing information with their colleagues (Parks, et al, 2006). Other academics were concerned with the impact of collusion on the performance of the second student cohort, believing that students who participated in the later OSCE were

at a greater advantage, although this has not been found consistently in the literature (Rutala, et al, 1991; Parks, et al, 2006). Few authors describe how they have tackled breach of confidentiality or student “collusion” in the literature. Pharmacy is a large course with up to 160 per academic year, however, medicine is often considerably larger and particularly with a greater number of stations, students would be required to participate in OSCE over a number of days. Rutala, et al (1991) proposed that collusion would increase student marks and, on discovering that their students’ marks had *not* increased, they concluded that if content of the stations had been leaked, as students had claimed, it had no impact on student grades. They postulated that the *skills* that a student is required to use in an OSCE would not change, regardless of their prior knowledge of the therapeutic area. Regardless of student actual performance there may be an impact on student perception of fair and equitable examinations if the same stations are used for both cohorts.

Student grades should not be the only consideration as it could be assumed that individuals who are sufficiently morally lax to cheat at high stakes University examinations may be more inclined to display professionally questionable behaviour in the workplace (Parks, et al, 2006). As honesty is a key attribute of a professional pharmacist, identification of dishonest behaviour in undergraduates is a matter of importance and the existing ‘Fitness to practice’ regulations from PSNI/GPhC offer guidance to Schools in relation to management. However a ‘name and shame’ policy is unlikely to be supported by students. Glick (2001) suggests that Schools need to create a culture amongst students and academic staff where academic dishonesty is unacceptable with less of an onus on students to divulge the names of colleagues who have cheated and more of a focus on creating an environment of peer pressure where this type of behaviour is unacceptable. Academic staff can support this by limiting opportunities for collusion, for example by altering examinations year on year. Although influences on personal behaviour are myriad including cultural and social upbringing, there are opportunities for staff to help to shape student professional development. Christakis and Feudtner (1993) discuss using these scenarios within the teaching of the professional course such as within ethics workshops, where students can debate amongst each other and with their tutors the appropriate course of action. Student understanding of professionalism and also professional behaviour may require further investigation.

The documentary analysis identified the importance of professionalism from a curriculum design perspective, however perhaps there is a mismatch between academic and student interpretation of this concept. Professionalism in pharmacy is poorly defined in pharmacy literature (Brown & Ferrill, 2009; Agomo, 2012) and research into the teaching of professional behaviour to healthcare professional students, including pharmacy students, is limited (Poirier & Gupchup, 2010; Hämeen-Anttila, Saano & Vainio; 2010). Agomo (2012) proposes that formal curricula such as experiential learning, aids student socialisation and acculturation with the profession albeit alongside the impact of the hidden curricula. Students are expected to absorb a balance of positive and negative messages during their degree, however inconsistent socialisation can occur due to ‘mixed messages’ from academic staff and experiential tutors resulting in “*student disillusionment and realistic disenchantment*” with their future professional role (Agomo, 2012). Student stakeholders interviewed reflected some disillusionment in their opinions of community pharmacy practice, where students (who had part-time jobs in a pharmacy) viewed this role as “less clinical” than that performed by pharmacists in a hospital environment. Buyx, Maxwell, and Schöne-Seifert (2008) identified the many challenges of teaching professionalism with medical students particularly where it has previously been addressed via the ‘*hidden curriculum*’ during experiential learning. They conclude that it is the responsibility of both the University as well as clinical tutors to teach and evaluate professional behaviours throughout the degree. The risks of students observing poor practice and perpetuating misconceptions as well as an increasingly informed and demanding patient population have raised the significance of developing professionalism during undergraduate education. The GPhC Education standards 2011 1.1(f) require that students behave according to the code of conduct for pharmacy students (PSNI, 2013) and student professional behaviour is evaluated by clinical placements from second year onwards.

A clear, structured and integrated approach to the introduction of professionalism for pharmacy undergraduates, building upon core skills from first year is required within the TLA in order to nurture socialisation within the pharmacy profession and improve the formation of patient partnerships to ultimately improve patient outcomes (Francis, 2013).

6.3.3 Inter-professional skills

Pharmacists, regardless of the sector in which they practice, do not operate in isolation and are required to form productive relationships with other healthcare professionals with whom they share the care of patients. Pharmacists are required to clarify prescribing decisions with prescribers on a daily basis and often challenge the appropriateness or even safety of a prescription to safeguard a patient's well-being. Students' ability to appropriately address complex and often sensitive issues with the prescriber, the patient as well as other members of the pharmacy and wider Healthcare Team is a vital component of future professional behaviour (Rickles, et al, 2010). Despite the expectations of the QUB MPharm curriculum that graduates will have developed the skills to communicate with and advise HCP colleagues, student participants expressed concerns regarding their ability to meaningfully interact with other professionals, demonstrating a lack of confidence in their ability.

Hierarchy in healthcare professions is well described although the place of the pharmacist in the clinical team is often unclear. A number of recent articles have demonstrated an improvement in patient outcomes with the inclusion of a pharmacist on the clinical team (Makowsky, et al, 2009; Carter, et al, 2009). All stakeholders believed that more frequent simulated interaction with other professionals would be useful but that nothing could replace real-life interaction, even on a social level, with other healthcare students. A number of researchers describe challenges to facilitating meaningful inter-professional education (Robson & Kitchen, 2007; Anderson & Lennox, 2009; Fougner & Horntvedt, 2011); however inter-professional education is essential to support student pharmacists awareness of their unique contribution to patient care, regardless of the clinical setting. The Association for Medical Education in Europe (AMEE) guide to inter-professional education advocates the vertical integration of professionalism throughout the curriculum in a spiral technique with multiple methods of evaluation, including multi-source feedback, attendance at clinical placements and also OSCE (Hean, Craddock & Hammick, 2012).

6.4 Factors influencing performance at OSCE

6.4.1 Familiarity with the OSCE format and content

Pharmacy students have had a lifetime of practice with paper and pencil exams prior to entering University, however their experience with oral examinations, including OSCE, are limited and this unfamiliarity may influence their performance (Fitzgerald, White & Gruppen, 2003). All stakeholders interviewed accepted that unfamiliarity with the OSCE format may have hindered student preparation and performance, despite the steps taken to prepare students with formative tasks. Suggestions made by both academic and student participants included a mock OSCE which may serve to prepare students more fully for the summative OSCE. This was acknowledged to be time-consuming for staff to prepare, deliver and assess and although students may be more aware of what to expect, other authors have not found that formative assessments improve student performance (Palmer & Devitt, 2008). In addition, one student believed that her participation in a formative OSCE had only served to increase her fears of this type of time-limited assessment. This formative OSCE was the first that the pharmacy staff had delivered and as described by Rennie and Main (2006), lack of familiarity with OSCE could have led students to experience a loss of confidence in the process. In 2012-13 a formative OSCE was introduced to the QUB MPharm for both third and fourth year students to provide students with immediate feedback on performance. Troncon (2004) suggests that one or two formative OSCEs may be beneficial to reduce the perception of OSCEs as a highly stressful examination, although this is acknowledged as a labour intensive solution.

One aspect of OSCE with which students were unfamiliar was the short duration for their performance. Since their inception, OSCE stations have been time-limited, with Harden (1975) suggesting a time frame of five minutes per station. Stakeholders interviewed had different opinions on the need for a strict time-limit. Students, pre-OSCE, viewed a time limit as artificial and unrealistic, believing they would have more time to interact with a patient in real life (Rennie & Main, 2006). Sleath (1996) however found the average pharmacist-patient interaction to be just under 2 minutes. From the perspective of academic staff, considerations were given to what would be achievable in order to complete the assessment in as short a time as possible and ten minutes was considered reasonable and similar to the time allocated in a clinical setting.

Students' request for 'more time' is mirrored with medical students investigated by Troncon (2004) where 70% of participants were discontent with the allocated time for

each station. Rutland et al (2008) found a variation to this, reporting that although students were dissatisfied with the time frame they recognised that being put under 'pressure' helped them to develop other skills, including the prioritisation of problems. Interestingly, post-OSCE, students views towards the time-frame ranged from inadequate, adequate to excessive time per task. A number of students reported reading the task rapidly without due attention leading to a misunderstanding of what was required, due to the influence of the time frame. Lambert, Pattison & de Looy (2010) addressed this by allowing students to read the task prior to starting the timer.

As expertise with this type of assessment format develops in pharmacy and reflecting what has already been implemented in Canada (Munoz, et al, 2005) for revalidation of pharmacists, academic stakeholders felt that they had a duty to expose students early in their careers to this type of performance assessed so that they would not be disadvantaged against other students qualifying from other Schools of Pharmacy (Evans, et al, 2011; Kirton & Kravitz, 2011). Since this research, the QUB course has introduced OSCEs into the extemporaneous dispensing module, which is taught in second year, from 2011-2012 and all stakeholders concurred that the early introduction of OSCE as a summative assessment into a number of different modules in the MPharm should improve student performance in OSCE overall. From 2014-15, all four years of the QUB MPharm will participate in 'high stakes' competency based assessment.

6.4.2 Feedback

Ineffective, inadequate, negative or positive feedback can lead to either false confidence or even a fear of practice (Henderson, Ferguson-Smith & Johnson, 2005). As students and academic staff become increasingly confident with OSCE as an evaluation, more sophisticated methods of feedback can evolve which should facilitate a more robust learning cycle for student skill development. Participants discussed the pros and cons of immediate feedback during practical exams describing the relief at knowing how you have performed immediately, however if feedback was negative they believed it could have an impact on the rest of their performances (Khattab & Rawlins, 2001; Jay, 2007). The current policy for feedback in QUB is a rapid turnaround of one week post exam for individualised written feedback with the option for further oral feedback if required. Sturpe (2010) found that out of thirty Schools of Pharmacy in the

USA using summative OSCEs, six provided no feedback and ten provided marks achieved with only three Schools providing individual feedback from the standardised patient. QUB provide feedback from both examiner and standardised patient/doctor. As another potential method of enhancing student learning from OSCE, Anderson and Stickley (2002) used the process of 'video playback' to show students their individual performances. They found this a powerful and effective learning tool as well as providing accurate, timely feedback to examinees.

6.4.3 Fear of the unknown

Reviewing medical and nursing OSCEs described in the literature, students are commonly assessed on the demonstration of a physical skill of, for example, auscultation (Jay, 2007) or interpretation of a test result (Mavis, 2000) and are aware of the content prior to the examination which facilitates more focused revision. QUB pharmacy students were not advised of the therapeutic areas under examination; any topic taught in the final two years was examinable in order to more adequately reflect day-to-day pharmacy practice. Evans, et al, (2011) report a similar approach to Mavis (2000) and Jay (2007) where they provided students with brief indications of station content beforehand such as patient counselling or legal issues, however the broadness of the OSCE content was viewed as a potential hindrance to student's ability to prepare for the examination.

6.4.4 Learning and assessment preferences

Pharmacy students are known to be high achievers with universities consistently attracting students with top grades at A-level for entry onto MPharm courses; nonetheless this is not necessarily sufficient to ensure that they will automatically develop into life-long learners, critical thinkers and ultimately knowledgeable practitioners. The QUB MPharm reliance upon didactic teaching as well as assessment via final examination is likely to produce students with short-term retention, as opposed to learning for a lifetime (Rust, 2002). Educational research has demonstrated that the use of an assortment of teaching methods can improve students' recall. Certain methods, for example, problem based learning may improve students' ability to apply knowledge in practice (Vaughan & Baker, 2001; Novak, et al, 2006). Knowledge of student learning preferences can also be useful in ensuring that student's maximise teaching and learning opportunities. Academic participants

admitted that student performance in different assessment methods varied, although all accepted that underlying knowledge was fundamental to success. Martin, Stark & Jolly, (2000) found that OSCE performance correlated to well-organised study methods and Jungnickel et al, (2009) describe that fostering life-long learning in undergraduate students is key to their ability to perform effectively as medicines experts when qualified.

6.4.5 Influence of other students (over-hearing others)

The majority of student participants reported being distracted by other examinees at the nearby (oral) stations whilst they attempted the written tasks. This is not a factor which has been identified in many other studies (Brosnan et al, 2006; Rennie & Main, 2006) although student stakeholders commented anecdotally that their colleagues in medicine at QUB had reported the same phenomenon. Brosnan et al, (2006), reported a slight trend towards the noisy OSCE environment interfering with their performance (56% agreed, n= 50). The impact on the students in this study was complex, varying from anxiety-inducing to positive reinforcement of performance with students post-OSCE admitting that over-hearing others added to their general anxiety and their feeling of urgency to begin their oral task despite not being fully prepared to do so. Students acknowledged that whilst they were completing a written station, they were often listening to their colleagues and mentally critiquing their own performance at the same station or even picking up points for the next oral task. One student believed that overhearing others had a constructive effect, particularly in relation to improving her performance and for her overall skill development. Whilst this was positive for this individual student, it is not the purpose of the OSCEs and may not reflect what the examiners are trying to achieve with this assessment.

Academic staff were aware that examinees could overhear for a number of reasons; they themselves could hear other students' performances but also because occasionally students actually paused mid-sentence to listen to a colleague at another station. Although academic stakeholders acknowledged that the noisy atmosphere was reflective of real-life practice and that over-hearing other professionals at ward level was a day to day occurrence, many participants raised the possibility of running oral and written stations in separate rooms to reduce the noise pollution and hence the risk of distraction for students. Rennie & Main (2006) suggest using only one

OSCE per room after student midwife feedback suggested that although realistic, a noisy environment under exam conditions increased their anxiety and affected their ability to perform optimally. For large class sizes like the QUB MPharm and given university accommodation and staffing, this may not be a realistic suggestion. Overall, academic staff agreed that if even one student was adversely affected by others, the room layout should be altered.

6.4.6 Influence of the assessor and standardised patient/ doctor

Some student participants were discomfited by the presence of both the standardised patient and the examiner at oral stations, which differed from their formative OSCE where the examiner had played both roles. The literature describes a wide range of approaches; Sturpe (2010) found that in 47% of Schools of Pharmacy using OSCEs, the standardised patient also acted as the examiner. Evans et al (2011) describe this approach in the UK whilst Rennie and Main (2006) recognised the need for a separate assessor and simulated patient after their students described the confusion they felt when the assessor played both roles for one station perhaps costing valuable time. Students admitted feeling pressurised into performing before being ready to do so, although whether this was due to time pressure or examiner presence is unclear (Anderson & Stickley, 2002).

A few academic participants described their awareness of the students preparing for the station in their presence and reported feelings of uneasiness and that their presence was unwelcome. Other staff disagreed explaining that due to the requirement to finish assessment from previous students as well as set up for subsequent candidates in the short time available, they completely ignored the students until they started to speak. One focus group suggested that students could call the patient and examiner to the station when they were ready to interact (Troncon, 2004). This suggestion was reinforced by a recommendation from candidates to prepare for the station elsewhere and then enter the room ready to perform (Hastings, et al, 2010). Student midwives admitted fear of performing poorly in front of qualified midwives with whom they may work in the future explaining that this added to their feelings of anxiety, a concern echoed by one focus group candidate (Rennie & Main, 2006). Prior knowledge of or relationships with examiners has been shown to have a positive impact on student scores in assessments including a recent paper on OSCEs

(Stroud et al, 2011) which demonstrated that the effect was observed in scenarios assessed via a structured checklist as well as those determined via a global rating, suggesting that a more detailed marking scheme is not the solution. Some authors have addressed this via removing the examiner from the scenario, either by training the patient to assess (Cleland, Abe & Rethans, 2009) or via completely recording each student interaction (Munoz, et al, 2005). Videoed student interactions could then be assessed in real time (Sturpe, 2010) or at a later date (Vivekananda-Schmidt et al, 2007). Videotaping was found to offer some advantages over live assessment including better use of examiner time, however results were not always found to be interchangeable with the presence of the examiner in the room during the OSCE (Vivekananda-Schmidt et al, 2007). Important pass-fail decisions varied with the use of video perhaps due to examiner fatigue in the OSCE room or the ability of the examiner marking via video to pause or rewind interactions in uncertain judgements (Sturpe, 2010).

6.5 Redesigning the MPharm

Rust (2002) suggests the ideal method to engender more than a surface approach to learning is the construction of a structured knowledge base, where students are expected to integrate knowledge between modules and academic years. Harden & Stamper (1999) agree describing a 'spiral curriculum' which they believe is suitable for the promotion of transferable skills. The design begins with presentations of models of care which are gradually reinforced with more complex concepts as student familiarity and experience grows (Davis & Harden, 2003). MPC 1 (MPC, 2011) and the GPhC standards for initial education and training of pharmacy students have endorsed a spiral approach as ideal for student contextualisation (GPhC, 2011).

6.5.1 Science versus Practice

The QUB MPharm is constructed along the traditional design of core science in the early years followed by clinical application in third and fourth year, similar to many traditional pharmacy degrees in the UK (Sosabowski & Gard, 2008). Wilson, et al., (2006) in their qualitative study within all sixteen Schools of Pharmacy in the UK at that time found that accreditation by the regulator was the most important external driver for curricular development. Increasing student numbers also had an enormous effect on design and delivery. They found that thirteen out of sixteen Schools loaded

science in the first two years with the remaining three integrating science and practice through the four year MPharm. Woster (2003) concluded that foundation science in a pharmacy degree was essential to foster the unique skills a pharmacist should possess, promoting the concept of embedding science and clinical learning objectives where possible to promote student understanding. The science versus practice debate continues in the literature. Anderson (2011) postulated that if our medical colleagues do not foresee a conflict between a doctor practising as a scientist *and* a clinician, why should we? The key to having a dual 'persona' appears to be the generation of clear objectives for students including regular opportunities to integrate their science knowledge into clinical practice (Marshall & Nykamp, 2010). All participants interviewed recognised that the QUB MPharm construction had caused some problems with regard to students' ability to integrate their science learning into clinical practice effectively. Students identified areas within the curriculum where pharmacy practice could be introduced earlier than it is currently but admitted that it would require movement of a number of knowledge modules to maximise the learning potential. One student commented that she would prefer all of the practice aspects of the course earlier in the degree, in order to provide students with more time to develop competence. This view was shared by pharmacy students in work undertaken by Jesson, et al, (2006, pg 281) where early exposure to practice based subjects was welcomed for three main reasons;

“To make the course more interesting, to aid contextualisation of the science component and to assist students in any early placement or vocational work”.

A curriculum evaluation is warranted and where linkages and overlaps between subjects are evident to academic staff, these should be emphasised to students via clear signposting. The success of integration can be evaluated via joint assessments between modules.

Academic and student stakeholders also identified a degree of 'modularisation' by students, which they believed to be supported by the current teaching, learning and assessment strategy within the MPharm. Modularisation was viewed by participants as detrimental to students' future performance as pharmacists, although students admitted that it supported their preparation for exams to have subjects addressed and

assessed separately. Cadman, et al, (2003) blamed modularisation and the focus on individual skills by both lecturers and students for the impeded development of critical thinking in nursing students. Pharmacy students interviewed unanimously concluded that the existing degree was not fit for purpose with many expressing a desire to leave the course in first and second year due its apparent lack of connection with their future professional roles.

The accrediting bodies, RPSGB and PSNI, promote an 'integrated' curriculum as the ideal method to support student learning. This type of MPharm curriculum exposes students to both science and clinical practice from early in their education. The accreditation visit to QUB in 2006 identified a dearth of pharmacy-related modules in the first two years of the course and recommendations included a review of course structure. Kerr (2000) believes that when approached in a systematic manner, an integrated curriculum can enhance student learning by both clearly defining learning outcomes for students and also via the expectation that their learning will be required to be applied continually in increasingly complex patient scenarios. The QUB MPharm in 2010-11 supported the concept of integration between modules as well as between academic years, however student feedback from this study suggests a lack of student *recognition* of connections between science and practice subjects. This suggests a requirement for a greater degree of signposting for undergraduates in order to foster a deeper understanding and application of knowledge as well as an increased focus on integrated assessments, including OSCE.

6.5.2 Community versus Hospital pharmacy practice

Pharmacy has increasingly become a diverse profession where pharmacists choose to work in one of five key settings; community pharmacy, primary care, hospital, industry or academia. Whilst the wide range of potential career paths enables recruitment of a wide range of candidates to the MPharm, it can pose challenges for curriculum design. The majority of undergraduate students will ultimately forge a career in community pharmacy (Hassell, 2006) and this will influence the MPharm content and emphasis on community pharmacy practice skills required in this environment; responding to symptoms, dispensing skills. However, similar to medical and nursing undergraduates, universities have found that patient-student interaction is easier to facilitate and standardise in a secondary care, hospital environment,

regardless of future practice. A fringe benefit provided by interaction with patients in a hospital environment is the opportunity for intra and inter-professional socialisation as well as subsequent influences on student career destinations. Savage, Beall & Woolley (2009) found that knowledge of work environment was a key consideration in pharmacy student's career choice. The financial rewards of the retail setting proved a significant motivator initially (post-graduation) whereas the adoption of clinical roles appeared to be a long-term goal for students.

The main goal of the experiential placements, regardless of setting, is the contextualisation of student learning from knowledge modules to patient management and outcomes. Students interviewed associated community pharmacy with a dispensing role and hospital pharmacy with a more clinical role. They expected a hospital pharmacist to apply therapeutic knowledge to patient care, but not a community pharmacist. Patient contact is acknowledged to be associated with job satisfaction for pharmacists and student participants agreed that patient contact was a highlight of experiential placements (Willet & Cooper, 1996). O'Neill and Gaither (2007) described a reduced pharmacist turnover in organisations with a patient-focused identify, who promoted the practice of pharmaceutical care. As previously described, the QUB MPharm has a strong emphasis on community pharmacy, promoting best practice and extended roles, including prescribing and students would be expected to view the role of the community pharmacist as more patient-centric. Perhaps the influence of student personal experiences, from part-time jobs in community pharmacy, may also have influenced their responses. Maynard, et al, (2011) acknowledged a discrepancy between the ideal pharmacist presented in university and the extent to which community pharmacists in practice are providing pharmaceutical care to patients. They describe a conflict arising for newly qualified pharmacists who are adequately prepared to provide clinical care to patients but who face business and staff demands with which they have less experience. Siracuse, et al, (2008) described the importance of providing realistic experiential experiences in community and hospital environments in order to manage students' expectations on graduation and to reduce the risk of dissatisfaction with their work role.

Some student participants viewed the hospital pharmacist role as more *prestigious*. Hierarchy within the pharmacist family is not well described in the literature, however,

O'Neill and Gaither (2007) allude to the importance of social identity in the promotion of self-esteem in a pharmacist. Student interactions with hospital staff, with a strong organisational identity, may differ significantly from those with a community pharmacist who works alone with many competing pressures from his business. The presence of the researcher (a hospital pharmacist) may have influenced student discussions. Students interviewed believed that patients and other members of the healthcare team were more likely to respect the hospital pharmacist as opposed to their approach with the community practitioner. Hughes and McCann (2003) reported their superordinate theme (when considering inter-professional barriers between GPs and community pharmacists) as the GPs view of pharmacists as '*shopkeepers*'. This may support a theory that pharmacy, particularly community pharmacy as the most visible aspect of the profession, is suffering from an image problem. Academic participants agreed that even amongst teaching staff, hospital and community pharmacy were distinct entities with little overlap of teaching between practitioners, making it even more difficult for students to draw links between experiential learning delivered in a hospital environment and a future career in community pharmacy. One academic participant suggested that a more cohesive approach within the School of Pharmacy should help to acclimatise students to the concept of working as a holistic team across the healthcare interface. Future revisions to the MPharm curriculum include the teaching and assessment of clinical pharmacy skills across both community and hospital settings. In 2012-13, students in fourth year completed a combined practice (community and hospital) 8 station OSCE including stations of dispensing, checking, prescribing and identification of pharmaceutical care issues.

6.5.3 *Value of OSCE*

Assessment is known to drive student learning (Stefani, 2004-5). Another influence on student allocation of study emphasis is the '*hidden curriculum*' that is, the views of colleagues within their own peer group and from more experienced students within the degree course as to what to learn for which assessment (Sambell & McDowell, 1998). Academic year 2010-11 was the first year in which fourth year MPharm students at QUB were expected to complete a summative OSCE. It was allocated 5% of one module, compared to other practice exams which constitute 50 to 70% of a module with a 70% pass mark. Prior to the OSCE, students compared the value of the OSCE to the value of other exams, including the prescribing exam, and admitted that they

would be focusing their attention on the exam which awarded the most marks towards their degree classification. They did however concede that at this stage of their degree every 5% was significant. Academic staff pre-OSCE felt that 5% was appropriate as this was a new assessment format for both the teaching staff and students alike with fears that the students' anxiety would have an influence on their performance in this exam due to their unfamiliarity with the examination format. Although colleagues have described introducing OSCEs into their institutions (Corbo, et al, 2006) they have not provided details of the contribution the assessment made towards module credits. For future years, some staff felt that this value needed to be increased as it offers a unique evaluation of student performance with patients which is traditionally difficult to ascertain by other methods of assessment (Monaghan, Vanderbush & McKay, 1995; Kirton & Kravitz, 2011). Some authors have voiced concerns regarding the use of OSCE as a measurement of true performance, particularly in relation to patient rapport and altruism (Ruedy, 2007). This was echoed by some student participants in this group who describe their acute awareness of the 'role-play' nature of the interaction, arguing they would not react in this manner in a real patient encounter. The role of OSCE appears to overlap with the development of clinical skills as well as its role in assessment (Miller, 1990; Hastings et al, 2010; Salinitri et al, 2012).

Post-OSCE, student views were mixed. Those who performed poorly reported feeling relieved that the exam had a low grade attached whilst acknowledging that if the OSCE had had a greater value they would have increased their effort accordingly. One student argued that OSCE should be worth at least the same as any other piece of coursework (10 to 20% of the module) in order for students to place sufficient emphasis upon it.

A number of academic stakeholders (n = 6) argued a strong case for parity between the 'value' or weighting of the OSCE compared to assessments of community pharmacy practice (PP, RTS). Community pharmacy practice is taught in a number of modules throughout third and fourth year of the MPharm at QUB. One academic participant identified that this emphasis reflects the amount of time spent teaching these skills, that is, weekly classes for three years for community practice versus the three weeks in the whole MPharm for hospital based clinical skills. Students interviewed suggested the early introduction of OSCE in order to facilitate student

familiarity, increasing the complexity and value of the assessment as the course progresses. The academic team at QUB have gained in experience and confidence with OSCE since 2010-11 and from 2012-13 the School of Pharmacy has introduced OSCEs into each year of the degree in a number of different practice subjects.

6.5.4. The integrated degree

Recognising some of the issues which have arisen with the traditional MPharm curriculum, the Modernising Pharmacy Careers (MPC) board has been reviewing evidence for a new structure which will encompass the pre-registration year (MPC, 2011). The current MPC proposal suggests an integrated 5 year degree after which students will graduate and register as a pharmacist simultaneously (Guile & Ahamed, 2011). One of the benefits of this is thought to be the promotion of vertical and horizontal integration (Dahle, et al, 2002) where students are more likely to foster a deep understanding as opposed to rote learning and superficial knowledge promoted by the modular approach, as they would participate in two six month work placements during the five years as well as shorter community and hospital placements. As this concept is relatively new and the focus has largely been on the English universities, academic participants were supportive of the concept which appeared to promote a better-rounded graduate but were skeptical that the wider pharmacy family of employers in primary and secondary care would come to an agreement with the universities to enable its delivery. Although purposive sampling was used for this study, respondents largely represented pharmacy academic staff working in community or hospital practice (n=13) as opposed to pharmaceutical science, which may have influenced their opinions regarding an increased emphasis on the teaching of clinical practice. Some academic participants believed that the profession needed to liaise closely with other healthcare profession colleagues such as nursing to avoid some of the pitfalls of managing large amounts of experiential learning, including variation between placement quality from experiential site to site and tutor to tutor and the requirement for validation of sites and tutors by academic staff instead of the regulator. Student participants held a range of opinions, with some welcoming the extra year to develop their pharmacy practice and communication skills whilst others believed that the increased length of the course would have put them off applying in the first place. Other students were also against the five year proposal but for economic reasons as it may require an additional year of student fees, although the

MPC have not released their funding strategy at this time. The integrated MPharm proposal has been endorsed by the Government in their paper 'Liberating the NHS: Developing the Healthcare Workforce' (DOH, 2012) where they confirm that if a sustainable and cost-neutral proposal can be agreed, they will support a five year degree.

6.6 Transferability of the findings of this research

This chapter has discussed the findings from both chapter 4 and 5 in light of the evidence base for OSCE, with particular emphasis on its use in a pharmacy setting. Although this case study was intended to illuminate the specific issues of the environment in which the case study was conducted, due to the similarity in both degree structure as well as student body characteristics, certain aspects of this work may be transferable to other Schools of Pharmacy and the accrediting bodies for Pharmacy within the UK who are considering the introduction of OSCE as a method to determine competence post registration similar to the Canadian model (Austin et al, 2003). Qualitative research, including case studies, are context specific and consequently do not strive to produce generalisable findings. The goal is to facilitate a deep understanding of the phenomenon with the use of purposive sampling to provide a broad range of perspectives on the topic. As a direct consequence of the depth of understanding uncovered, insights from qualitative work are often valuable to other researchers from both a qualitative and a quantitative theoretical standpoint. The clear and detailed description of the methods, analysis and findings should support others to determine the extent to which the findings are applicable to their environment. This transferability to other settings has been described by some authors as 'theoretical' generalisation (Rolfe, 2006; Robson, 2011). The dependability of this research will be defined by the readership, if their interpretation of the data meets that of the researcher or not.

Chapter 7

Study strengths, limitations and further study opportunities

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A number of areas of strength have been identified as well as a number of areas for improvement. This chapter highlights these issues as well as provide some suggestions for future study.

7.1. Strengths

This case study has identified that OSCE is believed (by participants) to achieve appropriate evaluation of clinical skills by pharmacy undergraduates, alongside existing examinations. As a consequence of the qualitative design it was possible to describe this complex phenomena from a number of perspectives; the curriculum as *written*, *taught* and *lived* and using the hermeneutic circle (Gadamer, 2004). The 'parts' were analysed individually and then brought together to create a richer understanding of the use of OSCE in QUB MPharm. This process also highlighted the implications of introducing a new assessment method on the curriculum itself as well as the teaching methods employed with the QUB MPharm.

The data analysed in this study included participants own words, either written from the curriculum documentation or oral, via interview transcripts and as such is presented in their own “categories of meaning”. This glimpse into the curriculum as written, lived and taught via participants own experiences of the phenomena shaped the researcher’s understanding, providing the elusive “insider” viewpoint. Conclusions drawn from this work have helped to guide the integration of OSCE into the QUB MPharm with the unforeseen advantage of increased awareness of the use of OSCE amongst academic staff following their engagement in the study.

The investigator worked as a sole researcher conducting all of the focus groups and interviews, transcribing all audio files verbatim and undertaking all of the analysis on the transcripts as well as the documentary analysis. A second researcher was employed to perform independent coding on both undergraduate and academic transcripts which imparts a high standard of rigour and trustworthiness with the data produced. Reliability of the data collected was also enhanced by the use of triangulation. Methodological triangulation was achieved via the use of literature review, a documentary analysis of the MPharm curriculum and focus group interviews with stakeholders. Time triangulation was achieved as the focus groups were undertaken prior to and post the OSCE assessment. Investigator triangulation was accomplished as an observer (RM) was in attendance for all undergraduate focus groups to reduce the potential biases which an individual researcher may bring to data collection and analysis (Cohen, Mannion & Morrison, 2003). A second researcher developed a separate coding frame for all data collected from interviews and focus groups (RM, LE) as well as for the documentary analysis (KP).

All participants were invited to comment on the initial transcripts via respondent validation and thereafter were welcomed to confirm the analysis as well as the findings chapter, although few commented beyond the initial transcription. Kitto, Chesters and Grbich (2008) admit that respondent validation has limitations due to the time commitment expected by participants in the reading of thesis drafts as well as the evolution of participants’ views during the research period, perhaps due to participation in the research, which could alter their interpretations. The use of respondents’ comments was limited within the research to that of ‘accuracy checking’ of transcription and initial interpretations.

The researcher was well known to participants prior to the study as either a colleague or a teacher, this could have created conflict. However, these relationships were crucial to securing the participation of both academic staff and undergraduates in this research. In fact, the researcher's intimate knowledge of the context of the research study and its setting has added to her ability to interpret nuances of participants views and has helped shape the interpretation of the data collected into the whole presented here in this thesis. Ferraris (1996) defined hermeneutics as "*the art of interpretation as transformation*" as he contrasts it with the traditional positivist view that the researcher must remain apart from the phenomenon under observation. Another advantage of the researcher's job within the School of Pharmacy in the conduction of this research was the ability to be responsive to last minute changes which occurred. For example, the timing of the OSCE which was originally scheduled for March 2011 but was changed to December 2010, weeks prior to the start of the research.

7.2 Limitations

The lack of engagement of science based academic staff was discouraging. This study invited all pharmacists on the academic team at QUB as well as all demonstrators and technical staff who participated in the running of the OSCEs. Only one science based member of academic staff participated in the focus groups with those declining to participate citing their lack of experience with OSCE as their reason for non-attendance. OSCE is designed to evaluate performance of clinical skills which are taught by the practice pharmacist team (who fully engaged in this project) however the presence of experienced academics, regardless of their background, may have enriched the discussion and offered alternative perspectives on the themes emerging.

All focus groups and interviews were transcribed as faithfully as possible, however some audio files were inaudible, for example; participants spoke simultaneously or noise pollution led to some data being uninterpretable. These lost fragments of data were identified in the transcripts during the transcribing process as detailed in Chapter 3. Many of the themes discussed were duplicated in further focus groups and it is unlikely that these comments would have affected the conclusions of this research.

Although the research study was iterative and the researcher moved between sampling, data collection and analysis and back again this process was limited by the time scale of the research study. Ethical approval was granted in October 2010 and the students participated in the OSCE on the 8th and 16th December 2010 respectively, necessitating a rapid dissemination of information regarding the study as well as recruitment and conduction of focus groups and interviews prior to the OSCE. All of the pre-OSCE focus groups were analysed prior to the post-OSCE focus groups and with knowledge of student views regarding their anticipation of OSCE the researcher was able to reveal these to participants in post-OSCE focus groups and record their subsequent responses.

The short turnaround time in which to complete 6 focus groups and 2 interviews necessitated the postponement of the documentary analysis of the MPharm curriculum (originally intended to be completed prior to the focus groups) to after the data collection and analysis period. This was unavoidable but unfortunate as an in depth knowledge of the curriculum prior to the interviews would have enriched the topic guide and the researcher's ability to probe participants on subtleties of the curriculum of which she was unaware. None of the documents analysed in the documentary analysis were designed for the research study and consequently much of the data reviewed in this analysis was superfluous to the research question, however the analysis provided rich context regarding the learning milieu which was unobtainable from any other source.

7.3 Recommendations

The use of OSCE has been recognised by participants in this study as not only fit for purpose but valuable, offering a unique perspective to determining undergraduate pharmacy student competence. The undergraduate and academic participants were supportive of the use of OSCE within the QUB MPharm albeit with some provisos towards the restructure of the MPharm and the OSCE delivery itself.

7.3.1 Constructive alignment (Biggs, 1999) of teaching, learning and assessment (TLA)

The teaching, learning and assessment methods need to be “seamlessly inter-related” (Rust, 2002) through the MPharm via the concept of horizontal and vertical integration.

This integration should scaffold student learning of science and practice in tandem and via a spiral curriculum, revisit topics in ever increasing depth and complexity as the degree progresses. A structured programme of OSCE should be implemented from the first year to introduce students to the requirement for evaluation of their performance from early in their careers with an increasing emphasis on the value of OSCE as students' progress through the MPharm. An integrated approach to TLA should reduce the impact of the modular degree structure on knowledge retention and ultimately application. Some progress has already been taken towards this goal for the accreditation in 2012 but further work is required to achieve a fully integrated course. Integration, in relation to clinical pharmacy skills, could begin with the closer working between the community and hospital pharmacy practice teams. If closer associations were represented by academic role models and clearer opportunities for transfer of skills were highlighted between the areas of practice this may improve student knowledge transfer. The proposed module would be just 'Practice' with no requirement for a prefix of hospital or community.

7.3.2 Review of the OSCE set-up

This was the first time that any of the academic staff had developed and coordinated an OSCE for this number of students and a few organisational points were identified by both student and academic participants which will need to be addressed prior to the subsequent use of OSCE;

- (i) Staff and students retained doubts regarding the equivalence of rotated stations despite the mapping of competencies. The OSCE Development Team need to consider whether a content rotation approach is appropriate or if the academic team should address student collusion and the unprofessional behaviour that it may foster.
- (ii) The OSCE literature generally accepts that between 12 – 15 stations are essential in order to ensure the reliability of the results achieved. Academic stakeholders were reluctant to increase stations numbers due to the impact on manpower required to design, deliver and evaluate this size of examination for a large group of students however if OSCE is to become more "high stakes" this is an inevitable progression. If the concept of a "Practice" module is adopted this will not only increase the scenarios available for OSCE examination e.g. dispensing of medicines,

over the counter sales, responding to symptoms as well as pharmacist prescribing but it will also increase the pool of academic staff available to author and facilitate the running of the OSCE itself. This has been initiated in the academic year 2012-13 with 8 stations and is planned for March 2013-14 also, again with 8 stations.

- (iii) The layout of the room enabled students to overhear their colleagues' performances, either prior to their own completion of this station or afterwards. Both were discussed in focus groups and students reported this broke their concentration during the task. One solution is to run all oral stations in one area and all written stations in another. This approach assumes that all candidates will be speaking at the same time and so will be less likely to concentrate on their colleagues performances. However, if two examination rooms are required simultaneously, this will increase manpower requirements and also increase the likelihood of a breach of confidentiality as students move from site to site. As the number of stations increases a larger venue will be required and this may reduce noise pollution even if both oral and written stations remain in the same location. In March 2013/14, all students will be required to wear ear protection at written stations and at verbal stations until they begin to speak.
- (iv) Hall, Hanna and Quinn (2012) found that there were inconsistencies relating to the provision of feedback from academic staff to pharmacy students at QUB, particularly in relation to examination feedback. Participants in this study debated the benefits of immediate feedback however it may affect the running of the examination and ultimately student performance. One method of addressing this may be to hold a feedback workshop soon after the examination with stations and props available for students to receive group and individual feedback on their performance.

7.3.3 Improve quality assurance of experiential learning

The TP Team and community practice academic staff need to ensure that the effectiveness of experiential learning, both in primary and secondary care, is uniform and progressive throughout the 4 years of the MPharm. Some discrepancies in

student experience were described despite the current quality assurance processes in place. Existing pharmacist tutors (in hospital) attend a 'Train the Trainers' course every 3 years which provides training for clinical staff in small group teaching, feedback and assessment however inconsistencies occur in student experience and satisfaction with their teaching and feedback. The use of a more formal approach to 'Train the Trainers' which includes assessment, perhaps by OSCE, of the pharmacist tutors may help to standardise student experience between tutors and hospital sites. The adoption of the Knowledge and Skills Framework (KSF) for pharmacists in NI along with the associated annual appraisal would support the requirement for all hospital pharmacists to provide education, however currently recruitment of tutors is entirely supported by good will and consequently this may be difficult to achieve.

7.3.4 Simulation prior to experiential learning

In order to maximise the existing resources and address the need to increase pharmacy undergraduate inter-professional learning opportunities, academic staff and students need to engage with simulation prior to interacting with real patients in either primary or secondary care. Evidence from other healthcare professions (Ahlberg, et al, 2007; Van Sickle, et al, 2008; Wayne, et al, 2008) supports the premise that HCPs who have been trained to proficiency on suitable simulators are less likely to commit errors when completing the same procedures on real patients for the first time. Traditionally pharmacy undergraduates have used simulation to a limited degree; for example blood pressure technique (Lee, Sobieraj & Kuti, 2010) whereas with the development of improved simulation (Seybert, 2011; Branch, 2013) and virtual patients (Benedict, 2010; Sansom & Cox, 2013) as well as an evolution in the role of pharmacists in the healthcare team the opportunities for simulation are infinite. QUB have submitted an inter-professional proposal for funding to construct the Centre for Clinical Skills and Simulation Training (CSST) including requirements for pharmacy undergraduate and postgraduate teaching within this business case. Access to opportunities for simulation with (virtual) patients as well as HCP colleagues in a non judgemental environment prior to experiential learning should increase student confidence in their clinical skills and also reduce the pressure on pharmacist tutors in the hospital environment, although Sansom and Cox (2013) warn against replacing patient-based experience entirely with simulation.

7.3.5 HEFCE A funding

Currently pharmacy is funded exclusively at HEFCE band B for laboratory work which is substantially lower (approximately 2.5 times lower) than band A funding for clinical work. Pharmacists' roles are becoming increasingly clinical in order to embrace the demands of patients both in community and hospital practice however this has not been recognised in relation to funding for improved clinical training by HEFCE. As described in chapter 4 and 6 undergraduate students require more and regular exposure to patients during structured experiential placement in order to prepare them for their future roles and to enable the profession to evolve further. This work cannot be funded via band B. Medical and dental students have enjoyed band A funding as well as substantial NHS funding which has facilitated their integrated experiential training throughout their degree programmes. If pharmacy education is expected improve the quality of experiential learning in order to produce adequately trained professionals fit for practice on graduation, the MPharm degree needs to attract HEFCE band A funding prior to integration to a 5 year course.

7.4 Opportunities for further research

Pharmacy has evolved as a healthcare profession with a clear responsibility for patient safety in relation to medicines use and misuse over the past 20 years. This mantle of public responsibility coupled with the ongoing work of both pharmacy regulators (GPhC and PSNI) as well as the Modernising Pharmacy Careers (MPC) board elevates the significance of implementing a robust assessment of pharmacist competence. OSCEs have been used to evaluate the performance of healthcare professional colleagues for almost 40 years (Harden, 1975) and have been employed in the revalidation of pharmacists in Canada for the past 10 years (Austin, et al, 2003).

Longitudinal study of student opinions of OSCE

1. A longitudinal version of this study considering students impressions of OSCE on entry into the MPharm and investigating the influences on their opinion and experience of OSCE as they progress through the degree. This would enable a global view of the influence of academic staff, curriculum, experiential learning as well as the hidden curriculum of knowledgeable peers and personal experiences to be evaluated. The results of this study could support a curriculum review of the

MPharm to further enhance modular integration and ultimately student performance in clinical skills.

Comparing existing degree structure with proposed integrated degree

2. MPC workstream 1 have recommended the implementation of a 5 year integrated degree course. This will require a reengineering of experiential placements for all pharmacy undergraduates and (currently) within the existing limited budget. The drivers behind the embedding of the pre-registration year include the belief that pharmacy students will be able to contextualise their learning (MPC, 2011) and achieve competence in performance during the MPharm as opposed to after graduation. A study designed to compare the existing 4 plus 1 MPharm design and the proposed 5 year integrated course in relation to student performance would be valuable in relation to the future of pharmacy professional training.

Evaluating the effectiveness of the Train the Trainers course as a support for Pharmacist tutors

3. Pharmacists working in clinical and community practice are essential teachers and role models for undergraduate students, however their participation in education is voluntary and they receive little training for their role. The TP Team currently run a "Train the Trainers" course to provide support for staff, however the development and validation of a bespoke course for practicing pharmacists who provide teaching to undergraduates would assist in the quality assurance of experiential placements. The advent of a 5 year integrated MPharm necessitates the development of a symbiotic relationship between employers and academic staff with increased teaching responsibilities for practice pharmacists and increased evaluation of performance by academic staff. The development of a course, perhaps with the Northern Ireland Centre for Postgraduate Learning and Development (NICPLD), and the evaluation of its appropriateness for pharmacists teaching requirements would help support current undergraduates and pharmacists as well as support the upcoming changes required by all staff for an integrated degree.

Chapter 8

Final reflections and implications for pharmacy

Chapter 8

Final reflections and implications for pharmacy

This study reflects a strong personal interest of the researcher in addition to the clear benefits for Queens University Belfast, however, this final chapter will focus primarily on my final personal reflections and implications for my professional practice.

My dual role as both a teacher and practicing pharmacist lends a unique perspective on the shaping of the QUB MPharm curriculum for future pharmacist professionals. I consider it a great honour to be in a position to advise undergraduates regarding their learning and development as well as their future career paths. There are some drawbacks to this position as I am often viewed as a teacher by those in hospital practice and as a hospital practitioner and not a 'real academic' by those at University. These personal challenges aside, I believe that it is my responsibility as a healthcare professional to ensure that future pharmacists continue to put the patient at the centre of their professional life whether they ultimately deliver direct or indirect patient care. In this final chapter I will reflect on both the data collection process as well as the process of analysis and evaluation.

8.1 The data collection process

Due to the novel nature of this type of assessment for academic staff and undergraduate students alike in the School of Pharmacy, I was keen to determine the fears and expectations of the key stakeholders who would be affected by introducing OSCEs into QUB. I was also determined to compare the curricular intentions to the participant experiences of the curriculum in order to identify any discrepancies or

inconsistencies between student and academic experiences in relation to the acquisition of clinical pharmacy skills. In order to illuminate the participant's opinions with another perspective, I also reviewed the documentation associated with the QUB MPharm degree which laid out how the course *intended* to prepare students for professional practice. As I was the main advocate in the design and implementation of OSCEs into the MPharm course at QUB, I was concerned that many academic colleagues and also undergraduate students would have so little knowledge of this assessment format that it would make the discussions stilted, requiring a lot of explanation and perhaps not a true reflection of their opinions than if they had more experience. This was borne out in a number of situations and these transcripts contain a number of comments by the moderator. However, many academic staff had sufficient knowledge, if not of the OSCE format, but of the design of effective assessments which meant that a lack of detailed knowledge of OSCE did not hinder all aspects of the discussion. Undergraduate participants had participated in numerous simulated clinical experiences and role plays and many had friends who were medical and nursing students and so were well versed in the OSCE concept, if not the practicalities of its use.

The documentary analysis provided useful insights including; reasons for methods of teaching for certain aspects of the curriculum; the timing of topics as well as the details of assessments and feedback provided to students. This furnished me with a different perspective than that provided by the identified participants. The accreditation documentation produced for 2006 provided a mission statement from the QUB curriculum designers which brought together the seemingly disparate strands of the MPharm which are vital to the construction of a future pharmacist. By becoming aware of the intended outcomes of the MPharm course and fleshing out the details with a thorough review of the semester guides and notes, I was able to understand which aspects of the course addressed individual competencies and this facilitated my comparison with the students' perception of the MPharm. This illuminated the curriculum as written compared to the curriculum as experienced by the staff and students within the MPharm. It became clear that performance assessments were not being used within the QUB MPharm despite a number of performance related competencies identified by the RPSGB/PSNI accreditation syllabus.

One drawback of my intimate involvement in the design and co-ordination of the OSCE examination, as well as the 'newness' of the assessment type for undergraduates, was that often the focus groups became diverted onto discussions about how to prepare for OSCE, as well as OSCE station content. I endeavoured to provide brief information to questioners and to respond to individuals after the focus group to allay any concerns or fears they had regarding the assessment. As moderator, I was keen that the discussions would be as productive as possible in as short a period of time as possible so as not to impinge on the other academic and occupational commitments of the participants. I introduced simple ice-breakers on topics that all participants would have a view in order to get the conversation flowing such as '*why have you participated in this research*' and also general discussions about clinical skills and their use in the pharmacy profession. This information is contained in the transcripts although it has not been coded or used in the findings. Although I had previously acted as a moderator during my qualitative MSc project and am an experienced teacher and facilitator, I read a range of qualitative text books to gain tips on facilitation and how to encourage reticent participants and discourage dominant contributors. I was concerned about how to successfully divert the conversation back onto the topic guide when it deviated onto a path that was not part of the research study and I was only successful in this task in some groups. Occasionally my lack of experience meant that participants did not embrace the new topic I had introduced and this led to periods of silence and lack of participation, particularly with the undergraduate students. I was very fortunate that during the undergraduate focus groups I had an observer who was a final year MPharm student and our post-focus group discussions were extremely valuable when attempting to gauge the reasons for differences in group dynamics. For example, we noticed that there were successful wide ranging open discussions in some groups whereas other groups were more difficult to get off the ground. In focus group 1, which was the largest pre-OSCE undergraduate group, the mood of the group was relaxed although some participants took a bit longer to be comfortable with vocalising their opinion than others. The group was a relatively even mix of male and female (3:5) and although the most vocal participant was male, this did not overshadow the second most vocal speaker, who was female. The group, eloquent on a wide range of issues, were keen to provide their opinion on where aspects of clinical teaching and the overall course could be improved, speaking with their personal experience. The provision of coffee and buns helped to make the ambiance

more informal despite the use of a teaching room for the meeting (although this was offered in all undergraduate groups). Focus group 3, a smaller group of 4, with an even mix of male and female (2:2) was not as relaxed as we had experienced in focus group 1. The discussion never became free-flowing and student-led and, as moderator, I had to encourage topics and introduce concepts much more than I had experienced in focus group 1. All of the attendees in focus group 3 admitted that they had largely come along as the observer was their friend and they wanted to help her complete her final year project, and so this may have contributed to the lack of desire for answers that was apparent from this group of students. I also noted that both male students were significantly more dominant than the female students and I noted that the female students were difficult to engage unless prompted to contribute.

The observer and I noted that both focus group 1 and 3 were populated by high achievers in the year group, all of whom were aiming for a first class honours in their degree and this may have influenced their decision to attend, as they may have viewed that any extra information that they could glean about the assessment format may be helpful to achieving their goals. Although I am encouraged by their enthusiasm to support the improvement of the course for others, as it will not influence their experience at QUB, I was concerned that this type of self-selected group may not be representative of the whole year group, many of whom may have completely different views towards competence based assessment. However, the whole year group were invited to attend, these students were not selected for their views. I was heartened by the fact that post-OSCE, a different mix of students attended the focus groups, many of whom, particularly in focus group 8, were not high achievers. This group was predominantly male (5:1) and they reported a much more negative impression of the OSCE experience. The post-OSCE groups had a very open agenda and were largely to re-address some concerns raised pre-OSCE to see if they were still considered valid and also to gauge opinion on areas of improvement for the academic team. I tried to determine the cause of the negative view of the assessment as it did not appear to stem from student performance (as students performed well achieving 60% or higher in their assessment). It was also unusual that this group was largely male and had a more negative view as a recent piece of research with this year group had shown that male students were more predisposed towards OSCEs than female students (McToal et al, 2012, Appendix 22). My conclusion was that their general lack of

familiarity with the OSCE format had led to a lack of confidence in their ability and also a lack of understanding of the nuances of the assessment including the use of patient notes and medication kardexes. Students should have been familiar with these props from hospital placements, however it appeared that this group were still 'surprised' by their presence in the assessment. I sensed an overall lack of preparation for the assessment due to its relatively low value, 5% of one module, and this may also have contributed to their inability to relax and perform competently during the simulated scenarios. Some academic staff also commented that this low value placed on the assessment could signify the level of importance that the QUB academic hierarchy placed upon the clinical skills being assessed in this examination as compared to other practice modules where, for example, dispensing skills in Pharmacy Practice represented 80% of the module and a 50% pass mark. On review of the core MPharm documentation, it is clear that the intention exists that students will use the provided building blocks of knowledge and observed clinical skills to develop their own approach. However, limited opportunities are provided for the practise of clinical skills within the MPharm which may stunt student ability to develop confidence in the pharmaceutical care of patients. When comparing students who receive weekly classes in Pharmacy Practice (PP) in Level 3 and also in Responding to Symptoms (RTS) in Level 4 to just 2 and a half weeks in the whole 4 year degree spent in a hospital environment practising their clinical skills there appears to be a significant sector bias towards community pharmacy. The traditional dispensing and over the counter skills are almost exclusively taught in a role play, simulated environment during PP and RTS and, although experiential learning in a community pharmacist is compulsory for 2 weeks during the degree, this training does not have strict learning outcomes or evaluation, with assessment credit being achieved via a reflective journal. Perhaps the hospital teacher practitioners need to consider how to teach and evaluate more of the student's clinical skills in the University environment, also to reduce the impact of student teaching on the hospital clinical staff.

Some participants, particularly in the undergraduate focus groups, took the opportunity to explore their views regarding the MPharm course structure inadequacies and their perceived lack of preparation for entering into the profession of pharmacy. Acting as moderator, I compared and contrasted the opinions generated by students, academic staff and the MPharm documentation in order to present the parts as a whole.

Gadamer (2004) believed that the hermeneutic circle of interpretation is ongoing with a perpetual movement of understanding from the whole to the part and back to the whole. He emphasised the need for researchers to acknowledge their preconceptions as part of the interpretative process of hermeneutics and encouraged a 'fusion of horizons' where the researcher acts as a conduit and presents the past and the present together and suggests a way forward for the future.

According to van Manen (1997), within the hermeneutic interview the researcher is expected to keep the question 'what is the meaning of this phenomenon' open and in mind. Heidegger (1962) emphasised the ontological perspective of hermeneutics by suggesting that the researchers needed to understand the 'theory of being' or '*dasein*', believing that this happened prior to reflection. One aspect of undertaking a hermeneutic phenomenological inquiry requires the researcher to have an understanding of the philosophical thinking on which the research is based and consistent with Heidegger, I believed that my preconceptions should not be 'bracketed' in order to study the participants, rather that my experiences and 'past' helped to interpret the experiences of the participants 'present' and generate the 'future'. My familiarity and empathy with the participants; in relation to academic workload and teaching aided in the development of a rapport and a level of trust necessary for in-depth discussion. It also stimulated honest conversations with the implicit acceptance that I understood participants' perspective and would candidly represent their opinions without the need for them to provide lengthy explanation. Other researchers, for example Hirsh (1995), suggested that a more insightful answer is often generated when the interviewer is able to demonstrate a significant level of experience and understanding of the topic being investigated. Hirsh (1995) observed that a researcher who is not viewed as knowledgeable in the topic under investigation can have difficulty inspiring the respect of the participants and consequently gaining open and honest discussion. Green & Thorogood (2009) however describe that an 'expert' in the topic under discussion may inhibit participants, as they may defer to that person's superior knowledge, so a happy medium with the moderator having a good working knowledge of the subject without intimidating participants appears to be the balance to strive for. Krueger & Casey (2009) agree, contending that a vital key to focus group success is the moderator's respect for the participants opinions.

Although the documents evaluated for this project were all used within the MPharm degree course, they were not designed to fit the subject of this study and I found it challenging to identify how they helped illuminate the 'curriculum as written' and to glean what unique perspective was offered to the reader of this research. Some documents were also a few years out of date (accreditation documents written 2006) and were updated in the 2011-12 academic year for the accreditation in May 2012. Despite this, immersion in the documentation designed to support the MPharm enabled a deeper grasp of the curriculum as written than I had previously held, despite teaching on the course for more than 7 years. Knowledge of the core aims, particularly learning outcomes for the MPharm, facilitated a broader breadth of understanding regarding the construction of modules and assessments.

8.2 Analysis and evaluation

After immersing myself in the QUB MPharm curriculum in order to construct the thesis presented to you, I believe that a redesign of the curriculum is essential in order to ensure that undergraduate pharmacists can relate their learning from all modules taught to individual patient care. The existing MPharm retains a heavy emphasis on pharmaceutical science, which is undoubtedly vital to the construction of a viable pharmacist, however clear signposting of its application in the professional practice of most pharmacists is largely absent. I believe that the introduction of OSCE as an assessment method was the first step in the review of the teaching of clinical skills throughout the MPharm in order to adequately prepare students to provide pharmaceutical care and interact appropriately with both patients and other healthcare professionals. Participation in this study has shaped my own view of the QUB MPharm and has facilitated a change in teaching within the TP Team including the introduction of clinical skills to the second year placement as well as assessment via OSCE (from 2011/12). My ongoing reflection on this study will help to ensure that I continue to listen to all of the stakeholders; students, academic staff as well as hospital pharmacists teaching during experiential placements. Their insights have led to a number of changes to both teaching and assessment within the MPharm and will continue to inspire me to seek better methods to teach patient care.

When starting this research, I hoped that the introduction of a performance based assessment such as OSCE would prove to be a more appropriate method of

determining student competence that the existing model, an essay. After completing this work, I understand that the introduction of an assessment alone cannot single-handedly achieve a dramatic change in student ability to develop clinical skills. What the OSCE *has* highlighted are the gaps in the MPharm curriculum where students are unable to transfer learning into practice. Engagement in the research project has also raised the awareness of academic staff outside of the TP Team in the usefulness of this type of assessment as well as the work conducted by students during their experiential placements. This has led to the development of the first combined 'practice' OSCE which was conducted in May 2013. Within this assessment, fourth year undergraduates completed 8 stations addressing competencies from 4 modules; Pharmacotherapy, Pharmacy Practice, Responding To Symptoms and Pharmacist Prescribing. Students were required to pass this assessment in order to graduate from the MPharm. This collaborative working between the community and hospital practice teams will continue over the next few years and will help to support a cohesive approach to the teaching of pharmacy practice so that undergraduate students will learn from us, academic practice staff, that the 'community versus hospital' divide is not as large as they may imagine. This can only be to the benefit of patient care.

References

- Adamo, G., 2003. Simulated and standardised patients in OSCEs: achievements and challenges 1992 – 2003. *Medical Teacher*, 25 (3), p.p. 262 – 270.
- Agomo, C.O., 2012. Why UK Pharmacy must adapt to the increasing demands of professionalism in practice. *International Journal of Pharmacy Practice*, 20, p.p. 320 – 323.
- Ahlberg, G., Enochsson, L., Gallagher, A.G., Hedman, L., Hogman, C., McClusky, D.A., Ramel, S., Smith, C.D. and Arvidsson, D., 2007. Proficiency-based virtual reality training significantly reduces error rate for residents during their first 10 laparoscopic cholecystectomies. *The American Journal of Surgery*, 193, p.p. 797 – 804.
- Aiken, C. and Keller, S., 2009. The irrational side of change management. *McKinsey Quarterly*, 2, p.p. 100 – 109.
- Alinier, G., 2003. 1. *Nurse Education Today*, 23 (6), p.p. 419 - 426.
- Allen, R., Heard, J., Savidge, M., Bittingle, J., Cantrell, M. and Huffmaster, T., 1998. Surveying students' attitudes during the OSCE. *Advances in Health Sciences Education*, 3. p.p. 197 – 206.
- Anderson, E.S. and Lennox, A. (2009). The Leicester Model of inter-professional education: developing, delivering and learning from student voices for 10 years. *Journal of Inter-professional Care*. 23 (6), p.p. 557 – 573.
- Anderson, S., 2005. *Making Medicines. A brief history of pharmacy and pharmaceuticals*. London-Chicago:Pharmaceutical Press.
- Anderson, S., 2011. Future Pharmacists: past imperfect, present tense, tomorrow uncertain. *The Pharmaceutical Journal*, 286, p. 162.
- Anderson, M. and Stickley, T., 2002. Finding Reality: the use of objective structured clinical examination (OSCE) in the assessment of mental health nursing students' interpersonal skills. *Nurse Education in Practice*, 2, p.p. 160 – 168.
- Appleton, J.V. and Cowley, S., 1997. Analysing clinical practice guidelines. A method of documentary analysis. *Journal of Advanced Nursing*. 25, p.p. 1008 - 1017.
- Arnold, R.C. and Walmsley, A.D., 2008. The use of the OSCE in postgraduate education. *European Journal of Dental Education*, 12, p.p. 126 - 130.
- Aspegren, K., 1999. Best Evidence Medical Education (BEME) Guide No. 2: Teaching and learning communication skills in medicine - a review with quality grading of articles. *Medical Teacher*, 21, p.p. 563 - 570.

Auewarakul, C., Downing, S.M., Jaturatamrong, U. and Praditsuwan, R., 2005. Sources of validity for an internal medicine student evaluation system: an evaluative study of assessment methods. *Medical Education*, 10 (1), p.p. 37 - 51.

Austin, Z., O'Byrne, C., Pugsley, J. and Quero Munoz, L., 2003. Development and validation processes for an objective structured clinical examination (OSCE) for entry-to-practice certification in pharmacy: the Canadian experience. *American Journal of Pharmaceutical Education*, 67 (3), Article 76.

Austin, Z., Gregory, P. and Tabak, D., 2006. Simulated patients versus standardized patients in Objective Structured Clinical Examination. *American Journal of Pharmaceutical Education*, 70 (5), Article 119.

Awaisu, A., Mohamed, M.H.N. and Mohammad, Q.A., 2007. Perception of Pharmacy Students in Malaysia on the Use of Objective Structured Clinical Examinations to Evaluate Competence. *American Journal of Pharmaceutical Education*, 71 (6), Article 118.

Awaisu, A., Abd Rahman, N.S., Nik Mohamed, M.H., Rahman Bux, S.H.B. and Nazar, N.I.M., 2010. Malaysian Pharmacy Students' Assessment of an Objective Structured Clinical Examination (OSCE). *American Journal of Pharmaceutical Education*, 74 (2), Article 34.

Awaisu, A. and Mohamed, M.H.N., 2010. Advances in Pharmacy education: An experience with the development and implementation of an Objective Structured Clinical Examination (OSCE) in an undergraduate pharmacy program. *Pharmacy Education*, 10 (1), p.p. 32 – 38.

Badger, L.W. and MacNeil, G., 2002. Standardised clients in the classroom: a novel instructional technique for social work educators. *Research on Social Work Practice*. 12 (3), p.p. 364 - 374.

Baig, L.A., Violato, C. and Crutcher, R.A., 2009. Assessing clinical communication skills in physicians: are the skills context specific or generalizable? *BMC Medical Education*. 9 (22), p.p. 1 – 7.

Baird, L.L., 1985. Do grades and tests predict adult accomplishment? *Research in Higher Education*, 23 (1), p.p. 3 – 85.

Barber, N., 2001. Pharmaceutical care and Medicines Management – is there a difference? *Pharmacy World and Science*, 23 (6), p.p. 210 - 211.

Barrows, H.S., 1993. An overview of the uses of standardised patients for teaching and evaluating clinical skills. *Academic Medicine*, 68 (6), p.p. 443 - 453.

Barrows, H.S. and Abrahamson, S., 1964. The programmed patient: a technique for appraising student performance in clinical neurology. *The Journal of Medical Education*, 39 (8), p.p. 802 - 805.

Bartfay, W., Rombough, R., Howse, E. and Leblanc, R., 2004. The OSCE approach in nursing education. *Canadian Nurse*. 100 (3), p.p. 19 – 23.

Beck, D.E., Boh, L.E. and O'Sullivan, P.S., 1995. Evaluation of student performance in experiential settings with confidence. *American Journal of Pharmaceutical Education*, 59, p.p. 236 – 247.

Beer, M. and Nohria, N., 2001. Cracking the code of change. *Harvard Business Review*, 74, p.p. 65 – 77.

Benedict, N., 2010. Virtual patients and problem-based learning in advanced therapeutics. *American Journal of Pharmaceutical Education*, 74 (8), Article 143.

Bergus, G.R. and Krieter, C.D., 2007. The reliability of summative judgements based on objective structured clinical examination cases distributed across the clinical ear. *Medical Education*, 41 (7), p.p. 661 - 666.

Bernsten, C., Bjorkman, I., Caramona, M., Crealey, G., FrØkjaer, B., Grundberger, E., Gustafsson, T., Henman, M., Herborg, H., Hughes, C., McElnay, J., Magner, M., van Mil, F., Schaeffer, M., Silva, S., Sondergaard, B., Sturgess, I., Tromp, D., Vivero, L., Winterstein, A; Pharmaceutical care of the Elderly in Europe Research (PEER) Group, 2001. Improving the well-being of elderly patients via community pharmacy-based provision of pharmaceutical care: a multicentre study in seven European countries. *Drugs Aging*, 18 (1), p.p. 63 – 77.

Bhavsar, V.M., Bird, E. and Anderson, H.M., 2007. Pharmacy students focus groups for formative evaluation of the learning environment. *American Journal of Pharmaceutical Education*, 71 (2), Article 22.

Biggs, J., 1999. What the student does; Teaching for enhanced learning. *Higher Education Research and Development*, 18 (1), p.p. 57 – 75.

Biggs, J., 2003. *Teaching for quality learning at university*. Buckingham, UK:Open University Press/SHRE.

Blouin, R.A., Riffée, W.H., Robinston, E.T., Beck, D.E., Green, C., Joyner, P.U., Persky, A.M. and Pollack, G.M., 2009. Roles of innovation in education delivery. *American Journal of Pharmaceutical Education*, 73 (8), Article 154.

Bokken, L., Rethmans, J.J., van Heurn, L., Duvivier, R., Scherphier, A. and van der Vleuten, C., 2009. Students' views on the use of real patients and simulated patients in undergraduate medical education. *Academic Medicine*, 84 (7), p.p. 958 – 963.

Bouriscot, K. and Roberts, T., 2006. Setting standards in a professional higher education course: defining the concept of the minimally competent student in performance based assessment at the level of graduation from medical school. *Higher Education Quarterly*, 60, p.p. 74 – 90.

Bradford University, 2013. A career in Pharmacy. Accessed on 28th February 2014. Available on: www.bradford.ac.uk/life-sciences/careers-employability/pharmacy/

Bradley, P. and Bligh, J., 1999. One year's experience with a clinical skills resource centre. *Medical Education*, 33 (2), p.p. 114 – 120.

Branch, C., 2013. Pharmacy students learning and satisfaction with high fidelity simulation to teach drug-induced dyspepsia. *American Journal of Pharmaceutical Education*, 77 (2), Article 30.

Branch, C., Apampa, B. and Gill, T., 2011. Can you learn from a dummy? Pharmacy students' views and perceptions of SimMan, a human patient simulator. *Pharmacy Education*, 11 (1).

Brand, H.S. and Schoonheim-Klein, M., 2009. Is the OSCE more stressful? Examination anxiety and its consequences in different assessment methods in dental education. *European Journal of Dental Education*, 13, p.p. 147 – 153.

Brazeau, C. and Boyd, L., 2002. Changing an existing OSCE to a teaching tool: the making of a teaching OSCE. *Academic Medicine*, 77 (9), p. 932.

Brewin, J. and Cantwell, R., 1997. Implementing the OSCE in Nottingham. *Psychiatric Bulletin*, 21, p.p. 30 - 32.

Brodie, P. and Irving, K., 2007. Assessment in work-based learning: investigating a pedagogical approach to enhance student learning. *Assessment and Evaluation in Higher Education*, 32 (1), p.p. 11 -19.

Brosnan, M., Evans, W., Brosnan, E. and Brown, G., 2006. Implementing objective structured clinical skills evaluation (OSCE) in nurse registration programmes in a centre in Ireland: A utilisation focused evaluation. *Nurse Education Today*, 26, p.p. 115 – 122.

Brown, D. and Ferrill, M.J., 2009. The Taxonomy of professionalism: reframing the academic pursuit of professional development. *American Journal of Pharmaceutical Education*, 73 (4), Article 68.

Brown, G., Manogue, M. and Martin, M., 1999. The validity and reliability of an OSCE in dentistry. *European Journal of Dental Education*, 3 (3), p.p. 117 - 125.

Bryan, C. and Clegg, K., 2006. *Innovative assessment in Higher Education*. London:Routledge.

Burnes, B., 2004. Kurt Lewin and the Planned Approach to Change: A Re-appraisal. *Journal of Management Studies*. 41 (6), p.p. 977 – 1002.

Buyx, A.M., Maxwell, B. and Schöne-Seifert., 2008. Challenges of educating for medical professionalism:who should step up to the line? *Medical Education*, 42, p.p. 758 – 764.

Byrne, E. and Smyth, S., 2008. Lecturers' experiences and perspectives of using an objective structured clinical examination. *Nurse Education in Practice*, 8, p.p. 283 – 289.

Cadman, K., Clack, E., Lethbridge, Z., Millward, J. and Redwood, R., 2003. Reflection: a casualty of modularisation. *Nurse Education Today*, 32, p.p. 11 – 18.

Campion, M.A., Campion, J.E. and Hudson, J.P. Jr., 1994. Structured Interviewing: A Note on Incremental Validity and Alternative Question Types. *Journal of Applied Psychology*, 79 (6), p.p. 998 - 1002.

Carlson, J., Tomkowiak, J. and Stilp, C., 2009. Using the Angoff method to set defensible cutoff scores for standardised patient performance evaluation in physician assistant education. *Journal of Physician Assistant Education*, 20 (1), p.p. 15 – 23.

Carr, S., 2004. Assessing clinical competency in medical senior house officers: how and why should we do it? *Postgraduate Medical Journal*. 80, p.p. 63 – 66.

Carter B.L., Ardery, G., Dawson, J.D., James, P.A., Bergus, G.R., Doucette, W.R., Chrischilles, E.A., Franciscus, C.L. and Xu, Y., 2009. Physician and Pharmacist collaboration to improve blood pressure control. *Archives of Internal Medicine*, 169 (21), p.p. 1996 – 2002.

Chaikoolvatana, A. and Goodyer, L., 2003. Evaluation of a multimedia case history simulation programme for pharmacy students. *American Journal of Pharmaceutical Education*, 67 (1), Article 16.

Chansarkar, B.A. and Raut-Roy, U., 1987. Student performance under different assessment situations. *Assessment and Evaluation in Higher Education*, 12 (2), p.p. 115 – 122.

Chemist and Druggist, 2010. *Full Elizabeth Lee Verdict Online*. Accessed on 28th February 2014. Available from: www.chemistanddruggist.co.uk/news-content/article_display_list/4185885/41858851

Chisholm, M.A., Cobb, H., Duke, L., McDuffie, C. and Kennedy, W.K., 2006. Development of an instrument to measure professionalism. *American Journal of Pharmaceutical Education*, 70 (4), Article 85.

Christakis, D.A. and Feudtner, C., 1993. Ethics in a short white coat: the ethical dilemmas that medical students confront. *Academic Medicine*, 68, p.p. 249 – 254.

Clarke, N., 2008. *Report of the Independent Inquiry into a Professional Body for Pharmacy*. Accessed on 28th February 2014. Available from www.theclarkeinquiry.com.

Clarke, R., 2007. Preparing teachers for work-based teaching and assessing. In: N. Jackson, A. Jamieson, and A. Khan, Eds. *Assessment in Medical Education and Training*. London: Radcliffe Publishing. Chapter 7.

Cleland, J.A., Abe, K. and Rethans, J.J., 2009. Use of simulated patients in Medical Education. AMEE guide 42. *Medical Teacher*, 31 (6), p.p. 477 – 486.

Cohen, L., Manion, L. and Morrison, K., 2003. *Research Methods in Education*. 5th Ed, London:Routledge.

Collet, J.H., Ress, J.A., Mylrea, S. and Crowther, I., 1994. Performance based assessment in pharmacy education. *International Journal of Pharmacy Practice*, 3, p.p. 38 – 41.

Competency and Development Evaluation Group (CODEG), 2013. *General Level Practice*. Accessed on 28th February 2014. Available from: www.codeg.org/frameworks/general-level-practice/

Conway, M.A., Cohen, G. and Stanhope, N., 1992. Why is it that university grades do not predict very long term retention? *Journal of Experimental Psychology: General*, 121 (3), p.p. 49 – 57.

Cooper, R.J., Anderson, C., Avery, T., Bissell, P., Guillaume, L., Hutchinson, A., James, V., Lymn, J., McIntosh, A., Murphy, E., Ratcliffe, J., Read, S. and Ward, P., 2008. Nurse and pharmacist supplementary prescribing in the UK—A thematic review of the literature. *Health Policy*, 85 (3), p.p. 277 – 292.

Corbo, M., Patel, J.P., Abdel Tawab, R. and Davies, J.G., 2006. Evaluating clinical skills of undergraduate pharmacy students using objective structured clinical examinations (OSCEs). *Pharmacy Education*, 6 (1), p.p. 5 - 58.

Cowen, D.L. and Helfand, W.H., 1990. *Pharmacy: an illustrated history*. New York:Harry N. Abrams (ed).

Crossley, J., Humphries, G. and Jolly, B., 2002. Assessing Health Professionals. *Medical Education*, 36, p.p. 800 - 804.

Crotty, M., 1998. *The foundations of social research. Meaning and perspective in the research process*, London:SAGE Publications.

Curran, V.R., Butler, R., Duke, P., Eaton, W.H., Moffatt, S.M., Sherman, G.P. and Pottle, M., 2007. Evaluation of the usefulness of simulated clinical examination in family-medicine residency program. *Medical Teacher*, 29, p.p. 406 – 407.

Cuthbertson, V.L., 2008. Pharmaceutical Care Plan examinations to identify students at risk for poor performance in Advanced Pharmacy Practice Experiences. *American Journal of Pharmaceutical Education*, 72 (5), p. 111.

Daelmans, H.E.M., Hoogenboom, R.J.I., Donker, A.J.M., Scherpbier, A.J.J.A., Stehouwer, C.D.A. and van der Vleuten, C.P.M., 2004. Effectiveness of clinical rotations as a learning environment for achieving competence. *Medical Teacher*, 26 (4), p.p. 305 – 312.

Dahle, L.O., Brynhildsen, J., Behrbohm Fallsberg, M., Rundquist, I. and Hammar, M., 2002. Pros and cons of vertical integration between clinical medicine and basic science within a problem-based undergraduate medical curriculum: examples and experiences from Linköping, Sweden. *Medical Teacher*, 24 (3), p.p. 280 – 285.

Davis, M.H., 2003. OSCE; The Dundee experience. *Medical Teacher*, 25 (3), p.p. 255 - 261.

Davis, M.H. and Harden, R.M., 2003. Planning and implementing an undergraduate medical curriculum; the lessons learned. *Medical Teacher*, 25 (6), p.p. 596 – 608.

Denzin, N.K. and Lincoln, Y.S. (Eds)., 2000. *The handbook of qualitative research*. Thousand Oaks, CA: Sage Publications.

Department of Health., 2001. The expert patient: a new approach to chronic disease management for the 21st century. Accessed on 28th February 2014. Available from www.dh.gov.uk/en/PublicationsandStatistics/Publications/PublicationsPolicyAndGuidance/DH_4006801

Department of Health (DOH)., 2006. *The Regulation of Non-Medical Healthcare Professions (The Foster Review)*. London, H.M.S.O.;The Stationary Office.

Department of Health (DOH)., 2007. *Report of the Working Party on Professional Regulation and Leadership in Pharmacy*. London, H.M.S.O.:The Stationary Office. (DOH, 2007a) (The Clarke Inquiry).

Department of Health (DOH)., 2007. *Trust, Assurance and Safety. The regulation of Health Professionals in the 21st Century*. London, H.M.S.O.:The Stationary Office. (DOH, 2007b)

Department of Health (DOH)., 2008. *Pharmacy in England. Building on Strengths – delivering the future*. London. H.M.S.O.:The Stationary Office.

Department of Health (DOH)., 2012. *Liberating the NHS: Developing the Healthcare Workforce*. London, H.M.S.O.:The Stationary Office.

Department of Health (DOH)., 2013. *Improving the safety of patients in England*. London. H.M.S.O.:The Stationary Office. (The Berwick Report).

Donyai, P., O'Grady, K., Jacklin, A., Barber, N. and Dean-Franklin, B., 2008. The effects of electronic prescribing on the quality of prescribing. *British Journal of Clinical Pharmacology*, 65 (2), p.p. 230 – 237.

Dupras, D.M. and Li, J.T.C., 1995. Use of an objective structured clinical examination to determine clinical competence. *Academic Medicine*, 70, p.p. 1029 – 1034.

Eagles, J.M., Calder, S.A., Nicholl, K.S. and Walker, C.G., 2001. A comparison of real patients, simulated patients and videotaped interview in teaching medical students about alcohol misuse. *Medical Teacher*, 23 (5), p.p. 490 – 493.

Edmunds, H., 2000. *The focus group research handbook*. London:McGraw-Hill.

El-Awady, E.E., Moss, S., Mottram, D. and O'Donnell, J., 2006. Student Perspectives on Pharmacy Curriculum and Instruction in Egyptian Schools. *American Journal of Pharmaceutical Education*, 70 (1), Article 09.

Elston, J. and Fulop, N., 2002. Perceptions of partnership. A documentary analysis of Health Improvement Programmes. *Public Health*, 116, p.p 207 - 213.

Elvin, S., 2011. No HIV consultant on-site? Why not get the pharmacist involved...*Clinical Pharmacist*, 3, p.p. 90 – 91.

Epstein, R.M., 2007. Assessment in Medical Education. *New England Journal of Medicine*, 356, p.p. 387 – 396.

Eva, K. W., Rosenfeld, J, Reiter, H and Norman, G., 2004. An admissions OSCE: the multiple mini-interview. *Medical Education*, 3, p.p. 314 – 326.

Evans, B.W., Alinier, G., Kostrzewski, A.J., Lefteri, K.A. and Dhillon, S., 2011. Development and design of Objective Structured Clinical Examination (OSCE) in undergraduate education in a new School of Pharmacy in England. *Currents in Pharmacy Teaching and Learning*, 3 (3), p.p. 216 – 223.

Evans, B.W., Kravitz, L., and Walker, N., 2013. *Pharmacy OSCEs: A Revision Guide*. London-Chicago:The Pharmaceutical Press.

Feigin, J. R., Orum, A. M., and Sjoberg, G., 1991. *A case for case study*, Chapel Hill:The University of North Carolina Press.

Feingold, C.E., Calaluce, M. and Kallen, M.A., 2004. Computerised patient model and simulated clinical experience: evaluation with baccalaureate nursing students. *Journal of Nursing Education*, 43 (4), p.p. 156 – 163.

Fernandez, R., Parker, D., Kalus, J.S., Miller, D. and Compton, S., 2007. Using a human patient simulation mannequin to teach interdisciplinary team skills to pharmacy students. *American Journal of Pharmaceutical Education*, 71 (3), Article 51.

Ferraris, M., 1996. *History of Hermeneutics*. Atlantic Highlands, New York:Humanities Press.

Fitzgerald, J.T., White, C.B. and Gruppen, L.D., 2003. A longitudinal study of self-assessment accuracy. *Medical Education*, 37 (7), p.p. 645 – 649.

Fletcher, P., 2000. Clinical competence examination; the importance of validity and reliability. *The Clinical Teacher*, 5 (1), p.p. 23 – 27.

Florence, A.T., 2004. If science does not underpin clinical practice, what does? *The Pharmaceutical Journal*, 272 (7301). p. 671.

Fougner, M. and Horntvedt, T., 2011. Students reflections on shadowing inter-professional teamwork: a Norwegian case study. *Journal of Inter-professional Care*, 25 (1), p.p. 33 – 38.

Fox, N.J., Ward, K.J. and O'Rourke, A.J., 2005. 'Expert patients', Pharmaceuticals and the Medical Model of Disease: The Case of Weight Loss Drugs and the Internet. *Social Science & Medicine*, 60 (6), p.p. 1299 – 1309.

Francis, R., 2013. The Mid Staffordshire NHS Foundation Trust Public Inquiry. Accessed on 28th February 2014. Available from: www.midstaffspublicinquiry.com/report

Franklin, P., 2005. OSCEs as a means of assessment for the practice of nurse prescribing. *Nurse Prescribing*, 3 (1), p.p.14 - 23.

Gadamer, H.G., 2004. *Truth and Method*. London:Continuum International Publications Group.

Gallimore, C., George, A.K. and Brown, M.C., 2008. Pharmacy Students' Preferences for Various Types of Simulated Patients. *American Journal of Pharmaceutical Education*, 72 (1), article 01.

Gallup, 2012. Honesty/Ethics in Professions. Accessed on 28th February 2014. Available from: www.gallup.com/poll/1654/honesty-ethics-professions.aspx

Galt KA., 2000. The need to define 'care' in pharmaceutical care: an examination across research, practice and education. *American Journal of Pharmaceutical Education*, 64, p.p. 223 - 233.

Gans, K., 2011. Should you change your thinking about change management?. *Strategic Finance*, October, p.p. 48 – 50.

Gass, J., Banks, D. and Wilson, A.J., 2004. Modularisation – flexible or restrictive professional education. *Nurse Education Today*, 24 (5), p.p. 337 - 343.

General Medical Council, 1993. *Tomorrow's doctors*. London:GMC.

General Medical Council, 2003. *Tomorrow's doctors*. London:GMC.

General Medical Council, 2009. *Tomorrow's doctors*. London:GMC.

General Pharmaceutical Council (2010) Accreditation of Master of Pharmacy degrees. Accessed on 28th February 2014. Available at: <http://www.pharmacyregulation.org/sites/default/files/MPharm%20accreditation%20standards%20and%20indicative%20syllabus%20m.pdf>

General Pharmaceutical Council. (2011). Initial Standards for the Education and Training of Pharmacists. [online] Accessed on 28th February 2014. Available at: http://www.pharmacyregulation.org/regulatingpharmacy/standardsandquality/initial_educationandtrainingforpharmacists/index.aspx

George, S., Haque, M.S. and Oyeboode, F., 2006. Standard setting: comparison of two methods. *BMC Medical Education*, 6 (46), p.p. 1 - 6.

Gerrow, J.D., Murphy, H.J., Boyd, M.A. and Scott, D.A., 2003. Concurrent validity of written and OSCE components of the Canadian Dental Certification Examinations. *Journal of Dental Education*, 67, p.p. 896 – 901.

Gibbs, G. and Simpson, C., 2004-5. Conditions under which assessment supports student learning. *Learning and Teaching in Higher Education*, 1, p.p. 3 – 31.

Gibbs, A., 1997. *Focus Groups*. Accessed on 28th February 2014. Available at: <http://www.sru.soc.surrey.ac.uk/SRU19.html>

Gidman, W., Ward, P. and McGregor, L., 2012. Understanding public trust in services provided by community pharmacists relative to those provided by general practitioners: a qualitative study. *BMJ Open*, 2, p.p. 1 – 9.

Glaser, B. and Strauss, A., 1967. *The Discovery of Grounded Theory*. London:Weidenfeld and Nicolson.

Glick, S., 2001. Cheating at Medical School. *British Medical Journal*, 322, p.p. 250 – 251.

Goldstein, E.A., Maclaren, C.F., Smith, S., Mengert, T.J., Maestas, R.R., Foy, H.M., Wenrich, M.D. and Ramsey, P.G., 2005. Promoting fundamental clinical skills: a competency-based college approach at the University of Washington. *Academic Medicine*, 80 (5), p.p. 423 – 433.

Grand-Maison, P., Lescop, J., Rainsberry, P and Brailovsky, C.A., 1992. Large scale use of an objective structured clinical examination for licensing family physicians. *Canadian Medical Association Journal*, 146, p.p. 1735 - 1740.

Green, J. and Thorogood, N., 2009. *Qualitative Methods for Health Research*, 2nd Ed, London:SAGE Publications.

Greer, L., 2001. Does changing the method of assessment of a module improve the performance of a student? *Assessment and Evaluation in Higher Education*, 26 (2), p.p. 127 – 131.

Guba, E. G., and Lincoln, Y. S., 1981. *Effective evaluation*. San Francisco, CA:Jossey-Bass Publishers.

Guile, D. and Ahamed, F., 2011. *Modernising the Pharmacy Curriculum*. A report for the Modernising Pharmacy Careers Pharmacist Undergraduate education and Pre-registration training review team London: Department of Health.

Gupta, P., Dewan, P. and Singh, T., 2009. Objective Structured Clinical Examination (OSCE) Revisited. *Journal of Postgraduate Medical Education, Training and Research*, 4 (6).

Hagemeier, N.E. and Mason, H.L., 2011. Student pharmacists' perceptions of testing and study strategies. *American Journal of Pharmaceutical Education*, 75 (2), Article 35.

Hall, M., Hanna, LA. and Quinn, S., 2012. Pharmacy Students' views of faculty feedback on academic performance. *American Journal of Pharmaceutical Education*, 76 (1), Article 5.

Ham C. and Alberti, K.G.M.M., 2002. The medical profession, the public, and the government. *British Medical Journal*, 324 (7341), p.p. 838 – 842.

Hameen-Antila, K., Saano, S. and Vainio, K., 2010). Professional competencies learned through working on a Medication Education project. *American Journal of Pharmaceutical Education*, 74 (6), Article 110.

Hammer, D.P., 2000. Professional attitudes and behaviors: the “A’s” and “B’s” of professionalism. *American Journal of Pharmaceutical Education*, 64, p.p. 455 – 464.

Hammer, D.P., Berger, B.A., Beardsley, R.S. and Easton, M.R., 2003. Student professionalism. *American Journal of Pharmaceutical Education*, 67, p.p. 544 – 572.

Hansen, A., Cottle, S., Negrine, R. and Newbold, C., 1998. *Mass Communication Research Methods*. Basingstoke:Macmillan.

Harden, R.M., Stevenson, M., Downne, W.W. and Wilson, G.M., 1975. Assessment of clinical competence using an observed structured clinical examination (OSCE). *British Medical Journal*, 1, p.p. 447- 451.

Harden, R.M. and Gleeson, F.A., 1979. Assessment of clinical competence using an objective structured clinical examination (OSCE). *Medical Education*, 13, p.p. 41 - 54.

Harden, R.M., 1990. Twelve tips for organizing an objective structured clinical examination (OSCE). *Medical Teacher*, 12, p.p. 259 – 264.

Harden, R, M. and Stamper, N., 1999. What is a spiral curriculum? *Medical Teacher*, 21, p.p. 141 - 143.

Hassell, K., 2006. Destination, future intentions and views on practice of British-based Pharmacists 5 and 10 years after qualifying. *Pharmacy World and Science*, 28 (3), p.p. 116 – 122.

Hastings, J.K., Flowers, S.K., Pace, A.C. and Spadaro, D., 2010. An Objective Standardized Clinical Examination (OSCE) in an Advanced Nonprescription Medicines Course. *American Journal of Pharmaceutical Education*, 74 (6), Article 98.

Haughey, S.L., Hughes, C.M., Adair, C.G. and Bell, H.M., 2007. Introducing a mandatory continuing professional development system: an evaluation of pharmacists attitudes and experience in Northern Ireland. *International Journal of Pharmacy Practice*, 15 (3), p.p. 243 – 249.

Hean, S., Craddock, D. and Hammick, M., 2012. Theoretical insights into inter-professional education: AMEE Guide No. 62. *Medical Teacher*, 34 (2), e78 – e101.

Heidegger, M., 1962. *Being and Time*. New York:Harper and Row.

Heine, N., Garman, K., Wallace, P., Bartos, R., and Richards, A., 2003. An analysis of standardised patient checklist errors and their effect on student scores. *Medical Education*, 37, p.p. 99 – 104.

Henderson, P., Ferguson-Smith, A.C., and Johnson, M.H., 2005. Development of essential professional skills: a framework for teaching and learning about feedback. *BMC Medical Education*, 5 (11).

Henwood, F., Wyatt, S., Hart, A. and Smith, J., 2003. 'Ignorance is bliss sometimes': constraints on the emergence of the 'informed patient' in the changing landscapes of health information. *Sociology of Health & Illness*, 25 (6), p.p. 589 – 607.

Hepler, C.D. and Strand, L.M., 1990. Opportunities and responsibilities in pharmaceutical care. *American Journal of Hospital Pharmacy*, 47 (3), p.p. 533 - 543.

Hermansen, C.J., Walbrandt-Pigarelli, D., Sorkness, C.A. and Wiederholt, J.B., 2000. The Patient Perspective of Pharmacy Clerkship Students' Roles in Pharmacist-Patient Relationship Development and the Delivery of Care. *American Journal of Pharmaceutical Education*, 64, p.p. 413 – 419.

Higher Education Funding Council for England (HEFCE), 2013. *HEFCE Annual Funding Allocations*. Accessed on 28th February 2014. Available at www.hefce.ac.uk/whatwedo/invest/institns/annallocs/

Hill, L.H., Delafuente, J.C. and Sicat, B.L., 2006. Development of a competency-based assessment process for advanced pharmacy practice experiences. *American Journal of Pharmaceutical Education*, 70 (1), Article 1.

Hirsch, P.M., 1995. Tales from the field: learning from researchers' accounts. In R.Hertz J.B. Imber, Eds. *Studying elites using qualitative methods*. London:Sage Publications.

Hodden, R.V., Rivington, R.N., Calcutt, L.E. and Haut, I.R., 1989. The effectiveness of immediate feedback during objective structured clinical examination (OSCE). *Medical Education*, 23, p.p. 184 – 188.

Hodges, B., 2003. Validity and the OSCE. *Medical Teacher*, 25 (3), p.p. 250 – 254. (Hodges, 2003a)

Hodges, B., 2003. OSCE! Variations on a theme by Harden. *Medical Education*, 37, p.p. 1134 – 1140. (Hodges, 2003b)

Hodges, B., Turnbull, J., Cohen, R., Bienenstock, A. and Norman, G., 1996. Evaluating communication skills in the objective structured clinical examination format:reliability and generalizability. *Medical Education*, 30, p.p. 38 - 43.

Hodges, B., Regehr, G., Hanson, M. and McNaughton, N., 1997. An objective structured clinical examination for evaluating psychiatric clinical clerks. *Academic Medicine*, 72, p.p. 715 - 721.

Hodges, B. and McIlroy, J.H., 2003. Analytic global OSCE ratings are sensitive to level of training. *Medical Education*, 37, p.p. 1012 - 1016.

Holliman, R., 2005. Reception analyses of science news: evaluating focus groups as a method. *Sociologia e Ricerca Sociale*, 26 (76-77), p.p. 254 – 264.

Hsieh, H.F., and Shannon, S.E., 2005. Three approaches to qualitative content analysis. *Qualitative Health Research*, 15 (9), p.p. 1277 - 1288.

Hughes, C.M. and McCann, S., 2003. Perceived inter-professional barriers between community pharmacists and general practitioners: a qualitative assessment. *British Journal of General Practitioners*, 53 (493), p.p. 600 – 606.

Hughes, F., Barry, J., Belaid, L., Cassidy, C., Hanna, L-A., McCague, P., McPhilips, H., Overell, A., Parsons, C. and Donnelly, R.F (2013). Development of an Objective Structured Clinical Examination (OSCE) to assess formulation and extemporaneous dispensing skills in MPharm undergraduates. *Pharmacy Education*, 13 (1), p.p. 7 – 14.

Hurtz, G.M. and Hertz, N.R., 1999. How many raters should be used for establishing cutoff scores with the Angoff Method? A general theory study. *Educational and Psychological Measurement*, 59 (6), p.p. 885 – 897.

Iramaneerat, C. and Yudkowsky, R., 2007. Rater errors in a clinical skills assessment of medical students. *Evaluating Health Professionals*, 30 (3), p.p. 266 - 283.

Jay, A., 2007. Student's perceptions of the OSCE: a valid assessment tool? *British Journal of Midwifery*, 15 (1), p.p. 32 - 37.

Jeffries, A., Simmons, B., Tabak, D., Mclroy, H., Lee, K.S., Roukema, H. and Skidmore, M., 2007. Using an objective structured clinical examination (OSCE) to assess multiple physician competencies in postgraduate training. *Medical Teacher*, 29, p.p. 183 - 191.

Jesson, J.K., Langley, C.A., Wilson, K.A. and Hatfield, K., 2006. Science or practice? UK undergraduate experiences and attitudes to the MPharm degree. *Pharmacy World and Science*, 28, p.p. 278 – 283.

Jesson, J., Wilson, K.A., Langley, C.A. and Hatfield, K., 2008. Images of Pharmacy as a career: a survey among groups of year 12 students at School. *The Pharmaceutical Journal*, 280, p.p. 183 – 186.

Jha, A.K., Doolan, D., Grandt, D., Scott, T. and Bates, D.W., 2008. The use of Health Technology in seven nations. *International Journal of Medical Informatics*, 77 (12), p.p. 848 – 854.

Junger, J., Schafer, S., Roth, C., Schellberg, D., Ben-David, M.F. and Nikendei, C., 2005. Effects of basic clinical skills training on OSCE performance. *Medical Education*, 39 (10), p.p. 1015 – 1020.

Jungnickel, P.W., Kelley, K.W., Hammer, D.P., Haines, S.T. and Marlowe, K.F., 2009. Addressing competencies for the future in the professional curriculum. *American Journal of Pharmaceutical Education*, 73 (8), Article 156.

Keele University, 2013. *Virtual patients and clinical avatars*. Accessed on 28th February 2014. Available at www.keele.ac.uk/pharmacy/vp/

Keely, E., Myers, K. and Dojeji, S, 2002. Can written communication skills be tested in an objective structured clinical examination format? *Academic Medicine*, 73, p.p. 82 - 86.

Kelley, K.A. and Demb. A., 2006. Student and faculty perceptions of competency-based assessment. *American Journal of Pharmaceutical Education*, 70 (6), Article 134.

Kerr, R.A., 2000. Curricular integration to enhance educational outcomes. *Pharmacotherapy*, 20 (10) part 2, p.p. 292(S) – 296(S).

Khattab, A.D. and Rawlings, B., 2001. Assessing nurse practitioner students using a modified objective structured clinical examination (OSCE). *Nurse Education Today*, 21 (7), p.p. 541 – 550.

Kirton, S.B. and Kravitz, L., 2011. Objective Structured Clinical Examinations (OSCEs) compared with traditional assessment methods. *American Journal of Pharmaceutical Education*, 75 (6), Article 111.

Kitto, S.C., Chesters, J. and Grbich, C., 2008. Quality in qualitative research. *The Medical Journal of Australia*, 188 (4), p.p. 243 – 246.

Kitzinger, J., 1994. The methodology of Focus Groups: the importance of interaction between research participants. *Sociology of Health and Illness*, 16 (1), p.p. 103 - 121.

Kitzinger, J., 1995. Introducing focus groups. *British Medical Journal*, 311, p.p. 299 - 302.

Koch, T., 1995. Interpretative approaches in nursing research: the influence of Husserl and Heidegger. *Journal of Advanced Nursing*, 21 (5), p.p. 827 – 836.

Kotter, J.P., 1995. Leading Change: Why Transformation Efforts Fail. *Harvard Business Review*, March, p.p. 59 – 67.

Kritikos, V., Watt, H.M.G., Krass, I., Sainsbury, E.J. and Bosnic-Anticevich, S.Z., 2003. Pharmacy students' perceptions of their profession relative to other healthcare professions. *International Journal of Pharmacy Practice*, 11 (2), p.p. 121 – 129.

Krueger, A. R., 1998. *Moderating focus groups*. London:SAGE publications.

Krueger, R.A. and Casey, M.A., 2009. *Focus groups. A practical guide for applied research*. 4th Ed. California:SAGE publications.

Kurz, J.M., Mahoney, K., Martin-Plank, L. and Lidicker, J., 2009. Objective structured clinical examination and advanced practice nursing students. *Journal of Professional Nursing*, 25 (3), p.p. 186 – 191.

- Kvale, S., 1996. *Interviews: An introduction to qualitative research interviewing*. Thousand Oaks, CA:Sage Publications.
- Lambert, L., Pattison, D.J. and de Looy, A.E., 2010. Dietetic students' performance of activities in an objective structured clinical examination. *Journal of Human Nutrition*, 23 (3), p.p. 224 – 229.
- Lane, C. and Rollnick S., 2007. The use of simulated patients and role-play in communication skills training: a review of the literature to August 2005. *Patient Education and Counseling*, 67, p.p. 13 - 20.
- Langford, N.J., Landray, M., Kendall, M.J. and Ferner, R.E., 2004. Testing the practical aspects of therapeutics by objective structured clinical examination. *Journal of Clinical Pharmacy and Therapeutics*, 29, p.p. 263 - 266.
- Lawrence, L., Sherman, J., Adams, E. and Gandra, S., 2004. Pharmacy students perceptions of pharmaceutical care in retail and clinic settings. *American Journal of Pharmaceutical Education*, 68 (1), Article 4.
- Leavitt, H.J., 1965. Applied Organizational change in Industry: structural, technology and humanistic approaches: In Martin J, 2nd Ed. 2001. *Organisational Behaviour*. London:Thompson Learning.
- Lee, J.J., Sobieraj, D.M. & Kuti, E.L., 2010. Student measurement of blood pressure using a simulated arm compared with a live subjects arm. *American Journal of Pharmaceutical Education*, 74 (5), Article 82.
- Lencioni, P., 2002. *The Five Dysfunctions of a Team, A Leadership Fable*. San Francisco, CA:Jossey Bass.
- Lie, D., Shapiro, J., Pardee, S. and Najm, W., 2008. A focus Group Study of Medical Students' Views of an Integrated Complementary and Alternative Medicine (CAM) Curriculum: Students Teaching Teachers. *Medical Education Online* 13 (3). Accessed from <http://www.med-ed-online.org> on 28th February 2014.
- Lincoln, Y.S. and Guba, E.G., 1985. *Naturalistic Inquiry*. California:SAGE publications.
- Makowsky, M.J., Schindel, T.J., Rosenthal, M., Campbell, K., Tsuyuki, R.T. and Madell, H.M., 2009. Collaboration between pharmacists, physicians and nurse practitioners: a qualitative investigation of working relationships in the inpatient medical setting. *Journal of Inter-professional Care*, 23 (2), p.p. 169 – 184.
- Marshall, L.L. and Nykamp, D., 2010. Active-learning assignments to integrate basic science and clinical course materials. *American Journal of Pharmaceutical Education*, 74 (7), Article 119.
- Martin, J., 2001. *Organisational Behaviour*. 2nd Edition. London:Thompson Learning.

Martin, I., Stark, P., and Jolly, B., 2000. Benefiting from clinical experience: the influence of learning style and clinical experience on performance in an undergraduate objective structured clinical examination. *Medical Education*, 34, p.p. 530 - 534.

Martin, I.G. and Jolly, B., 2002. Predictive validity and estimates cut-off score of an objective structured clinical examination (OSCE) used as an assessment of clinical skills at the end of the first clinical year. *Medical Education*, 36, p.p. 418 - 425.

Mavis, B.E., 2000. Does studying for an objective structured clinical examination make a difference? *Medical Education*, 34, p.p. 808 – 812.

Maynard, R.A., Wagner, M.E., Winkler, S.R. and Montuoro, J.L., 2011. Assessment of student pharmacists perception on participation in clinical services in the community pharmacy setting. *Currents in Pharmacy Teaching and Learning*, 3 (2), p.p. 123 – 136.

Mays, N. and Pope, C., 2000. Assessing quality in qualitative research. *British Medical Journal*, 320, p.p. 50 – 52.

McLellan, E., MacQueen, K.M. and Neidig, J. L., 2003. Beyond the qualitative interview: data preparation and transcription. *Field Methods*, 15 (1), p.p. 63 – 84.

McRobbie, D., Fleming, G., Ortner, M., Bates, I and Davies, J.G., 2002. Measuring clinical competence in pre-registration trainees by Objective Structured Clinical Examination (OSCE). *International Journal of Pharmacy Practice*, 10, supp. R7.

McRobbie, D.S.D., 2004. MPharm courses should concentrate on pharmacy practice. *The Pharmaceutical Journal*, 272 (7305), p. 802.

McToal, C., Haughey, S. and O'Hare, R., 2012. *Quantitative analysis of OSCE assessments in Level 4 MPharm Students*. Presented as a poster at GHP-UKCPA conference, May 2012.

McWilliams, P. and Botwinski, C., 2010. Developing a successful nursing objective structured clinical examination. *Journal of Nursing Education*, 49 (1), p.p. 36 – 41.

Mergenthaler, E. and Stinson, C.H., 1992. Psychotherapy transcription standards. *Psychotherapy Research*, 2 (2), p.p. 125 – 142.

Miles, M.B. and Huberman, A.M., 1994. *Qualitative data analysis*. 2nd Ed. London:SAGE publications.

Miles, M.B., Huberman, A.M. and Saldana, J. (2013). *Qualitative Data Analysis; A Methods Sourcebook*. Thousand Oaks, CA:SAGE Publications.

Miller, C.M.I. and Parlett, M., 1974. *Up to the mark: A study of the examination game*. Guildford:Society for Research into Higher Education.

Miller, G.E., 1990. The Assessment of Clinical Skills/competence/performance. *Academic Medicine*, 65 (9), p.p.S63 – 67.

Mills, E., Blenkinsopp, A., McKinley, R. and Black, P., 2011. *The assessment of observed practice: a literature review*. GPhC, June 2011. Accessed from www.generalpharmaceuticalcouncil.co.uk on 28th February 2014.

Modernising Pharmacy Careers Board, 2011. *Review of Pharmacy undergraduate and pre-registration training and proposals for reform*. Accessed on 28th February 2014. Available from: www.mee.nhs.uk/pdf/MPC_Discussion_Paper.pdf

Monaghan, M.S. and Jones, R.M., 2005. Innovations in Teaching: Designing an assessment for an abilities-based curriculum. *American Journal of Pharmaceutical Education*, 69 (2), Article 19.

Monaghan, M.S., Vanderbush, R.E. and McKay, A.B., 1995. Evaluation of clinical skills in pharmacy education: past, present and future. *American Journal of Pharmaceutical Education*, 59, p.p. 354 – 358.

Mort, J.R. and Hansen, D.J., 2010. First-year Pharmacy students' self-assessment of communication skills and the impact of video review. *American Journal of Pharmaceutical Education*, 74 (5), Article 78.

Moule, P. and Goodman, M., 2009. *Nursing Research: an introduction*. Thousand Oaks, California: Sage Publications.

Murray, E., Gruppen, L., Catton, P., Hays, R. and Wooliscroft, J.O., 2000. The accountability of clinical education: it's definition and assessment. *Medical Education*, 34, p.p. 871 – 879.

Munoz, L., O'Byrne, C., Pugsley, J. and Austin, Z., 2005. Reliability, validity and generalisability of an objective, structured clinical examination (OSCE) for assessment of entry-into-practice pharmacy. *Pharmacy Education*, 5 (1), p.p. 33 – 43.

Murphy, A., 2011. Management of patients with difficult to control asthma in a specialised clinic. *Clinical Pharmacist*, 3, p.p. 30 – 32.

Nayer, M., 1993. An overview of the objective structured clinical examination. *Physiotherapy Canada*, 45 (3), p.p. 171 - 178.

Nation, L. and Rutter, P., 2011. Short communication piece on the experiences of final year Pharmacy students to clinical placements. *Journal of Health and Social care improvement*, 2, p.p. 1 – 5.

Newble, D. and Jeager, K., 1983. The effect of assessment and examinations on the learning of medical students. *Medical Education*, 17, p.p. 165 - 171.

Newble, D., 2004. Techniques for measuring clinical competence; objective structured clinical examinations. *Medical Education*, 38, p.p. 199 - 203.

Nikendei, C., Zeuch, A., Dieckmann, P., Roth, C., Schafer, S., Volkl, M., Schellberg, D., Herzog, W., and Junger, J., 2005. Role-playing for more realistic technical skills training. *Medical Teacher*, 27 (2), p.p. 122 – 126.

Norman, G. (2005). Inverting the pyramid. *Advances in Health Sciences Education*, 10, p.p. 85 – 88.

Novak, S., Shah, S., Wilson, J.P., Lawson, K.A. and Salzman, R.D., 2006. Pharmacy students' learning styles before and after a problem-based learning experience. *American Journal of Pharmaceutical Education*, 70 (4), Article 74.

Noyce, P.R., 2007. Proving patient care through community Pharmacies in the UK: Policy, practice and Research. *The Annals of Pharmacotherapy*, 41, p.p. 861 – 868.

O'Neill, A. and McCall, J.M., 1996. Objectively assessing nursing practices: a curricular development. *Nurse Education Today*, 16, p.p. 121 -126.

O'Neill, J.L. and Gaither, L.A., 2007. Investigating the relationship between the practice of pharmaceutical care, construed external image, organisational identity and job intention turnover of community pharmacists. *Research in Social Administrative Pharmacy*, 3 (4), p.p. 438 – 463.

O'Sullivan, P., Chao, S., Russell, M., Levine, S. and Fabiny, A., 2008. Development and improvement of an Objective Structured Clinical Examination to provide formative feedback on communication and interpersonal skills in general training. *Journal of American Geriatric Society*, 56, p.p. 1730 - 1735.

O'Sullivan, H., van Mook, W., Fewtrell, R. and Wass, V., 2012. Integrating professionalism into the curriculum. *Medical Teacher*, 34 (2), p.p. 155 – 157.

Palmer E.J. and Devitt, P.G., 2008. Limitations of student-driven formative assessment in a clinical clerkship. A randomised clinical trial. *BMC Medical Education*, 8 (29).

Parker, C. and Lewis, R., 1981. Beyond the Peter Principle – Managing Successful Transitions. *Journal of European Industrial Training*, September 5, p.p. 17 – 21.

Parry, J., Mathers, J., Thomas, H., Lilford, R., Stevens, A. and Spurgeon, P., 2008. More students less capacity? An assessment of the competing demands on academic medical staff. *Medical Education*, 42 (12), p.p. 1155 – 1165.

Parish, S.J., Ramaswamy, M., Stein, M.R., Kachur, E.K. and Arnsten, J.H., 2006. Teaching about substance abuse with objective structured clinical exams. *Journal of General Internal Medicine*, 21 (5), p.p. 453 – 459.

Parker, C. and Lewis, R., 1981. Beyond the Peter Principle – Managing successful transitions. *Journal of European Industrial Training*, 5, p.p. 17 – 21.

Parks, R., Warren, P.M., Boyd, K.M., Cameron, H., Cumming, A. and Lloyd-Jones, G., 2006. The Objective Structured Clinical Examination and student collusion: marks do not tell the whole truth. *Journal of Medical Ethics*, 32 (12), p.p. 734 – 738.

Parlett, M. and Dearden, G., 1977. *Introduction to illuminative evaluation: studies in higher education*. California:Pacific Soundings Press.

Parlett, M. and Hamilton, D., 1972. *Evaluation as illumination: a new approach to the study of innovatory programmes*. Republished in Parlett, M & Dearden, G (eds), 1977.

Paterson, M. and Higgs, J., 2005. Using Hermeneutics as a qualitative research approach in professional practice. *Qualitative Report*, 10 (2), p.p. 339 – 357.

Patrício, M., Miguel, J., Fareleira, F., Young, M., Norman, G. and Vaz Carneiro, A., 2009. A comprehensive checklist for reporting the use of OSCEs. *Medical Teacher*, 31, p.p. 112 – 124.

Patton, M. Q., 2002. *Qualitative Research & Evaluation Methods, Third Edition*. Thousand Oaks. California:SAGE Publications.

Patton, M.Q. and Patrizi, P., 2005. *Teaching Evaluation Using the Case Method*. New Directions for Evaluation. Thousand Oaks, California:SAGE Publications.

Petty, N.J., Thomson, O.P. and Stew, G., 2012. Ready for a paradigm shift? Part 1: Introducing the philosophy of qualitative research. *Manual Therapy*, 17, p.p. 267 – 274.

Pharmaceutical Society of Northern Ireland (PSNI), 2013. Code of Ethics. Accessed on 28th February 2014. Available from: www.psn.org.uk/documents/312/code%2Bof%2Bethics%2Bfor%2BPharmacists%2Bin%2BNorthern%2BIreland.pdf

Pickering, A. and Watts, C., 2005. The role of moderators in focus group interviews: practical considerations. Accessed on 28th February 2014. Available from: http://www.heacademy.ac.uk/resources/detail/resource_database/casestudies/cs_115

Plaza, C.M., Beierson-Draugalis, J., Slack, M.R., Skrepnek, G.H. and Saver, K.A., 2007. Use of reflective portfolios in Health Sciences Education. *American Journal of Pharmaceutical Education*, 71 (2), Article 34.

Poirier, T.I. and Gupchup, G.V., 2010. Assessment of pharmacy student professionalism across a curriculum. *American Journal of Pharmaceutical Education*, 74 (4), Article 62.

Poland, B. and Pederson, A., 1998. Reading between the lines: Interpreting silences in qualitative research. *Qualitative Inquiry*, 4, p.p. 293 – 312.

Powell, R.A. and Single, H.M., 1995. Focus groups. *International Journal of Quality in Health Care*, 8, p.p. 499 – 504.

Prislin, M.D., Fitzpatrick, C.F., Lie, D., Giglio, M., Radecki, S. and Lewis, E., 1998. Use of objective structured clinical examination in evaluating student performance. *Family Medicine*, 30, p.p. 338 - 344.

Queens University Belfast (QUB), 2013. Medical Education Portal. Accessed on 28th February 2014. Available from: www.med.qub.ac.uk

Quero Munoz, L., O'Byrne, C., Pugsley, J. and Austin, Z., 2005. Reliability, validity and generalisability of an objective structured clinical examination (OSCE) for assessment of entry-to-practice in pharmacy. *Pharmacy Education*, 5 (1), p.p. 33 – 43.

Rabiee, F., 2004. Focus group interview and data analysis. *Proceedings of the Nutrition Society*, 63, p.p. 655 - 660.

Race K.E., Hotch D.F. and Parker T., 1994. Rehabilitation program evaluation: use of focus groups to empower clients. *Evaluation Review*, 8 (6), p.p. 730 - 740.

Race, P., Brown, S. and Smith, B., 2005. *500 Tips on Assessment*. 2nd Ed. London:RoutledgeFalmer.

Ragan, R.E., Virtue, D.W. and Chi, S.J., 2013. An Assessment Program Using Standardised Clients to Determine Student Readiness for Clinical Practice. *American Journal of Pharmaceutical Education*, 77 (1), article 14.

Ragucci, K.R., Fermo, J.D. and Mazur, J.N., 2005. Objective structured clinical examinations for an ambulatory care pharmacy rotation. *American Journal of Health-System Pharmacy*, 62, p.p. 927 – 929.

Ram, P., van der Vleuten, C., Rethmans., J.J., Schouten, B., Hobma, S. and Grol, R., 1999. Assessment in general practice: the predictive value of written-knowledge tests and a multiple station examination for actual medical performance in daily practice. *Medical Education*, 33 (3), p.p. 197 – 203.

Ramsden, P., 1992. *Learning to teach in higher education*. London:RoutledgeFalmer.

Reape, A., Brown, D., Ashwell, P., Bailey, L. and Lips-Naruf, C., 2011. The use of human patient simulators for teaching UK Pharmacy students about critical care. *Pharmacy Education*, 11 (1).

Regehr, G., Macrae, H., Reznick, R., and Szalay, D., 1998. Comparing the psychometric properties of checklists and global rating scales for assessing performance of an OSCE-format examination. *Academic Medicine*, 73., p.p. 993 - 997.

Regehr, G., Freeman, R., Hodges, B., Russell, L., 1999. Assessing the generalizability of OSCE measures across content domains. *Academic Medicine*, 74, p.p. 1320 – 1322.

Remington, T.L., Foulk, M.A. and Williams, B.C. (2006). Evaluation of evidence for interprofessional education. *American Journal of Pharmaceutical Education*, 70 (3): Article 66.

Rennie, A.M. and Main, M., 2006. Student Midwives' views of the objective structured clinical examination. *British Journal of Midwifery*, 14 (10), p.p. 602 - 607.

Rethmans, J.J., Sturmans, F., Drop, R., van der Vleuten C. and Hobus, P., 1991. Does competence of general practitioners predict their performance? Comparison between examination setting and actual practice. *British Medical Journal*, 303 (6814), p.p. 1377 – 1380.

Rethmans, J.J., Norcini, J.J., Baron-Maldonado, M., Blackmore, D., Jolly, B.C., LaDuca, T., Lew, S., Page, G.G. and Southgate, L.H., 2002. The relationship between competence and performance: implications for assessing practice performance. *Medical Education*, 36, p.p. 901 – 909.

Ruedy, J. (2007). Assessing students – clinical competence versus performance. *International e-Journal of Science, Medicine and Education*, 1 (1), p.p. 15 – 21.

Rickles, N.M., Noland, C.M., Tramontozzi, A., and Vinci, M.A., 2010. Pharmacy students' knowledge and communication of medical errors. *American Journal of Pharmaceutical Education*, 74 (4), Article 60.

Robson, C., 2011. *Real world research, Third Edition*. Chichester: Wiley.

Robson, M. and Kitchen, S.S., 2007. Exploring physiotherapy students' experiences of inter-professional collaboration in the clinical setting: a critical incident setting. *Journal of Inter-professional Care*, 21 (1), p.p. 95 – 109.

Rolfe, G., 2006. Validity, trustworthiness and rigour: quality and the idea of qualitative research. *Journal of Advanced Nursing*, 53 (3), p. 304 - 310.

Royal Pharmaceutical Society of Great Britain (RPSGB), 1996. *The New Horizon: Pharmacy in a New Age*. London: The Royal Pharmaceutical Society of Great Britain.

Royal Pharmaceutical Society of Great Britain (RPSGB), 2002. Support for Society's proposals for revision of pharmacy degree courses. *The Pharmaceutical Journal*, 268 (7187), p.p. 305 – 306.

Royal Pharmaceutical Society of Great Britain (RPSGB), 2004. *Making Pharmacy Education Fit for the Future*. Accessed on 28th February 2014. Available from: <http://www.rpsgb.org.uk/pdfs/maphedfitforfuturesumm.pdf> (2004a).

Royal Pharmaceutical Society of Great Britain (RPSGB), 2004. *Competencies of the future pharmacy workforce*. Phase 2 report. Accessed on 28th February 2014. Available from: http://faculty.ksu.edu.sa/hisham/Documents/RPSGB_Files_/1/compfutphwfp2repfull.pdf (2004b).

Royal Pharmaceutical Society (RPS), 2013. *RPS and BBC radio 4 talk about additives in children's medicines*. Accessed on 28th February 2014. Available from: www.rpharms.com/what-s-happening/news_show.asp?id_985

Rust, C., 2002. The impact of assessment on student learning. *Active learning in higher education*, 3 (2), p.p. 145 – 158.

Rutala, P.J., Witzke, D.B., Leko, E.O., Fulginiti, J.V. and Taylor, P.J., 1990. Student fatigue as a variable affecting performance in an objective structured clinical examination. *Academic Medicine*, 65, p.p. S53 - S54.

Rutala, P.J., Witzke, D.B., Leko, E.O., Fulginiti, J.V. and Taylor, P.J., 1991. Sharing of information by students in an Objective Structured Clinical Examination. *Archives of Internal Medicine*, 151 (3), p.p. 541 – 544.

Rutland, J., Wilkinson, T., Smith-Han, K. and Thompson-Fawcett, M., 2008. “You can do it late at night, or in the morning. You can do it at home, I did it with my flatmate”. The Educational Impact of OSCE. *Medical Teacher*, 30, p.p. 206 – 211.

Rutter, P.M., 2001. The introduction of OSCE into the MPharm degree pathway. *Pharmacy Education*, 1, p.p. 173 - 180.

Rutter, P., 2007 – conference abstract from ‘The Science Learning and Teaching conference’ – OSCE uptake and usage in Schools of Pharmacy.

Ryan, G. and Bernard, R., 2000. *Data management and analysis methods*. In Denzin, N. and Lincoln, Y., Eds. *Handbook of Qualitative Research*, p.p. 769 – 802. Thousand Oaks, CA:Sage Publications

Saldana, J., 2009. *The coding manual for qualitative researchers*. London:SAGE publications.

Salinitri, F.D., O’Connell, M.B. Garwood, C.L., Tutag Lehr, V. and Abdallah, K., 2012. An Objective Structured Clinical Examination to Assess Problem-Based Learning. *American Journal of Pharmaceutical Education*, 76 (3), Article 44.

Sambell, K. and McDowell, L., 1998. The construction of the hidden curriculum: messages and meanings in the assessment of student learning. *Assessment and Evaluation in Higher Education*, **23** (4), p.p. 391 – 402.

Sansom, V.E. & Cox, E.A., 2013. Student pharmacists perspectives on actual vs. simulated pharmacy practice experiences. *Currents in pharmacy teaching and learning*, 5, p.p. 146 – 148.

Savage, L.M., Beall, J.W. and Woolley, T.W., 2009. Factors that influence the career goals of pharmacy students. *American Journal of Pharmaceutical Education*, 73 (2), Article 28.

Schafheutle, E., Hassell, K., Ashcroft, D., Hall, J. and Harrison, S., 2010. *Professionalism in Pharmacy Education*. Pharmacy Practice Research Trust. Accessed on 28th February 2014. Available from: www.pprt.org.uk/Documents/Publications/Professionalism_in_pharmacy_education_final_report.pdf

Schoonheim-Klein, M., Walmsley, A.D., Habets, L., van der Velden, U. and Manogue, M., 2005. An implementation strategy for introducing an OSCE into a dental school. *European Journal of Dental Education*, 9, p.p. 143 – 149.

Schoonheim-Klein, M.E., Habets, L.L.M.H., Aartman, I.H.A., van der Vleuten., C.P., Hoogstraten, J. and van der Velden, U., 2006. Implementing an objective structured clinical examination (OSCE) in dental education: effects on students' learning strategies. *European Journal of Dental Education*, 10, p.p. 226 – 235.

Schultz, K.W., Kirby, J., Delva, D., Godwin, M., Verma, S., Birthwhistle, R., Knapper, C. and Seguin, R., 2004. Medical students and residents preferred site characteristic and preceptor behaviours for learning in the ambulatory setting: a cross-sectional survey. *BMC Medical Education*, 4 (12).

Schwartzman, E., Hus, D.I., Law, A.V. and Chung, E.P., 2011. Assessment of patient counseling skills during objective structured clinical examination: examining the effectiveness of a training program in minimising inter-grader variability. *Patient Education and Counselling*, 83, p.p. 472 – 477.

Scott, D.M., Friesner, D.L. and Miller, D.R., 2010. Pharmacy Students' perceptions of their preparedness to provide pharmaceutical care. *American Journal of Pharmaceutical Education*, 74 (1), Article 8.

Selby, C., Osman, L. and Davis, M., 1995. How to do it: Set up and run an objective structured clinical exam. *British Medical Journal*, 310, p.p. 1187 – 1190.

Seybert, A.L., 2011. Patient simulation in pharmacy education. *American Journal of Pharmaceutical Education*, 75 (9), Article 187.

Seybert, A.L., Laughlin, K.K., Benedict, N.J., Barton, C.M. and Rea, R.S., 2006. Pharmacy student response to patient-simulated mannequins to teach performance based pharmacotherapeutics. *American Journal of Pharmaceutical Education*, 70 (3), Article 48.

Seybert, A.L. and Barton, C.M., 2007. Simulation-based learning to teach blood pressure assessment to Doctor of Pharmacy students. *American Journal of Pharmaceutical Education*, 71 (3), Article 48.

Seybert, A.L., Kobulinsky, L.R. and McKaveney, T.P., 2008. Human patient simulation in a pharmacotherapy course. *American Journal of Pharmaceutical Education*, 72 (2), Article 37.

Shumway, J.M. and Harden, R.M., 2003. AMEE Guide No. 25: the assessment of learning for the competent and reflective physician. *Medical Teacher*, 25 (6), p.p. 569 – 584.

Sibbald, D., 2001. Using first year students as standardized patients for an objective structured clinical exam for third year students. *American Journal of Pharmaceutical Education*, 65, p.p. 404 - 412.

Simpson, J.G., Furnace, J., Crosby, J., Cumming, A.D., Evans, P.A., Friedman Ben David, M., Harden, R.M., Lloyd, D., McKenzie, H., McLachlan, J.C., McPhate, G.F., Percy-Robb, I.W. and MacPherson, S.G., 2002. The Scottish doctor—learning outcomes for the medical undergraduate in Scotland: a foundation for competent and reflective practitioners. *Medical Teacher*, 24 (2), pp. 136 – 143.

Siracuse, M.V., Schondelmeyer, S.W., Hadsall, R.S. and Schommer, J.C., 2008. Third year Pharmacy students' work experience and attitudes and perceptions of the Pharmacy profession. *American Journal of Pharmaceutical Education*, 72, Article 50.

Skau, K., 2007. Pharmacy is a Science-based profession. *American Journal of Pharmaceutical Education*, 71 (1), Article 11.

Skinner, B.D., Newton, W.P. and Curtis, P., 2007. The educational value of an OSCE in family practice residency. *Academic Medicine*, 72 (8), p.p. 722 - 724.

Sleath, B., 1996. Pharmacist-patient relationship: authoritarian, participatory, or default? *Patient Education and Counselling*, 28 (3), p.p. 253 – 263.

Smee, S., 2003. ABC of Learning and Teaching in Medicine. Skill based assessment. *British Medical Journal*, 326, p.p. 703 – 706.

Smith, J., 2003. *The Shipman Inquiry, Third report*. Accessed on 28th February 2014. Available from: www.official-documents.gov.uk/documents/cm58/5854/5854

Snyder, B.R., 1971. *The Hidden Curriculum*. Cambridge, Massachusetts:MIT Press.

Sosabowski, M.H. and Gard, P.R., 2008. Pharmacy Education in the United Kingdom. *American Journal of Pharmaceutical Education*, 72 (6), p.p. 1 - 7.

Stake, R.E., 1995. *The Art of Case Study Research*. Thousand Oaks, California:SAGE Publications.

Stefani, L., 2004-5. Assessment of student learning: Promoting a scholarly approach in learning and teaching. *Higher Education*, 1, p.p. 51 – 66.

Stiggins, R.J., 1987. Design and development of performance assessments. *Educational Measurement: issues and practice*, Fall, p.p. 33 – 41.

Stroud, L. Herold, J., Tomlinson, G. and Cavalcanti, R.B., 2011. Who you know or what you know? Effect of examiner familiarity with residents on OSCE scores. *Academic Medicine*, 86, S8 – S11.

Sturgess, I.K., McIlroy, J.C., Hughes, C.M. and Crealey, G., 2003. Community Pharmacy based provision of care to older patients. *Pharmacy World and Science*, 5, p.p. 218 – 226.

Sturpe, D., 2010. Objective Structured Clinical Examinations in Doctor of Pharmacy Programs in the United States. *American Journal of Pharmaceutical Education*, 74 (8), Article 148.

Sturpe, D.A., Hynh, D. and Haines, S.T., 2010. Scoring objective structured clinical examinations using video monitors or video recordings. *American Journal of Pharmaceutical Education*, 74 (3), Article 44.

Supernaw, R.B. and Mehvar, R., 2002. Methodology for the assessment of competence and the definition of deficiencies of students in all levels of the curriculum. *American Journal of Pharmaceutical Education*, 66, p.p. 1 - 4.

Swanson, D.B. and Norcini, J.J., 1989. Factors influencing reliability of tests using standardised patients. *Teaching and learning in Medicine*, 1, p.p. 158 - 166.

Tamblyn, R.M., Klass, D.V., Schabl, G.K. and Kopelow, M.L., 1991. Sources of unreliability and bias in standardised patient rating. *Teaching and Learning in Medicine*, 3, p.p. 74 – 85.

The Francis Report: The Mid Staffordshire NHS Foundation Trust Report. [online] Available at: <http://www.midstaffpublicinquiry.com/report> [Accessed 28th February 2014].

Thistlethwaite, J.E., 2002. Developing an OSCE station to assess the ability of Medical Students to share information and decisions about patients: issues relating to inter-rater reliability and the use of simulated patients. *Education for Health*, 15 (2), p.p. 170 – 179.

Troncon, L.E., 2004. Clinical skills assessment: limitations to the introduction of an OSCE in a traditional Brazilian medical school. *São Paulo Medical Journal*, 122 (1), p.p. 12 – 17.

Turner, J.L. and Dankoski, M.E., 2008. Objective Structured Clinical Exams: A critical review. *Family Medicine*, 40 (8), p.p. 574 - 578.

Van de Ven, A. and Sun, K., 2011. Breakdowns in implementing models of organisation change. *Academy of Management Perspectives*, August, p.p. 58 – 72.

Van der Vleuten, C.P.M., 1996. The assessment of professional competence; developments, research and practical implications. *Advances in Health Sciences Education*, 1, p.p. 41 – 67.

Van der Vleuten, C.P.M. and Schuwirth, L.W.T., 2005. Assessing professional competence: from methods to programmes. *Medical Education*, 39, p.p. 309 – 317.

Van Manen, M., 1997. *Researching lived experience: Human science for an action sensitive pedagogy, Second Edition*. London: The Althouse Press.

Van Sickle, K., Ritter, E.M., Baghai, M., Goldenberg, A.E., Huang, I.P., Gallagher, A.G. & Smith, C.D., 2008. Prospective, randomised, double-blind trial of curriculum-based training for intra-corporeal suturing and knot tying. *Journal of American College of Surgeons*, 207, p.p. 560 – 568.

Varnish, J., 1998. Drug pushers or health care professionals: the public's perceptions of pharmacy as a profession. *International Journal of Pharmacy Practice*, 6 (1), p.p. 13 – 21.

Vaughn, L. and Baker, R., 2001. Teaching in the medical setting: balancing teaching styles, learning styles and teaching methods. *Medical Teacher*, 23, p.p. 610 – 612.

Verhoeven, B.H., Van der Stieg, A.F.W., Scherpbier, A.J.J.A., Muijtjens, A.M.M., Verwijnen, G.M. and Van der Vleuten, C.P.M., 1999. Reliability and credibility of an Angoff standard setting procedure in program testing using recent graduates as judges. *Medical Education*, 33, p.p. 832 – 837.

Verma, S., Broers, T., Paterson, M., Schroeder, C., Medves, J.M. and Morrison, C., 2009. Core competencies: The next generation. *Journal of Allied Health*, 38 (1), p.p. 47 – 53.

Vivekananda-Schmidt, P., Lewis, M., Coady, D., Morley, C., Kay, L., Walker, D. and Hassell, A.B., 2007. Exploring the use of videotaped objective structured clinical examination in the assessment of joint examination skills of medical students. *Arthritis & Rheumatism*, 57 (5), p.p. 869 – 876.

Von Below, B., Hellquist, G., Rodger, S., Gunnasson, R., Bjorkelund, C., and Wahlqvist, M., 2008. Medical students' and facilitators' experiences of an early professional contact course: Active and motivated students, strained facilitators. *BMC Medical Education*, 8, 56.

Vyas, D., Wombwell, E., Russell, E. and Caligiuri, F., 2010. High-fidelity patient simulation series to supplement introductory pharmacy practice experiences. *American Journal of Pharmaceutical Education*, 74 (9), Article 169.

Wagner, P., Hendrich, J., Moseley, G. and Hudson, V., 2007. Defining medical professionalism: a quality study. *Medical Education*, 41 (3), p.p. 288 – 294.
Walsham, G., 1993. *Interpreting information systems in organizations*. Chicester: Wiley.

Wass, V., Van der Vleuten, C., Shatzer, J. and Jones, R., 2001. Assessment of clinical competence. *The Lancet*, 357, .pp. 945 - 949.

Wayne, D.B., Didwania, A., Feinglass, J., Fudala, M.J., Barsuk, J.H. & McGaghie, W.C., 2008. Simulation-based education improves quality of care during cardiac arrest team responses at an academic teaching hospital. *Chest*, 133 (1), p.p. 56 – 61.

Weber, R. P., 1990. *Basic content analysis*. Beverly Hills, California:Sage Publications.

Wildemuth, B.M., 2009. *Applications of social research methods to questions in information and library science*. Westport, Connecticut:Libraries Unlimited.

Willett, V.J. and Cooper, C.L., 1996. Stress and job satisfaction in community pharmacy: a pilot study. *The Pharmaceutical Journal*, 256, p.p. 94 – 98.

Willis, S. and Hassell, K., 2007. *From pharmacy education into pre-registration training*. Accessed on 28th February 2014. Available from: www.pprrt.org.uk/Documents/Publications/From_pharmacy_education_into_preregistration_training.pdf

Wilson, K., Langley, C., Jesson, J. and Hatfield, K., 2006. Mapping teaching, learning and assessment in the MPharm in the UK Schools of Pharmacy. *The Pharmaceutical Journal*, 277, p.p. 369 – 372.

Winch, C. and Clarke, L., 2004 Front-loaded Vocational Education versus Lifelong Learning: A critique of current UK government policy. *Oxford Review of Education*, 29 (2), p.p. 239 – 252.

Woster, P.M., 2003. Maintaining basic science content throughout the PharmD curriculum. *American Journal of Pharmaceutical Education*, 67 (3), Article 99.

Yedidia, M.J., Gillespie, C.C., Kachur, E., Schwartz, M.D., Ockene, J., Chepaitis, A.E., Snyder, C.W., Lazare, A and Lipkin M. (2003). Effect of Communications Training on Medical Student Performance. *Journal of the American Medical Association*, 290 (9), p.p. 1157 – 1165.

Yin, R.K., 2009. *Case study research. Design and method*. 4th Ed. California:Sage publications.

Zucker, D. M., 2009. *How to do case study research*. Accessed on 28th February 2014. Available from: http://scholarworks.umass.edu/cgi/viewcontent.cgi?article=1001&content=nursing_faculty_pubs.