

# **An exploratory study of pharmacy graduate preparedness for pre- registration training**

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## Summary

Major changes to the role of the pharmacist in the past decade include an increased prevalence of pharmacist independent prescribing and a shift towards multi-disciplinary working. In 2011 the GPhC accreditation criteria for schools of pharmacy also changed significantly, moving to a more outcomes-based education. Little is known about the preparedness of post-2011 graduates for modern practice in both hospital and community pharmacy settings. This study aimed to explore perceptions of this.

Semi-structured one-to-one interviews were conducted to determine current perceptions of graduate preparedness for pre-registration training, what schools of pharmacy do well and areas for improvement. Fourteen members of academic staff (including teacher practitioners) from the Cardiff School of Pharmacy and Pharmaceutical Sciences, twenty-five employers (individuals involved in the supervision/training of pre-registration trainees) from hospital and community pharmacies, and seventeen recent pharmacy graduates from both hospital and community pre-registration training programmes were interviewed. A range of themes and subthemes were created through thematic analysis.

The time between graduation and the early weeks of pre-registration training was identified as an important period in the transition from student to healthcare professional. This transition was eased by a graduate's prior exposure to the workplace (specific training site and more generally). All three stakeholder groups were supportive of enhancing spirality in MPharm curricula such that material learnt at university may be contextualised in pharmacy experiential placements. Students' exposure to patients improved their confidence and communication skills whilst their interactions with pharmacist role models informed their expectations of practice.

While stakeholders perceive graduates to have sufficient knowledge, their ability to apply this may be improved, suggesting post-2011 graduates are not as prepared for pre-registration training as they could be. The need for enhanced student exposure to practice, patients and pharmacists as part of the undergraduate degree has been identified.

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Chapter One

# Introduction

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# 1 Introduction

This chapter begins by outlining the researcher's epistemological and ontological position, identifying the paradigm through which the research was conducted. The role of the pharmacist in the UK including recent changes and projections for the future as well as the process by which pharmacists are educated have been explored. Relevant pedagogic literature supporting adult education and the development of pharmacists will also be introduced.

## 1.1 Research paradigm

A researcher's epistemological and ontological standpoint (hence the theoretical paradigm through which a piece of research is to be conducted) should always be stated. This allows the reader to understand the researcher's world-view, belief system and their understanding of the nature of knowledge and reality. These will have a direct impact on the way in which a piece of research is shaped and so stating this will enable the reader to interpret the data. The method employed was also dictated by the chosen research paradigm.

This research was conducted through the constructivist paradigm, which assumes that mental constructions are made by an individual based on their life experience (Bunniss and Kelly, 2010). Guba and Lincoln (1994), cited in Borzillo (2007) describe how no person's version of reality is more or less valid than another, though some may be more informed. An individual's construction will alter over time in line with their life experiences. Each stakeholder group interviewed as part of this study had their own construction of reality influenced by their personal experiences. Each were given equal weighting. No single person's view was treated as more or less true than another's.

The constructivist paradigm also acknowledges the link between participant and researcher. Rather than trying to minimise the effect of the researcher

(as may be desired in a positivist paradigm) it acknowledges that research is value mediated and knowledge is literally co-constructed between the two.

Other theoretical paradigms were considered but rejected for this piece of research. Firstly, positivism assumes that an objective reality exists, and this can be accessed through enquiry. Positivists search for what they consider to be “objective universal truths” through quantitative methods (Rubin and Rubin, 2012). This reflects the approach most commonly used in the natural sciences. However it may be argued that stakeholder’s reality is not objective. They are influenced by their own experiences, belief systems and interaction with others. The purpose of this research was to collect rich data through discourse, it does not seek to find a causal relationship as the positivist approach does. Through the positivist paradigm data production is said to be value free, and not in any way influenced by the investigator. This was not possible for this type of research where findings were very much value mediated. For similar reasons the post-positivist paradigm was rejected. Post-positivism aims to produce knowledge through falsification of a hypothesis. This research did not aim to test a hypothesis.

Finally, the critical theory paradigm also acknowledges that an objective reality exists, however this is shaped by the individual over time (Cohen and Crabtree, 2006). Critical theory is arguably more closely linked to this research than positivism and post-positivism in that it assumes that generated data is value mediated and the investigator and subject are directly linked. It has been noted that the aim of enquiry through the critical theory paradigm is critique and transformation of the subject’s reality. This was not the aim of the research.

The research could have been conducted through any paradigm, but the findings would look very different depending on the methods adopted.

### **1.1.1 Constructionism or constructivism?**

As stated above the research was conducted through a constructivist paradigm however a literature search identified ambiguity in the use of the terms constructionism and constructivism. In some texts “the words constructionism and constructivism have inappropriately been used interchangeably” (Lee, 2012). Such ambiguity may be due in part to constructivism’s relatively recent emergence. The purpose of this section is to position the research in the appropriate paradigm.

There is lack of consensus in the literature on the definition of the two terms. It has been suggested that “constructivism” is a more generic term (Young and Collin, 2004) often used as an umbrella under which many subtypes lie. These include radical, moderate and social constructivism.

Radical constructivism endorsed by Von Glaserfeld proposes that “it is the individual mind that constructs reality” (Young and Collin, 2004) and as such “responsibility for the gained knowledge lies with the constructor (Von Glaserfeld, 2001). He states that the opposition to constructivism has often claimed that constructivism denies reality. However other texts state that constructivism acknowledges an external reality but denies that it can be known.

There appears to be less of a distinctive difference between moderate and social constructivism. Moderate constructivists like Piaget (on whom Von Glaserfeld based his work) believe in the assumption that “the individual constructions take place within a systematic relationship to the external world” (Young and Collin, 2004). In opposition to radical constructivism this seems to acknowledge that the construction of knowledge is not a solely internal cognitive process. Again, some disparity in the literature seems to exist regarding Piaget’s theory. Many document that it is vastly different to that of the recognised father of social constructivism, Lev Vygotsky. However

other sources claim there is much more overlap between the two theories and this has been historically lost in translation (Lourenco, 2012).

Finally in social constructivism it is accepted that individual constructions of knowledge and reality are influenced by social relationships (Young and Collin, 2004). It had been argued that through the constructivist paradigm “the individual mind is active exclusively in the meaning making activity” (Lee, 2012) however it seems this author is describing a more radical constructivism that doesn’t take into account the social importance of meaning making activity. Philpott and Batty suggest that medical education is achieved through social constructivism. In an academic setting the sharing of information through discourse leads to learning, more generally “when human beings interact, learning takes place” and this is referred to as social constructivism (Philpott and Batty, 2009). Constructivists must question and evaluate what they are told, not for the destruction of the notions of one group, but the construction of innovative ways of thinking” (Philpott and Batty, 2009). This may be reflected in pharmacy education whereby students undertake individual mental constructions and meaning making through taught lectures but also learn through social construction during interactive workshops and through communication with other students and more experienced professionals in pharmacy placement settings.

On the opposite end of the spectrum to radical constructivism lies social constructionism. This paradigm focuses on knowledge as a social rather than cognitive process. Knowledge is literally constructed through human interaction. The main difference between constructionism and constructivism appears to lie in the differences in epistemology. Constructivism subscribes to a dualist epistemology where an objective world exists independently to ideas that are made by the mind, however constructionism is also anti-essentialist therefore no given entity has specific traits which help to categorise the entity (Young and Collin, 2004). An important distinction was also made by Crotty (1998) who stated that “it would be useful, then, to

reserve the term constructivism for the epistemological considerations focusing exclusively on the meaning-making activity of the individual mind and to use constructionism where the focus includes the collective generation [and transmission] of meaning” (Crotty, 1998). Constructivism therefore respects that the way each person views the world is valid, but constructionism emphasises the importance of social and cultural implications on world-view.

Social constructivism seems to lie at the centre of the interpretivist spectrum and possesses elements of both constructivism and constructionism. As such this was selected as the most appropriate paradigm for this research due to its belief that knowledge is a construction in the mind of the individual which is shaped by social processes.

To conclude, although it has been stated that this research was conducted through a constructivist paradigm, a more specific genre, social constructivism, was chosen. The use of this paradigm allowed new answers to be considered to problems by constructing knowledge through interaction between the researcher and stakeholder participants. Similarly, stakeholders may be regarded as social constructivists as each constructs meaning which is shaped by their social world.

## **1.2 Pharmacy in the UK**

Pharmacists are healthcare professionals who are experts in medicines including the underpinning science and their safe and effective use (Smith and Darracott, 2011). The role has seen significant change in the UK in recent years with a shift to pharmacies being promoted as convenient and accessible environments for members of the public to seek healthcare advice. As such the opening hours of many pharmacies have been drastically increased with 400 new pharmacies in England open for at least 100 hours per week since April 2005 (Department of Health, 2008). The number of items dispensed by community pharmacies is ever increasing. The total number of prescription items dispensed in the community in

England in 2017 was 1.11 billion (an increase of 0.15% from 2016) (NHS digital, 2018).

Pharmacists working in hospital practice have also experienced a shift towards more clinical (as opposed to dispensing/medicine supply) activities, prompting a review of the standards for hospital pharmacy (Royal Pharmaceutical Society, 2017). Funding has been announced for over 160 more pharmacists to work in GP practices in England, offering “clinical expertise on day-to-day medicine issues and providing consultations with patients directly” (NHS England, 2018). There has been an increase in the number of pharmacists independently prescribing, as well as a change in their practice, from prescribing in discreet areas of specialism to more generalist prescribing in GP practices and Accident and Emergency departments (General Pharmaceutical Council, 2018a). In light of this a consultation has recently been undertaken to reform the standards for the initial education of independent pharmacist prescribers (General Pharmaceutical Council, 2018a).

The prevalence of pharmacists working in general practices and primary care ‘clusters’ has also increased in Wales, in line with a Welsh Government incentive (Welsh Government, 2015). In response to a shortage of GPs and nurse practitioners, cluster pharmacists in Wales are able to work alongside other healthcare professionals ‘as part of a multidisciplinary team, ensuring the NHS is making the most effective use of all skills and resources...’ (GP One, 2016). Publication of the latest Welsh Government vision for healthcare in Wales ‘A Healthier Wales: Our plan for Health and Social Care’ reiterates the role of primary care in healthcare provision for the future, such that patients will receive care closer to home (Welsh Government, 2018).

The profession faces significant challenges in the near future, not least an ever-ageing population. It is estimated that by 2039 29.5% of people will be 60 years old or over and 1 in 12 people in the UK will be 80 years old or over



(Office for National Statistics, 2015). Thus patients will be presenting with more complex multi-disease states and polypharmacy. The emergence of personalised medicines will also be a significant challenge as emerging sophisticated diagnostic techniques allow selection of medicines for patients based on their genetic profile (Hannay, 2016).

Improvements to current pharmacy service provision in the UK have been proposed and include better promotion of access to pharmacists as experts for advice around medicines, expansion of the range of medicines available to the public Over The Counter (OTC), the treatment of minor ailments in pharmacies, taking a more visible role in health through services such as sexual health screening and supporting people with long term health conditions (Department of Health, 2008). While pharmacists may be in an ideal position to embrace these changes pharmacy education must reflect emerging knowledge requirements. Increased multidisciplinary working for improved patient-centred care (Department of Health, 2010) also necessitates increased focus on communication skills so that pharmacists may work effectively with healthcare professionals and patients alike.

### **1.2.1 Pharmacy education in the UK**

Prior to the introduction of the MPharm degree programme in the UK pharmacists were educated through an initial three year BPharm or BSc degree scheme followed by a pre-registration year in practice (Sosabowski and Gard, 2008). The move to an MPharm degree scheme as the entry point to the profession was in line with the Bologna agreement, which brings educational equivalence across Europe (Sosabowski and Gard, 2008). It was estimated that £200 million is invested annually to train pharmacists in England, with the cost of educating one pharmacist estimated to be approximately £90,000 (Smith and Darracott, 2011).

Preparing to become a healthcare professional involves developing knowledge, skills and attitudes and growing into a professional community

(Shulman, 1998). The basis for pharmacy lifelong education begins at university and provides an underpinning knowledge of sources of medicinal products, how compounds are developed into medicines, how they act upon the body and how the body acts upon medicines, the process of disease, the safe and effective use of medicines, law and ethical frameworks governing medicines, communication with healthcare professionals, patients and others and effective working within the healthcare environment (Quality Assurance Agency, 2002). The General Pharmaceutical Council, as the pharmacy professional regulator, is responsible for 'defining the education and training requirements of pharmacists' (General Pharmaceutical Council, 2018b).

The training of pharmacists begins traditionally with a four year MPharm undergraduate programme, followed by a 52-week pre-registration training year (General Pharmaceutical Council, 2011). Students must pass the regulator's registration assessment in order to practice within the UK, along with other milestones. The route from commencing undergraduate studies and registering with the General Pharmaceutical Council (GPhC) must be completed within eight years (General Pharmaceutical Council, 2011) allowing time for illness, failed modules at university and other interruptions to studies.

The GPhC sets the standards by which schools of pharmacy must comply when recruiting students, ensuring they meet the required academic standards, English language and numeracy requirements, Criminal Records Bureau (CRB)/Disclosure Scotland checks and health checks (General Pharmaceutical Council, 2011). Students must also apply the standards for pharmacy professionals (General Pharmaceutical Council, 2017a) throughout their studies and beyond. The standards describe the knowledge, attitudes and behaviours expected in order to join the register (General Pharmaceutical Council, 2017a).

From an international perspective it has been said that changes in the pharmacy profession necessitate review of recruitment and admissions procedures by pharmacy schools (Shaw et al, 2015). One way in which a UK school of pharmacy has reflected upon and modified their recruitment procedure is through the introduction of Multiple Mini Interviews (MMIs). At Nottingham University MMIs are used to assess student 'core competencies and behaviours' through a range of stations focusing on "ethical values and professional standards...knowledge of pharmacy...motivations for choosing a career in the field, and basic science and maths questions" (Nottingham University, 2018). While this process is said to be beneficial in recruiting students who will be "well equipped to practice pharmacy for the next 40-50 years" (Anderson, 2017) another study conducted in a medical school has reported potential concerns with the use of MMIs (Razack et al, 2009). This includes the potential for students to 'act' their way through the MMI process, as well as practical concerns such as evaluator preparation/fatigue and undue student stress (Razack et al, 2009). Further research into the use of MMIs in a pharmacy context is therefore required.

The number of pharmacy schools in the UK has risen drastically. Between 1999 and 2009 the number of schools in England increased from twelve to twenty-one, this saw the number of pharmacy students more than double (Smith and Darracott, 2011). Currently there are twenty-eight schools of pharmacy accredited by the GPhC to provide pharmacy education, with a further three holding provisional accreditation (General Pharmaceutical Council, 2018c). Each course is slightly different in terms of the modules studied and the mechanisms of programme delivery. Time spent on placement greatly varies between schools (Wilson et al, 2006) and is limited (Schafheutle et al, 2012) when compared with other healthcare professionals. Two of the accredited courses are unique in offering a five-year integrated programme whereby students complete their pre-registration training in a single programme of education; these are the University of East Anglia and the University of Nottingham (General Pharmaceutical Council,

2018c). The University of Bradford also offers a 5-year sandwich programme in which students undertake two six-month blocks of pre-registration training in an intercalated programme (General Pharmaceutical Council, 2018c). There are currently no published studies on the effectiveness of any UK MPharm programme.

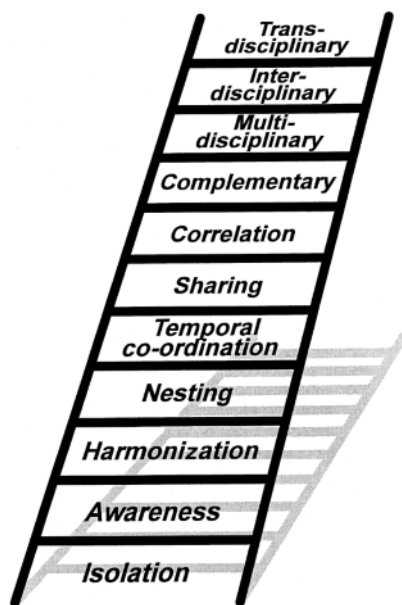
The GPhC requires that schools provide a range of teaching, learning and assessment methods in order to deliver and test the outcomes expected (General Pharmaceutical Council, 2011). Assessment strategy should include diagnostic, formative and summative assessment as well as timely feedback (General Pharmaceutical Council, 2011). In the past the regulator has noted that modular courses can be assessment heavy, and as such feedback timeliness has sometimes suffered (General Pharmaceutical Council, 2013).

The standards describe the types of staff students are expected to work with during MPharm programmes. This includes “practice staff, scientists, researchers and support staff...other healthcare professionals” (General Pharmaceutical Council, 2011). Practice staff are more commonly known in a pharmacy education context as ‘teacher-practitioners’, individuals who spend a proportion of their time practicing in the pharmacy environment and a proportion facilitating learning in universities. While there are no recent studies on their contribution to MPharm curricula in the UK, a study of their role in Germany revealed their ability to work with “faculty and practitioners, the teacher-practitioner draws on the expertise and strength of each component for the promotion of a more comprehensive, improved pharmacy education and practice” (Strohkirch and Jaehde, 2003).

In line with the outcomes based shift in the standards (described further in section 1.4) there is no guidance on what learning activities should be included per say (e.g. lectures/workshops etc) but it is stated that methods should result in learning on experiences with inter-professional practices,

clinical education, scientific education, research methods, opportunities to integrate theory and practice to develop skills in order to become self-directed learners, opportunity for reflection, opportunity to develop specialist knowledge and learning that enables “demonstration of behaviours, attitudes and values set out in the GPhC’s Code of conduct...” (General Pharmaceutical Council, 2011).

Curricula should also be ‘integrated’, meaning that “component parts of education and training must be linked in a coherent way” (General Pharmaceutical Council, 2011). This is based on the work of Harden (2000) for use in medicine curricula and can be seen in Figure 1.1



**Figure 1.1:** Harden’s ladder.

([https://www.pharmacyregulation.org/sites/default/files/supplementary\\_guidance\\_on\\_integration.pdf](https://www.pharmacyregulation.org/sites/default/files/supplementary_guidance_on_integration.pdf))

In order to satisfy the regulator’s requirement for integration, schools must show how curricula is “trans-disciplinary, inter-disciplinary and multi-disciplinary” (General Pharmaceutical Council, 2018d). Other steps of the ladder are deemed insufficient. In a multi-disciplinary model cases are typically used as a means to allow students to apply their knowledge, whereas in an inter-disciplinary model perspectives of individual disciplines

are lost (General Pharmaceutical Council, 2018d). The highest step on the ladder, trans-disciplinary, is where students learn through “application to the real world”, and so at this step students are expected to be immersed in a practice environment (General Pharmaceutical Council, 2018d). Schools may choose how they apply principles of integration, this may include themes such as structuring a course around organ-systems, age or health problems (General Pharmaceutical Council, 2018d) but this should be made explicit to the regulator. Husband et al (2014) note that successful integration also relies on academic philosophy and that ultimately integration occurs in the mind of the learner (Husband et al, 2014). Husband thus refers to the work of Henry (1958) who states that curricula must also include sufficient flexibility for students to become “integrative thinkers”.

MPharm programmes must also provide “practical experience of working with patients, carers and other healthcare professionals” (General Pharmaceutical Council, 2011) though the guidance is not prescriptive about how, when or what this should look like. While the guidance also states that “off-site learning is quality assured and linked to specified areas of the curriculum and outcomes. This must include the quality assurance of placements and placement staff” (General Pharmaceutical Council, 2011) there are no guidelines on how placements and staff should be quality assured.

Similarly, there are no explicit requirements for how “experiences with inter-professional practices” should be delivered. Interviews conducted with staff from nine schools of pharmacy in the UK revealed that no standard strategy for delivering Inter-professional Education (IPE) could be identified, though students were said to value IPE, “especially interaction with other professionals” (Patel et al, 2016).

### **1.2.2 The Cardiff MPharm**

This study involves participants who work at and graduated from the Cardiff School of Pharmacy and Pharmaceutical Sciences (CSPPS) (as well as others) and so information relating to this individual school is presented here.

Previously named the Welsh School of Pharmacy, CSPPS offers a four-year module based MPharm programme, comprised of 480 credits (Cardiff University, 2018). Delivered through a variety of teaching and learning mechanisms including lectures, workshops, IPE experiences, work-based placements, laboratory based classes, case based learning, communication workshops and eLearning the CSPPS MPharm programme aims to provide a sound knowledge of science while providing experience of working with pharmacy practitioners and other healthcare professionals (Cardiff University, 2018).

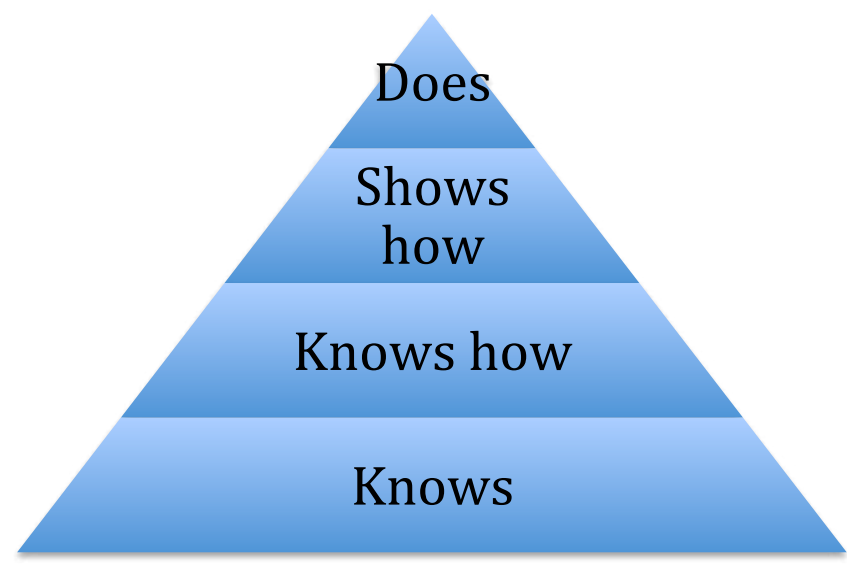
Placements are provided in all four years of the programme, for all students with approximately five days spent in community pharmacy practice and a week in an NHS hospital pharmacy in year three (Cardiff University, 2018). Role emerging placements are a relatively new feature of the programme and see students spending a whole or half day in other health/social care settings such as day hospitals (Mantzourani and Hughes, 2016).

### **1.2.3 Accreditation of UK MPharm programmes**

The regulator is responsible for maintaining the register and controlling entry into the profession as well as setting out the standards with which universities must comply when designing and reviewing MPharm curricula. Courses are accredited through a robust GPhC reaccreditation process every six years with an interim visit every three years (General Pharmaceutical Council, 2017b). As well as visits to schools the GPhC requires submission of annual reports detailing student fitness to practice information as well as student and staffing numbers (General Pharmaceutical Council, 2013). It is a requirement for schools to also submit “an analysis of

views about their MPharm degree from current pre-registration trainees and recent registrants who studied on the MPharm degree being reaccredited”, as well as the views of patients and the public (General Pharmaceutical Council, 2013).

Implementation of new standards for the initial education of pharmacists by the regulator in 2011 aimed to ensure pharmacists are fit for the future. All areas of initial pharmacy education are covered by the standards from the way in which students are recruited to MPharm programmes, curriculum design and delivery to student and academic support (General Pharmaceutical Council, 2011). A shift in focus is evident in the standards from content driven to outcomes based education (General Pharmaceutical Council, 2011). Outcomes based education can be defined as “the transparent application of a set of measurable criteria for setting a standard of proficiency” (Collins, 2015). This is based on Miller’s triangle (Miller, 1990) as depicted in Figure 1.2. The standards list the tasks and degree to which students and pre-registration trainees and are expected to perform them (General Pharmaceutical Council, 2011).

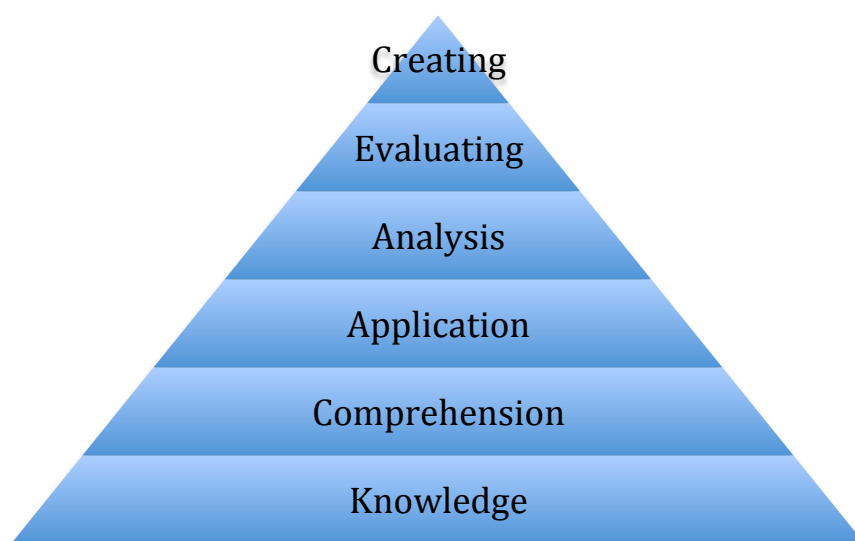


**Figure 1.2:** Miller’s Triangle (Miller, 1990) ([http://www.gp-training.net/training/educational\\_theory/adult\\_learning/miller.htm](http://www.gp-training.net/training/educational_theory/adult_learning/miller.htm))



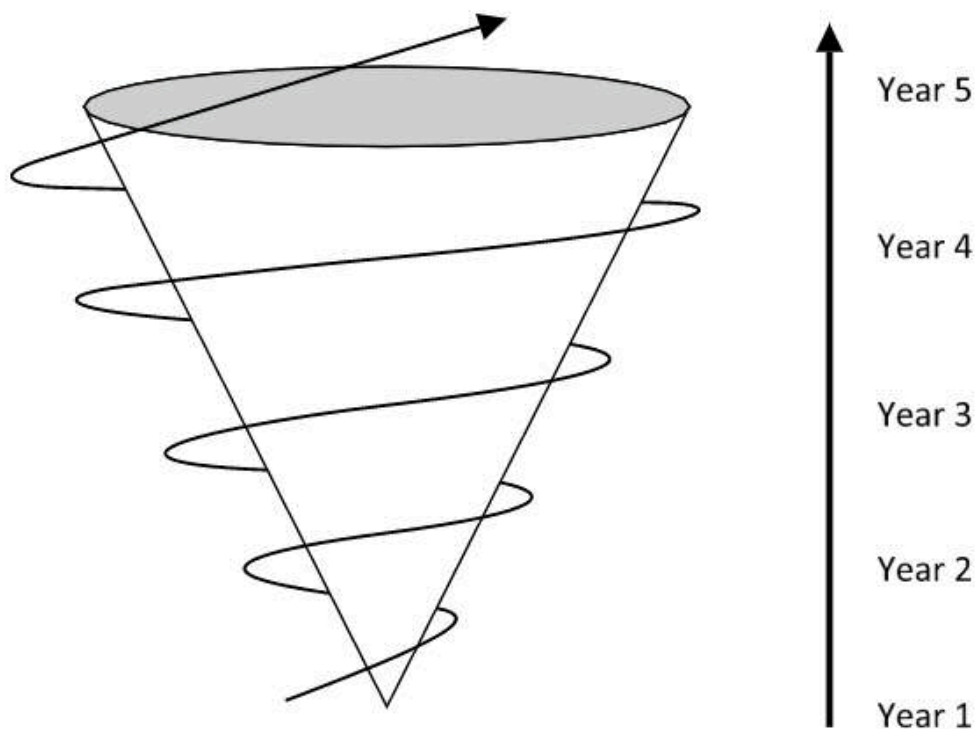
At level one, students are expected to have knowledge that may be applied to future situations, whereas level two expects students to know how to use this knowledge. By level three students should be able to show how something is applied in a real life context, culminating in level four, 'does', whereby students should be able to act independently demonstrating their competence in a real life environment (General Pharmaceutical Council, 2011). Level four is usually reserved for the expectations of pre-registration pharmacists. This is broadly based on the work of Bloom (summarised in Figure 1.3), commonly used by educators when developing learning objectives (Austin, 2016).

Knowledge forms the base of Bloom's pyramid, as it is central to everything that learning is built upon. As described by Austin (2016), failure to build upon the foundations of the pyramid (knowledge) leads to "incomplete acquisition of knowledge and skills over time, which may result in performance problems, such as an inability to apply learning in new or different contexts or situations". Therefore, the importance of knowledge acquisition in the initial education of pharmacists cannot be understated.



**Figure 1.3:** Bloom's Taxonomy: A structure for explaining learning. (Adapted from: <https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/>)

Schools are also expected, according to the standards, to build complexity throughout programmes year on year in line with a so-called spiral curriculum. Harden and Stamper (1999) define a spiral curriculum as “one in which there is an iterative revisiting of topics, subjects or themes throughout the course” but stress that it is not simply repetition of material, but revisiting with deepening at each encounter (Harden and Stamper, 1999).



**Figure 1.4:** A spiral curriculum. Source: The General Pharmaceutical Council, 2011. Standards for the initial education and training of pharmacists.

Figure 1.4 depicts a schematic of one example of an area within a spiral curriculum whereby topics are introduced in year 1, then revisited with progressive complexity until the right level of understanding is reached (General Pharmaceutical Council, 2011). Learning occurs when connections are made between new and existing information (Regan-Smith et al 1994).

Three elements to this include elaboration (linking to what we know), refinement (sorting through information) and restructuring (development of new knowledge) (Norman and Schmidt, 1992). Spirality has been adopted in many different fields, owing to its usefulness in problem-based and outcomes-based education (Harden and Stamper, 1999). Therefore schools are expected, according to the standards, to weave spirality throughout curricula such that new information can be integrated with existing knowledge.

### **1.3 Pre-registration training**

For those on the traditional four-year MPharm programme a year of pre-registration training follows whereby students work in a practice setting under the supervision of a pre-registration tutor for a period of fifty-two weeks. This stage of the initial education of pharmacists is represented by the top of the spiral (Figure 1.4). The student must be assessed at four discreet time points throughout the year, and eventually signed off as fit to sit the registration examination after successfully meeting seventy-six performance outcomes based upon personal effectiveness, interpersonal skills and medicines and health (General Pharmaceutical Council, 2018e). Pre-registration trainees must also write a series of evidences, documenting their learning, and meet the fitness to practice criteria (General Pharmaceutical Council, 2018f).

For pre-registration training, the majority of students enter hospital or community pharmacy environments. However, more recently an increased number or range of multi-sector pre-registration training programmes have been introduced whereby trainees spend their time in structured placements split between, for example, hospital, community and primary care environments (NHS Wales, 2018a).

Post registration the majority of graduates stay in community or hospital pharmacy though a smaller proportion are employed in GP practices, NHS primary care organisations, pharmaceutical industry and in academia

(Quality Assurance Agency, 2002). The prevalence of pharmacists working in GP practices is however increasing under a pilot scheme in England where pharmacists will be directly involved in providing help to those with long term conditions on polypharmacy (Jankovic, 2016).

#### **1.4 Challenges in pharmacy education and proposed changes**

Through Higher Education England's Modernising Pharmacy Careers programme, Modernising Pharmacy Careers Wales and NHS Education for Scotland (NES) pharmacy education in the UK is evaluated and developed.

Challenges in the initial education of pharmacists remain a feature today and include the necessity to introduce therapeutic areas to cater to new and expanding roles (such as independent prescribing) and debating the weighting of science and practice within the undergraduate course (Sosabowski and Gard, 2008). Weaknesses in the initial education of pharmacists in the UK have been identified and proposals made to address this.

Firstly, pharmacy is currently funded as a science programme and does not receive a clinical supplement for placement exposure (Smith and Darracott, 2011). Secondly, learning and assessment has traditionally focused upon the development of knowledge and skills at the expense of developing the individual as a member of a profession (Smith and Darracott, 2011).

Significant proposals have been made for future changes in light of this in order to equip graduates to be clinical professionals, confident in decision-making and with active roles in the health of the public (Smith and Darracott, 2011). Proposals include moving towards a 5-year integrated programme whereby students experience two six month periods of practice exposure within their university experience, ultimately leading to registration with the regulator upon graduation. Universities and employers would hence be jointly responsible for student sign off. These changes will however require

additional clinical funding and changes to the current pharmacy education infrastructure (Smith and Darracott, 2011). These proposals are further discussed in Chapter Six.

## **1.5 Educating pharmacy professionals**

### **1.5.1 Development of knowledge, skills, attitudes and values**

This section focuses on knowledge, skill, attitude and value acquisition in adult learners.

Malcolm Knowles, an American educationalist, laid the foundations upon which adult learning may take place and coined the term 'androgogy' to describe this (Knowles, 1988). He stated that as a person develops they move from being dependent to self-directed, growing an increasing wealth of experience upon which they learn. An individual will also move from being subject-centred to problem-centred. Motivation to learn becomes increasingly internal, but individuals must be able to see the relevance of their learning to their practice (Knowles, 1988). Teaching and learning today is still based upon the key principles advocated by Knowles such as the need for learners to be involved in the planning and evaluation of teaching and the value of experience in driving learning.

Students learn in different ways. There is no individual theory that explains how healthcare professional students learn however the literature outlines a number of theories which may play a part including the behaviourist (Thorndike, 1911; Skinner 1954) and cognitive theory (Piaget, 1952; Bruner, 1966; Ausubel 1968).

In a behaviourist paradigm learning is said to be "any more or less permanent change in behavior which is the result of experience" (Jarvis et al, 2003). The emphasis is clearly on behavioural outcomes associated with learning. While previously favoured, it does not acknowledge the development of skills, knowledge, attitudes or values and is therefore limited

in its approach. The main criticism being that 'human beings are... more complex than just the sum of their behaviours' (Jarvis et al, 2003).

Cognitive theories differ from behaviourist theory depending on the perspective of the theorist. Piaget (1929) based his work on small groups of young learners and recognised a relationship between stage of cognitive development and learning. In doing so he stated that with a child's age grows the ability to conceptualise, though he acknowledges this is a continuous process his detailed writings cease at age 15 (Jarvis et al, 2003). Kohlberg (1986) perceived this notion to be too simplistic and expanded on this work by suggesting modes of thought are mixed in moral development, hence not entirely age related.

Other theories were also considered. Humanistic theories which focus on self-actualisation and self-direction in learning have been described (Durning and Artino, 2011) while transformative theory explores how critical reflection can be used to challenge learners beliefs and constructions (Mezirow, 1978, 1990, 1995), however it is argued that this does not recognise the impact of context and social factors on professional education.

Constructivist theory forms the basis of curriculum development, learning and teaching strategies, assessment and programme evaluation in medical education (Taylor and Hamdy, 2013) as well as other related subjects including pharmacy. Through constructivism the teacher is viewed as a facilitator to learning rather than someone who provides knowledge (Kaufman, 2003). It also assumes the stance that for things to be learned enough time must be given for experiences to be held and examined (Kaufman, 2003).

Social constructivists (Vygotsky, 1978) focus on the way the community supports learning. Schon's (1987) communities of practice theory describes this. Learning is said to be a byproduct of working in a community as

opposed to being deliberate, and is a result of social interaction (Lave and Wenger, 1991). Learners become a member of the community through professional socialisation (Taylor and Hamdy, 2013) and move towards the centre of the community as they learn through a process known as 'legitimate peripheral participation' (Lave and Wenger, 1991). Meaningful learning is said to occur when connections can be made between new and existing information (Regan-Smith et al 1994). This is in line with the theory of subsumption (Ausubel, 1968), which considers how individuals consolidate material through integrating new with previous knowledge. Educators can assist in this process by providing the 'scaffolding' upon which constructions can be made (Ausubel, 1968). Through learning with individuals discussions will occur which increase the amount of practical knowledge a learner has. It is said that some things remain a mystery until we speak with someone with a different range of knowledge or understanding. The more diverse a learning group's membership the more likely the individual is to learn (Luft and Ingham, 1955).

Mukhalalati and Taylor (2018) describe how Duncan-Hewitt and Austin (2005) were some of the first to propose a restructure of pharmacy education based on communities of practice theory, whereby 'students, residents, practitioners and faculty members work together and learn from each other' (Mukhalalati and Taylor, 2018). Mukhalalati and Taylor go on to describe a communities of practice framework developed through literature review, which can be used to inform the design of healthcare education programmes (Mukhalalati and Taylor, 2018).

### **1.5.2 Situated learning**

Constructivist theory supports the need for learners to be positioned in the environment in which their learning is to be applied (Lave and Wenger, 1991). Shulman states that knowledge is not professional knowledge until it is "enacted in the crucible of the field. Professions are ultimately about *practice*" (Shulman, 1998). Clinical experience is therefore thought to ease

entry into practice (Shulman, 1998). Shulman's view is consistent with the recent recommendations made for the enhancement to the initial education and training of pharmacists (Smith and Darracott, 2011). Through experiential learning educators draw upon experiences to facilitate learning. Its relevance in medical education is widely acknowledged and focuses on developing competencies in specific contexts (Yardley et al, 2012). Artemeva et al (2017) describe how two types of situated learning inform and support each other in medical education, these include legitimate peripheral participation and guided participation. Through the former the focus is on the learner working on essential but "lower-stakes" tasks, contributing to the "overall activity" whereas the latter has emphasis on tasks "intentionally designed by instructors to facilitate learning and assistance provided by instructor to learners so the latter build the knowledge and skills necessary to perform the task more independently next time" (Artemeva et al, 2017).

## **1.6 Preparedness for practice**

### **1.6.1 Preparedness of pharmacy students for practice**

Preparedness for practice has been utilised in medical education as a means to assess degree programmes (Burford and Vance, 2014). Often self-reported, preparedness may be interpreted by individuals in different ways (Cave et al, 2009) such as 'do I feel capable', 'am I competent' or 'am I nervous?' (Burford and Vance, 2014; Cave et al 2009). This may lead to potential problems with its use. Another point to consider is that authors do not always make explicitly clear what they mean by 'practice' (i.e. are authors exploring preparedness for initial training? The early days/weeks/months or practice as a whole).

Preparedness of pharmacy graduates for practice in the UK has also been explored. One study conducted with final year students from fourteen schools of pharmacy via questionnaire showed that fewer students felt prepared for a professional approach to tasks than competence in performing pharmacist tasks themselves (Willis et al, 2009). Although most students felt their degree



had prepared them for nine of the ten 'preparedness for performance of pharmacist-role tasks' learning outcomes, less than half the students surveyed felt their school had provided them with good OTC knowledge (Willis, 2009). Analysis of demographic data also showed that females and minority groups felt prepared for more learning outcomes than others, with significant differences being seen between students of different schools of pharmacy (Willis, 2009). A participant's pharmacy school was also shown to have a significant effect of their perceived preparedness (Willis, 2009). It is however important to consider that this study was conducted at a time when the Royal Pharmaceutical Society of Great Britain (RPSGB) regulated the profession, and before publication of the newest standards for accreditation of pharmacy schools (General Pharmaceutical Council, 2011). Hence pharmacy undergraduate courses were not expected to have the same 'outcomes' focus as they do today. The study measured preparedness against RPSGB standards for course accreditation, which are quite different to the criteria used today (Willis, 2009).

More recently a study to evaluate the influence of curricula reform in one UK school of pharmacy found that overall preparedness increased in all three areas of a questionnaire based upon the GPhC performance standards after the course changes were made (Parmar, 2016). This study was available online after data collection for the thesis was undertaken. Its findings will be discussed in context of the present study in the General Discussion.

In other countries focus groups and questionnaires have been used to investigate pharmacy graduate preparedness and have shown that graduate team work, leadership and knowledge of the law could be improved while overall student knowledge and application of this was deemed to be good (Sealy et al, 2013). In Canada, surveys have shown that graduates of a problem based curricula perceived themselves to be equally or better prepared than those from a traditional programme, whereas preceptors and employers showed no significant difference in their views (Whelan et al,

2007). In the US a Preparedness to Provide Pharmaceutical Care (PREP) tool has been administered with students, who rated themselves highest in psychological aspects and lowest on administrative aspects of patient care (Scott et al, 2010). The introduction of Introductory Pharmacy Practice Experiences (IPPE's) was said to help students cure their false pretenses about their preparedness (Scott et al, 2010). A study to explore the perceptions of preceptors, interns and newly registered pharmacists on preparedness in New Zealand found that overall the degree prepared graduates for practice however employers perceptions were less favourable than graduates self-perceptions (Kairuz et al, 2010). This reinforces the need to engage with a number of key stakeholders as opposed to one group when evaluating curricula.

### **1.6.2 Preparedness of other healthcare professionals for practice**

While the initial training of other healthcare professionals is different to that of pharmacists, studies on preparedness for practice in this group have been conducted to a greater extent.

The training of medical students and nurses involves a greater proportion of time spent in practice-based learning (Nursing and Midwifery Council, 2010; General Medical Council, 2015). Medical Schools must give students “sufficient practical experiences to achieve the learning outcomes required for graduates” outlined by the regulator (General Medical Council, 2015). Experience in the clinical setting must grow with complexity in line with the curriculum and an opportunity must be provided to work with other healthcare professionals (General Medical Council, 2015). Similarly, in nursing education “adequate clinical experience” must be provided, students must gain exposure under the supervision of qualified nursing staff and also obtain experience of working with members of other professions in the healthcare sector (Nursing and Midwifery Council, 2010).

A number of questionnaire tools have been used to explore medical student preparedness for practice (Jones et al, 2002; Goldacre et al, 2003, Cave et al, 2007, 2009; Matheson and Matheson, 2009; Taylor et al, 2010; Tallentire et al, 2011; Morrow et al 2012; Van Hamel and Jenner 2015) as well as interviews or focus groups (O'Neil et al, 2003; Watmough et al, 2006, 2009; Illing et al, 2013). Researchers have engaged with different stakeholder groups to explore graduate preparedness including medical school graduates themselves (Taylor et al, 2010; Jones et al, 2002; Cave et al, 2007, 2009; Van Hamel and Jenner, 2015; O'Neil et al, 2003; Watmough et al, 2006; Tallentire et al, 2011), educational supervisors of undergraduates (Watmough et al, 2006), supervising ward doctors (Matheson and Matheson, 2009) and others involved in the supervision of medical graduates in the workplace including nurses and pharmacists (Morrow, 2012). This approach may be suitable for assessing the preparedness of pharmacy graduates in order to establish how they perform in a practice environment, however, other colleagues may not be as informed about the structure of the MPharm programme, or indeed what a pharmacy graduate is expected to be able to do.

Studies often explore the differences in graduate preparedness between schools of medicine with varying outcomes, some studies showing a variation between graduates from different schools (Cave et al, 2007; Goldacre et al, 2003; Taylor et al, 2010) and another showing variation of graduates within schools themselves (Morrow et al, 2012). Different areas of strengths and weaknesses in preparedness have been highlighted such as graduates perceived confidence in communication skills and teamwork (Watmough et al, 2006) but lower levels of confidence in prescribing (Tallentire et al, 2011). Studies from a pharmacy perspective exploring potential differences between schools of pharmacy in terms of preparedness may be an appropriate approach in order to establish curricula differences and the impact of these, however this would require large scale participation from graduates from a range of universities.

Mechanisms that support medicine graduates in their preparedness for and transition to work have been explored and include the benefits of a compulsory induction period (Van Hamel and Jenner, 2015). Such was the perceived success of the induction period, each additional day of induction led to reduced F1 anxiety levels (Van Hamel and Jenner, 2015). The most valued components of the induction were said to be the opportunity to 'shadow', tips from outgoing F1's and also the "use of scenarios to help recognise the critically ill" (Van Hamel and Jenner, 2015).

Communication classes and clinical exposure in the final year (Watmough et al, 2006) and Problem Based Learning (PBL) have also been documented as producing graduates who are better at dealing with uncertainty (O'Neil et al, 2003). The value of real life exposure to practice has also been shown to produce benefits over simulated experience (Burford and Vance, 2014). Barriers to preparedness have been highlighted, such as the relevance of learning not being made explicit to students (Watmough et al, 2009).

The preparedness of other healthcare professionals such as nurses and dentists have also been explored through qualitative interviewing (Gerrish, 2000; Mooney and Dip, 2006) and questionnaires (Ali et al, 2017; Gilmour et al, 2016; Lynch et al, 2010). Studies have found that there are areas for improvement in nursing education as students do not always feel prepared for practice (Gerrish, 2000). The learning environment has been highlighted as particularly important and should ease the transition to professional, while the benefits of spending time in the workplace have been discussed the limitations of students 'feeling in the way' or 'like a shadow' have been recognised when students are not given learning objectives (Mooney and Dip, 2006). Preparedness studies in dental education have highlighted numerous other issues such as gender differences (with females being perceived to feel less prepared than males) and the benefits of outreach teaching into community hospital environments as beneficial in easing the

transition to practitioner (Gilmour et al, 2016; Lynch et al, 2010). The use of the Dental Undergraduates Preparedness Assessment Scale (DU-PAS) in one study highlighted that final year students felt well prepared for simple clinical procedures and communication skills but assessing orthodontic treatment needs, crowns, endodontics, research skills, making referrals for oral cancer and raising concerns about colleagues were areas in which preparedness scored worst (Ali et al, 2017). While this tool is specific for dental education the PREP tool (described above) has been used in a pharmacy context.

### **1.7 Summary**

As highlighted in this chapter the pharmacy profession is facing significant challenges, and potential major changes to the way in which pharmacy professionals are educated. Limited studies have been conducted into current graduate preparedness for their roles, especially in the UK. Aside from one study which evaluated the preparedness of graduates from one school of pharmacy after a curricula reform (Parmar, 2016), the author was unable to find any other published work on preparedness of pharmacy graduates for practice since the most recent reform to the regulator's standards for initial education of pharmacist (General Pharmaceutical Council, 2011). In order to ensure graduates are adequately prepared for the workplace environment it is important to understand the ways in which students learn and how they are currently prepared for their role. This study was designed and conducted in response to the lack of research in a pharmacy context.

### **1.7.1 Aims and objectives**

This study was exploratory and context specific in nature. The MPharm programme at Cardiff University had not been reviewed since the GPhC accreditation system came into force. This study aimed to explore stakeholder perceptions of how pharmacy graduates may be better prepared for practice.

The objectives were to:

- Explore stakeholder perceptions of how graduates are currently prepared for practice
- Identify recommendations and/or suggestions for improvements and areas of good practice
- Compare and contrast the views of different stakeholder groups in relation to graduate preparedness for practice
- Triangulate stakeholder views in order to make recommendations for ways in which schools of pharmacy may better prepare graduates for practice

Chapter Two

# Methodology

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## **2 Methodology**

### **2.1 Introduction**

Chapter one provided an introduction to the thesis including the research paradigm, aims and objectives. This chapter details the process from study design and obtaining ethical approval through to data analysis. The chapter will also consider general principles such as reflexivity, iteration and informed consent.

### **2.2 Data generation**

As the research was conducted through the constructivist paradigm the term data generation is used throughout the thesis, as opposed to the term data collection. This highlights the collaborative nature of knowledge generation between researcher and participant. Kvale describes the qualitative researcher as a “traveler” as opposed to a “miner” (Kvale, 1996). The researcher builds knowledge and changes as data are generated through a series of interviews. It is not to be assumed that data may simply be retrieved from the subject, like a miner would dig below the surface to extract coal for example. In this way the interview may be known as the site of joint production of knowledge (Wengraf, 2001).

#### **2.2.3 Reflexivity**

Reflexivity may be described as “a popular tool used to analyse personal, inter-subjective and social processes which shape research projects” (Finlay and Gough, 2003). Reflexivity allows the researcher to “acknowledge their role” as well as “situate” their research, thus increasing transparency to the reader and hence quality of the research (Finlay and Gough, 2003).

A clear distinction may however be drawn with the similar term, reflection. Reflexivity in qualitative research can be described as “thoughtful, self-aware analysis of the inter-subjective dynamics between the researcher and the research” (Finlay and Gough, 2003) on a practical level this involves the researcher reflecting on how their “social background, assumptions,



positioning and behaviour” (Finlay and Gough, 2003) affect the research, it involves an “immediate, dynamic and continuing self-awareness”. In contrast reflection may be defined simply as “thinking about something after the event” (Finlay and Gough, 2003).

The researcher, as a past student of CSPPS, acknowledges that preconceptions may exist regarding the research question. From a positivist perspective this may be seen as a drawback. However, from a constructivist perspective it is acknowledged that no research is value free. As long as the researcher is reflexive in their approach the reader will be able to interpret the findings in relation to the researcher’s experiences and world-view. For this reason the researcher began by writing a piece entitled “my undergraduate experience”. This allowed recognition of preconceptions in order to minimize the effects of these on interviewees. A project diary was also kept in order to record any personal thoughts and feelings, aiding with the process of reflexivity. The diary served as a record of changes made to the topic guide and ideas of developing themes. Diary keeping serves as a means of “reflective commentary” (Shenton, 2004) and is important in ensuring credibility in qualitative research. Initial impressions of the data were noted to monitor the researcher’s own constructions (Guba and Lincoln, 1989). The diary acted as a source of notes about analysis, thoughts, interpretations and questions about the data (Strauss and Corbin, 1998).

It is recommended that the researcher’s biographical information is made apparent in the reporting of qualitative research (Maykut and Morehouse, 1994). As a past student of CSPPS, a registered pharmacist and more recently a member of staff at the Wales Centre for Professional Pharmacy Education (WCPPE) it is acknowledged that the researcher was known to staff members, some recent graduates and other stakeholders alike. For this reason the data may look different compared to data generated by another party. However such familiarity may not be deemed as a negative, rather, the important stage of rapport building in interview situations was already

achieved. Contrary to the positivist belief, the interviewer's emotional and cognitive effect on the interviewee is not necessarily a source of error (Kvale, 1996). Others encourage the development of researcher familiarity with the culture of the organisation or participants before interviewing (Shenton, 2004). This important stage was already achieved prior to study commencement through the researcher's prior experience within the institution.

#### **2.2.4 Research questions**

The overarching question underpinning this piece of research is "How can schools of pharmacy better prepare graduates for their pre-registration year?" In order to address this question a number of key stakeholders were identified and invited to share their opinion on the matter.

Research questions, aims and objectives unique to each stakeholder group were written and are stated throughout the thesis in each relevant chapter.

### **2.3 Qualitative methodology**

Qualitative methods have grown in popularity in recent years, with many texts highlighting the usefulness of their application (Mason, 2002; Flick, 2009; Babbie, 2013). Their use in the social sciences has developed owing to the richness of data that it is possible to generate through the spoken word, focusing on depth rather than breadth of data (Rubin and Rubin, 2012). Their use is not limited to the social sciences but can also be seen in research in health services, nursing and pharmacy (Murphy et al, 1998). Qualitative methods are particularly useful in a complex education context where a complex understanding is necessary, extending the scope of educational research (Anderson, 2010).

Qualitative research was employed in this study due to its exploratory nature. The research question required a deeper level of understanding of stakeholder's opinions, which may not be gathered through quantitative methods. In line with the recommendation of Silverman qualitative methods

were used in this study as it sought to understand “what” and “how” (Silverman, 2011). The purpose was not to quantify stakeholder feelings, but to probe deeply into their perceptions about MPharm programmes and preparedness for pharmacy practice. This may not have been achieved if participants were presented with pre-set fields to agree/disagree with, as their true beliefs may not have been covered by such categories.

Qualitative methods allowed the participants world-view to be explored through probing questions, hence unveiling explanations. While their views may have been gathered by using open-ended questions in survey instruments, there would have been no opportunity to probe and give interviewees the opportunity to expand, clarify and explain if needed. Qualitative methods allowed the researcher to confirm what had been learnt during the course of data generation so the results accurately represent the interviewee’s perspective. Data were generated with a relatively limited number of individuals and so it is acknowledged that it is not possible to generalise the findings to a larger population, however the findings may be transferrable to other settings (other schools of pharmacy) (Anderson, 2010).

While the advantages of using qualitative methods have been outlined they are not without criticism (Shenton, 2004). It is for this reason that researchers must employ a range of methods in order to ensure trustworthiness in qualitative research projects. These are highlighted throughout the chapter where applicable.

### **2.3.1 Choice of qualitative method**

Interviews are the most common qualitative research method (Bryman, 2001) with a range of interviewing methods available for utilisation by qualitative researchers. These include both group and one-to-one interviews. An interview will also lie on a spectrum from structured to unstructured.

Semi-structured one-to-one interviewing was selected as the most appropriate form of data generation for this study. Its use is well established

in pharmacy education research and so the same method was selected for use in this study as a means of ensuring credibility (Shenton, 2004; Wilson et al, 2016; Hendry et al, 2016).

The researcher had a specific topic in mind with many specific questions pre-formulated and a number of follow up questions to ask (Rubin and Rubin, 2012). Question wording was carefully crafted prior to interviews however this was modified where appropriate in response to interviewee answers. Questions were asked in a specific order though not consistently (Hesse-Biber and Leavy, 2010; Merriam, 2014). Through the use of this method the researcher was able to follow up topics divulged by the participant with further questioning. Questions could be altered in response to the participant as the interview progressed (Flick, 2009) ensuring that opportunities for data generation were not missed.

Unstructured interviewing would have been impractical in this case as the necessary data may not have been generated. Through unstructured interviewing a “general” topic is known beforehand but many interview questions are formulated as the interview progresses (Rubin and Rubin, 2012) and so important topics may have been missed.

On the other end of the spectrum a highly structured interview may not have allowed participants to express their true feelings. When participants are given the opportunity to speak off topic, subjects important to them may be revealed and so valuable data may be generated.

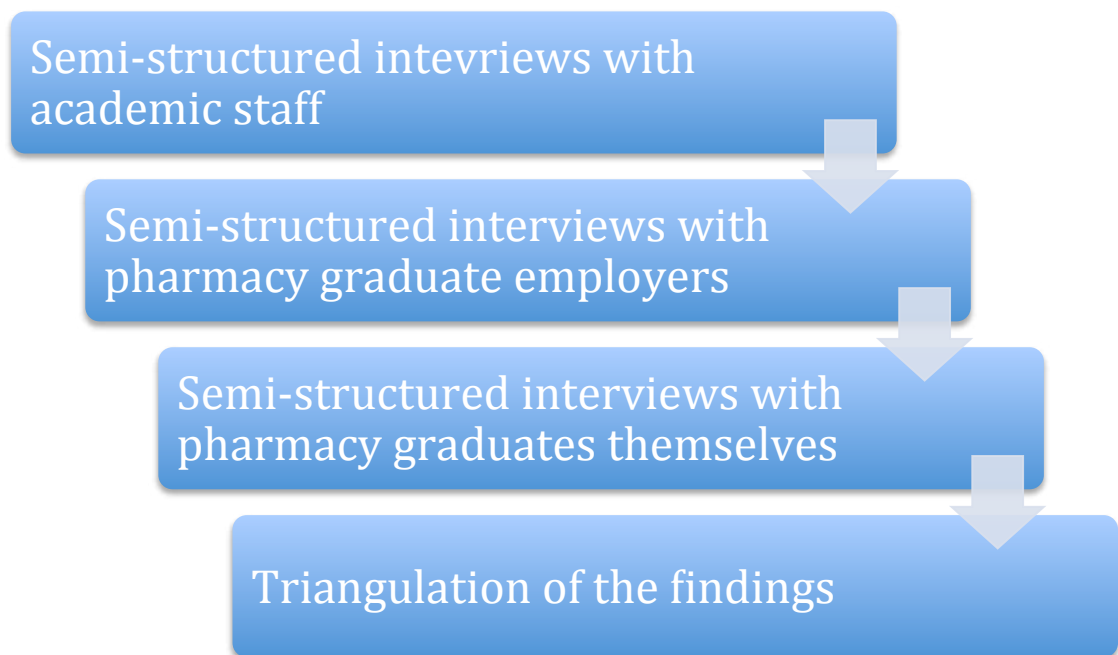
Other types of interviewing were available as methods to the researcher such as ethnographic interviewing. This may be described as a conversation conducted in-situ, with a purpose (Spradley, 1979). However this was rejected as a method of data generation for this study as it would not have been feasible to access participants in this way and impede on their day-to-day work. Also, the subject matter was related more to participant

experiences of pharmacy education and exposure to students/pre-registration pharmacists as opposed to their day-to-day role as academic staff/a pre-registration pharmacist/a practicing pharmacist.

Group interviewing was also considered but rejected as a method for use in this study. It would have been impractical to organise one set time for all participants of each stakeholder group to be present, owing to their busy schedules. It may have also limited the quantity and quality of data produced as from a one hour focus group participants would have spoken considerably less than they did in a one-to-one hour long interview scenario. Issues such as participants masking their true feelings or tailoring their responses in the presence of others were also avoided by rejecting the group interview method.

### 2.3.2 Overview of research design

The opinions of a number of stakeholder groups were sought in order to explore the research question as a means of triangulation, adding rigour to the research process (Anderson, 2010). The overall research design is shown in Figure 2.1.



**Figure 2.1-** Steps in the overall research design

## **2.4 Ethical approval**

As this study involved human participants and was carried out by a PhD researcher of Cardiff University, ethical approval was needed for each of the three stages of the study from CSPPS Research Ethics Committee.

Applications were submitted at different time points as the study progressed and moved on to the next stakeholder groups (see sections 3.2, 4.2 and 5.2 for dates and further details). Suggestions made by the ethics committee were actioned and resubmissions were made before approvals were granted.

As engagement with pharmacy graduate employers involved recruitment of individuals directly in their capacity as NHS employees NHS Research and Development approvals were required (NHS HRA, 2017). Applications were made to all Health Boards in Wales and a number of geographically convenient areas in England (outlined in Chapter Four) through the IRAS system. Once approvals were granted employer participants from a total of fourteen Health Boards or trusts in England and Wales were able to be invited to participate in the study.

## **2.5 Topic guide generation**

While a different topic guide was employed for use with each stakeholder group the same general principles were considered and applied during their design.

Rubin and Rubin encourage engagement with the literature to suggest the main interview questions (Rubin and Rubin, 2012) and so the researcher began by identifying and reading a key relevant document- the GPhC guidance on the initial education of pharmacists (General Pharmaceutical Council, 2011). Appropriate language for use with stakeholders was identified from this text as well as the key areas that schools of pharmacy must consider when developing curricula, namely graduate skills, knowledge, attitudes and values. This allowed the researcher to pick up on “subtle nuances in the data” (Strauss and Corbin, 1998). While the majority of

analysis was inductive in nature engagement with this document also allowed the researcher to conduct an element of deductive analysis in the study, when generating themes and sub-themes from data obtained in interviews with recent graduates (Chapter Five).

Language used in the standards for accreditation (General Pharmaceutical Council, 2011) was reflected in topic guides, for example a section focused on graduate preparedness in each of the areas of knowledge, skills, attitudes and values. Being a majority inductive study the researcher did not engage with other texts or conduct a full literature review prior to data generation preventing “projection” whereby a literature review may influence the analysis process (Boyatzis, 1998). It has been suggested that a literature review beforehand may “shut down” the author’s openness to themes emerging from the data (Tuckett, 2005). Preconceptions may be developed prior to data generation and analysis and so this was avoided by limited engagement with the literature.

The topic guide was also developed following discussions within the research team relating to the research aims and objectives. Each successive topic guide used was informed by the topic guide used in an earlier part of the study (for example the topic guide used with employers was based on the one used with academic staff), and by pilot interviews.

A section of the topic guide was used to explore stakeholder perceptions of pharmacy graduate preparedness for practice or pre-registration training (depending on the stakeholder group) in order to address the research aims and objectives. The final topic guide section always allowed the opportunity to “sum up” what had been learnt and to allow the participant to add anything else that they felt was important to the topic.

Topic guides were generated for ethical approval and remained broad, with key “areas” to be discussed depicted in bubbles in a mind map format.

Specific research questions with actual wording were then drafted based on these areas prior to conducting interviews.

### **2.5.1 Interview questions**

Interview questions may take a number of different forms. They can be about understanding concepts (how people understand the world) or events and processes (in order to understand what happened) (Rubin and Rubin, 2012). Exploration of fine details such as reactions to situations or emotions may also be pursued in depth, this may be referred to as “thick description” (Geertz, 1973).

Interviews are often constructed based around three types of interview question. Main questions ensure each part of the overall research question are explored, probes encourage participants to elaborate on an answer (for example through provided examples or further detail) and follow-up questions to provide more depth and to guide the participant in real time (Rubin and Rubin, 2012; Anderson, 2010).

Interview questions were carefully crafted after topic guide generation and prior to commencing interviews. Care was taken in the language used so as not to impose preconceptions or limit respondents’ answers (Rubin and Rubin, 2012).

Interviews started with simple questions on the participants’ background. This served as a means to contextualise responses while signaling that these matters will “frame the discussion” and allowed the individual to feel at ease (Rubin and Rubin, 2012). The researcher progressed by asking some basic interview questions that the interviewee would certainly know something about in order to feel comfortable with their ability to respond (Rubin and Rubin, 2012). For example

*“What do you think are the skills needed by a practising pharmacist?”*



Non-verbal communication is important in qualitative interviewing. The researcher aimed to make the participant feel engaged and at ease throughout by demonstrating empathy and understanding through facial expression (Rubin and Rubin, 2012) and mirroring body posture.

Questions central to the research question, those which may be seen as more sensitive in nature, followed once a rapport was established and the interviewee felt comfortable. These were open in style, allowing the participant to answer in their own words (Foddy, 1993). Leading questions were avoided as this may have led to the participant tailoring their response in order to answer in a way that they thought the interviewer wanted (Wengraf, 2001). Each research question was explored using a number of different interview questions enabling the topic to be approached from a number of different angles and in different ways (Kvale, 1996).

Interviews drew to a close by drawing away from emotive topics while maintaining avenues of contact (Rubin and Rubin, 2012). Interviewees were asked whether they'd be willing to be contacted by the researcher for any clarification of points (even though they had already signed to give consent for this prior to the interview).

The researcher developed and refined the skills required for qualitative interviewing as the study progressed through re-listening and reflecting upon interview audio. In particular the researcher identified early in the study the tendency to ask "multiple questions". Recognition of this early in the research process meant that it could be limited in subsequent interviews such that the researcher was conscious to ask one question at a time and wait until it was answered fully before asking another question.

## **2.6 Recruitment and sampling**

A variety of non-probability sampling methods were used during recruitment including convenience, purposive and snowball sampling (Rubin and Babbie, 2009). Purposive sampling was employed throughout as this is recognised

as being appropriate where a limited number of knowledgeable ‘experts’ in a field exist (Tongco, 2007). It has been used with success in similar areas in the past as a means of seeking out “groups, settings and individuals where...the processes being studied are most likely to occur” (Denzin and Lincoln, 2011). Academic staff and Teacher Practitioners (TPs) and pre-registration employer/trainer participants were invited to participate based on their roles and area/s of practice, while recent graduates were invited based on their gender, geographical location and area of current practice. This allowed the “gaps” in the data to be filled. Key stakeholders were invited first, and only after analysis of these interviews were the next interviewees invited to take part. A variety of perspectives were sought in order to provide a “more stable view of reality based on a wide spectrum of observations from a wide base of points in time-space” (Dervin, 1983). See individual empirical chapters for detail about the sample.

As a means of triangulating the findings a range of participants from different stakeholder groups were interviewed. Individual viewpoints were verified against others (Shenton, 2004) and provided the opportunity to “check out bits of information across informants” (Van Maanen, 1983).

Traditional quantitative social science research may be viewed as a fairly linear process, beginning with a review of the literature, sample selection, data collection then analysis. However, qualitative research is more of a cyclical, iterative process. This was applied during this programme of research. The researcher continually reflected on the research as a whole asking “how far do the methods... and theories that are used do justice to the subject and the data” (Flick, 2009). The linear process of collecting data then analysing at a later date was replaced with the notion of an “interwoven procedure” (Flick, 2009) such that new participants were constantly invited throughout the study as opposed to “all in one go” at the start. Use of a cyclical process was also beneficial in particular for a novice researcher whose skills were developed early in the process.

Convenience sampling was also used to enable the researcher to access interviewees with limited disruption. Those in a convenient geographical area (easily reached by public transport from Cardiff) were approached and invited to participate. Where face-to-face interviews were not possible then telephone interviews were conducted, as described later in the chapter.

Another mechanism of recruitment employed was snowball sampling. Interviewees were asked at the end of the interview whether they could identify anyone else who may wish to participate in the study thus affording the technique the alternative name “respondent-driven sampling” (Salganik and Heckathorn, 2004). Interviewees were asked either to provide the researcher with the individual’s contact e-mail address (with permission) or to ask the individual themselves to get in touch with the researcher if they were interested in participating. The technique has often been employed in situations where it was desirable to access “hard to reach” populations and individuals for example in studies with unemployed men (Atkinson and Flint, 2001) and individuals with HIV virus (Sifaneck and Neaigus, 2001). Its use in this study allowed participants to utilise their social networks to suggest potential interviewees.

Glaser and Strauss (1967) state that interviews should continue until saturation is achieved, meaning that no new codes or themes are generated during analysis. However, it is possible to argue that saturation may never fully be achieved in a study, especially in a study such as this which includes a self-selection sample. Indeed, O’Reilly and Parker (2012) have an opposing view and challenge the acceptance that ‘adopting saturation as a generic quality marker is inappropriate’, instead focusing on issues of transparency and epistemology (O’Reilly and Parker, 2012).

In this study interviews were conducted until the rate of new code and theme generation significantly slowed (i.e. near saturation), all invited participants

who had agreed to be involved had been interviewed and all reasonable efforts to recruit new participants had been made (within the practical, time-restricted constraints of a programme of doctoral research). However, it is not possible to say that saturation was achieved.

### **2.6.1 Informed consent**

Informed consent is grounded in the principles of “individual autonomy and secondarily that of beneficence” (Marzano, 2012) thus respecting people’s choice to participate and avoiding potential harm to participants. Gaining informed consent is vitally important in research involving human participants (Mason, 2002). A number of codes of ethics were consulted when considering this and in drawing up participant information sheets and consent forms (The British Sociological Association, 2002; The British Psychological Society, 2010). In line with the recommendations made by such societies procedures were put in place to ensure consent obtained was informed.

Participants were informed about the overall purpose of the research, the design and any possible risks and benefits from participation (Brinkmann and Kvale, 2015). They were also informed about confidentiality, who would have access to the data and how information would be disseminated (Brinkmann and Kvale, 2015).

Participants were e-mailed the information sheet and consent form beforehand (at least two weeks in advance of the interview). Before conducting the interview the researcher checked that they had the opportunity to read the information sheet and that it had been understood. Participants were given the opportunity to ask questions before completing a hard copy of the consent form. For telephone interviews the same process was undertaken via e-mail.

Consent was obtained in a written format through participant consent forms as this is the recognised preferred mechanism (Brinkmann and Kvale, 2015).

Where interviews were conducted by telephone signed copies of the consent form were scanned and e-mailed between participant and researcher. As there were no child participants or vulnerable adults it was deemed that all participants were capable of signing to acknowledge informed consent had been achieved.

Interviewees were given the opportunity to refuse to participate in the study and were encouraged to be frank and open in their responses (Shenton, 2004) by stating:

*“There are no right or wrong answers, it is just your opinion that is important”*

at the outset of each interview. They were also given the opportunity to withdraw at any time, without needing to give an explanation.

### **2.6.2 Confidentiality**

Confidentiality in research refers to an agreement with the participant/s about what is to be done with the data after it has been generated, for example who it may be shared with (Kaiser, 2012). Participants in this study were reassured that data would be kept confidential within the research team (supervisors Professor Dai John, Dr Louise Hughes and Dr Sion Coulman) at all times. Transcripts were anonymised such that no personal identifiers were left in any quotes used in dissemination of the study findings. Audio and transcript data were stored on the researcher’s password protected laptop and the recording device (Philips Voice Tracer DVT5500) was locked in a cabinet within CSPPS. Only the researcher and supervisory team could access this.

### **2.7 Interviewing**

Qualitative interviewing may be seen as more than a scientific research method. It may also be considered an art form that requires much practice and expertise. The interview serves as the “construction site for knowledge”

in which the interviewer is given an “inter-view” into the subject’s world (Kvale, 1996).

The art of interviewing builds upon the skills used in ordinary conversation but differs in many ways, for example interviews may be considered as more one sided whereby the interviewer asks the majority of the questions and the interviewee provides the majority of the answers (Rubin and Rubin, 2012). Interviewers plan questions in advance and seek more depth on a smaller range of topics than you’d expect in normal conversation (Rubin and Rubin, 2012).

Interviews were organised mainly in quiet locations where possible in order to minimise noise, distractions and disruptions (Kvale, 1996). Sometimes this was unavoidable for example when interviewing in a community pharmacy consultation room and the pharmacist needed to answer a query or in a member of academic staff’s office when the participant needed to answer the telephone. Further detail on interview locations and processes can be found in each empirical chapter method section (section 3.2, 4.2 and 5.2).

At the start of the interview, interviewees were welcomed and thanked for giving up their time. They were reminded of the study aim and that confidentiality would be maintained at all times, that there were no right or wrong answers and it was their personal opinion being sought. The structure of the interview/topic guide was then explained in order for the interviewee to know what to expect and to enable them to feel the progression of the interview.

The use of the “pause” technique is well established in qualitative interviewing and was used in this study as a useful means of allowing the participant to express their thoughts and feelings without being interrupted or led to speak about certain other topics (Kvale, 1996). Where the participant was speaking about something and came to the end of a sentence the

researcher often employed a pause in which the interviewee had a moment to think and reflect before sometimes filling the silence and elaborating on a point or providing an example. It was only after the use of the pause that the interviewer would move on to asking another question.

Telephone interviewing was employed where face-to-face interviews were not possible. The method allowed individuals who otherwise would have been excluded from the study owing to their geographical location to be included and for their opinions to be heard. It served as advantageous in limiting travel time to and from interviews as telephone interviews were conducted from the researcher's home. The same recording device was used however it was plugged into the landline telephone as opposed to being free standing on the table. Telephone interviewing also allowed the participant to feel comfortable and at ease in a location which best suited them, the researcher was also able to pay more attention to the topic guide and note making when less emphasis needed to be put on non-verbal communication (as this could not be seen) (Smith, 2005).

### **2.7.1 Listening**

Intense listening is a feature required in qualitative interviewing (Rubin and Rubin, 2012). In order to achieve this the researcher avoided interrupting the participant when they were speaking and maintained appropriate eye contact. In order to show the interviewee that what they were saying was heard and understood non-verbal communication was used, such as nodding.

### **2.7.2 Iteration**

The process of iteration is a highly reflexive task. It involves the researcher becoming immersed in the data. Reading and re-reading must occur in order for patterns and key ideas to emerge. This in turn allows refinement of the process for future interviews. Redundant questions may be dropped or reworded so that the most relevant data may be generated. Not only will the research question be better understood through this process, continuous

reading and re-reading will also inform the data to be collected and the participants to be interviewed next (DiCicco-Bloom and Crabtree, 2006).

An iterative process was employed in this study as audio data were transcribed immediately after generation with important emerging themes being noted. Reflection of this data generation (through listening to audio at least once and re-reading transcripts at least twice) led to refinement of the topic guide, and focusing of the research questions. This process prevented the collection of unnecessary data. Leaving all interview data until the end for analysis may have had undesirable consequences such as unanswered questions, large volumes of irrelevant data (if the original questions posed were not sufficient in eliciting the necessary information), and ultimately a missed opportunity for the generation of higher quality data.

As mentioned, an emerging trend in qualitative studies is for research to be conducted in a cyclical process. This requires the researcher to “permanently reflect” on the research as a whole, being reflexive throughout. This continuous reflection allows development of the researcher, continual focusing and refinement of the research and is “key to sparking insight and developing meaning” (Srivastava and Hopwood, 2009).

### **2.7.3 Audio recording and transcribing**

Audio recording was selected as the most appropriate method of recording data generated in this study as opposed to video recording (which was deemed unnecessary and potentially intrusive), note taking or simple memory recall as these methods may have meant that important information was missed (Brinkmann and Kvale, 2015). Use of the audio recorder (Philips Voice Tracer DVT5500) gave the researcher freedom to concentrate on the interview while securing a record of the interview in high acoustic quality, which could be transferred directly to a laptop for safe storage (Brinkmann and Kvale, 2015).



Although a recording device was used participants were informed that notes would be made throughout. This was to ensure mental prompts were noted and followed up at a later stage in the interview, so as not to ask a probing question and break an interviewees trail of thought. For example during the interview with AS7 the researcher sought to clarify a response later in the interview after the participant had finished discussing the point they were making. At the time the researcher made a note of the words “organisation and attention to detail”. Later when there was a sufficient pause in the interview this was then followed up with a question

**BB: “... you mentioned that pharmacist organisation and attention to fine details is important. How do you think we prepare them for that aspect? When you see them in your role, how do you think they do?”**

AS7: *Yeah I think that aspect, many of them are quite good at.”*

The researcher also made other notes surrounding the participants’ non-verbal communication. While transcribing these actions were included in square brackets. An example of this is evident where AS5 recalls the perceived differences between nurses and pharmacists with regards to reflection.

AS5: *“...the nurses know how to do it like that [clicks fingers] where as the pharmacists struggle and need sort of the basic structure of you know whatever models”*

It is acknowledged that the presence of a recording device may have an impact on what is said during an interview situation (Mason, 2002). However in this case all interviewees seemed comfortable and at ease having their opinions captured accurately and soon forgot about the presence of the recorder. Recording the interviews allowed the researcher to be fully present in the interview (Mason, 2002) and improved active listening, as opposed to being preoccupied with note taking.

Transcription was conducted as soon as possible post-interview so that the data was still “fresh” in the researcher’s mind. Approximately 4-5 hours was spent transcribing an hour of interview audio, this is in line with the time taken by others (Bryman, 2001; Kvale, 1996). Where poor quality audio recording prevented the conversation from being understood “[inaudible]” was depicted within the transcript. Funding was awarded by the school of pharmacy postgraduate research fund for 3rd party transcription for part of the study. In this case an external supplier (Virtutype<sup>®</sup>) was employed to conduct data transcription. From sending audio data there was usually a 72 hour turn around in the researcher receiving completed transcripts.

Transcripts were then accuracy checked by listening to the audio and re-reading (Maclean et al, 2004). This step was deemed particularly important where a third party transcribed the audio in order to allow the researcher to gain “close contact and familiarity with the data” (Boyatzis, 1998; Tuckett, 2005). Punctuation and italics were added where appropriate to ensure that stresses and emphasis on words were retained such that it could be read as the interviewee intended. Recurring ideas and phrases identified through re-listening were noted.

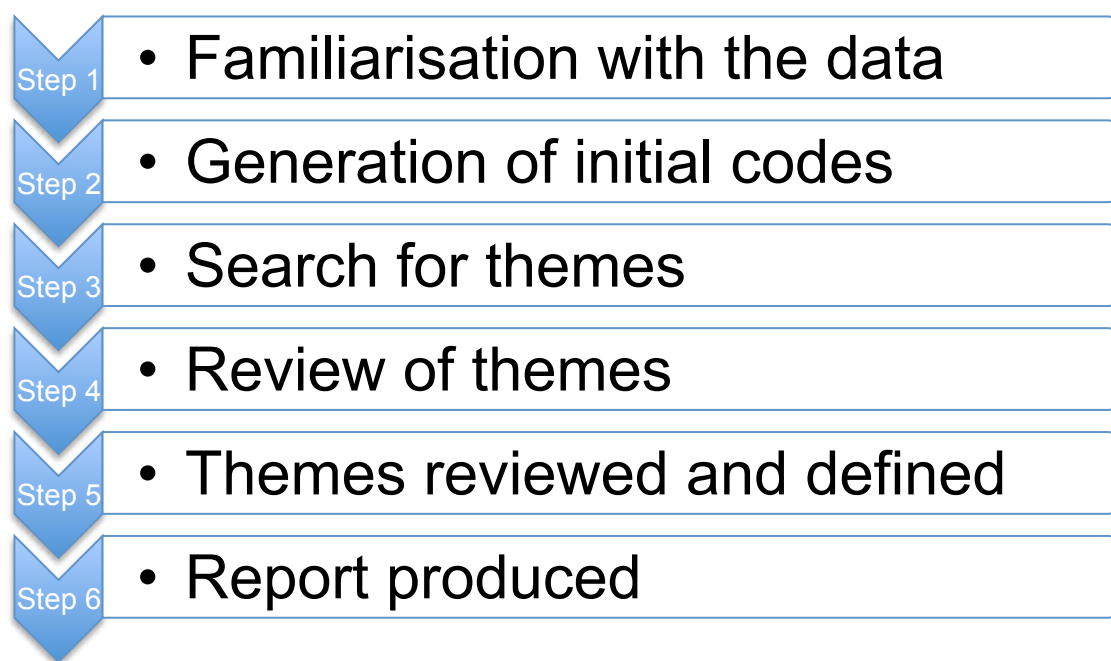
Transcription and transcript checking served to act as a preliminary step in the analysis process itself (Brinkmann and Kvale, 2015) as the researcher became immersed in the data and familiar with the emerging issues.

## **2.8 Data analysis**

The method of data analysis was selected early in the research process. To answer the research question it was more important to be able to analyse *what* was being said, rather than *how* it was said, in order to address the research aims and objectives. For this reason Braun and Clarke’s thematic analysis was selected as an appropriate analysis method (Braun and Clarke, 2006). The same method has been used with success in previous comparable studies and so its use in this piece of research serves as a means to ensure credibility (Shenton, 2004).

Other methods of data analysis considered included conversation analysis, discourse analysis and narrative analysis as these focus on describing people's methods of producing social interaction, language as the medium for interaction and the structure of stories respectively (Silverman, 2011; Potter, 2004).

The main stages in the thematic analysis procedure can be seen in Figure 2.2.



**Figure 2.2:** Stages of thematic analysis. The above figure details the main stages in the generation of codes and themes (Adapted from Braun and Clarke, 2006).

The method was applied both inductively and deductively during data analysis, depending on the section of data to be analysed. For example a deductive approach was taken where the researcher sought to identify the necessary knowledge, skills, attitudes and values of a pharmacist or pre-registration pharmacist, and where suggestions for improvements in preparedness by schools were made, therefore these questions were directly asked during

interviews. Prior reading of a key document, the regulator standards for the initial education of pharmacists, allowed the researcher to become familiar and attuned to the terminology used by participants (General Pharmaceutical Council, 2011). While recent pharmacy graduates were not explicitly asked 'what knowledge, skills, attitudes and values are required of a pre-registration pharmacist', prior analysis of interviews with employers and staff of CSPPS meant key knowledge, skills, attitudes and values had been identified. Transcripts could therefore be 'searched' for these terms in order to see if they were present.

For all other analysis the method was applied inductively whereby the researcher approached the data as a 'blank canvas' with no preconceptions of what the participants may talk about. Codes were generated directly from the data, in line with the exploratory nature of the research objectives. No other prior research or texts were engaged with prior to data analysis so no presumptions or preconceived ideas of what the data would show were held.

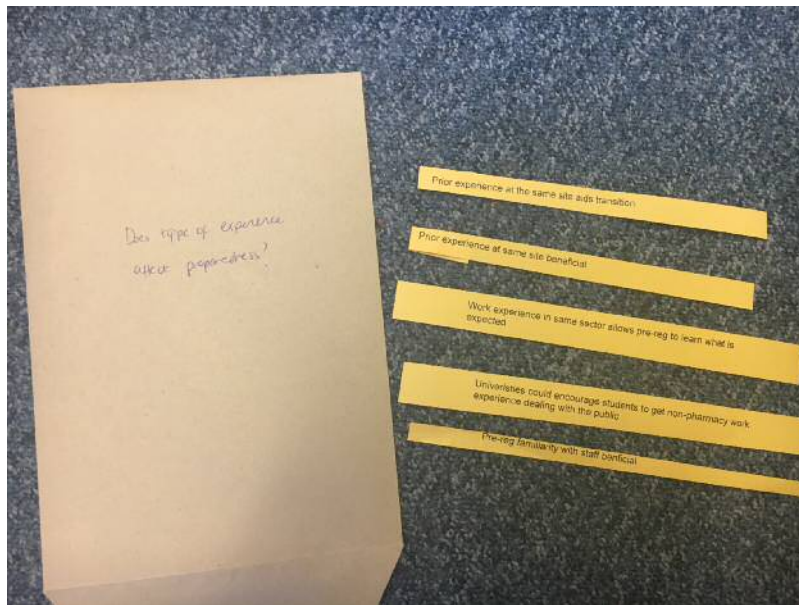
Analysis was undertaken alongside data generation. The first stage of analysis was achieved through active listening during interviews and post interview through immersion in the data. Verbatim transcription followed, this served to be a very useful stage allowing the researcher to be familiarised with the data. Interview transcripts were read and reread as part of the analysis process in order to "find repeated patterns of meaning" (Braun and Clarke, 2006). Analysis was interwoven into the process whereby an interview would be conducted, transcribed and analysed before the next interview was conducted (Silverman, 2011).

For the first element of the study (interviews with staff participants) the researcher trialed the use of NVivo 10 computer analysis software, one of a number of computer programmes designed to assist in the analysis of qualitative data. It has been argued that using this system may increase the rigour of a piece of research (Leech and Onwuegbuzie, 2011) especially

where large data sets are involved. During data generation with academic staff, interviews ranged from one to two hours in length therefore NVivo 10 was a useful tool for sorting these large data sets. Unlike the use of SPSS in quantitative studies, there is no formula to interpret the data on the researcher's behalf. It is a task for the researcher to read and re-read the data to interpret meaning. The software was useful as a means of storing and sorting codes but the researcher found it preferable to code "by hand" as this allowed the researcher to feel more immersed and in tune with the data. For this reason interview transcripts with staff were also coded by hand. The resulting list of codes was very similar to the codes generated using NVivo software. From here on in all elements of the study were coded "by hand".

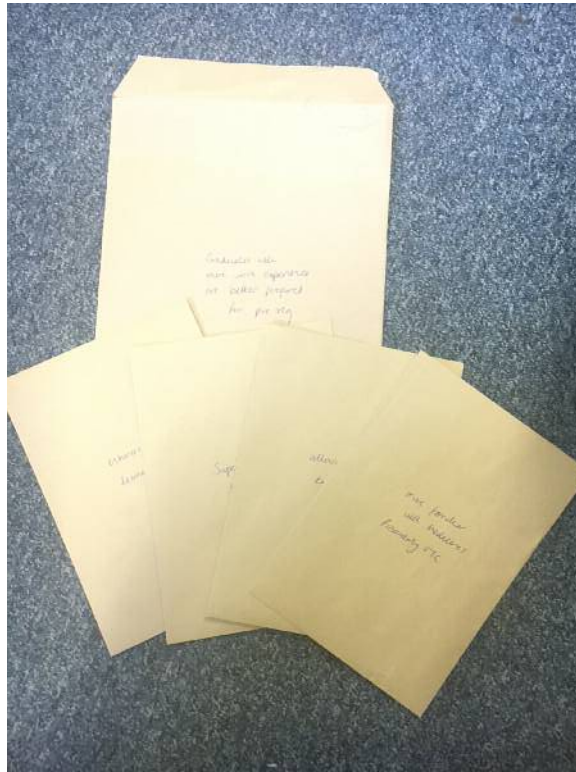
Transcripts were printed, highlighted and annotated in pen with descriptive labels (initial codes) which described what each portion of the text was about. Coding may be seen as "the process whereby raw data are transformed into standardised form suitable for machine processing and analysis" (Babbie, 2013). When assigning codes the researcher asked "what is being described? How is it understood? What does it mean? And why?" (Tuckett, 2005). Sections of the data were sometimes assigned one code, more than one or no code at all. "Marginal remarks" were also made whereby notes were jotted in the transcript margin relating to ideas about the data and notes for future interviews (Miles and Huberman, 1994).

Codes were arranged into groups depending on their focus and meaning. Each group was a potential theme or sub-theme and was given a provisional definition, consistent with the method of code sorting employed in other thematically analysed studies (Frith and Gleeson, 2004). Data judged to belong to a particular theme were compared in order to recognise the common features that made it such (Figure 2.3) (Tuckett, 2005). This process allowed data to be viewed from a different perspective, at an overarching level in its entirety.



**Figure 2.3:** Code sorting. Codes were typed in Microsoft Office, cut out and arranged into groups according to their meaning. Codes were then grouped into sub-themes (small envelopes)

Time was spent reviewing the themes, modifying them in order for the labels to accurately represent the essence of the data, some were merged and others removed entirely (Figure 2.4).



**Figure 2.4:** Theme/Sub-theme grouping. Sub-themes were grouped and organised into overarching themes (large envelopes)

This process was repeated until no other significant changes were made (i.e. until codes could no longer be moved between themes and minor changes to theme and sub-theme names did not change the essence of the meaning). Mind maps were produced in order to visually observe the relationships between the themes and sub-themes (Figures 3.1, 4.1 and 5.2).

The final stage of thematic analysis was generation of the study findings as a report. In presenting the findings poignant, representative quotes were selected and included for reference (Anderson, 2010) in order to highlight specific points with tangible data. These can be seen throughout the results chapters.

Towards the end of the study (after a period of absence from the data while other elements of the study were written), data were revisited. Transcripts were printed and highlighted by hand with codes assigned. This served as a useful means of checking the researcher's interpretation of the data was still

valid. While there were no major differences highlighted, this exercise was useful in reacquainting with the data and obtaining reassurance that the themes/sub-themes were representative of the data.

Group analysis exercises were conducted within the research team at discreet time points throughout the study. These allowed the researcher to hear others' interpretation of the data and to ensure that the researcher's own application of codes and interpretation was not unreasonable. These discussions provided an opportunity for the researcher to share developing ideas and interpretations (Shenton, 2004) while verifying the generated themes.

As a means of ensuring trustworthiness in the researcher opportunities, for "peer scrutiny" were encouraged (Shenton, 2004). The work was shared at various time points through the form of posters at conferences and also a presentation of the data at a student led "journal club" (though transcripts were not shared with individuals.) This afforded the opportunity to receive feedback and offered fresh perspective.

## **2.9 Summary**

This chapter has outlined the methodology used for the study from generation of the topic guide and interview questions, obtaining ethics approval through to undertaking the interviews and analysis. Chapter Three (the first of three empirical chapters) will describe in further detail how these methods were used with the first stakeholder group involved in the study, academic pharmacy school staff, including TPs.



Chapter Three

# Interviews with academic staff

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## **3 Academic Staff**

### **3.1 Introduction**

This chapter explores the views of academic staff of the Cardiff School of Pharmacy and Pharmaceutical Sciences (CSPPS) towards graduate preparedness for practice. Interviewees included senior management, teacher practitioners, and lecturing staff with research interests in a wide range of subject areas. For the purpose of this study this stakeholder group will be referred to collectively as academic staff.

As individuals involved in course planning, delivery and student supervision, academic staff were ideally placed to comment on how graduates are currently prepared for practice while reflecting upon curriculum provision, what works well and suggestions for improvement.

Limited UK studies have been conducted with pharmacy school staff. Where staff views have been sought it has often been in relation to discreet course elements such as IPE (Patel et al, 2016). To the researcher's knowledge the only study to explore academic staff views towards MPharm curricula as a whole was published in 2005 (Wilson et al, 2005). It included semi-structured interviews with 24 representatives from schools of pharmacy and concluded that there was a need for an integrated review of the degree accreditation process and redefinition of professional competence at an undergraduate level. Other themes explored included school professional accreditation as the driver for curriculum design, a lack of student choice currently offered and poor links to pre-registration training (Wilson et al, 2005).

Studies involving school of pharmacy staff outside the UK are mainly confined to the US. One such study found that more effort is needed in order to integrate 'service learning' (practice-based learning) into the curricula, with defined objectives (Peters and Mackinnon, 2004). As with UK studies, work is focused on evaluating discreet elements of curricula such as educational technologies, Team Based Learning (TBL) and practice-based activities. In

order to explore perceptions towards advanced placement experiences Zarembski et al (2005) surveyed 45 experiential programme directors. They identified a need to continually improve quality in engaging students in practice site activities. Quality assurance mechanisms may include student evaluations and interviews with placement site preceptors (Zarembski et al, 2005). In a separate study pharmacy faculty were engaged to explore their perceptions of learning technologies, these included reported confidence in the use of audience response systems and a perceived pressure from colleagues to adopt new learning technologies (DiVall et al, 2013). An evaluation of an integrated curriculum conducted mainly through TBL found that staff preferred the TBL mechanism of programme delivery. Perceived benefits included a positive effect on student behaviours and engagement, with students taking greater responsibility for their learning (Nelson et al, 2013). One study which explored staff perceptions towards a whole curriculum has been conducted in an Australian school of pharmacy and included interviews with 35 academic staff. These interviews found a desire for increased integration of content, greater opportunity for IPE and greater flexibility and choice for students (Ryan et al, 2009).

This part of the study aimed to explore academic staff perceptions of how pharmacy graduates could be better prepared for practice.

The objectives were to:

- Determine the perceived knowledge, skills, attitudes and values important for a practicing pharmacist
- Explore staff views on how CSPPS currently prepares graduates for practice
- Identify recommendations for improvements and areas of good practice
- Determine potential barriers to improvements and ways in which these could be overcome
- Explore stakeholder engagement with the school and how this could be improved

### **3.2 Ethical approval**

Ethical approval was sought from CSPPS Research Ethics Committee. A favourable response was obtained on 27/01/14 following confirmation to the committee that data would be anonymised so that staff could not be identified via their roles.

### **3.3 Method**

Qualitative methods (described in Chapter Two) were employed for this part of the study.

#### **3.3.1 Topic guide design and refinement**

Interview questions were designed according to the aims and objectives. A broad topic guide was designed and utilised during interviews (Appendix 1.1). Its development was informed by the GPhC regulatory requirements for reaccreditation of pharmacy curricula (General Pharmaceutical Council, 2011), discussions within the supervisory team and three pilot interviews. Specific interview questions concerning each section of the topic guide (with actual wording) were then created.

Five sections were included in the topic guide. The first of which sought to gain more information about the participant including their current Learning, Teaching and Assessment (LTA) activities, and additional roles within the school. This data was obtained solely for the purpose of contextualising participant responses.

For the remaining sections a “skills, knowledge, attitudes, values” framework was employed, in line with the terminology used in regulator reaccreditation documentation (General Pharmaceutical Council, 2011). As staff should have been familiar with the GPhC standards for the initial education of pharmacists it was deemed appropriate that this terminology was used, as it is frequently used in GPhC documentation.

A suggestion was made by a pilot interviewee to present the definition of these terms to participants during the interview in the form of flashcards. Definitions provided were taken from the Oxford Living dictionary (2017) and were as follows:

**Knowledge:** *Facts and information acquired through experience or education; the theoretical or practical understanding of a subject.*

**Skills:** *The ability to do something well; expertise*

**Attitudes:** *A settled way of thinking or feeling about something*

**Values:** *The regard that something is held to deserve; the importance, worth, or usefulness of something.*

Although the Oxford English dictionary defines Knowledge as “facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject” the word ‘skills’ was

removed as this was covered separately. While the definitions are shown separately here the researcher specifically referred to attitudes and values together, so that participants would not have to differentiate between the two.

The flashcards were used for two interviews, but were not used in subsequent interviews as they were deemed to be too much of a distraction for participants. The researcher found that interviewees would spend much time reading and processing the flashcard definitions and focusing too much attention on whether the attributes they were suggesting fell under one domain or another. Instead, it was deemed more beneficial to the interview process to remove the cards and let the participant speak freely about what was most important to them, their suggestions could later be grouped and sorted by the researcher in the analysis process. By removing definition flashcards it is acknowledged that the way in which individuals interpreted the terms may have differed.

Section two sought to explore staff opinions on the current role of the pharmacist, in particular the required skills, knowledge, attitudes and values of a pharmacist. Participants were also given the opportunity to describe any additional traits they deemed important. The purpose of this section was to focus the participant to the subject in question. It gave them time to relax into and become comfortable in the interview situation. The section also allowed the interviewee to think about what was important and to compare this with how they currently feel students are prepared for practice.

Section three sought to establish opinions on the way in which Cardiff students are currently prepared for practice, the mainstay of the interview. Use of the knowledge, skills, attitudes and values framework allowed the participant to think about how students are prepared in light of what is required of them. Staff members were also asked what they believe the school does best, and what it could do better.

Section four sought to explore suggestions for improvement along with any perceived barriers to making suggested changes. Finally, section five involved a conversation around stakeholder engagement in course design. After the interview staff were reminded of the research question and encouraged to add any further points that were of importance to them.

In line with an iterative process the topic guide was slightly modified post pilot interviews in order to generate the highest possible quality data. Such changes included minor rewording so that statements were less leading (i.e. *“How well do we currently prepare undergraduates...?”* was changed to *“How do we currently prepare undergraduates...?”*)

The addition of a set introduction to the topic guide allowed the researcher to explain the process with the participant and put them at ease, in addition allowing the researcher to be reassured that no important information had been omitted. The researcher also added a section detailing to the participant what was to come in the interview, to give the participant time to start thinking about their answers and allow them to feel progression through the interview.

Probing questions relating to whether the requirement for any attributes listed as being necessary had changed at all were added to section two following pilot interviews. It became evident that the role of the pharmacist had changed, the researcher therefore deemed it important to establish whether particular traits stated by the participants were “new” in response to changing demand or whether they had always been relevant.

The addition of the prefix *“as an academic...”*, though minor, was helpful in focusing the interviewee this was modified accordingly depending on the staff member being interviewed (i.e. *“as a teacher practitioner...”* was used where a teacher practitioner was being interviewed).

The addition of the final question “*are there any questions I haven’t asked that you feel I should have asked?*” was useful in the process of iteration and allowed immediate feedback from the interviewees.

It was also decided at this stage to narrow the focus of the research question for future stakeholder groups such that participants were to be asked “*how can schools of pharmacy better prepare graduates for their pre-registration year?*” as opposed to “*for practice*” more generally. Refining the research question for interviews with other stakeholder groups aimed to provide participants with greater clarity and focus.

After ethical approval of the topic guide, specific interview questions (with actual wording to be used during interviews) were written in order to explore each section of the topic guide consistently with participants, ensuring each had an equal opportunity to comment. These were used during pilot interviews in order to sense check for flow and participant understanding and included:

- *Can you tell me about your current LTA activities?*
- *Can you tell me about any additional roles you hold within the school?*
- *As an academic, what do you think are the most important skills for a pharmacist to have? (Has this changed at all)*
- *As an academic, what do you think are the key areas of knowledge that a pharmacist should have? (Has this changed at all?)*
- *As an academic, what are the key attitudes and values a pharmacist should display? (Has this changed at all?)*
- *Are there any other key features of a good pharmacist?*
- *What are your opinions on the way in which we currently prepare our undergraduates in terms of skills/knowledge/attitudes and values?*
- *How do we prepare them for life after university?*
- *What do we do best as a school to prepare our undergraduates for practice?*



- *What do we do worst to prepare our undergraduates for practice?*
- *How do you think this is compared with other Schools of Pharmacy?*
- *How can we better prepare our graduates in terms of knowledge/skills/attitudes and values? (Are there any barriers to this? Are there any ways in which this may be overcome?)*
- *If you were to redesign the course, what would you like to see?*
- *Do you have any other comments related to content, delivery or assessment?*
- *What are your opinions on stakeholder involvement for course improvements?*
- *Who are the relevant stakeholders for the School?*
- *How can we better engage with them?*

Interview questions were asked in a particular order for each interview though not consistently as the conversation was guided by the participant's agenda.

### **3.3.2 Recruitment and sampling**

The researcher invited individuals based on their background and experiences including pharmacists and non-pharmacists (those who were registered but not practicing, teacher practitioners and those with no pharmacy background), predominant area of teaching, career pathway (teaching and research or teaching and scholarship) and level of seniority (from junior lecturer through to lecturer, reader, professor and senior school staff; module leaders and non-module leaders). This was in order to ensure as wide a range of views as possible were captured and allowed differences to be explored during analysis based on different participant attributes.

Potential participants were invited directly via e-mail (n=17).

### **3.3.3 Research diary**

A research diary was kept throughout the study. The researcher recorded post interview reflections in this as a means to document any thoughts or

feelings on the interview, suggestions for the next interview or emerging themes (see diary excerpt in Appendix 3.1 as an example).

### **3.3.4 Analysis**

Verbatim transcription and inductive thematic analysis were undertaken according to the method outlined in Chapter Two.

### **3.3.5 The interviews**

All interviews were conducted face-to-face. Due to the convenient geographical location of participants interviews were mostly undertaken in one of the consultation rooms in CSPPS. These rooms are purpose-built training facilities recently installed at CSPPS, designed to replicate a consultation room that you would find in a community pharmacy and are used in pharmacy practice related teaching. Blue roll was removed from the examination beds and all medical equipment (such as first aid boxes) moved in order to make the environment as neutral and non-clinical as possible. Two interviews were conducted in other rooms in CSPPS due to room availability and interviewee preference.

Three pilot interviews were undertaken with academic staff, allowing refinement and focusing of the topic guide. Pilot interviewees were known to the researcher and have themselves had experience in qualitative interviewing. As such this provided a good starting point for the researcher to practise and hone qualitative interviewing skills aided by participant feedback. The topic guide underwent minor alterations in line with an iterative process throughout the research (as described above). As no major amendments were made to the topic guide or interview process, data generated through pilot interviews were included in data analysis.

Participants were sent a copy of the information sheet (Appendix 1.2) and consent form (Appendix 1.3) at the same time as the invitation e-mail (Appendix 1.4). A hard copy was also provided at the start of each interview. Interviews were conducted via the method outlined in Chapter Two.

All participants were offered a copy of the interview transcript at the end of the interview. Four interviewees requested a copy and were given approximately two weeks to read the interview and provide amendments/clarifications. One participant provided amendments to the transcript in the form of minor changes to two sentences for clarification. One such deletion is shown, whereby the portion of text removed from the transcript is indicated in square brackets.

AS7: *"...this is definitely something that they think -I don't need to know any of that stuff I've learnt in university, no-one uses that, therefore I'm going to forget it. Or not bring it with me. Which is a shame really isn't it? [I don't think,] There are exceptions to that and obviously you know over the years obvious that students do have a lot more usable knowledge".*

These amendments were accepted by the researcher and the updated transcript was used for data analysis. The remaining three participants provided with copies of the transcript did not wish to make any additions, clarifications or amendments.

Recommendations of topics to discuss with interviewees in subsequent interviews were suggested by some academic staff participants. One interviewee suggested exploring what skills, attitudes and values were required of pre-registration pharmacists with employers. This was noted in the research diary as a consideration for inclusion when interviewing other stakeholders.

### **3.3.6 Interviewee characteristics**

Table 3.1 details the key characteristics of the participants including the duration of the interview, and whether they were a pharmacist or non-pharmacist participant. Interviewees were all employed by CSPPS. Interviews lasted between 1 hour and 1 hour 57 minutes with a mean of 1 hour and 24 minutes. A follow up interview was conducted with interviewee

AS4 who asked to meet on another separate occasion to complete the interview due to time constraints at the first interview.

In order to protect participant anonymity other personal identifiers have been omitted from the table. The study sample also included seven male and seven female staff members. Eight participants taught predominantly in pharmacy practice, one in drug delivery, four in pharmacology and one in medicinal chemistry. While ten participants were registered pharmacists, seven had not been in a patient-facing role in the preceding four years.

**Table 3.1:** Academic staff interviewee characteristics

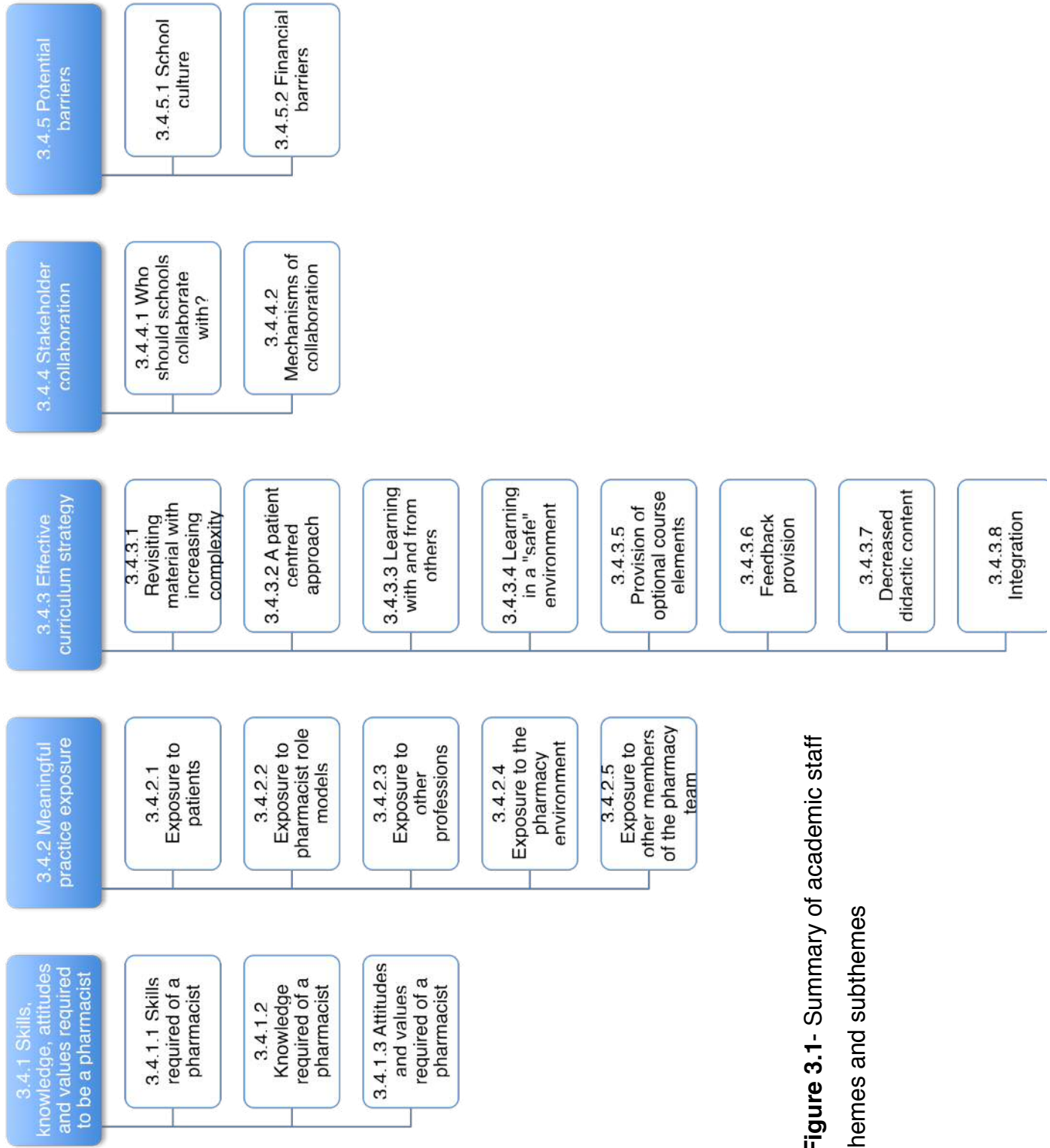
<b>Participant</b>	<b>Pharmacist/Non-pharmacist</b>	<b>Academic Staff/Teacher Practitioner</b>	<b>Duration of interview</b>
AS1	Pharmacist	Academic Staff	1 hr 13 mins
AS2	Pharmacist	Academic Staff	1 hr
AS3	Pharmacist	Academic Staff	1 hr 34 mins
AS4	Pharmacist	Academic Staff	Interview 1- 1 hr Interview 2 (follow up)- 1 hr 1 min
AS5	Pharmacist	Academic Staff	1 hr 13 mins
AS6	Pharmacist	Academic Staff	1 hr 57 mins
AS7	Pharmacist	Teacher Practitioner	1 hr 37 mins
AS8	Pharmacist	Teacher Practitioner	1 hr 38 mins
AS9	Pharmacist	Teacher Practitioner	1 hr 40 mins
AS10	Pharmacist	Academic Staff	1 hr 22 mins
AS11	Pharmacist	Teacher Practitioner	1 hr 20 mins
AS12	Non-pharmacist	Academic Staff	1 hr 33 mins
AS13	Non-pharmacist	Academic Staff	1 hr 21 mins
AS14	Non-pharmacist	Academic Staff	1 hr 32 mins

### **3.4 Results**

Fifteen individuals agreed to participate, however one was lost to follow up. This was due to staff annual leave and workload demands resulting in no suitable time to conduct the interview. One interviewee declined the invitation to participate owing to a lack of time, another did not reply to the invitation e-mail or follow up reminder.

Interviews (n=14) were conducted between 27/01/2014 and 19/09/2014 in accordance with the method outlined in Chapter Two. No participant withdrew consent.

A series of themes and subthemes were generated through inductive thematic analysis and are presented in Figure 3.1.



**Figure 3.1-** Summary of academic staff themes and subthemes

### 3.4.1 Skills, knowledge, attitudes and values required to be a pharmacist

The perceived knowledge, skills, attitudes and values needed to be a pharmacist are presented here with illustrative quotes, a more comprehensive list is presented in Appendix 1.5. Comparisons have been made between the characteristics identified by different stakeholder groups as being important and discussion around this is included in Chapter Six. Where participants perceived there to be a change in the requirement of a particular skill, area of knowledge, attitude or value a supporting quote is presented.

Skills identified by academic staff as important for a pharmacist to possess included teamwork, checking/dispensing and communication skills, to name but a few.

AS7: *“So instead of just doing the pharmacy stuff now it’s much more part of a team...responding to their questions...promote things that need doing or sorting”*

AS1: *“...old school stuff like the dispensing and the uhm checking aspects”*

AS5: *“...the role of the pharmacist has become much more patient-centred and therefore it is just such an integral part of their role now that they can communicate”*

Academic staff perceived that pharmacists should know about anatomy/physiology, formulations, public health and medicines in general.

AS4: *“...so they need to have some anatomy and they certainly need physiology”*

AS2: *“they should know about formulations and how formulations work and how they deliver drugs into the body.”*

AS8: *“...medication that is being dispensed but also public health...we work on several campaigns throughout the year...people look to us for that information”*



Required attitudes and values were discussed and included a 'can-do' attitude, confidence and professionalism.

AS11: *"I think it's definitely a can do. And that is a big big attitude wise. It definitely needs to be that can do attitude."*

AS10: *"I think a degree of confidence in being able to articulate something and to be able to justify an approach..."*

AS14: *"...they should be professional. Um [pause] they should be professional, respectful, friendly, but not over friendly"*

As well as suggesting desired pharmacist attitudes and values, staff discussed the difficulty in developing student attitudes at university. The question of nature or nurture (i.e. whether attitudes and values are inherent or developed through MPharm curricula) was debated. The relative importance therefore of recruitment and admissions procedures to MPharm courses were expressed.

AS1: *"I think it's actually quite hard to instill attitudes, I think often a lot of these are things that you already have and it's sometimes quite hard to change those once you've reached the age of 18...so I think part of that comes under recruiting bearing that in mind during your recruitment."*

AS2: *"...you can create a culture which helps people to develop those attitudes but if they don't have any of those attitudes when they come into the course it's very difficult to change someone's attitudes by the time they leave the course..."*

### **3.4.2 Meaningful practice exposure**

All participants highlighted exposure to pharmacy practice as an important factor in graduate preparedness for practice. There was little consensus on whether current practice exposures were sufficient and what constitutes a meaningful practice exposure. This theme explores what academic staff perceived as being meaningful to graduate preparedness.

### **3.4.2.1 Exposure to patients**

Staff expressed clear value in students gaining exposure to patients, be that in a placement environment or bringing patients into the university. While AS14 perceived exposure to patients with specific diseases as beneficial AS4 and AS1 had alternative views that bringing in individuals who have minor ailments and those who are not necessarily ill, respectively, may also be beneficial. This suggests that exposure to more people, in general, may constitute meaningful exposure.

AS14: *"I bring people in...they really value it. I know from bringing people in that they learn things from those patients that they, we, couldn't teach them unless we had had that particular disease".*

AS4: *"... not just providing an environment where students will go and um meet patients with particular diseases, substantial conditions, cardiac conditions, diabetes, we should also make sure we find ways of showing them some of the more routine conditions because the symptomatology um can then be more readily differentiated."*

AS1: *"If we could get patients in and patients don't have to be ill patients because a patient could be anyone so if we could get a student from the College of Music and Drama in to be a twenty year old with a cough, 'cos they are a twenty year old with a cough you know they don't have to have a serious illness or anything but if we could use people you know, be a bit more inventive about it we can get people in, taking drug histories from real life people I think that would help enormously"*

### **3.4.2.2 Exposure to pharmacist role models**

Some, but not all, academic staff stated that they perceived themselves to be role models and acknowledged their responsibility as such. AS5 and AS11 are registered pharmacists, a potential explanation for their view.

AS5: *"I think we can have boundaries that help to encourage people to think about what they wear, you know to an assessment or you know how they behave professionally and things like that. Um, [pause] and also to be good role models as lecturers you know, and tutors.*

**BB: how do you think we do that at the moment?**

AS5: *um [laughs] I don't know. I don't know. Um but [pause] but the influence is great."*

AS11: "...every lecturer is a role model and they must, they should remember that as soon as they stand up in that lecture theatre, lab, workshop..."

Exposure to practicing pharmacists was also deemed important for undergraduates in developing certain skills.

AS5: "...those are the type of skills [communication skills] people learnt more by role modeling and exposure to practice maybe and it was, not that it was necessarily ok but you, I certainly felt you know when I was qualified as a pharmacist for the first time a lot of the core things I was learning was not what I'd covered in my degree"

While all staff were perceived to be role models, teacher practitioners in particular were highlighted as being particularly important as individuals whom students look up to. While their contribution to the curriculum is clearly highly valued, some participants stressed that their skills could be better utilised. This view was shared by teacher practitioners themselves.

AS3: "we use TP's. I don't think that we involve the TP's as much as we should do in the design and development of the curriculum, and they would welcome that but I think the mechanism isn't quite right to get that input. It's partly due to their limited time, partly due to the fact that I think we use them for some teaching that they shouldn't be used for. They have skills that we could use to better effect...I think [pause] TP's sometimes are delivering factual lectures um and by all means yes look at that, provide a case for that member of staff but then they're delivering those factual lectures. Takes them a while to write the lecture, to update it and deliver it. Then the associated marking of examination questions based on it, which means again that they're not doing something else for the school. You know and maybe if a TP had a series of 3 pharmacology lectures if you think about the time it takes to research, develop, deliver and assess those 3 lectures- how many sessions of 8 or 12 students that TP could be a facilitator for and what value that would have?"

**BB: what sort of things do you think the TP's could be involved in then in these smaller sessions?**

AS3: I think problem solving, um communication um clinical type skills, cognitive services, um [pause] dealing with difficult patients, just chatting through problems how it relates to practice."

AS1: "... I mean we've got the teacher practitioners and I think they are a really valuable resource but I don't know if we use them as well as we

*could...we've got people teaching things where the TP's would be much better..."*

*AS7: "...this isn't a criticism of the school so much as the fact that I think we could probably be used better, in the kind of shaping of the curriculum or the things that are taught, the way that they're taught... I think those are the kind of things that are perhaps not [pause] there aren't the opportunities then to harvest the resource of the TPs. And it depends what the school wants I suppose you know, if they are prepared to set the agenda and we just teach it, I think that's how it works in the main... there are areas where we could be more utilised."*

### **3.4.2.3 Exposure to other professions**

Some participants mentioned the importance of exposing students to other healthcare professionals. In particular this was voiced by teacher practitioners who have experience of working in multi-disciplinary teams.

*AS7: "They obviously meet a variety of people here but they are generally people that they er like tutors or in that kind of relationship... Umm, but particularly working with other healthcare professionals, you know they don't get much of a chance to see what their role is in relationship with others. When I do teaching with them um we've got maybe a patient case and I don't know perhaps there's a bit of a question mark over the diagnosis, they tend to think "oh I will send them for an X ray I will um [pause] I will start them on chemotherapy" you know, they are making decisions which a pharmacist wouldn't do"*

*AS9: "It's been started hasn't it with inter professional learning is one of the ways of getting them to communicate with other members of um the healthcare professionals. I've suggested to students this year, why don't you go and do hospital volunteering? Things like that. To improve communication skills with other people"*

While student communication skills were praised by many this was in contrast with the views of others who noted that they could be further improved, particularly with other healthcare professionals.

*AS9: "And I think as well even though I said they need to improve their communication skills, I think generally their communication skills and their attitude to the need and the [pause] reflection that they need to improve their um know... um communication skills seems to be there with the Cardiff students."*

AS13: "...we don't really prepare them well right now for working with other healthcare professionals. Or we're starting to do that. We're starting to have sessions where they're working on common tasks with medical students for example...so we have to continue to do that..."

AS8: "I think that's an area that's really missed um at undergraduate level. We don't really discuss how you would deal with other healthcare professionals..."

#### **3.4.2.4 Exposure to the pharmacy environment**

Interviewees were supportive of the idea of learning in the workplace environment. In particular it was perceived that this would provide the opportunity to learn by doing. Having the opportunity to practise tangible skills was perceived as beneficial.

AS10: "And for me where pharmacy should be eventually is that clear marriage as we have with nursing and dentistry and other areas where it's sometimes quite difficult to see the divide between work and learning...So if you're a medic working under the supervision of someone in a team, um, you can make mistakes. Um, they don't necessarily have to be mistakes which directly affect the patient but you can be asked a series of questions in a very challenging environment and you can get it wrong. But you learn from that. I don't think we have enough opportunity amongst our students to do that at an undergraduate level"

AS3: "if you want to dispense medicines correctly the best thing to do is to go and dispense medicines and doing two hours a week for five weeks isn't going to prepare you for the dispensing role if indeed that is a role for pharmacists."

A teacher practitioner noted that currently the limited time that students spend in practice provide little opportunity to learn by doing.

AS7: "So the experience tends to be finding your feet, seeing new things, and it doesn't get to the point, or has limited chance to get to the point of actually learning things or delving into them, doing things for yourself, being challenged to use what you've learnt in university you know, there isn't generally enough time to get to that point...it's not kind of protected time in any way so I still have to do all my normal things that day. So you know the student might get a few explanations here and there, but not necessarily [pause] the extra help"

AS5 expressed that seeing things in the workplace environment was also deemed as important in providing students with subject material and experiences to reflect upon. This will be explored later in the chapter. AS5 has had contact with postgraduate pharmacists who regularly undertake reflection as part of their career progression, this may be a reason for their view.

AS5: *“You need something concrete to reflect on and not just one incident ‘cos you need some exposure to know when things are going well or not going well and for comparison.”*

**BB: ok**

AS5: *and it’s hard as an undergraduate to do that. We try and provide some examples of things from them to reflect on”*

AS7 described how students find it hard to recall and apply things that have been learnt in a different environment, such as in the classroom. AS7 is a teacher practitioner and so will have had experience of supervising students in the workplace as well as the classroom.

AS7: *“They [graduates] can’t translate that to the real situation they find. And I can’t really get to the bottom of why that is. But in speaking to students they will very often say things like- well the patient didn’t know their medicines, the patient couldn’t tell me when they took them. And it’s like we teach them here [university] in a kind of sanitised situation... It’s suddenly, this situation I’m faced with isn’t the kind of parameters that I learnt it in and so it’s difficult to apply a structured approach that they learn to a situation that’s a bit more movable or a bit more um flexible to it. And I guess it’s the same often when we are doing workshops with them teaching therapeutic kind of areas. They want a black and white, and life isn’t like that. And that idea of working with grey areas, of coming to a conclusion, of thinking on your feet, that kind of thing, I think means that skills that we’ve taught them they’d struggled to be able to then apply in the situations they find themselves when they start their pre-reg”*

#### **3.4.2.5 Exposure to other members of the pharmacy team**

To a lesser extent it was perceived that students may benefit from exposure to other members of the pharmacy team, for example technicians. AS1’s view may have been influenced by their prior experience of teaching alongside pharmacy technicians on the MPharm programme.

AS1: “...also I think we tend to ignore technicians... I think that’s perhaps something we you know could benefit from is getting more technicians involved because pharmacy is not a isolated activity you don’t do it, well you do in very small community pharmacies, but on the whole you’ve normally got other people there and I think it’s important to, we can’t just train the students to be isolated little pharmacy machines and then suddenly expect them to reach the real world and work with other people and respect and understand other peoples roles and responsibilities if they’ve never been used to that so I think technicians could be more utilised in terms of not just their views but also getting more involved in within the course”

### **3.4.3 Effective curriculum strategy**

#### **3.4.3.1 Revisiting material with increasing complexity**

Academic staff made reference to the benefits of repeating content in allowing students to become “refreshed” and reacquainted with material before they begin their pre-registration training.

AS3: “...it [fourth year teaching in final semester] has given students confidence in terms of knowledge and skills um so that helps them go into the workplace not thinking the last time I looked at a BNF was December of my fourth year. And it seems to work based on the feedback we get.”

In particular staff spoke about the need for “spirality” within the curriculum. This term was used by participant AS1, this may be because an impending school reaccreditation was high on their agenda. As such the participant may have used the terminology used in GPhC standards for reaccreditation. AS11 and AS12 used the term “spirality” or “spiral curriculum” but appeared to have a different interpretation of the meaning of the term, potentially confusing it with “integration”.

AS1: “...we build up through the undergraduate years where as in the past I think it was a bit more patchwork. We’ve tried to make a determined effort to build on it in sort of spirality so we are starting off with simple uhm situations in the first year then building up through to more sort of complex situations. So they are getting used to it early on but we’re not throwing them in the deep end too soon”

AS12: “Um but a lot of modules run across second years and third years for example as options, so they’re not really looking to scale up where as we’re supposed to be, we’re working in a spiral, you know all these buzz

*words of spiral curriculum and trying to build things like that into it. You're trying to, you need to identify continuity through all the modules through all four years. And that is quite a hard thing to try and achieve, especially if you're trying to impose that upon a system that is segmented into modules with module leaders within disciplines. And historically it's been within a discipline, oh this is a medchem module, this is a pharmacology module, um to a certain extent I think there's the need for some separation, certainly in the early years, to provide basic knowledge but in the upper years I think there is plenty more scope, certainly in third year, we could be doing more to integrate um across the years"*

**BB: "What are your opinions on how we currently prepare our undergraduates knowledge for when they leave?"**

*AS11: it's opened my eyes a lot being involved with the university and understanding things such as [Anonymous lecturer] favourite, spirality, and the idea of how things are introduced and expanded and the restrictions that modules put on sort of teaching and how all this sort of side of things and integration and, so I've learnt a lot on this whereas I just thought knowledge was coming from a text book, learning, knowing and that was it. Whereas actually the application of the knowledge is more important than the actual learning of the knowledge...*

**BB: is that a feeling that is shared with everybody at the School then? That there's this drive towards improving the way we teach things and spirality?**

*AS11: From the module review I certainly feel that people understand why we're going the way we are going. So why we are doing integrated exam questions, why we're not just asking a ten mark essay question but trying to get them to to um apply their knowledge across different aspects. So across pharmacology, chemistry and professional pharmacy all in one scenario."*

### **3.4.3.2 A patient centred approach**

Patient centredness was a theme that came through strongly throughout interviews. Using patients as the focus of workshops in particular was deemed beneficial to student learning. Many participants drew comparisons with other healthcare degree programmes where patient centredness was deemed to play a greater role and stated their desire for pharmacy to be in line with this. This was a view shared particularly by pharmacist participants.

*AS5: "I think nurses come into um the learning and teaching of their nursing degree in general, I mean it's a generalisation but with a better awareness of the compassionate side of, people side of you know the degree, and less so in terms of the science and in medicine erm I'd say they*



*are more attuned to having, that marriage between the biomedical and the patient centredness”*

*AS1: “I think by contextualising stuff a lot more I think certainly feedback from the third year students is when they start doing workshops where they’re pulling things together and doing it in a very patient centred setting suddenly they get why they’ve been taught things and feedback is often quite strong from around that that its oh now I understand why that’s relevant so I think the more we can contextualise stuff the better it is so that they understand why, why we’re learning”*

### **3.4.3.3 Learning with and from others**

Staff highlighted the benefits of students learning with and from each other. Small group teaching and students working together in small groups was deemed positive to learning but also in allowing staff to identify students who may need more support.

*AS3: “...so I think general conversations and working in small groups is a much better way of, the old tutorial way I suppose, the ward round with the um medical students and the doctors group tutorials you know a group of 4 or 5 students maybe 8 as they do in law, those types of environments whereby you’re challenging them...”*

*AS9: “I think more smaller group teaching may be, would help improvements in communication skills...feedback we get every year is “well we don’t have small group teaching like this, we really enjoyed just being a small group, doing this in a smaller group, you know. This style of teaching of being in a tutorial and bouncing our ideas around before we make a decision on what to do, we really enjoyed.” So I think maybe making a bit more of people’s skills in having a bit more time with small groups... I mean you could do smaller group teaching within other modules... you can pick up the ones who are struggling with communication skills with you, struggling even with communication skills with their peers... in an informal environment where you’re sitting around a table in a group discussing a case of a patient or discussing a new drug molecule you would probably pick up on those who struggle with speaking to you know a more senior member of staff or, struggle speaking to their peers as well.”*

Staff also appeared to value inter-professional mixing through undergraduate curricula, allowing students to learn with and from other healthcare students. Though the majority were overwhelmingly positive about this aspect one participant did state the need for this method of teaching to be rationalised.

AS5: “we have all experienced or yes heard of IPE which is just people sitting next to each other in different parts of the lecture theatre which doesn’t work. You know proper IPE has to be facilitated well, and a lot of planning going into how that happens, so um [pause] whether it’s more IPE or you know more good IPE um or enhancing what we currently do I don’t know. But it’s not just the medics I think we can do IPE with. You know I think um maybe exploring different professions.

**BB: Like what for example?**

AS5: um I don’t know, healthcare studies, you know there’s a big school of healthcare studies with physiotherapists and nurses and um, um radiographers and speech therapists, who have a lot of exposure to patients.”

#### **3.4.3.4 Learning in a safe environment**

In general staff held positive views towards opportunities at university to practise and apply knowledge in a safe environment before doing so in the workplace. Interviewees mentioned student OSCEs as a means to practise communication but held mixed opinions. While many thought they were useful, particularly in providing a more relevant form of assessment, some perceived them to be false and in need of continued improvement.

AS13: “...students are given sometimes it may be er one-to-one interview sometimes it’s demonstrating competency in a mock clinical situation, the OSCE type things. Um probably don’t do enough of those. I know that we are moving towards more relevant ways of assessing the students”

AS9: “I think we do OSCE’s don’t we, but the students see them as false...and they don’t necessarily come in, maybe not in the right mind-set, for the situation. I’m not, whether that’s the right way to say it that they’re not in the right mind set but the feedback we get, and not only at undergraduate level but from pre-reg’s “oh well it was so false, it was an OSCE, it was really false” you know. “If I’d been in the actual situation” and it’s all the time “if I’d been in the actual situation I’d have changed, you know I would have prepared I would have done something differently” and it’s getting over that that is probably the most difficult thing from the school’s point of view.”

AS10 appeared to agree with this notion, while opportunity to practise was deemed beneficial, current “artificiality” on the MPharm programme was perceived as negative. As previously highlighted, many were in support of ensuring greater contact with real patients.

AS10: *“I have a feeling that our shift has to be into the areas of uncertainty, the areas of um challenge in practice um, uncomfortable things to be in. Uncomfortable or difficult things to teach um and actually I don't think they're easily taught in the sought of sterile educational environment that we have had as pharmacists in the past. And this takes us back again into, you know, simulation, proper placement learning and those other things, because I do think there's a big artificiality in our form of education and I think one of the biggest shifts that I'm seeing is the need for that artificiality to go...some of the schools are actually doing very good jobs now.”*

Teaching in a workshop environment in the classroom was also viewed as useful to students, allowing learning to be facilitated.

AS8: *“I found the students much more engaged in the work, we were able to cover a much wider variety of um products...they found it much easier to ask questions so I think a workshop environment really helped them to get to grips with that area”*

#### **3.4.3.5 Provision of optional course elements**

Seven of the fourteen interviewees mentioned provision of optional course elements as a potential enhancement to the MPharm programme.

Comparisons were drawn with other schools that do offer options.

AS4: *“I think that in an increasingly competitive um workplace um people that can demonstrate that they have other skills beyond clinical pharmacy um would be um would be valued and a able to meet the competition. Um but we are reluctant to give, as you know, students options in anything at the moment, and er ...we should be giving at least final year options in different aspects of pharmacy. Other schools do it... and I think if we don't do it soon um we, there will be consequences. So the students at [Anon] University for example who elect to go um in their final year to an overseas placement. Could be in industry, could be in a school of pharmacy could be in a community pharmacy...I would look at them as an employer with more interest let's say than a student who hadn't had that opportunity.”*

AS3: *“We don't give anybody any options in Cardiff which is a shame, other than the research project. So once they've made their decision then they're not, I suppose they may want to do community they may want to do hospital, they may want to do something on education and training, leadership and management even specific therapeutic areas. We've got no opportunity for somebody doing a four year degree to decide that they want to specialise in something small or focus some of their efforts so I don't think that helps either”*

However not all staff were entirely supportive of this notion, noting the complexities of introducing such a change. AS5 was also mindful that differentiation may start too early on the MPharm programme currently where students are choosing whether to pursue a career in hospital or community pharmacy early in their education, and this having a seeming knock on effect on their motivation to learn throughout the rest of the programme. Participant AS14 also deemed offering optional elements to be non-essential.

AS5: *"I have some views about how that sort of differentiation starts too early in a pharmacist's career um and even in undergraduate... I hear the final year students, even third year students saying to me that they're aware of you know this attitude in the undergrad that if you're going into hospital pharmacy if you're going into community pharmacy, there seems to be some attitudinal stuff going on. ...people make decisions about which sector to go into that may not be based on reality, I think that maybe once you make that decision you can't change or it's that us and them thing and of course there's primary care which is another issue. So it's interesting. My view is that we need to be a united profession. Pharmacy is too small a profession to have hospital, community, most people see community pharmacists, you know 90% of the time, not in hospital, what we do there is great it needs to be maybe re-addressed, the balance of funding or maybe the, where the training takes place to have more of an impact, um, and you won't hear people saying "oh I'm a hospital physiotherapist" or "I'm a community physiotherapist"*

AS14: *"I think the problem about optional modules is you could bring them in, it's a space thing I suppose. But you've got to have, it's ensuring that you've got modules that are all of a similar degree of complexity and similar so that if you're, so there isn't one that's easy.... You've got to have optional modules that are all equally rigorous and assessed to the same standard. Not in the same way. But assessed to the same standard. And I think that's why it's difficult to have... I'm never entirely sure it's necessarily. Well, [pause] I think [pause] I think it's more important to make sure that we prepare them for the real life for the workplace that they're going in to. I think that's the most important thing we have to produce somebody who is ready to go and be, do their pre-reg. And I'm not entirely sure that optional modules are critical to that process."*

#### **3.4.3.6 Feedback provision**

The vast majority of participants spoke about feedback in one way or another. Feedback was deemed to be important, both in allowing students to gain an insight into their own performance, affording an opportunity for

reflection and also for schools to reflect upon their practices (although this element of feedback will be discussed later in the chapter). Two participants noted that increasing formative feedback would be beneficial to students.

AS10: *“I think feedback is probably one of the most important ways that we can enhance our student experience, but feedback has become, it’s become something which happens at the end of a summative assessment. And actually I think it’s rubbish, at that point. Um my sense is that there has to be a constant dialogue as someone is learning... I’ve seen it at many universities, not to do with pharmacy, where books are handed back all marked with extensive feedback, and they’re still there half a year later, students haven’t picked them up because they don’t value, they’ve done the task they don’t value what’s in there. So I think one of the things that we can really do which would be of value of value to the students is make feedback count... So the feedback may not necessarily be in the end. It may be in the middle, and then expecting something from having given the feedback. So, or it might be a day later. But it’s something where the feedback has to be used rather than simply received.”*

AS3: *“I think a lot of people forget that this [is a] classroom based degree at the moment and therefore they don’t get a practice you know and they don’t get enough formative feedback and it’s not going to change because of the way the degree is funded and because there is I suppose no white space in the timetable”*

#### **3.4.3.7 Decreased didactic content**

A number of pharmacist participants were forthcoming in describing their desire for a decrease in the content of didactic content that is delivered to students, in favour of “white space” in the timetable. Such space was thought to be useful in allowing students the opportunity for self-study and reflection. While pharmacists often spoke about the benefits of reflection this was not mentioned by non-pharmacist staff.

AS2: *“I guess what I’m talking about is doing less didactic content based activities...”*

AS3: *“I think we need to create time in the timetable, a white space, that needs to be done so that students can think given directed study, not to be lectured at”*

AS9 noted that some graduates have the tendency to desire “spoon-feeding”, this view may result from AS9’s practice exposure and contact with other healthcare students who do not receive as much didactic teaching. Staff perceived that students value contact hours and see this as “value for money”

AS9: *“I think we spoon feed pharmacy students...quite a lot. You know, medics aren’t spoon-fed. And as well as that the job that potentially a medical student gets can be affected on a write up that they get from the consultant. So you know from the moment they step foot on the ward, for their placements, you know, they have to be signed off. “*

AS4: *“I mean I do expect students to do additional study, but if they’re 30 hours in a lab or a um workshop or a lecture theatre um I couldn’t reasonably expect them to do more than 10 or 15 hours of private study a week um [pause] er so I think that the time has got to be created within the timetable...one of the unforeseen consequences of the fees um regime is that students, paying clients now, and their parents and whoever else they want to know what am I getting for my money? And what they want is contact not direction.”*

One participant noted a desire for decreased didactic delivery of chemistry content in particular. A potential suggestion for this was that AS7 is a teacher practitioner and did not perceive their chemistry knowledge to be useful for practice. Another participant (also a pharmacist) agreed that knowledge of chemistry may potentially fall as a lower priority attribute for a pharmacist to possess.

AS7: *“Chemistry, I would struggle more with knowing the bits that are useful there, because I, I don’t particularly know how it’s useful to know chemical structures or how those bonds breaking or being made actually changes my day to day practice, or has an influence in it or can be useful to it. And, well, I’ll let you ask a chemistry teacher what the answer to that is, I think some chemistry is obviously useful because there are examples of where that affects a drug and... but I’ll let someone else decide that”*

AS4: *“...if you were prioritising them I’d probably put some of the physic-chemical and um you know sort of chemistry knowledge lower down”*

### **3.4.3.8 Integration**

While staff often spoke of integration including its benefits and the need to incorporate it into the programme there was some ambiguity in the use of the term. Some staff referred to integration in terms of experiencing teaching alongside practice exposure:

AS11: *"...it's all well and good to teach a lot of that stuff from textbook but until you actually have these people coming in...until we actually do it, it's not necessarily going to be understood."*

Whereas others spoke about integration more in terms of combining elements of different modules of the course be it in teaching or in assessment.

AS10: *"I believe that our modes of assessment um could be much more deeply team based, they could be much more testing of integrated knowledge."*

AS2: *"...the accreditor has now said we need to have an integrated content. People have argued what the word integrated means so for the purpose of this discussion integrated for me just means that science and practice is integrated so you know how to apply science to practice... and I think the School is making concerted efforts to do that...I think what needs to happen is there are some concerted efforts in areas of the School that everybody has to take this on."*

AS8: *"...in particular there's a lot of working between pharmacology and clinical on um integrating their work, and that's fantastic to see. A lot of the um pharmacology lecturers are really proactive now about asking us...'right-what kind of case would you have?'"*

AS4: *"...dealing with complexity is basically about being able to integrate information across scenarios, so I think modular um education hasn't helped but we aren't going to be able to change that now."*

There were also differing views on how the School currently implements integration. Some believed that improvements have been made and others stated that more context could be provided, with some drawing comparisons to another UK MPharm programme which was deemed to be integrated.

AS3: “...undergrads at the moment don’t have that pharmacy context, how it applies to the real world we bear that point in mind, then perhaps I am expecting too much”

AS1: “[UK Mpharm programme] for example if, well I know in theory I don’t know what it’s like in actuality but I know in theory they’ve they have re-written their, what was a very traditional course and they’ve sort of taken it completely apart and re-written a completely new much more integrated programme.”

AS13: “I’ve seen more examples of staff working together in the past year or two than ever before actually so there’s a whole aspect of integration of knowledge. Um, where as we used to deliver a a module on pharmaceutical chemistry and one on pharmacology, bring those together but not just bringing aspects of science together, bringing aspects of science and practice together.”

AS6: “You know [UK university] have got this fully integrated programme which seems to have some really good features in its assessments”

The pharmacists interviewed acknowledged the need for students to have an opportunity to apply knowledge and the lack of opportunity that is currently provided, where as others did not comment on this.

**BB: “Do you think there’s any way in which the School can better prepare graduates in terms of their sort of underpinning knowledge?”**

AS5: *Um I think a lot of the knowledge is in there that needs to be in there is in there. Some of it won’t really make sense until the context of applying it comes into place. It’s a bit like prescribing, you can know the prescribing curriculum in terms of knowledge, but until you get to apply it in a particular context with patients then that’s when that knowledge is really learnt.*”

AS7: “They want a black and white, and life isn’t like that. And that idea of working with grey areas, of coming to a conclusion, of thinking on your feet, that kind of thing, I think means that skills that we’ve taught them they’d struggled to be able to then apply in the situations they find themselves when they start their pre-reg”

### **3.4.4 Stakeholder collaboration**

#### **3.4.4.1 Who should schools collaborate with?**

A wide range of potential stakeholders were suggested by academic staff including school staff themselves, patients, the public, carers, employers



(such as hospital and community pharmacies), other healthcare professionals and industries, The General Pharmaceutical Council, Wales Centre for Professional Pharmacy Education (WCPPE), Welsh Education Development Service (WEDS), Welsh Government, The Royal Pharmaceutical Society (RPS) and their Local Practice Forums (LPFs), Community Pharmacy Wales (CPW), Local Health Boards (LHBs) and other schools of pharmacy. Recent graduates and MPharm students themselves were also noted as important stakeholders.

Staff often mentioned collaboration with the GPhC, in particular the need to comply with the new outcomes framework, focusing on what students should be able to *do*. However this was at odds with the way in which some participants spoke throughout interviews as they often referred to what the school provides i.e. the *inputs*. A potential explanation for this finding may be the lack of contact academic staff have with the products of the MPharm programme (the graduates, once they leave the school) and so have little knowledge of what they are and aren't able to do, hence academic staff were often unable to comment on how graduates perform in practice. Often it was assumed that students were able to do things because of the university provision (what is taught as opposed to what is learned).

AS10: *"...try and shift away from an income, an input based model of education to output based model of education, you know what are, what are we expecting of our graduates. And we were able to think of very very different styles of education um because we didn't have any constraints, we're shifting in that direction um as a professional body, and that's really good. I think Cardiff has to do quite a lot of running to get up to the front end of the game. I think at the moment, perhaps understandably because we're last in the current sequence of accreditations, or reaccreditations, so there are lots of schools now who have looked at the integrated four year programme with um with er a variety of learning against new standards, we haven't yet been through that accreditation process...Um, I think this [pause] I think again the way of encouraging learning is not to teach."*

AS5: *"...but you know I know that um the communication skills teaching is done very well, the ethics and professional skills, oral*

*presentation skills, written skills, a lot of those transferrable skills um I would say are taught to a very high level.*

**BB: OK.**

*AS5: So I think we're starting from a very high selling point in terms of skills.*

**BB: So is that something that you've noticed from experience or something you've heard from feedback that you think communication skills are good?**

*AS5: um, that's more in terms of what I understand in terms of the input just from you know, sitting in board of studies or looking at various aspects of different modules and listening to colleagues or meetings that I attend and sort of you know gleaning the kind of things that are taught at the moment"*

The need for greater collaboration with employers in order to obtain feedback on how graduates perform in practice was discussed. While some members of staff felt that Cardiff graduates are employable owing to the reputation of the school and its standing in the GPhC registration exam pass data, teacher practitioners in particular were keen to stress that this alone is not enough to guarantee graduates jobs in the highly competitive market, potentially due to their greater experience in pre-registration pharmacist recruitment and contact with graduates from other schools.

*AS13: "I sense that Cardiff students when they go into pre-reg they're well regarded, have a good, Cardiff has a good reputation, there's no doubt about that..."*

*AS4: "...and this is where the anecdote comes in you know the the you know employer saying 'well they're you know they're...' on the other hand you know I had the what's his name [pharmacy recruiter] sitting next to me a few weeks ago ...and he said to me- 'we love your graduates'...he said 'you know they, we know that they'll do well. We know that if we take a bet on a Cardiff graduate um there won't be any issues'."*

*AS8: "Unfortunately I think some people still have the view of – the Cardiff "name" [interviewee uses air quotation marks] will get people jobs. Um I've sat in on numerous interviews, not once have I heard someone say "what school of pharmacy have you come from?"... So I think it's important that people [who] are senior in university realise that. Um that that the Cardiff name doesn't get jobs anymore."*

*AS9: "From what I see in practice and from what people say to me, you know, I'm not saying there aren't schools of pharmacy that, it's picked up*

*on in interview definitely that they have, are poorer, schools of pharmacy. But, you know, the fact that Cardiff came second this year, didn't they? For was it research in The Guardian?... You know, that would pay no weight on a student's interview for pre-reg place... But I think there is this perception within the School that you know, people want graduates from Cardiff because it's a original school of pharmacy and I, you know, I think that needs to change, you know? I think people need to start saying, actually none of you are guaranteed a job. So take all opportunities you can."*

#### **3.4.4.2 Mechanisms of collaboration**

The importance of collaboration with stakeholders, particularly employers, in order to gauge how graduates were performing in practice was highlighted. The majority of academics stated that pre-registration trainee attitudes are good however one interviewee (who had contact with and feedback from employers) stated there is room for improvement, thus highlighting that 'you don't know what you don't know'.

*AS3: "We have reports back from some people saying that they're, they come out thinking they know it all they don't recognise their own limitations um they are not students any more and sometimes it takes a while to go from student mode to work mode. But generally speaking I think most the vast majority of our graduates do have appropriate work attitudes"*

There is also a clear need to find out what employers expect of students on day one of their pre-registration training. Academics spoke of different end points, with differing opinions on what a day one pre-registration trainee should look like. Some participants stated that certain elements could be developed when they were in the pre-registration training environment but others expected that they should arrive with these abilities. An example of this is that teacher practitioners stated that some graduates lack the ability to apply information (as described above) whereas other academic staff saw the pre-registration training year as the opportunity to practise applying the knowledge learnt at university.

#### **BB: "how do you think the School currently prepares undergraduates in terms of knowledge?"**

*AS4: in terms of knowledge I I think it's good... I mean that knowledge would be test and the application of that knowledge would be tested in*

*something like the pre-reg um in the qualifying exam. Um so I don't think there's any problem with knowledge."*

*AS4: "And if they couldn't dispense 28 atenolol 100 O.D. I don't think that would be a problem, they could learn that on the first day of their pre-reg."*

*AS14: "I mean I know we do a lot of the communication but they don't do communication with real people, with real patients, with real illnesses, and they don't, they're not standing in a pharmacy with 20 people standing behind that person and having to do it, go do it all, do it properly but do it at the speed that is necessary to fulfill their obligations and that I think is what the pre-reg does. The pre-reg puts them in the real life context. And then they practice, essentially, that is what the pre-reg is, it's a giant practice exercise."*

*AS7: "So they've got those skills but when I see them come into hospital I feel like they really flounder like that skill has suddenly left them. Suddenly they are faced with a real patient or a real drug chart or a real doctor to speak to and they can't translate that to the real situation they find."*

There also appears to be debate in the data around whether schools should be preparing students to be practicing pharmacists or whether there should be scope for students to have other careers.

*AS13: "...in a sense the course has to prepare them for whatever comes next and for most of them that is is er is life as a pharmacist. Um it could it could of course be a research career it could be an industry based career, those are things we also have to prepare students for..."*

*AS1: "I think we need more feedback in terms of what actually is needed on day one of pre-reg but not looking at that in isolation because I think again we tend to think within our own little box of undergrad and then there's this little box of pre-reg and this little box of post qualification...and that needs to be a bit more joined up to look, you kind of almost want to work backwards so starting at day one pharmacist and therefore what does a pre-reg need to be able to do therefore what does an undergrad need to do to be able to prepare that whole process"*

It is clear from the data that feedback is often informal and anecdotal (as previously mentioned by AS4) and that there is a need to formalise this. Various methods of engagement were suggested in order to evaluate current course design including informal events, semi-structured interviewing and

small group engagements. Some staff were unsure of the best way in which to engage stakeholders but stated that it should occur frequently, and that findings should be disseminated to all staff. Face-to-face communication was suggested as best by some participants and the importance of communication being two-way was stressed.

AS7: *“...talking to people is the most valuable rather than surveys and questionnaires and things like that”*

Barriers to stakeholder engagement were perceived to be lack of stakeholder time. However combining stakeholder engagement opportunities such that more than one individual is consulted at a time was also believed to hold potential issues, such conversation being dominated by some individuals.

AS11: *“I think that one-to-one is time consuming for everybody, but group can also be overpowering by some people.”*

### **3.4.5 Potential barriers**

#### **3.4.5.1 School culture**

Interviewees often referred to the Cardiff School of Pharmacy as “traditional”. It was perceived that being an older school meant that it was more difficult to make changes to the programme.

AS1: *“I think we’re probably one of the more traditional schools at the moment... I think um a lot of the newer schools in particular are a bit more I guess they’ve had the freedom to be a bit more visionary about things. We’re somewhat restricted by tradition in that because we’ve been around for such a long time you’re constantly making small changes and tinkering around the edges of things”*

There was also a perceived lack of desire to make changes by some staff.

AS2: *“...you don’t know if they are going to be better until you actually do them. So there’s a tendency towards ‘well if it aint broke don’t fix it’. That’s sort of safe mentality isn’t it...”*

An additional potential barrier to change and in delivering the integrated approach which staff often spoke about was separation between staff groups such as pharmacist and non-pharmacist staff, those on ‘teaching and

research' and 'teaching and scholarship' contracts. While teacher practitioners were described by others as highly valued members of staff they spoke about being underutilised (as previously discussed) and potentially lacking communication from other staff. Differing views on this were evident.

AS3: *"the other thing that we do well I think generally speaking is work as a team within the school. That's um having a great head of school... is very, very helpful. But, the history of the school, the way that the staff help and support each other um the student body, how collegiate that is, and how the staff and the students work together, I think in one building is very helpful... So I think that's something else that we, we do well and I suppose that what we do well is we continue to support it and encourage it to make sure it continues and thrives to become, you know, a community if you like, in which people can flourish. We need to support that."*

AS12: *"one of the issues that's growing at the moment which I have raised at meetings and I'm concerned about it the distance that seems to be being put between pharmacists and non-pharmacist teachers... the information seems to stop at the pharmacists that are on staff rather than it being spread amongst everybody"*.

AS9: *"I wasn't aware that there were 40 iPads that we could book. Um so I think it comes down to maybe the communication of the academic staff with us as TPs."*

Frustrations were also noted by a few participants who perceived research achievements to obtain more acknowledgement than their teaching endeavors. This is a potential barrier to staff spending more time developing their teaching portfolio.

AS12: *"I think there's a big problem with the T [teaching] not being very strongly recognised... there's a huge conflict between how much time I can spend doing that, developing teaching, when I could be writing grant applications or papers..."*

#### **3.4.5.2 Financial barriers**

While discussing barriers to improving the preparedness of graduates interviewees often made reference to the way in which the course is funded.

While suggesting improvements a caveat that the degree is funded as a science as opposed to a healthcare subject was occasionally offered.

AS5: *“I think it’s in terms of numbers, consistency and finances...that all involves a large financial commitment um and I think those are the biggest challenges”*

AS3: *“...I think a lot of people forget that this [is a] classroom based degree at the moment... and it’s not going to change because of the way the degree is funded...”*

### **3.5 Discussion**

Interviewing academic staff of CSPPS was beneficial in offering an insight into perceptions of graduate preparedness as well as some wider topical issues in pharmacy education more generally. Participants involved had a range of backgrounds and experiences with varying levels of seniority and length of experience within the profession. This was important in offering a range of insights influenced by a variety of factors including the subject discipline in which they teach, their own experiences and values. The purpose of the study was not to seek consensus opinion but to canvas a range of opinions including those who may have opposing views.

The researcher is a past student of CSPPS and therefore knew the interviewees. This offered the ideal starting ground for development of interviewing skills, as the researcher felt comfortable and able to practise different questioning techniques. Through familiarity with participants and prior conversations, some of the issues explored and opinions held were to some extent anticipated. However, there was equally a high proportion of new issues (particularly the perceived underutilisation of teacher practitioner skills) raised which were not foreseen. Being known to each participant (and vice versa) meant that the important stage of rapport building was to an extent achieved prior to interviews. Interviewees were familiar with the researcher’s preexisting knowledge of the subject at hand and so were able to use acronyms and colloquialisms naturally.

Semi-structured interviews were a particularly useful method of data generation to use with this stakeholder group. Coordinating focus groups of academic staff would have been practically challenging and therefore interviews provided a pragmatic and flexible option. Interviewees expressed strong views on occasion that they may not have been willing to share in a group interview scenario, especially if their line manager or similar had been present. Being able to speak to participants face-to-face also offered the opportunity for non-verbal gestures to be noted and taken into account (i.e. smiling, rolling the eyes). One such example can be seen in the data presented above whereby a participant used their hands to gesture quotation marks while responding to a question.

Interviewing academic staff served as a great starting point for the research, and provided plenty of topics for further exploration with other stakeholder groups. An emergent theme was the lack of clarity over desired endpoints/outputs i.e. should CSPPS focus on producing pharmacists or pre-registration pharmacists more specifically? By exploring the issue with employers (Chapter Four) it could be possible to clarify what is expected of a graduate upon completion of the MPharm programme.

There were no major differences identified between individuals with regards to the knowledge, skills, attitudes and values needed of pharmacists except for the fact that some pharmacist participants mentioned that the ability to reflect is desirable, whereas other non-pharmacist participants did not. This could suggest that reflection upon ones own performance and continual development is central to being a healthcare professional. Reflection was an attribute also highlighted as being important in learning and is explored further in Chapters Four and Six. As pharmacists, participants will be used to undertaking Continuing Professional Development (CPD) in order to remain on the GPhC register. It is possible therefore that they have a greater appreciation for reflection as a learning tool, hence why they mentioned this attribute as being required.



While there was no major difference identified between pharmacist desired characteristics it was however noted that academic staff participants spoke about different end points from the degree. Some had different ideas of what graduates should be able to do upon graduation and what can be developed throughout the pre-registration training year. This highlights the necessity of speaking with employers in order to find out what they expect of graduates and also in having an agreed definition of what a graduate should be able to do. This finding corroborates the work of Wilson et al (2005) who stated that redefinition of professional competence was needed at an undergraduate level.

Academic staff described a vast array of requirements in terms of the knowledge, skills, attitudes and values with significant overlap between their views and the views of the regulator. With respect to student attitudes, many of the suggestions made fell in line with the seven principles outlined in the student Code of Conduct (General Pharmaceutical Council, 2010), in particular staff stressed the importance of making patients their first concern, having respect, being honest and trustworthy and taking responsibility. Likewise the skills and knowledge requirements of a pharmacist expressed by academic staff are reflected in the requirements for the initial education and training of pharmacists (General Pharmaceutical Council, 2011).

The relative importance of students having the required attitudes and values to be a pharmacist was discussed and, with this, the debate around whether attitudes and values are attributed to nature or nurture. Attitude may be defined as a “settled way of thinking or feeling about someone or something, typically one that is reflected in a person's behavior” (Oxford Living Dictionaries, 2017). Psychology literature describes how attitudes can be learned and developed through an individual’s past and present experiences (DeLamater, 2013), suggesting that it is possible to develop attitudes over time. Although it may be argued that if a student already possesses the

necessary attitudes there is less work to be done throughout the MPharm programme. Some participants suggested that the admissions process could be further enhanced in order to ensure the most appropriate individuals were undertaking MPharm training. This issue has been reflected in medical education, whereby alternative methods to the standard “admissions interview”, such as Situational Judgment Tests (SJT’s) have been developed. Medical education literature has documented the benefits of using Situational Judgment Tests (SJT’s) and Multiple Mini Interviews (MMI’s) in student selection concluding that through the use of SJT’s a number of “non-cognitive professional attributes” can be measured (Patterson and Ashworth, 2011) with useful levels of validity (McDaniel et al, 2001; Lievens et al, 2012). Therefore, this may be an issue which schools wish to explore further and employ in their admissions processes.

Participants were asked whether they perceived the knowledge, skill, attitude and value requirements to be a pharmacist to have changed. While the need for some attributes were thought to have remained the same the majority of participants highlighted a perceived increase in the importance of pharmacists being able to communicate with patients and other healthcare professionals. Pharmacists were said to be more “hands on” and require the skills to perform tasks such as blood pressure checks, with less of a requirement to dispense medicines. The ability to use IT was also deemed to have become more important, as has the ability to work in a team, owing to the perceived integration of pharmacists in multidisciplinary healthcare teams. Pharmacists were also said to require knowledge of formulations but the requirement to physically make pharmaceutical products had diminished. Overall, the biggest perceived change appears to be in skill requirement as opposed to attitudinal or knowledge. This may be a useful consideration for individuals reviewing MPharm curricula. On reflection participant responses to the question of whether or not the required attributes of a pharmacist had changed did not have as much relevance to the research question as other

lines of enquiry. For this reason it was decided that this question would not be explored with other stakeholder groups.

Discussion points specific to this stakeholder group are presented below. More general discussion between stakeholder groups interviewed can be found in Chapter Six.

Academic staff were in agreement that students would benefit from greater exposure to practice, patients and professionals (3.4.2). While the school currently provides placements for all students in all years of the programme (approximately five days in community pharmacy, a week in an NHS hospital pharmacy and a number of half-day role-emerging placements in other health and social care settings) (Cardiff University, 2018) it was clear that staff wanted to provide students with greater opportunities for exposure to practice. These proposed enhancements are in line with the work of Vygotsky's theory of situated cognition which states that knowledge is tied to the situation in which it is learned, making it difficult to apply in other situations (Gauvain, 2008). This is explored further in Chapters Five and Six.

A key term used by most participants at various parts of the interview was "integration" (3.4.3.8). Staff explained the benefits of integration to pharmacy education and how although efforts have been and are being made to ensure integration, more can be done by CSPPS to ensure sufficient integration between subject areas and with pharmacy practice. The term was used with some ambiguity between interviews as explained in the results, with no consensus in its definition. However each reference to the term was in line with recommendations made in a report to Higher Education England (HEE). Integrating science and practice, integrating practical placements into curricula and better integration of teaching, learning and assessment of science and practice allowing contextualisation of learning are all noted in the literature as recommendations for the progression of pharmacy education (Smith and Darracott, 2011). Academic staff in this study agreed with this

principle and understood the benefits. The views of staff in this study also align with those in previous studies, mainly the need to increase integration of students in practice-based activities (Zarembski et al, 2005) and to increase the integration of content within courses (Ryan et al, 2009). The issue of integration is explored further in Chapters Five and Six.

There appeared to be some confusion in terminology between participants with regard to the term “spirality” also, with two participants seeming to describe integration while talking of spirality. In essence, those who mentioned spirality were supportive of efforts to build upon content throughout the programme with increasing levels of difficulty. A spiral curriculum may be defined as one in which “there is an iterative revisiting of topics, subjects or themes throughout the course” (Harden and Stamper 2009) with each subsequent visit building upon the last. Staff reported positive feedback from students when subject matter were revisited (3.4.3.1) and hence stressed the importance of this educational tool in curriculum design. This principle is discussed in further detail in Chapter Six.

Many staff suggested that offering students optional study elements throughout the MPharm would better prepare them for practice and make them particularly employable (3.4.3.5). This finding agrees with the work of Wilson et al (2005) and also that of Ryan et al (2009), who too found that students should be given more choice and flexibility. While having options was said to be an attractive element for students, this study identified potential barriers such as timetabling and ensuring consistency between options in terms of assessment. Further work into the feasibility and potential benefits of including optional course elements to MPharm curricula is required.

Academic staff stressed the importance of teacher practitioner input in course delivery (3.4.2.2) but suggested that they could be better utilised (3.4.5.1) as opposed to the current way in which they are involved in

delivering course content. Teacher practitioners interviewed agreed with this notion, stating that they have been unable to input as frequently as they would like in curriculum design and that their background and experiences may situate them in a position to share first hand experiences with students as opposed to pure delivery of pre-defined content. This suggests that there may be grounds for a review of the way in which teacher practitioners, and other practicing pharmacists, are involved in MPharm curricula design.

One academic spoke about “student mode” in relation to employer feedback and other academic staff made reference to a “student mentality” at an undergraduate level and how students see themselves as professionals upon graduation and entrance into the workplace. This is in line with the theory of professional socialisation. Professional socialisation may be defined as “the process by which individuals selectively acquire the values and attitudes, the interests, skills and knowledge- in short, the culture-current in the groups to which they are, or seek to become, a member” (Merton et al, 1957). Students are said to embark on the process of professional socialisation from the start of their undergraduate education and through practice placements however the relatively limited exposure to placements in the UK means that the pre-registration year is currently an important part in the professional socialisation process (Schafheutle et al, 2016). Academic staff suggested increasing workplace exposure through placements as a means of increasing graduate preparedness for practice through a variety of mechanisms. One such potential benefit may be through enhancing the professional socialisation process, such that graduates are equipped with the attitudes, values, skills and knowledge of the professional community they will be entering. Professional socialisation is further discussed in Chapter Six.

Small group teaching was highlighted as a particularly useful mechanism of teaching (3.4.3.3) whereby students can be individually challenged and receive greater contact with those delivering the session, as opposed to the

traditional lecture theatre model. The benefits of small group teaching have also been noted by other stakeholders interviewed in the study and will be explored further in Chapters Four and Six.

Participants suggested a range of stakeholders (3.4.4.1) with whom schools of pharmacy should engage with when conducting curricula review and development. Future stages of this project will be informed by these recommendations and will include the perceptions of recent pharmacy graduates and employers alike. Engagement will be face-to-face where possible and the researcher will go to the participants, as suggested. One participant commented that feedback received by CSPPS is often anecdotal, another stated that they heard things “second hand”. By engaging with key stakeholders through this research the feedback will be formalised.

### **3.6 Limitations**

The findings of this study may not be generalised as they include the views of a relatively small sample of participants from one school of pharmacy. Further studies may include the views of other academic staff including those from other schools of pharmacy. While the lessons from this study may be applicable to other schools, the inclusion of CSPPS staff makes the recommendations more applicable to CSPPS.

The findings of the study may have been influenced by the close proximity of interviews to a reaccreditation cycle. Reaccreditation may have been high on the agenda of some participants and influenced their response to questions, therefore the results may look different if the study is repeated at a later date.

Many participants interviewed stated that they hadn't been in practice for a long time. This brings to light the question of how well placed academic staff were to comment upon the knowledge, skills, attitudes and values required of practicing pharmacists. For this reason their opinions are triangulated in Chapter Six with the views of other stakeholders.

While the majority of interviews were conducted in consultation rooms (“neutral” territory), two interviews were undertaken in the offices of the participants. This posed unique challenges as interviews were interrupted by telephone conversations. Such interruptions appeared to affect a participant’s train of thought. Therefore the researcher suggests that interviewing in neutral territory, where possible, is superior in allowing the interview to progress without distraction. Efforts will be made to interview in neutral spaces for future stages of the research.

Another limitation to this study is that academic staff do not always have contact with students post-graduation. Therefore speculation on their abilities in practice may come from perceptions of how a student performs as an undergraduate or as second hand feedback received from an employer. In order to explore graduate abilities upon entering the pre-registration training year engagement with employers or graduates themselves is needed.

### **3.7 Conclusion**

The use of qualitative interviewing methods was useful in exploring the views of academic staff towards graduate preparedness for practice.

The aims and objectives of this part of the study were met. In particular the knowledge, skills, attitudes and values needed to be a practicing pharmacist were described. The relative importance of individuals’ attitudes and values were highlighted, as well as the difficulties in developing these through MPharm curricula. The preparedness of graduates of CSPPS for practice was explored with the majority of views being positive, however a need to obtain formal feedback from employers with experience of supervising graduates in the workplace was highlighted. Potential barriers to making course improvements were discussed and include financial, logistical and theoretical barriers (such as individuals’ resistance to change). Academic staff made positive comments relating to engaging various stakeholders in course design and delivery and suggested holding formal events in order to improve collaboration, providing a mechanism for two-way feedback.

The findings of Chapters Three, Four and Five are triangulated in Chapter Six where areas of good practice are highlighted, suggestions for further work and recommendations are outlined.



Chapter Four

# Interviews with employers

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## **4 Employers**

### **4.1 Introduction**

Chapter Three explored the views of school of pharmacy staff towards graduate preparedness for practice. This chapter continues by exploring the views of individuals involved in the employment, supervision, education and training of pharmacy graduates in the UK. This stakeholder group are referred to as “employers” herein. As individuals who have significant contact with pharmacy graduates this stakeholder group were ideally situated to comment on ways in which schools of pharmacy may better prepare graduates for pre-registration training.

#### **4.1.1 Employer perceptions of pharmacy graduate preparedness for pre-registration**

Previous studies investigating the views of employers towards pharmacy graduates in the UK are limited. A 2016 study found that both pre-registration tutors and non-pharmacist staff act as role models for graduates in their post-graduate training. There was also a difference between hospital and community practice in the role of the pre-registration tutor and the mixture of patients that graduates were exposed to (Jee et al, 2016) highlighting the need to provide students with a range of experiences. Interviews conducted by Langley and Aheer (2010) showed that sufficient knowledge is held, however graduates lack the ability to apply this in practice. Communication and interpersonal skills were also lacking (Langley and Aheer, 2010).

Employer perceptions of graduate preparedness beyond the UK have explored the suitability of pharmacy graduates for the workplace. One study in the West Indies found graduates to possess theoretical knowledge but lacked the ability to apply this, with those being trained under an apprenticeship programme perceived as being better prepared than those who were not, however this study is limited by a small sample size (Sealy et al, 2013). Focus group participants in this study also stated that schools possess a lack of clinical faculty members (Sealy et al, 2013).

A study in Thailand highlighted that 76.5% of hospital pharmacists perceived graduates to be prepared for hospital pharmacy practice. Half of the participants indicated that PharmD graduates were better prepared, as measured by higher competencies in clinical activities, than BPharm graduates (Anderson et al, 2015). Employers surveyed in a study conducted in New Zealand perceived graduates to be better at dispensing than extemporaneous compounding and attributed this to compounding being taught early in the four year programme (years 1 and 2). This culminated in the authors calling for revision of this specific subject area later in the programme (Kairuz et al, 2010).

Studies with employers in the United States have identified communication skills as a highly desirable characteristic for pharmacy graduates (Thompson et al, 2012; Bond et al, 2013; Vlasses et al, 2013). This was ranked above other characteristics such as an ability to use literature and punctuality, with the desired attributes varying depending on the practice site (Thompson et al, 2012). It was also found that sufficient education and direction needs to be given to those who supervise graduates in experiential settings in order that skills can be adequately addressed (Bond et al, 2013). A necessity to engage with employers in the review of US pharmacy programmes and accreditation standards was also identified (Vlasses, 2013).

#### **4.1.2 Employer perceptions of medical graduate preparedness for practice**

More research has been conducted in medical graduates' preparedness to practice than pharmacy graduates. While differences in their initial education must be borne in mind, some parallels can be drawn. Relevant literature in this group is therefore presented here. When surveyed, consultants and registrars identified that junior doctors are not as prepared for starting work as they could be (Matheson and Matheson, 2009; Tallentire et al, 2011; Van Hamel and Jenner, 2015). Graduates were found to lack confidence but positive comments were made regarding their enthusiasm and reliability

(Tallentire, 2011). Having familiarity with the ward environment was emphasised as being of importance in student transition to F1 (Tallentire, 2011). Studies with F1 supervisors also found that preparedness is dependent on medical school attended (Van Hamel and Jenner, 2015).

This chapter aimed to explore employer perceptions of the preparedness of UK pharmacy graduates for pre-registration training.

The objectives were to:

- Determine the perceived knowledge, skills, attitudes and values important for a pre-registration trainee pharmacist
- Explore employer feelings on how graduates are prepared for the pre-registration training year
- Explore employers' opinions on the factors that influence the preparedness of individual pre-registration trainee pharmacists for their pre-registration training year
- Gather and explore employers perspectives on improvements that could be made to undergraduate programmes to better prepare students for the pre-registration training year

## **4.2 Ethical approval**

Ethical approval was sought from CSPPS Research Ethics Committee (REC). A favorable response for interviewing community pharmacist employers was obtained 16<sup>th</sup> March 2015 on the condition that consent forms were updated to include the supervisors contact details and the participant information sheet was amended to include details of anonymised quotes. A separate application to interview hospital pharmacist employers was made. A favorable response was obtained on 20<sup>th</sup> November 2015 upon addition of a complaints procedure to the participant information sheet, clarification of study inclusion criteria, addition of a statement relating to confidentiality in a potential group interview situation and clarification that data would be stored

for twelve months after publication of the last research output or for three years (whichever is longer).

After liaising with Health and Care Research Wales an R&D application was made through the Integrated Research Approval System (IRAS) in order to interview hospital pharmacists. All seven Health Boards in Wales were approached in addition to fifteen NHS Trusts in England. Approvals were granted by all seven Welsh Health Boards and seven English NHS Trusts in spring 2016. Reasons for non-inclusion of the remaining NHS trusts included research and development departments workload and inability to respond in time. One NHS Trust required applications to be made through a separate new HRA system while others did not respond to telephone calls or e-mails.

In order to obtain NHS approvals the researcher became Good Clinical Practice (GCP) certified. Research passports for each site were applied for and granted, Cardiff University Sponsorship was obtained and Site Specific Information (SSI) forms for each site were completed.

### **4.3 Method**

Qualitative methods (described in Chapter Two) were employed for this part of the study.

#### **4.3.1 Topic guide design and refinement**

The basic topic guide (Appendix 2.1) was developed for approval by CSPPS Research Ethics Committee, with the specific research questions (including wording) being developed later. Topic guide design was influenced by a previous topic guide that was used to interview CSPPS staff (Chapter Three).

Questions were written according to the aims and objectives of the study and were informed by educational literature. In particular the terms knowledge, skills, attitudes and values were frequently used as this is in line with the terminology employed by the GPhC. Interview questions were written and reflected upon within the research team before being refined. In line with an

iterative process the topic guide was slightly modified in order to generate the highest possible quality data.

For example during interviews with hospital employers the wording of one of the questions was slightly amended by the addition of “briefly”, in order to stress to the participant that this was a relatively small aspect of the interview.

*“I’d like to briefly explore your opinion on the desired characteristics of a pre-reg pharmacist...”*

This was in response to the first interviewee, who spent a long time defining what characteristics were most important. While interesting, it reduced the time to discuss other vital areas of the topic guide.

In order to explore employer perceptions around stakeholder engagement and collaboration with pharmacy schools a question was added to the hospital pharmacist topic guide. Initially the following wording was used:

*“Something that’s particularly important to the school is communicating with those individuals involved in the training of our graduates, such as yourself. Is there anything that the School can do to facilitate communication with you, including feedback, to help us better prepare those who undertake their pre-reg with you?”*

The question was used with the first two participants however it was clear that it was not working as well as it could have. Participants appeared confused by what was being asked and requested clarification. The researcher re-listened to audio data in light of this and refined the question, making it shorter and less ambiguous.

*“My supervisors have told me that the next question is really important. Is there anything that the School can do to allow collaborative working to improve the preparedness of our graduates who come to you for pre-reg?”*

Stating that the next question is important drew in the participants' focus and interest. They listened intently and considered their response before answering. Participants no longer required clarification of what was being asked and were forthcoming with suggestions on how schools (including CSPPS) can better collaborate with employers. While no longer specifically asked in the question, participant answers focused on aspects of communication between schools and employers, its importance and how it can be improved.

Similarly refinements were made through an iterative process to the topic guide used in interviews with community employers. Examples include removing a question asking which services the community pharmacy offers in order to save time for more vital questions (this information was required for contextualisation purposes only and was gathered by the researcher prior to the interview for example through the pharmacy's website). More questions were also added to the initial section of the topic guide to establish the employers experience in supervising pre-registration students (such as whether or not they were a tutor, for how long they had been a tutor if so, when was the last time they'd supervised a pre-registration trainee and do they have contact with one or more pre-registration trainees currently). The focus of the final section of the topic guide was refined with emphasis switched from exploring what pre-registration trainees do well and less well to what schools do well and less well in preparing graduates for pre-registration training. In doing so repetition was avoided.

#### **4.3.2 Recruitment and sampling**

A number of non-probability sampling methods were used to recruit a range of participants (n=25) including convenience, purposive and snowball

sampling. Potential interviewees were identified as individuals known to the researcher and supervisory team. In addition to the methods in Table 4.1 a Facebook advertisement post (Appendix 2.2) to the Welsh School of Pharmacy Past Students Association page was also made but attracted no interest from potential participants (Table 4.2). Advertisement leaflets (Appendix 2.3) were also handed out at a Royal Pharmaceutical Society Local Practice Forum event but attracted no interest from potential participants. Methods of recruitment and participants recruited by each method are outlined in Table 4.1 and Table 4.2.

Interviews were conducted with pharmacists with a range of backgrounds and experiences including pre-registration tutors, non-tutors involved in the supervision of pre-registration pharmacists, pharmacy managers, education and training specialists, pharmacy owners, those employed by independent pharmacies, individuals employed in a multiple, with varying degrees of experience and seniority within their respective organisations.

**Table 4.1-** Method of recruitment and uptake for interviews with hospital pharmacist employers

<b>Recruitment method</b>	<b>Number of participants recruited</b>
Direct e-mail	6
Snowball Sampling	4
Twitter advertisement	1



**Table 4.2-** Method of recruitment and uptake for interviews with community pharmacist employers

<b>Recruitment method</b>	<b>Number of participants recruited</b>
Direct e-mail/e-mail to pharmacy recruitment leads	9
Facebook advertisement	1
Twitter advertisement	1
Royal Pharmaceutical Society online boards	3

#### **4.3.3 Research diary**

A research diary was kept throughout the study. The researcher recorded post interview reflections for the purpose of documenting any thoughts or feelings on the interview, suggestions for the next interview or emerging themes (diary excerpt in Appendix 3.1 as an example).

#### **4.3.4 Analysis**

Verbatim transcription and inductive thematic analysis were undertaken according to the method outlined in Chapter Two (section 2.8).

#### **4.3.5 The interviews**

Interviews (n=25) were conducted between 04/08/2015 and 08/09/2016 in accordance with the method outlined in Chapter Two (section 2.5.1). No participant withdrew consent. Interviews were conducted in two separate timeframes. This was to enable the lengthy NHS REC application process to be undertaken alongside data generation with community pharmacists.

Interviews with community pharmacists were conducted before interviews with hospital pharmacists after obtaining a grant from The Harold and Marjorie Moss fund. Monies received were used in order to travel to participants by train and for overnight hotel accommodation. Interviews with

hospital pharmacists were conducted soon after. All interviews were conducted face-to-face in geographical locations outlined in table 4.3.

Potential participants were e-mailed (Appendix 2.4) the participant information sheet (Appendix 2.5) and consent form (Appendix 2.6) at the same time as their e-mail invitation to participate and were asked to read and consider before agreeing to take part. A mutually convenient interview time, date and location was agreed in advance. Interviews were conducted in a range of locations across England and Wales including meeting rooms at hospital pharmacy departments (n=6), community pharmacy consultation rooms (n=7), consultation rooms at CSPPS (n=9), a participants office at another school of pharmacy (n=1), a café near the participants place of work (n=1) and one interview was conducted in the participants home.

At the start of the interview, participants were handed a printed copy of the information sheet and consent form. They were asked to read the information sheet and were given the opportunity to ask any questions, before completing the consent form. Consent forms were then checked for completeness before interviews began. Participants were thanked for giving up their time to take part and were given a brief reminder of the purpose of the interview. After general housekeeping points were provided (anticipated length of the interview, reassurance that confidentiality would be maintained and that the researcher may make some written notes as well as making an audio recording of the interview) participants were asked if they had any questions. Interviews were conducted within the hours of the normal working day and so participants had to return to work at a set time meaning interview durations were limited. There was little time for conversation beforehand and the researcher commenced the interview as soon as possible in each case.

As described in Chapter Two (section 2.5.1) the structure of the topic guide was described to each participant so that they could feel the progression of the interview and could anticipate where certain topics were to be discussed.

The Philips Voice Tracer DVT5500 device was used for this part of the study and was placed in the centre of the table. While audio data was being captured the researcher made notes of non-verbal cues and mental prompts of things to follow up and probe more deeply during the interview.

A topic guide (Appendix 2.1) was employed during interviews, with each section being explored in turn. Questions were asked in the same general order though not consistently as some questions that were already inadvertently answered by the participant beforehand. In these instances the questions were not repeated. As described in Chapter Two, open questions were used initially followed by a series of closed questions to further probe or clarify a response. Meaning was clarified by asking:

*“Can I just check that I have understood you correctly...”*

The content of the topic guide allowed the participant to express the knowledge, skills, attitudes and values they believed were required in pre-registration pharmacists, how pre-registration trainee pharmacists were currently performing in practice and their suggestions for future improvements. This is in line with the aims and objectives of this element of the study.

#### **4.3.6 Interviewee characteristics**

Table 4.3 details the key characteristics of the participants (n=25) including their area of practice, gender, current status as a tutor or otherwise, geographical and specific location of interview and the interview duration. Interviews lasted between 19 and 51 minutes with a mean of 32 minutes. In addition to the characteristics described in the table below interviewees held a range of backgrounds and experiences. These details have been omitted from the table in order to protect participant anonymity.

**Table 4.3: Employer interviewee characteristics**

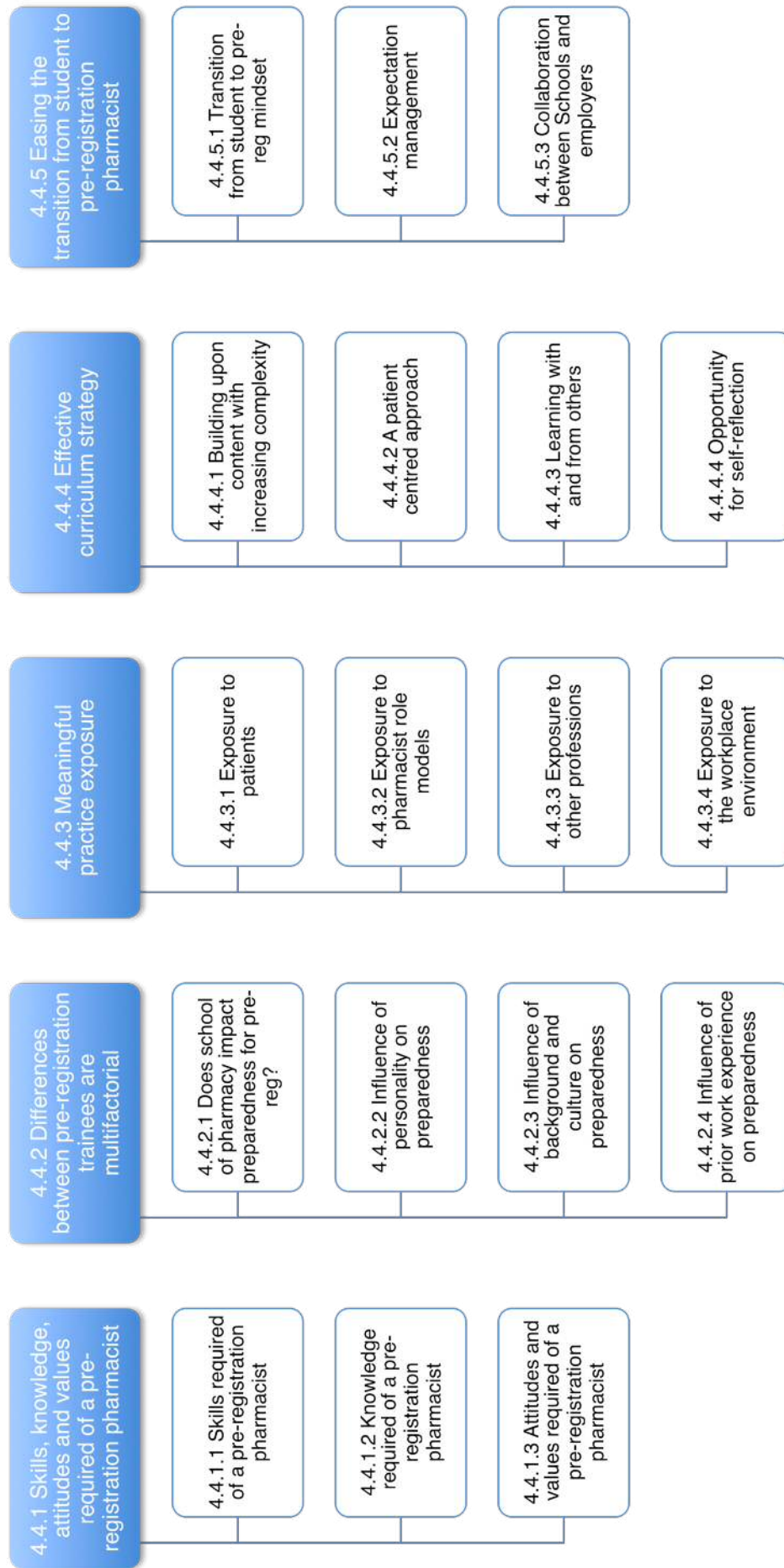
Participant	Sector	Gender	Current tutor?	Previous pre-reg tutor?	Geographical location	Interview location	Duration of interview (minutes)
CP1	Community	F	No	Yes	South Wales	Participant's workplace	23
CP2	Community	M	No	Yes	South Wales	Participant's workplace	33
CP3	Community	F	No	Yes	Bristol	CSPPS	28
CP4	Community	F	No	Yes	West Wales	CSPPS	24
CP5	Community	M	No	Yes	Bristol	CSPPS	42
CP6	Community	F	Yes	Yes	Liverpool	Participant's workplace	46
CP7	Community	F	Yes	No	South Wales	Participant's home	43
CP8	Community	M	No	No	South Wales	CSPPS	21
CP9	Community	F	No	Yes	South Wales	CSPPS	29
CP10	Community	F	No	No	South Wales	CSPPS	29
CP11	Community	M	Yes	Yes	Birmingham	Participant's workplace	28
CP12	Community	M	Yes	Yes	Birmingham	Participant's workplace	34

**Table 4.3 Contd: Employer characteristics**

CP13	Community	F		Yes	Yes	London	Participant's workplace	41
CP14	Community	F		Yes	Yes	Manchester	Participant's workplace	20
HP1	Hospital	F		No	Yes	South Wales	Participant's workplace	42
HP2	Hospital	F		Yes	Yes	South Wales	CSPPS	51
HP3	Hospital	F		Yes	Yes	South Wales	CSPPS	27
HP4	Hospital	F		Yes	Yes	South Wales	Participant's workplace	29
HP5	Hospital	F		Yes	Yes	North Wales	Participant's workplace	35
HP6	Hospital	M		No	Yes	London	Participant's workplace	19
HP7	Hospital	F		Yes	Yes	North Wales	Participant's workplace	29
HP8	Hospital	F		No	Yes	North Wales	Participant's workplace	38
HP9	Hospital	M		Yes	Yes	Brighton	Local cafe	26
HP10	Hospital	M		No	Yes	Nottingham	Participant's workplace	38
HP11	Hospital	F		No	No	South Wales	CSPPS	36

## **4.4 Results**

Themes and subthemes were derived from the data and are presented in figure 4.1, with themes and blue and corresponding subthemes underneath in white. The results section will explore each of these in turn.



**Figure 4.1:** Summary of employer themes and subthemes

#### **4.4.1 Skills, knowledge, attitudes and values required of a pre-registration pharmacist**

Knowledge, skills, attitudes and values important to be an effective pre-registration pharmacist were identified. Some key features are presented here however a more comprehensive list is presented as a table in Appendix 2.7 with supporting participant quotes. While attributes were mentioned frequently by more than one participant one representative quote has been selected for illustrative purposes. Comparisons have been made between the characteristics identified by different stakeholder groups as being important and discussion around this is included in Chapter Six.

Skills perceived to be important for a pre-registration pharmacist to possess included the ability to apply their knowledge, to deal with conflict and to find information.

HP9: *“somebody who has a foundation knowledge um who is able to then take that foundation knowledge then apply it in practical context...”*

CP9: *“I guess those are things that are most lacking I would say if there is, sort of, a conflict or some difficulty the ones I’ve seen have not really got involved.”*

C12: *“I don’t expect people to know everything, nit o expect people to know where to go and find that information and look it up.”*

Basic medication information, drug charts/documents and law were areas of knowledge perceived to be needed.

HP8: *“I would say with knowledge base that they have a good understanding of how the drugs work um what to look out for sort of drug interactions, doses that type of thing so I would call that clinical therapeutic knowledge.”*

HP3: *“I would expect hospital to have some understanding of the hospital paperwork, drug charts and how it differs from community”*



CP2: *“Law again, something I would expect graduates to come out and you should really...I would like to think that you wouldn’t have to teach them anything about aspects of pharmacy law”*

In terms of attitudes and values, enthusiasm, empathy and a compassionate nature were all desired.

CP6: *“I mean they’ve all got a degree. So academically it doesn’t matter. What I need is ideally enthusiasm”*

CP2: *“Empathy and the like is probably the biggest thing”*

HP1: *“I think what we’ve realized now more than ever is that compassionate side, isn’t it...you need to be motivated to want to help people...”*

#### **4.4.2 Differences between pre-registration trainees are multifactorial**

##### **4.4.2.1 Does School of Pharmacy impact preparedness for pre-reg?**

There was conflicting data related to the impact of schools of pharmacy on graduate preparedness for pre-registration training. Some participants stated they believed some schools were better or worse than others. Comparisons were often made between “newer” and more “traditional” or “older” schools, with graduates of the latter deemed as being better prepared for the pre-registration training year. HP9 and CP5 had contrasting views. Both had previously supervised graduates from a range of universities.

HP9: *“Generally speaking guys from the traditional schools of pharmacy tend to perform better and I do not know why that is...we know that they perform better in the GPhC’s exam at the end of the year so guys from [University A] or [University B] or somebody they do really well...whether that is something to do with recruitment or something to do with their courses unfortunately I can’t say.”*

CP5: *“...it’s really hard to generalise. Some of them are great and some less so. I cant say I can pick up any themes from specific institutions you know its not like oh the people from there are always this or people from Cardiff are always that”*

Where participants perceived there to be a difference between graduates from different universities it was often in reference to graduate knowledge and the varying levels of exposure to practice provided.

HP4: *“Some universities, I’ve found, have got a better knowledge of therapeutics than others.”*

HP10: *“I’ve seen students from [Anonymous] School of Pharmacy, they seem to have had a lot more exposure in terms of clinical and problem solving type teaching, they seem to be a lot more knowledgeable in the clinical setting”*

HP4: *“I think there’s some universities where they have had more placements and more emphasis on, more time I think spent in hospital practice, I can’t comment about community...But yeah, they did seem to have more practical knowledge, on the job and certainly in hospital experience.”*

A graduate’s school of pharmacy was also noted as having a potential effect on communication skills depending on the emphasis of development of this skill within the curriculum.

CP10: *“I think there is a much greater emphasis potentially on developing some of the, sort of, communication skills. I would like to see that much more as a higher mandatory part... now some schools have incorporated that and it is a mandatory part of it but not all of them. So there is a big difference between what they’re doing... you’ve still got some schools and people coming out who are still telling patients what to do.”*

Finally, some individuals perceived there to be a difference between pre-registration pharmacists based on the entry requirements of their university.

**BB: “You mentioned a sort of spectrum of graduates...what can you attribute, if anything, those differences between graduates to?”**

HP1: *I think there would be a certain difference in entry requirements between schools of pharmacy...”*

#### **4.4.2.2 Influence of personality on preparedness**

A pre-registration pharmacist’s personality was said to be important in influencing preparedness for and success during the pre-registration year.

Personality was perceived to affect abilities such as time management and communication skills and some interviewees indicated that it was difficult for universities to influence this.

**BB: “Those that you said were better than others at their time keeping and prioritising, can you attribute that to anything?”**

CP7: *I don't really know. I think it's a skill that people seem to have a good grasp on or they don't...maybe it's a personality thing.”*

CP6: *“...She was a very different...she was more outgoing than any of the other ones I've had but it's not something you can breed into them at university. It's a fact of life, I think.”*

The ability of a pre-registration pharmacist to make the transition from university and integrate into a new team was also said to be determined by their personality, with shy characters being perceived as less able to integrate into a new team. This was true for both hospital and community employers.

CP12: *“...the guys I had difficulties with, you know, maybe the difficulties have been more with working with a team and taking direction from other people and then they're not fitting well. So it's a square peg in a round hole sort of thing and sometimes that eases and other times it doesn't. So it's just a personality thing”*

HP6: *“...you need someone who isn't going to be a shy, retiring person that isn't going to fit within a big teaching hospital environment...if you shy away then you disappear and it's very easy to disappear”*

#### **4.4.2.3 Influence of background and culture on preparedness**

Some participants spoke of the influence of a pre-registration trainee's background including family influence on preparedness for pre-registration training. In particular it was seen as problematic where a student's motivation to be a pharmacist was not intrinsic. Other ways in which a pre-registration trainee's family was said to affect their preparedness was through personal experience with handling relatives' medication.

CP1: *“Some are all for it, um want to learn as much as they can...others go through the motions and you think-why are you bothering? You don't seem to have the oomf?”*

**BB: *What can you attribute that to if anything?***

CP1: *“...in at least one case I've had the impression that the family have pushed this particular person to do pharmacy and they may or may not really have really wanted to.”*

**BB: *“Those who've had better knowledge, can you attribute that to anything at all?”***

CP12: *I think personal experience...some of them have been through with family members and they've had the experience of medication and issues around medication. I think they, sort of, pick up on things and they make the connections quicker. Everybody else will and they eventually do...”*

Both hospital and community employers also noted a potential difference between pre-registration trainees according to their culture and ethnicity.

HP9: *“...In some cultures being reserved is better. So they are used to being reserved and communicating less and so during the year you have to give them a push to open up and not be that reserved and in the British culture, traditional British culture you are quite open often so you go and communicate with people and express concerns and those guys tend to progress easier so people from ethnic minorities I would say a lot of the time require some extra support. But not always.”*

CP3: *“So [University A] has quite a lot of Asian guys I get from up there... but they're quite self-confident. And then you get the er sort of Malaysians from [University B], there's a massive load of them who don't seem to interact very much. Whether it's sort of you know*

**BB: *like a cultural thing?***

CP3: *Cultural thing yeah. I think that makes quite an impact so yeah. Again I don't know whether it's, I don't know why it is”*

#### **4.4.2.4 Influence of prior work experience on preparedness**

A graduate's prior work experiences appeared to have the most significant impact on preparedness for pre-registration training with employers often referring to those who had done more placements or held pharmacy jobs alongside their studies as being better prepared than those who had fewer practice based experiences. Participants expressed additional benefit to having exposure to the site or company in which they complete their pre-registration training before starting.

CP7: *“Generally the pre-reg’s I’ve come across have had summer placements within our company so they know what they’re stepping into...”*

Participants also noted the benefits of pre-registration trainees holding non-pharmacy related jobs in their preparedness for pre-registration training also, particularly in the development of work ethic.

CP8: *“... I think if somebody is used to having a job or a part-time job they know that they have to be there at a certain time and they finish at a certain time...”*

CP6: *“...I don’t think he’d [Anon pre-reg trainee] ever worked at all. The problem we had was you then have to spend two months teaching them how to do simple tasks that you would expect people coming to work in a shop would be able to do.”*

HP7: *“I’ve had two that were mature students who were exceptional and I think that does come from maturity doesn’t it, both of these students had done other jobs...they were very conscientious, do a lot of self-directed study, they’d go away and look at things themselves and they were very driven and actually they were exceptional.”*

A nuance in the data is that community pharmacists specifically highlighted that the difference between students who have had prior jobs, especially in pharmacy, becomes apparent when they are in the workplace. CP1, 3, 6, 8, 11 and 13 noted this.

CP1: *“...some of them absolutely brilliant [laughs] um, notably one who happened to work here part time evenings and weekends, for I think it as about the end of year one of the degree.*

**BB: So what do you think it was about that student that made them brilliant for you?**

CP1: *very intelligent, willing to learn, picked up on things quickly, good manner with customers and staff um got things done*

**BB: mmm can you attribute that to anything?**

CP1: *well part of it was just her and how she was and part of it was because she had all that extra time to learn a little more about community pharmacy and the OTC meds”*

CP3: *“...it links more into the experiences they’ve had whilst they are at uni. So if somebody has worked during their holidays, weekend work, they tend to you know really be able to tell the diff, you know you can tell them to*

*maybe somebody whose had a couple of placements. Um, has all the theoretical knowledge but actually when they go out there it's like a different world."*

Benefits of having prior workplace exposure were said to include better communication skills and an ability to better apply their knowledge in practice.

CP4: *"If people have been on more placements and they've been in a work environment then their communication skills tend to be much better than some who probably have just sat on just doing the bare minimum which is in the undergraduate programme..."*

HP10: *"Different students are stronger in different clinical areas or have had more exposure in terms of placements...I think I have observed some students who may have not had exposure in real life. Their idea of knowledge is very very basic and what is...you know this is what is written down. So this is what we'll go by, and then you get the other students who had a bit more experience out there on placements, outside of university and their knowledge is definitely a lot more well-rounded. They can apply principle to a situation rather than sort of just regurgitating what they've been taught*

#### **4.4.3 Meaningful practice exposure**

##### **4.4.3.1 Exposure to patients**

Regardless of sector employers wanted graduates to have more exposure to patients through their undergraduate education in order to help improve their communication skills, have a better holistic view of the patient and to apply their knowledge.

**BB: "You spoke about as well the pre-reg's ability to interact with patients themselves. Is there anything that you think can be done at an undergraduate level to better them in that respect?"**

HP1: *I think it's the sick patients in the hospital bed that come to mind because, I think that it's easier for trainees to get part-time jobs or get insight into community pharmacy. So I think it might be the timetabled placements at undergraduate and the tasks that people are set to do maybe during those placements. So you could have plenty in the booklets around finding out. I think there's already drug histories in there..."*

**BB: "What could you attribute that lack of empathy at the start?"**

CP1: *maybe not enough time with real people, real patients."*

HP9: "...that one hour talking to the patient is probably more valuable than sitting in a classroom and listening to a pharmacology lecture for two hours which you can read at home."

It was also perceived that having contact with real patients is superior to role-playing with actors or academic staff. Participants hinted at the perceived limited use of OSCE's through the language used.

HP3: "Real patients and not fake patients that you try and adapt to a mark scheme and things, but just a real life, what are we going to do with this actual woman in the bed and not the bit of paper in front of you."

CP1: "um [pause] maybe not enough time with real people, real patients.

**BB: ok yeah. That makes sense**

CP1: as opposed to role acting or whatever. Because it's not the same [laughs] they know they're acting as opposed to getting a real patient in...or even real, again real people coming in. With real ailments or whatever sort. ...Whip somebody in who is coughing their head off on the street [laugh]"

**BB: what do you think schools of pharmacy can do to better prepare graduates for speaking to patients?**

HP10: I think as much patient exposure as you can get, not just patient exposure, just speaking to people and speaking to people from different backgrounds because not everybody is going to have English as their first language and not everyone is going to be white, middle class, British, fluent in English"

#### **4.4.3.2 Exposure to pharmacist role models**

The input of teacher practitioners was clearly valued by participants, with some stating that greater involvement from these individuals would be beneficial in improving graduate preparedness. In particular teacher practitioners were perceived to help undergraduate pharmacy students recognise how to apply their knowledge in practice.

HP3: "You've got to keep the science knowledge, but making it as practice based as possible. Yeah. Keep the teacher pracs in as much relevant teaching as possible."

CP4: "...more practicing pharmacists coming in with real life scenarios that they've been dealing with in that week or that month so that they can then say what would you do in this situation, what would you do in that, and

*use the knowledge that you've learnt from this module and how would you apply it for this particular patient"*

*HP4: "I know there are teacher practitioners from various sectors, but whether there could be more exposure with them..."*

**BB: "Is there anything in particular you would recommend to schools of pharmacy that they can do with their students so that they are better prepared for that [making knowledge practical]"**

*HP7: I think teacher practitioners from hospital, well from all settings really and trying to get them to bring in real life cases to the classroom and making it really practical, really relevant... it's making it real it's not just on a Powerpoint"*

A potential barrier to increasing such exposure is a perceived lack of funding for pharmacy clinicians in universities.

*HP6: "...what I would say is there's probably not enough funding. So if you go to [Pharmacy School] you say, you can have a band 7 for what you're paying, but they're only prepared to pay for half of that. So how do you expect your trainees to get..."*

Hospital based participants also suggested exposing students to specialist pharmacists during their education in order to make theoretical learning more practical. This may be because specialist roles are more common in this sector and are considered part of the natural career progression for a hospital pharmacist.

*HP5: "I'm wondering whether it would be useful to have antimicrobial pharmacists or hospital pharmacists come in and explaining what it means not just knowing the list. So skills is putting it into practice"*

*"HP2: Perhaps these cluster pharmacy roles...I could possibly foresee a situation in the future whereby every GP practice has their own pharmacist, but what are we doing for the undergrads to prepare them for that earlier on in their career...so maybe that does come back to spending more time out in a GP surgery or with staff who work in that field."*

#### **4.4.3.3 Exposure to other healthcare professions**

Hospital employers mentioned increasing exposure to a wider range of healthcare professionals while on placement as being beneficial. This was not explored by community pharmacists.



HP4: "...getting them to communicate with health care professionals, trying to get them to communicate with doctors, maybe even medicines information settings you know, so maybe that would sort of come into looking at what happens on placement and making sure that people are pushed to do that."

HP2: "If they did spend more time out on placement they'd get more opportunity to be talking around these sort of people... it would certainly help with more junior members of staff..."

Bringing individuals into the classroom was viewed as an alternative way to expose students to other healthcare professionals.

HP1: "I think that it doesn't have to always be full sort of inter professional education. Sometimes even there would be a value in a professional standing at the front of the lecture there and saying this is what I do with patients and these are the sort of issues they raise with me about medication..."

Hospital and community employers noted that some graduates are less confident at communicating with other healthcare professionals, in comparison with communicating with patients. One interviewee suggested that this was because pre-registration trainee pharmacists may view themselves as inferior.

HP2: "Most of them I think have been always really good with patients. Maybe some have perhaps been less confident perhaps approaching doctors to query prescriptions"

CP1: "...sometimes they are scared of talking to doctors. They think that, not think, but have some sort of attitudes as doctors, big up there 'I am' and what they say goes and they can't necessarily challenge."

Graduates were perceived to consider nurses the most approachable of the healthcare team and were able to communicate more comfortably with them.

"HP1: generally I would say that they're most comfortable with nurses.  
**BB: can you attribute that to anything?**

HP1: *approachability probably of nursing staff...there's something about being in your comfort zone there I imagine that they can answer if something is available as a liquid versus a tablet...those sort of things."*

Understanding the roles of other healthcare professionals at an undergraduate level was also thought to improve preparedness for multidisciplinary working during the pre-registration year. Current lack of exposure to other healthcare professionals during the undergraduate programme was suggested as a reason for graduates approaching the wrong members of the healthcare team on the ward, when asking for help.

HP2: *"You may have a pre-reg on a ward and perhaps they may go up to a nurse on the ward and say oh that patient needs the toilet and if perhaps they understood a little bit more generally about how that ward worked...they would go to the most appropriate person to resolve that sort of thing"*

The impact of exposure to other professionals in the workplace was evident in the data, both on pre-registration trainee knowledge (as previously described) but also in shaping pre-registration trainee attitudes and behaviours.

HP7: *"we often have pre-reg's coming in in clothes that aren't appropriate for the workplace... I don't know whether it's a generation thing, a cultural thing, because everybody else does it, they do it...It doesn't help that the medical students and the F1s are also dressing like they are going out on a night out, it encourages people."*

#### **4.4.3.4 Exposure to the workplace environment**

Having the opportunity to be immersed in the pharmacy workplace environment while on placement was said to afford students substantial opportunities for learning. By observing what happens in practice, employers believe that students are more able to make connections between theory and practice and thus contextualise their learning. Having tangible learning materials in the pharmacy environment, such as the medicine packaging, was viewed as positive.

HP1: *“Well I think that when you’ve taken the knowledge right through to the practical level, I suppose it depends, doesn’t it, on the type of learning for the individual. Maybe I feel strongly about it because I might be kinaesthetic and want to learn through that experience, but is there enough of it at the moment? I suppose wanting there to be a better product coming as a pre-reg who’s more comfortable and able to speak to patients and actually prove their competency in the pre-reg year is telling me that there’s something preceding that that would be good to change.”*

CP7: *“I know it sounds silly but you’re used to looking at the drugs in their boxes and knowing what the tablets look like and knowing what people think about the medication and talking to patients clinically.”*

A current perceived lack of exposure to the workplace environment was highlighted by all participants, both hospital and community based, and was the reason attributed to some graduates inability to apply their knowledge in practice.

CP2: *“...I think the theory of it all probably is there. The application, well that comes down to practice I suppose and being put in those situations which, only comes down to application and opportunity to apply it. So I suppose the more opportunity they’ve had at undergraduate level um the better they will be...once you immerse them in situations and then you learn from it...”*

CP4: *“You know they might see an MUR form but have they actually sat in on an MUR, have they led an MUR just being supported by the pharmacist?...it’s all well and good giving them a talk on it but they need to have hands on go at doing it to be able to apply it and that’s my biggest issue is always the application of what they get taught. Because they probably do cover all that but it’s not apparent when they come because they’ve got no idea how to apply it to those situations.”*

HP1: *“...it’s just trying to make it better for the student to take that new knowledge right to practical application at the time and making sense of it rather than having to build and build and build this massive knowledge then getting to the workplace and try to download that all into clinical practice in one year”*

HP8 was able to draw a comparison with the way in which diploma pharmacists learn due to her involvement with these individuals in the workplace. Diploma pharmacists were said to learn through being immersed in practice, hence able to apply their learning.

HP8: *"...in the first year they are immersed, three months with medical patients and three months with surgical patients...the application of everything that they've done undergraduate and pre-reg well its got to be used in that first year...maybe there isn't a huge difference in the level its just that they know how to apply it, they know when to monitor patients, they know therapeutic drug monitoring and why because they are just with patients constantly"*

Independent community pharmacy participants were keen to provide opportunities for students to gain exposure to the workplace environment. However, whilst hospital employers recognised the benefits of students gaining workplace exposure, fewer made reference to wanting to take students through their undergraduate training.

CP13: *"...community pharmacists now are going to be swimming in really deep dirty water with all the changes. There's going to be no financial gain [to students having placements] but there's going to be a lot of knowledge gain and I think to be honest the knowledge gain is vital."*

CP2: *"...there aren't many pharmacy undergraduates, blinking thousands of pharmacies out there so why not think that this is a part and parcel of your role?...it would certainly help you I think if you're looking to be a pre-reg tutor in recruitment as well. Um, you'd know kind of what you're dealing with."*

CP6: *"now I don't want to exploit students by saying to the university why don't you send me your students during the summer. I'll take three students over the summer for two weeks each but I can't pay them. Now I think that's a fact of life with a lot of independent pharmacies"*

HP8: *"I know we'd like to see more placements but I do realise that that would have an implication on the workplace ...."*

The majority of participants alluded to a formal collaboration between schools and employers with more consistent periods of exposure and defined placement objectives. This was deemed as beneficial both for student learning and also in allowing supervisors to have continued contact with students. HP7 had been involved in the education and training of medics

and hence their experience with the way in which medical undergraduates experience workplace exposure may have influenced this opinion.

HP7: *“...some universities they go one day a week don’t they, they meet the same pharmacists and they do a lot there and that would really help I think from a consistency point of view and you’d be able to see their progression and their development if you were a named person and linked in with it then that would really help.”*

HP1: *“...really it’s about trying to help the university get the clinical exposure for its undergraduates that it needs really. In each sector for the learning outcomes that are relevant in that sector. So there would be certain things that makes sense to be covered, you know, in primary care, in community...”*

CP10: *“I think in reality they [schools] need to have more into partnership working and potentially with the sectors that community is going out with...you need to be going out into these sectors much earlier and I suppose that comes with your actual placements. I think you need to quality assure those placements”*

Having exposure to a range of workplace environments was also deemed as being important in providing students an opportunity to decide which sector of pharmacy they wish to progress their career in.

CP1: *“[pause] I suppose more placements or longer placements, be that in the summer or during hol, during term time*

**BB: So just to make sure I understood correctly um you say preparing them for the different aspects so maybe do you mean making them better prepared for the aspect they choose to do their pre-reg in specifically or for both?**

CP1: *better chance of deciding which way they want to go to do pre-reg and probably onwards from there”*

#### **4.4.4 Effective curriculum strategy**

##### **4.4.4.1 Building upon content with increasing complexity**

Participants made reference to the benefits of revisiting material throughout curricula in order to refresh knowledge. HP7 went further in describing the benefits of a “spiral curriculum” in which topics are repeatedly encountered with increasing difficulty. As previously mentioned HP7 has involvement in

the education of medics, hence a potential deeper understanding of such educational concepts.

HP7: *“I prefer it with medical students to be honest because you know like the spiral curriculum, building on something each week, progress and pushing and pushing and pushing and increasing that knowledge stream aren’t you throughout the time frame...”*

CP3 and CP4 both referred to the requirement to revisit over-the-counter (OTC) teaching throughout the undergraduate programme. Both interviewees have undertaken further postgraduate studies in education and so their perceptions may be influenced by their increased awareness of education principles.

**BB: “What can schools of pharmacy do to improve their over the counter knowledge?”**

CP3: *I think partly possibly it’s because it’s visited early in the course. So perhaps if you could maybe somehow integrate it all the way through. Um, and I know it’s not like not necessarily put in there but they do that responding to symptoms 1<sup>st</sup> year stroke 2<sup>nd</sup> year and then it’s like okay we move on to really more important things and actually like actually well that’s still important*

**BB: ah ok**

CP3: *so maybe if we could just sort of revisit it a little bit more or incorporate it into other things so it’s still at the forefront of their mind later in the course?*

**BB: What about their OTC knowledge? How is that?**

CP4: *[pulls face]*

**BB: [laughs]**

CP4: *Not great...most of the OTC stuff was covered in year two before so I don’t know if it’s still that and if they continue to practice in community pharmacy they retain those skills and they are on the forefront of any new products that are coming...”*

#### **4.4.4.2 A patient centred approach**

Employers were keen for students to experience integrated teaching where science and practice are embedded in patient scenarios. Segregating learning into different modules was viewed as problematic where students cannot assimilate learning from different areas.

CP11: *"...the problem we've got with the way pharmacy is taught from when I was taught is it's modular...they don't think of the patient as a complete patient they think of them as, well that was module 2 and that was cardiovascular. Respiratory was module 3 of year 2...I've looked after pre-reg for quite a few years now and I would say their clinical knowledge is probably worse than it's ever been and I think the issue is this modular aspect."*

HP2: *"I would probably make it, take away some of the science focus or maybe again trying to integrate some more of the science stuff with some of the clinical stuff"*

There were mixed opinions between employers on the value of role-play. Some participants valued its use in contextualising learning for students and providing a safe opportunity to practise, whilst others considered its value to be limited.

HP5: *"...well it could be a case of setting up joking consultations between pharmacist and prescriber because I know they do that... that situation where someone pretends to be a doctor, someone pretends to be a pharmacist or nurse and I think that forces you to think about things more then and have to explain your justification. Because as soon as they have to explain their justification they start realising what they don't know and what they haven't looked up."*

CP1: *"...maybe not enough time with real people, real patients. As opposed to role acting or whatever. Because it's NOT the same [laughs]...they know they are acting as opposed to getting a real patient in"*

CP13 *"...lets do the role play, all this kind of rubbish, but actually role play doesn't develop you for what really happens"*

Having the patient at the centre of learning through case studies at university was viewed as positive in allowing students to make their knowledge more practical. However CP14 held strong negative views about pure Problem Based Learning (PBL) curricula. This may be attributed to her own preferred learning style.

HP7: *"...so things like case based discussions and a little bit maybe about what they do at diploma level I think that would certainly help for hospital pharmacy...I think it would make them a little more clinical and a little more practical rather than just recalling facts..."*

HP10: *“I’ve seen students from [University C], they seem to have had a lot more exposure in terms of clinical and problem solving type teaching, they seem to be a lot more knowledgeable in the clinical setting”*

CP14: *“...they all do this...what do they call it? Is it problem based?”*

**BB: like problem based learning?**

CP14: *I think so, rather than actually be...and I know there’s room for both, but I felt that a lot of the knowledge was superficial...maybe I’m an old fashioned girl...I couldn’t have learned like that”*

#### **4.4.4.3 Learning with and from others**

Having the opportunity to work in groups in undergraduate curricula, to allow discussion between learners, was a notion supported by employers. In particular employers placed emphasis on the benefits of smaller group teaching as opposed to whole cohorts. HP7 highlighted that an element of “peer pressure” in such group learning environments can be a positive contribution.

HP7: *“I think because it’s such a big year group they don’t get that small group teaching and that discussion and that ability to sort of channel that information out...you don’t have discussion or the ability to sort of pull out that information from them...everybody has to chip in...I think it just kicks them a little more to start thinking practically about how to do things. I think also they generate ideas from each other as well and that’s quite useful for teaching because scenarios come up that you wouldn’t necessarily get if you stood up and did it as a classroom presentation, those questions wouldn’t get asked because people would be embarrassed to ask those questions”*

CP4: *“...on training days they tend to work better if they are in smaller groups they tend to gel better rather than being in a larger number.”*

In particular Inter-Professional Education (IPE) i.e. occasions when two or more professions learn from and about each other (Lakhani and Anderson, 2008) was discussed. Perceived benefits included potential for greater understanding of each other’s roles and increased confidence in inter-professional communications.

CP1: *“maybe have some joint sessions with doctors, dentists, students now I mean...to prove that they are human as well.”*



CP3: *“So if they’re phoning the doctor it’s like “ooh, I’ve got to phone the doctor” and put the doctor up on a pedestal rather than talking as an equal.*

**BB: *what do you think leads to that?***

C3: [sighs] [pause] *I don’t know whether it just goes back to the public’s perceptions of different roles. Could be even as basic as that. I think actually having IPL should help because you know you’re actually going to be learning alongside each other and respecting each other.”*

CP04: *“...But exposing them to as many different teams they possibly can during their undergraduate will then allow them, and I think all the stuff that’s going on with the inter-professional learning, getting them to work with sort of nurses and medics earlier on will give them more confidence than in dealing with those sort of situations when they’re in, well I say you know the real world I guess*

*A caveat to providing IPE is that provision should be rationalised in order to guarantee its usefulness to both parties.”*

One participant discussed the role of multi-professional education, which involves two or more professionals learning the same content side by side where as IPE focuses on practitioners learning together for the benefit of the user (Lakhani and Anderson 2008).

**BB: *”what was it about [University D]...***

CP11: *well it’s funny because I think the first year they’re taught with medics and medics aren’t taught pharmacy. So why would you want to spend a year with medics? You know, you might be learning anatomy and anything else like that....”*

#### **4.4.4.4 Opportunity for self-reflection**

Reflection was a skill that was stated as being required by pre-registration trainees, particularly by hospital employers. However, some participants highlighted the need for improved reflection by trainees. HP2 and HP3 work in the same NHS trust and so this may be a potential reason for their shared views i.e. if the same experience of a pre-registration trainee with seemingly poor reflective abilities. An alternative explanation is that both HP2 and HP3 have completed their clinical diplomas which involves submitting various reflective accounts, hence this may be relevant and important to them.

HP2: "...you generally have to prompt and probe...I think if it was something instilled from the point of view of starting your studies maybe it would be by the time you graduated would be more engrained in what you do. For instance pre-reg's may give me a summary record of an activity...there's a section that says, what else do you need to learn more about. Nothing is generally what they write and I'm like you're a pre-reg. There's always something new to learn...maybe there could be like a thing straight after OSCEs where the students have to sort of sit and reflect on how they did"

HP3: "I think whether it is that some degrees have more of an element of feedback development during it than others... I felt [Anon pre-reg] didn't seem to appreciate or understand the importance of feedback ...So that, kind of, CPD cycle. Reflective cycle. If you act on evidence and there's an element of what do you want to learn more about [Anon pre-reg] happily leaves that box blank ...So that kind of reflective thought process doesn't seem to have hit home in that situation"

#### **4.4.5 Easing the transition from student to pre-registration pharmacist**

##### **4.4.5.1 Transition from "student" to "pre-reg" mindset**

Many participants referred to a "student mindset" at the start of the pre-registration training year as opposed to a "pharmacist mindset". Features of the "student mindset" included the desire to be "spoon-fed" (a term used by ten of the twenty five participants), viewing the pre-registration exam as their end goal, not taking responsibility for the direction of their pre-registration training year and attributing less importance to behavior development (as well as knowledge and skill development).

CP3: "...in terms of studying and having an end goal of an exam in their minds to get through they are quite focused on getting there. Passing the exam at the end of the year. Probably they are less focused on the behavioural side of pre-reg. so they are very much focused on- I've got an exam at the end, I need to pass it"

HP1: "My experience has been that they are very highly motivated to pass the pre-reg assessment... I don't know how much of it is that they've selected the right people into the Schools of Pharmacy or everybody really wants to get to the end post and get their registration and their salary."

HP3: "I'd like them, I suppose, to come into the workplace as a professional from day one. I'd say that's somewhere far off, but they take a while to get over not being a student any more. So their attitude should be

*that they're there to work but also that they're self-directed learners and they're no longer spoon feed undergrads."*

CP3 perceived pre-registration trainees to have a "student mentality" resulting from the lack of responsibilities, particularly in checking their own work, bestowed upon them. Hospital employers did not refer to this phenomenon, potentially as it is common place for hospital pre-registration trainee pharmacists to complete their ACT training and conduct the final product check as part of their training year.

CP3: *"...So in pre-reg year they are still thinking "somebody is checking me". Um, and I think there's a big shift in that part way through the year. But actually checking their own work..."*

**BB: *What do you think it is that... why do you think they think like that when they come from their pre-reg?***

CP3: *Still in the student mode. Still like well I'm a student, I'm still learning, which is true, they are. Um, but I think until somebody, until you have to take responsibility it's quite easy to say well it's not my responsibility, it's like a natural sort of thing, I'm not the end line so [both laugh]"*

CP13: *"We had an incident with one who didn't come in because she was helping a friend in labour. She phoned up. We know nothing about this. So when I said to her, what would you have done if you were the pharmacist? You cant just not turn in. if you knew it was going to happen you should have given a warning that maybe...and she said, well I thought I'm a student..."*

Some participants had a contrary view and believed pre-registration trainee pharmacists to be self-motivated learners. HP4 and HP9 both work in cities where the demand for pre-registration places in hospitals is high. As such these employers may have recruited high caliber pre-registration trainees, a potential explanation for their views.

HP4: *"... they've got certainly the right attitude to, you know, they're not expecting to be spoon-fed they come in here, they're eager to learn, they've chosen and they've fought for a hospital pre-reg place. I mean, you know, there's obviously a lot of competition and I think that stands them in good staid as well and they all seem, they all want to be here, they want to help the patients, they want to help the department."*

HP9: *“We wouldn’t recruit them if they had poor attitudes and values so I think all the trainees we’ve had have had excellent attitudes, values and behaviours. Patients are the first concern for them and they’ve always been great and we emphasise attitudes and values at the beginning during induction”*

#### **4.4.5.2      *Expectation management***

Some employers thought that some pre-registration trainees did not understand their role, which in turn causes issues in the transition from university. Whilst a hospital pre-registration trainee was identified by some employers as being eager to undertake clinical tasks with minimal supervision and displeasure at being “held back” a community employer noted that the tendency for community pre-registration trainees may be to slip into the role of a dispenser.

CP4: *“...I think it’s just them having a clear understanding of what the pre-reg year is. I don’t think necessarily everybody comes into it understanding what they do...”*

HP3: *“I think this pre-reg felt like the year was just a box tick to get him to qualify. He felt like he’d done the degree and now he should be a pharmacist. He doesn’t seem to appreciate what the year was for.”*

HP1: *“there are some coming through that are really confident and want to get on with stuff and the rules, if you like, of the workplace are holding them back... like you must have done 500 items before you can then go on the ward and do things. Whereas people are arriving ready to go and talk to patients ...these are the rules and regulations that I mentioned earlier that stop people from just coming and getting on... It’s just a year at the moment it’s such valuable time, they literally have to take a day and a half out to get that done where they could be doing other stuff...thinking about the whole of your career and everything that you can get out of this year when you’re supernumerary”*

CP7: *“I think the stumbling block for a lot of it is that the company see you as a dispenser rather than a trainee pharmacist a lot of pre-reg’s will happily fit into that role and I think there’s the onus on the tutor to make sure that doesn’t happen. A lot of who will just slip into the dispensing team rather than prepare for the role in which you’re training...”*

Graduates were said to require a more realistic expectation of the roles and responsibilities of a pre-registration trainee pharmacist. Mechanisms

suggested to realise this included bringing in current pre-registration trainee pharmacists to universities to speak with the students and enhancing exposure to practice environments. HP7 suggested a harmonisation period where the pre-registration trainee gains exposure to their pre-registration workplace throughout their undergraduate degree (as previously discussed HP7 had involvement in medic education and as such may have developed this view from contact with these students).

HP9: “ *they come out and they have no clue about what the expectations of a pre-reg are, who the pre-reg is, what the responsibilities are, what the roles of a pre-reg. they go ‘ oh can I do this, can I do that’ what you need is some pre-reg’s coming to universities and running some workshops with them. Running things like calculations...*”

HP7: “*...a little more harmonisation like what the medical students do so they’ll come into placements a little earlier. For some students their pre-reg is their first time in hospital pharmacy, and ideally you’d want them to have had a good few weeks before that so that you aren’t just showing them around, showing them what the job of the pharmacist is but you get straight in there, get them ready to move on to the next step quite quickly*”

HP3: “*Can there be things during in the final years of, the pre-reg tutors coming to the university or some sort of integrated working...Our pre-reg who is coming in August ...one of the newer universities- her school has told her she had to come to the site where she’s going to her pre-reg for at least a day before the end of her fourth year which seemed like a good idea, but the school has given her no objectives and hadn’t made her set any objectives. So we didn’t know what to do with the day... I think it helps on day one to sort of set a bit of expectation... That sort of handover could be very useful...*”

#### **4.4.5.3 Collaboration between schools and employers**

Many participants had a self-confessed lack of knowledge of undergraduate MPharm programmes, with one employer even stating that they knew more about the medic programme than pharmacy. Participants sometimes referred back to their own undergraduate education. Whilst they acknowledged the course had probably changed since then they knew little about how it had changed.

HP11: *“It’s difficult not knowing a huge amount about the course now...”*

HP4: *“...I’ve got a better idea almost of how some of the medical school curricular works because it is so integrated...”*

CP12: *“I’m not familiar with how the course is set out and how they’re run...”*

HP1: *“...we’ll always think about the undergraduate course as the one that we experienced, you see*

Pre-registration employers stated that collaborative working could be improved by better informing tutors about the content of the MPharm programme. In doing so employers could ensure continuity in education and potentially have greater trust in graduate abilities if they know certain elements have been covered at undergraduate level.

HP2: *“I don’t know if there’s any way that you could give pre-reg tutors a better understanding of the MPharm degree and what actually is taught...if I did know I would be able to tailor more their work experience when they come out...I would feel like I would know where to pick up from where things have left off”*

HP1: *“I’m just literally thinking of an A4 sheet with a plan of what the modules are, quite high level, and maybe with a second sheet of bullet points about the content of the course so people could see where calculations ran through it or communication ran through it, and that they would then pitch their pre-reg training at the appropriate point... If they were aware of that sort of detail about how the course has developed that would give them confidence, wouldn’t it, to maybe loosen the leash a little bit on the pre-reg trainees.”*

HP8: *“...maybe we hold people back too much because we don’t know what’s covered at university.”*

Some employers expressed that they would like to know more about their pre-registration trainee prior to them starting their training year in order for them to plan and prepare. Having such knowledge was thought to aid the transition of student to pre-registration trainee through tailoring support offered.

HP7: *“...it would have been nice maybe from the university to know about these types of characters and know what type of support, obviously I know it would be very difficult to do because it’s such a big year group to then be telling the pre-reg tutors and I guess that’s the type of information you try and tease out with interview isn’t it...”*

Some employers commented that schools could work more closely with them in order to gauge the knowledge, skills, attitudes and values required in practice. Employers expressed that schools would also be able to identify areas of their curriculum that may need to be addressed through obtaining feedback on their graduates and how they perform in practice, thus moving towards a symbiotic relationship between schools and employers.

HP8: *“...the university is preparing what they think a pharmacy graduate should look like. I think the world of pharmacy has changed so much, we are involved in so many more different roles than we were so should the university be looking at what the workplace requires um so every now and again maybe there should be discussions or like workshops on what we are looking for.”*

HP3: *“I think it would be good to be able to feedback to help you guys keep developing the undergrad course to, kind of, make out what we want. So if there are any glaring obvious... and I suppose that needs to be for all universities. I’ve certainly seen a difference this year from one university to the other”*

HP4: *“...this is, you know a collaboration. It’s got to be both ways and I, yeah, maybe if I had a better understanding of how things are working then we could say well hey, that’s made a difference in your graduates or vice versa...”*

HP5: *“if you guys don’t know about say the MI answering queries or the fact that they know the theory but cant put it into practice then you guys are never going to tailor the course to what we think needs happening... and equally if you turn around and say – we did this and you don’t feel like its helped the student or say it didn’t help them then we can say ok well we tried and it didn’t work or we’ll try something else”*

There is currently a perceived lack of communication between schools of pharmacy and employers. Various mechanisms of improving this were identified by employers such as face-to-face discussions, online channels

and through teacher practitioner input. Employers deemed a time point early in the pre-registration trainee's training year as most suitable for schools to obtain feedback on their graduates, before the effects of the training delivered by the pre-registration provider becomes apparent.

HP1: *"...sorry I've struggled with that question because I thought well what is really provided to work places about courses? I would say, yeah that there wasn't...but I think this is a potential gap at the moment from my perspective."*

HP4: *"I...there could be some sort of feedback mechanism quite early on, I would say, because that's when there some, mostly, you know, the graduate experience is obviously the most pronounced in those first few months."*

HP8: *"maybe they there should be discussions or like workshops on what we are looking for."*

**BB: how would you like to see those kind of discussions take place? What kind of format?**

HP8: *there's no point having a talking shop is there? But you do gain a lot from face-to-face discussions"*

HP2: *"...electronic communication of some of that information would be a really good starting point. I wouldn't be expecting like a lecturer to be calling me up...the mechanism of teacher practitioners whether that might work...but I think that would rely perhaps on these teacher practitioners knowing the students quite well."*

The geographical location of the training was identified by employers as a potential barrier to increased collaborative working, however some acknowledged that this could be overcome by using e-mail or telephone.

HP2: *"...School of pharmacies all around the country, isn't it? It's not like pre-reg tutors can all come to a particular school of pharmacy and learn a little bit more about what's going on."*

HP5: *"because of distance I'm happy for e-mail, telephone. Telephone might be easier as well because you can hear tone of voice but you know..."*

An alternative mechanism of collaboration was suggested by another participant, who suggested that graduates providing feedback directly to the university on their preparedness would be beneficial. Chapter Five will focus



on this notion, as the perceptions of recent pharmacy graduates on their preparedness for pre-registration training will be explored.

HP5: “...*the pre-reg’s themselves, do they feedback to you? Because I’d have thought they’d have been the best people to ask because they are the ones who have gone from undergraduate to the actual pre-reg job...*”

## **4.5 Discussion**

Discussion points specific to this stakeholder group are presented here.

More general discussion points between stakeholder groups are described in Chapter Six.

This element of the study explored the perceptions of hospital and community employers in relation to how graduates are currently prepared for the pre-registration year. The methodology employed allowed participants to speak at length about the issues of most importance to them, informed by their background and other factors. Interviews were conducted across a wide time frame, allowing the researcher to undertake significant reflection and iterations to the topic guide. The researcher also learnt the importance of employing the “pregnant pause” in interview scenarios whereby a question was posed, followed by a period of silence, prompting the interviewee to fill the silence and expand on various issues. Snowball sampling (discussed further in Chapter Two) was employed in recruitment for this study and gatekeepers were used, in the form of teacher practitioners, to recruit participants. This was particularly useful in identifying those individuals who had roles in the education and training of pre-registration pharmacists. Social media was also useful in advertising the study and this allowed an independent pharmacist at a distant geographical location (hence with experience of supervising graduates from other universities) to be recruited. A separate participant commented before an interview that they did not usually partake in such research, although they had often been asked, and that something about the way in which the advertisement was written

appealed to them, giving the researcher confidence in the recruitment materials being used.

Interviewing participants from a range of geographical areas across Wales and England provided an interesting insight into perceived differences between graduates of different schools.

Participants worked in pharmacies in both deprived and more affluent areas. A mixture of independent pharmacies, small chain and larger multiple pharmacies were also included. Anonymous destination of leavers' information was utilised in order to select hospital employers whom recruited more than one Cardiff graduate in the past three years to invite for interview. This information allowed the researcher to select potential participants over a wide geographical area, who had experience with Cardiff graduates and where public transportation links were suitable in order for the researcher to reach the participant for interviews. Unfortunately not all of the sites approached were able to be included in the study due to reasons described in section 4.2.

Employers of pre-registration pharmacists encounter a diverse range of issues when supervising pre-registration pharmacists. Pre-registration students come from different social, cultural and educational backgrounds. Employers often had experience of many pre-registration trainee pharmacists particularly the more experienced interviewees, and unsurprisingly were unable to isolate the most important factor that influences graduate preparedness for their pre-registration year. An interplay of factors were deemed to contribute to preparedness for pre-registration training. These may include but are not limited to the graduates' school of pharmacy, background and culture, personality and prior work experiences.

CP2 perceived a pre-registration trainee's calculation skills to be good, while HP1 took an opposing view when recalling the calculation skills of a pre-

registration trainee under her supervision. Whether this was due to the school of pharmacy or a difference between the two individuals was deliberated. There was no consensus regarding whether a school of pharmacy is responsible for differences between graduate preparedness in terms of calculation skills. This was true for preparedness for pre-registration training in general, unlike the findings of Van Hamel and Jenner (2015), which found that preparedness of medics for practice is dependent on school attended.

Graduate culture and background were identified as potential contributory factors to preparedness for pre-registration training, as discussed in section 4.4.2.3. This is supported by a report, which highlighted that Black-African candidates perform less well at the GPhC exam in comparison with other groups (Johnston et al, 2016). It was concluded that a complex interplay of factors influence the experiences of Black-African students throughout their pharmacy education, including the fact that many are mature students with financial and other family commitments and are overseas students. Some Black-African students have also experienced prejudice throughout their training and a lack of Black-African role models to guide them through their studies (Johnston et al, 2016). Schools should consider how student culture and background may affect their preparedness for the pre-registration year.

Exposure of students to the practice environment through work experience was also highlighted as a contributory factor to graduate preparedness for pre-registration training (4.4.2.4). CP1 noted that a student (who held a pharmacy Saturday job) was a particularly strong candidate owing to her ability to apply her knowledge whereas HP1 had an opposing view and stressed that application of knowledge could be improved. However, HP1 had not supervised a graduate with these experiences. Having such exposure to practice allows learning to be applied and is important. This corroborates with the findings of Sealy et al (2013) and the theory of situated cognition (Vygotsky, 1978) and is explored further in Chapter Six.

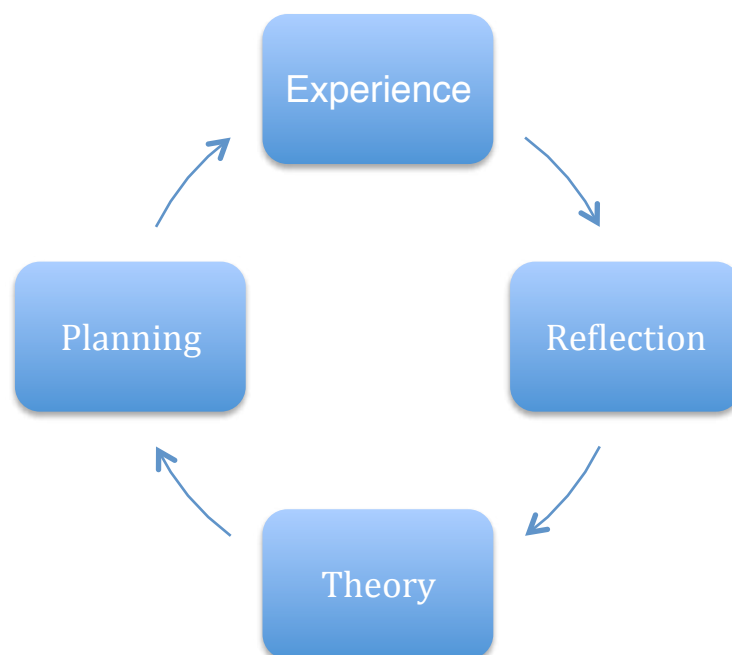
Independent community pharmacy participants in particular were keen to provide opportunities for students to gain exposure to the workplace environment. However, whilst hospital employers recognised the benefits of students gaining workplace exposure they made less reference to wanting to take students through their undergraduate training. This may potentially be attributed to the differences in the way in which community and hospital pharmacy is funded, the “business” element of community pharmacy and recent funding cuts. A community based interviewee highlighted that where staffing is limited students may be utilised in the day-to-day tasks of running the community pharmacy. In hospital practice students may potentially be viewed as requiring more supervision and input from pharmacist staff.

Participant perceptions that learning in the workplace is more effective than other mechanisms of learning is aligned with the views of others (4.4.3.4). “Clinical teaching” (teaching directly involving patients) has been extensively used in medical education at an undergraduate level, with institutions striving to provide greater exposure and introduce this as early as possible in programmes (Spencer, 2003). Its many strengths are well documented including providing an opportunity for students to develop their behaviours, attitudes and ability to think professionally, in addition to expanding their knowledge, in line with the teachers that they shadow (Spencer, 2003). However clinical teaching is not without its challenges, including competing demands on resource, its often opportunistic nature, fewer patients being available for involvement (through ill health, lack of consent, shorter hospital stays for example), the clinical environment not being “teaching friendly”, rewards and recognition for teaching being poor, time pressures, increasing numbers of students and under-resourcing (Spencer, 2003). The latter three issues were highlighted as barriers by the participants in this study.

Common problems with clinical teaching include a focus on factual recall rather than problem solving, teaching pitched at an incorrect level, passive observation by students, inadequate supervision, little opportunity for

reflection, “teaching by humiliation” (whereby students are put on the spot and may not know the answers), informed consent not sought from patients, lack of respect for patients dignity and privacy, lack of clear objectives and expectations and lack of congruence or continuity with the rest of the curriculum (Spencer, 2003). While some of these issues may be specific to medical education, the latter two were both concerns raised by participants in this study. Their enthusiasm to increase student learning through exposure to practice environments were clear, as was their desire to ensure this is designed as an integral part of the pharmacy curricula, with planned aims and objectives to achieve learning in specific clinical areas. Doing so would ensure that students are drawing on existing knowledge and skills, relative to the learning environment (Parsell and Bligh, 2001).

Clinical teaching allows students to learn through experience, which is said to give “life, texture and subjective personal meaning to abstract concepts” (Kolb, 1984). Kolb’s cycle forms the basis of experiential learning, and includes four fundamental principles.



**Figure 4.2:** Kolb's experiential learning cycle. (Adapted from: <https://www.simplypsychology.org/learning-kolb.html>)

Figure 4.2 above depicts Kolb's cycle and its four fundamental principles- experience, reflection, theory and planning. A teachers' role is to enable students to move around the cycle (Spencer, 2003). In practice this would mean that students are exposed to the experience in the workplace, are given time to reflect on the experience (what did it mean? How did I feel?), use this experience to develop their understanding of the theory, then plan for what they would do next time (Spencer, 2003). In implementing periods of clinical exposure to the workplace students could use opportunities both at university and the workplace to move around Kolb's cycle. Schools may wish to consider the principles of Kolb's work when planning MPharm curricula.

Employers views are echoed by Caffarella and Barnett (1994) who stress the importance of experiential learning namely in providing "rich life experiences" as the building blocks for learning, reflecting on such experiences enables meaning making or "re-making" as an individuals perspective need not be fixed (Caffarella and Barnett, 1994). The authors state that learning should also involve active engagement as opposed to passive listening, so that learners construct meaning for themselves. Along with group interaction, learners also use their life experiences to inform the meaning they take from learning experiences (Caffarella and Barnett, 1994). Experiential learning in a pharmacy context is discussed further in Chapter Six.

Personality was identified in this part of the study as important in influencing preparedness for pre-registration training (4.4.2.2). In particular participants discussed individuals' motivation to study and in choosing pharmacy as a career. It was established that motivation needs to be intrinsic. Where students were seemingly "pressured" into a pharmacy career by family they fared less well in the workplace (4.4.2.3). Pre-registration trainees were said to be motivated to learn where they were given sufficient responsibility for

patients. This is supported by the work of Parsell and Bligh (2001) who stated that learners value being given increasing responsibility for patient care, in combination with feedback on their progress. Hospital pharmacists in particular highlighted that pre-registration trainees can feel disillusioned when they are dispensary based at the start of the pre-reg. Allowing trainee pharmacists to take responsibilities for patients' care may improve their motivation to learn.

Commonalities between desired attitudes and values between the two sectors included a desire for patient centredness, professionalism and a willingness to learn. This may form the core attributes schools may wish to consider when recruiting students. Professionalism was a thread of conversation which ran throughout the majority of interviews, often presenting when interviewees reflected upon pre-registration trainee professional dress. Community employers did not mention the way in which their trainees dress. This may be due to their satisfaction with their appearance or the fact that some community employers have a prescriptive dress code or uniform. On the other hand some hospital employers made reference to perceived poor professional dress by pre-registration trainees and attributed this to the influence of junior medics also working on the ward. This finding suggests that the culture in which a graduate works, or the "community of practice" influences their perception of professionalism. Communities of practice will be discussed in further detail in Chapter Six.

Perceived differences in the skills required of a pre-registration trainee were also apparent between hospital and community pharmacy employers. It is unsurprising that community employers stated the need for business and managerial skills, as well as leadership and retail skills. This was not common to interviews with hospital employers, owing to the different role. This raises the question of whether graduates may benefit from optional training elements depending on their preferred sector of practice. A core common skill set was also identified between stakeholders which included

(but was not limited to) dispensing, teamwork and communication skills. This finding corroborates with work of Thompson et al (2012), Bond et al (2013); and Vlasses et al (2013) who identified communication as a highly desirable skill for graduating medics. The relative importance therefore of communication skills to graduates of healthcare programmes may be considered by educators when designing and refining programmes.

A pre-registration student's understanding of the roles of other healthcare professionals was also deemed important by hospital pharmacy employers (4.4.3.3). This may be attributed to the multi-disciplinary teams found in the ward environment, hence the importance of exposing students to a range of experiences at undergraduate level.

Overall, this study established that differences exist between the desired knowledge, skills, attitudes and values of pre-registration trainees between sectors of pharmacy. This agrees with the findings of Thompson et al (2012) who found that desired attributes of pharmacy graduates also vary depending on practice site in the US.

Having prior exposure to the workplace environment prior to starting pre-registration training was identified as being beneficial (4.4.3.2). This is supported by the work of Tallentire (2011) who identified that the transition to F1 for medics is eased by prior workplace exposure also. The effect of moving to a centralised pre-registration trainee recruitment system (Oriel) is not yet known. This may have a knock on consequence on student control of where they will be based for their training year and subsequently whether they will be able to visit this site prior to starting. This may have relevance to the ease of transition into pre-registration training for future pharmacy graduates.

Whilst employers discussed the importance of student exposure to role models throughout their education they did so with reference to the pre-



registration tutor and other pharmacists (4.4.3.2). No reference was made to other members of the pharmacy team as role models for graduates, as described by Jee et al (2016). However, in agreement with the work of Jee, it was identified hospital and community pre-registration trainees experience a different range of patients, thus highlighting the need for students to experience a range of practice exposures throughout their undergraduate training.

Participants reflected upon university programmes and were forthcoming with opinions on various teaching methods and tools such as PBL (4.4.4.2), small group teaching (4.4.4.3) and reflection (4.4.4.4). The significance of each are explored in turn.

Employers had different opinions of PBL. PBL is an established teaching method in the UK and further afield, particularly in the education of medical students. It is typically based on the Maastricht “seven jump” process whereby students in a group (approximately 10) together with a facilitator are presented with a scenario which is then used to “trigger” their learning (Wood, 2003). Unfamiliar terms are clarified within the group before the problem is defined (step one), “brainstorming” then takes places (step two) where suggestions of possible explanations are made (step three). These are reviewed and arranged into tentative solutions (step four) before learning objectives are formulated amongst the group in step five. Each student participant then has time for private study (step six), before rejoining the rest of the group in step seven to share their learning. This is reviewed and potentially assessed by a tutor (Davis and Harden, 1999). In theory this is thought to improve generic skills important in the workplace such as communication, teamwork, problem solving, independent responsibility for learning, sharing information and respect for others. Certainly from the data many participants agree the use of PBL is positive, particularly in allowing students to see the clinical relevance of their teaching. This is echoed by Wood (2003) who states that using a clinical stimulus for learning enables

students to understand the relevance of theory in clinical practice. Potential drawbacks include significant changes to staffing and resource, such as a requirement for additional training and a strain on, for example, library materials when PBL groups are working on similar subject areas. However, it could be argued that such a strain on library resource exists where traditional methods are used and whole cohorts seek to undertake additional reading before/after lectures or workshops. Other potential pitfalls include the notion that some students may not be exposed to particular teachers who, in a traditional curriculum, would have led a lecture with the whole cohort and the fact that tutors may find the PBL process difficult or frustrating as they are unable to “pass on” their own knowledge (Wood, 2003). One participant in this study also stated that they felt the knowledge a student received through PBL was “surface” knowledge, however the student in question may have had “surface knowledge” for a host of reasons and the participants personal preferred learning style may have influenced her response. PBL has shown promise as an educational tool as it seems those who have been through PBL curricula have better knowledge retention, although traditional assessments of curricular outcomes have shown little or no difference in students graduating from traditional or PBL courses (Wood, 2003). Greater research of PBL effectiveness in a pharmacy education context is needed.

Small group teaching has long been acknowledged by others to be an effective mechanism of education whereby students can “negotiate meanings, express themselves in the language of the subject, and establish closer contact with academic staff”, it also allows students to monitor their own learning and gain a degree of self-direction (Jaques, 2003). In this study employers stated the importance of self-direction and independence to the pre-registration programme and suggested that students may benefit from a greater emphasis on self-directed learning at the undergraduate level. Small group teaching sessions may benefit students in many ways. It is acknowledged that the success of small group teaching relies heavily upon active participation from all group members, the students being adequately

prepared for the session and the physical teaching conditions, for example seating around round tables is thought to encourage conversation over rectangular seating arrangements (Jaques, 2003). These factors may therefore be considered by any institution considering employing small group teaching in their programmes, in order to enhance its effectiveness. Allowing students to work together in a group is also thought to motivate students through “peer pressure”, reducing the likelihood of students failing to keep up with workload (Wood, 2003).

Employers spoke about the importance of, and perceived lack of, reflective abilities in some pre-registration trainees. This was particularly evident when compiling their evidence records as part of the training monitoring process. Reflection in adult learning has long been recognised. A theory suggested by Schon (1983) states that when something new or unexpected is encountered in practice by a professional person the person responds in two separate acts of reflective practice. First is the immediate reflection in action whereby the individual reflects on past behaviours in order to resolve the situation (Schon, 1983). Secondly the individual later reflects upon the situation, how it went, and whether anything needs to be taken into consideration for the next time this event is encountered. Both instances of reflection are said to be important in order to “develop wisdom and artistry in their practice” (Schon, 1987). What appears to be lacking in the pre-registration trainee population discussed by participants is the second element of reflection, whereby events encountered are not revisited in order to review how they could improve next time. Instilling reflection in the student undergraduate experience may enable this behavior to continue into the pre-registration year and beyond.

#### **4.6 Limitations**

The two elements of this part of the study (interviews with community employers and hospital employers) were not conducted in parallel. This was based on workload and capacity. Interviews with community employers were

conducted while ethical approvals were sought for interviews with hospital employers. On reflection, conducting the studies alongside each other may have been beneficial in order to snowball sample between employer groups. It also may have allowed issues raised by one stakeholder group to be explored with the other.

The NHS Research Ethics application process was more time consuming than anticipated, with much time spent communicating with different sites in isolation in order to fulfill their various requirements. This was a barrier to data generation, however with the implementation of the new HRA system this process may be streamlined for any future work.

Interviewing in community pharmacies posed new challenges to the researcher. Whereas previous interviews were conducted in “office type” environments, interviews in community pharmacies were conducted in the consultation rooms, which were often cramped and offered little workspace. The recording device was often balanced on the researcher’s knee or on the floor, which sometimes made re-listening to the audio data more difficult. Interviewing community pharmacists also meant that interruptions to interview proceedings were inevitable. This happened on a number of occasions where for example the pharmacy phone rang, a prescription needed to be checked, or on one occasion where a dispenser needed to speak to the pharmacist about a patient related issue.

On one occasion a participant was keen to share their views before the researcher had the opportunity to set up the recording equipment, this led the researcher to use the stock phrase

*“...that is something I’d like to explore on my topic guide, it would be great to come back to that later”*

The researcher made a note of this issue and revisited it later in the interview when the recording device was switched on, in order to capture the participants' view.

While the number of participants recruited for this stage in the study is in line with the number recruited for other stakeholder groups (academic staff and recent graduates) it would have been nice to recruit some more employers, particularly hospital based. Reasonable efforts were made to recruit but unfortunately a lack of uptake and time restrictions meant that the study had to end after 11 participants were recruited and interviewed. The purpose of this study is very much exploratory and not to make generalisations. The sample size was therefore deemed sufficient to make some initial explorations.

An added challenge with interviewing employers was that some interviewees made reference to their own MPharm experience. It is acknowledged that the degree scheme may have changed significantly since some of the interviewees completed their training. This was avoided as best as possible but would inevitably have been a confounding factor. When a participant began to speak about their own experience a gentle reminder was given

*“So how do you think that is for the pre-reg that you are currently supervising?”*

This was helpful in returning the participants focus and ensuring the most relevant data was captured.

As the interviews were being conducted with practicing pharmacists this often meant that interviews were conducted at lunchtime or during the pharmacies normal opening hours, therefore the researcher felt the added element of time pressure. One participant stated directly before the interview that he only had 20 minutes before needing to go to another meeting and so

it was important for the researcher to focus on the issues of most importance, and to keep the conversation related to the topic guide as much as possible. Inevitably this meant that there were a number of areas that could have been explored further but this was not possible at the time. Upon re-listening to the data and throughout analysis there were no issues that required clarification and so it was not deemed necessary to contact the participants again to ask follow up questions in these circumstances.

The addition of a section to the topic guide with hospital employers surrounding collaboration was not mirrored in the community pharmacist topic guide as interviews with community employers had already been conducted. Therefore community employers were not as explicit in their suggestions for improved collaboration, yet it was still evident from the data that pre-registration trainees would benefit from greater collaboration between schools and employers in terms of workplace exposure provision.

This was a qualitative piece of work conducted through a social-constructivist paradigm and therefore meaning was co-generated between interviewee and researcher. If the project were conducted by an alternative researcher data generation and interpretations may have differed.

It is acknowledged that all participants in this study had experience of supervising graduates from CSPPS (at the time of interview or in the preceding years). While the lessons from this study may be applicable to other schools they may be more applicable to CSPPS. Inclusion of more participants (in different geographical locations/proximities to other pharmacy schools) may yield alternative results.

#### **4.7 Conclusion**

The perceived knowledge, skills, attitudes and values required to be a pre-registration trainee pharmacist were identified and include subtle discrepancies between the attributes needed in community and hospital pharmacy environments.

Employer feelings towards graduate preparedness were explored. The underpinning theoretical knowledge of graduates was identified as an area in which graduates are well prepared, however they were mainly perceived as lacking the ability to apply this to practice.

A number of factors influencing preparedness for pre-registration were identified, namely background and culture, personality, school of pharmacy attended and prior work experiences.

Suggestions for improvements to MPharm curricula centred around enhancing student exposure to pharmacy practice. This is explored further in Chapter Six.

Findings cannot be generalised as they only include the views of a relatively small sample of pre-registration employers. The use of qualitative methods was beneficial in exploring issues most important to employers and affording the opportunity to prompt and probe where necessary. Interviewing this stakeholder group posed unique challenges in terms of recruitment and interview locations, as discussed above, yet the aims and objectives of the study were met.

The findings of Chapters Three, Four and Five are triangulated in Chapter Six where suggestions for further work and recommendations are outlined.

Chapter Five

# Interviews with recent graduates

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## 5 Recent graduates

### 5.1 Introduction

Chapter Four explored the views of those involved in the recruitment, supervision and training of pre-registration pharmacists towards graduate preparedness for the pre-registration year. This chapter explores the views of recent pharmacy graduates towards their own preparedness. Interviews with this stakeholder group were conducted in order to obtain an insight into areas for which they felt well and less well prepared and suggestions for how their graduating school of pharmacy could better prepare its graduates for the pre-registration training year.

Some relevant literature specific to the preparedness of nursing and medical students for practice is presented here, as there are a greater number of published studies in this area. Some similarities between pharmacy, nursing and medicine undergraduate education can be drawn, for example the requirement for students to have practice exposure. The GPhC states that practical experience should increase year on year, similarly the General Medical Council (GMC) state that exposure to patients should increase year on year (General Pharmaceutical Council, 2011; General Medical Council 2015). However it is prudent to note that there are also many differences. As such the views of medics and pharmacists may differ. Namely, medics are required to spend a higher proportion of time in the workplace environment on placements which “must be planned and structured to give each student experience across a range of specialities, rather than relying entirely upon this arising by chance” (General Medical Council, 2009). Nursing students too are required to spend a higher proportion of time in a clinical setting than pharmacy undergraduates (2,300 hours for nursing as opposed to no minimal time requirement set out by the GPhC) (Nursing and Midwifery Council, 2010). There is also more specific guidance relating to the provision and evaluation of placements provided by the medical education regulator, such as having formal written agreements with placement providers relating

to the objectives of placement exposure (General Medical Council, 2009) and no specific requirement for pharmacy education providers to have such written agreements (General Pharmaceutical Council, 2011).

### **5.1.1 Preparedness of medical graduates for practice**

A number of UK studies have explored medicine graduate perceptions of their preparedness to practice (Cave, 2009; Watmough et al 2009; Taylor et al, 2010; Illing et al 2013; Miles et al 2017; Monrouxe et al 2017; Surmon et al 2016) and have highlighted a need for improvement. In particular a review of published literature conducted by Monrouxe et al (2017) highlighted that interventions are needed “to address area of unpreparedness” such as multidisciplinary working, prescribing and clinical reasoning (Monrouxe et al, 2017). Monrouxe et al. also suggest that future studies should include the involvement of multiple stakeholders, as the majority of current studies are based on medicine graduate self-perceptions (Monrouxe et al, 2017).

Studies have focused on whether differences exist between the preparedness of graduates from different medical schools and have found varying results. The work of Taylor et al (2010) found large differences in graduate preparedness between medical schools yet the more recent work of Morrow (2012) found there to be no significant difference. Another study has shown that personality also plays a role (Cave, 2009) with agreeableness, conscientiousness and extraversion positively correlating with preparedness.

Earlier studies have been conducted to compare and contrast integrated Problem Based Learning (PBL) curricula against a traditional medicine programme. One such study used semi-structured interviews with graduates of each course (O’Neil et al. 2003). It found that graduates of the new integrated programme were better prepared for ‘dealing with uncertainty, knowing their personal limits and ascertaining their rights for support when they felt these limits had been reached’ (O’Neil et al, 2003). Potential reasons for this finding were suggested such as the students having the

opportunity to identify gaps in learning, write their own learning objectives through PBL (O'Neil et al, 2003) but also that students encounter anxieties over their depth and breadth of knowledge at an undergraduate level through PBL (Woodward, 1996). Though potentially outdated, a postal survey of graduates from PBL and 'traditional' curricula found that graduates of a new PBL curricula perceived themselves to be better prepared in 12 of 19 broad competencies with the study authors attributing such positive perceptions to the group work encountered through PBL, inclusion of legal/ethical dilemmas in PBL and the emphasis on learning in community settings (Jones et al, 2002). However, one area of competence 'understanding disease processes' received a less favourable rating, highlighting the need for further research (Jones et al, 2002).

Experiential learning "on the job" has been found to play an important part in medic preparedness for practice, a commonality between studies (Cave et al, 2009; Illing et al, 2013; Tallentire et al; 2011), with "real life" experiences having a perceived larger effect on preparedness than simulated experiences (Burford et al, 2014). The necessity to make learning relevant was also significant in preparing for practice (Watmough, 2009) as was the desire for increased opportunity to shadow and take part in simulations (Clack, 1994; Goldacre, 2003).

The transition period from student to doctor was highlighted as a challenging time (Brennan et al, 2010, Bogg et al, 2001). A compulsory period of induction for medics was introduced in 2012 in an attempt to "smooth" this. The work of Van Hamel and Jenner (2015) concluded that the induction period eased graduate anxiety, in particular the tips from outgoing Foundation Year 1 doctors (F1s) were highly valued (Van Hamel and Jenner, 2015). Clinical exposure has also been shown to decrease stress in the time of transition (Brennan et al, 2010). Evidence presented in a systematic review by Surmon et al (2016) also supports clinical skills refreshers, clarification of medical graduates roles and expectations, enhancing content

contextualisation and provision of further opportunities to apply knowledge and skills in increasing graduate preparedness for practice (Surmon et al, 2016).

### **5.1.2 Preparedness of nursing graduates for practice**

Studies with nursing graduates have yielded similar findings with strong emphasis placed on the clinical learning environment as a “powerful catalyst to students’ learning” (Mooney and Dip, 2007). The transition from student to nurse was also identified as a difficult period. The recognition of nursing students as “supernumerary” was discussed as both beneficial in easing the transfer but also in making students feel “in the way” (Gerrish, 2000; Mooney and Dip, 2007). Finally, the role of lecturer practitioners in nursing was highlighted as having a profound effect on students through facilitating learning (Dearmun, 2000). Nurses are educated in a different way to pharmacists and so while some comparisons may be drawn their views may differ in light of this.

### **5.1.3 Preparedness of pharmacy graduates for practice**

Studies focusing specifically on pharmacy curricula and preparedness for practice in the UK (Langley and Aheer, 2010; Jesson et al. 2006; Willis et al, 2009; Wilson et al, 2006; Wilson et al, 2005) have been published to a lesser extent and often report the perceptions of undergraduate students as opposed to graduates. Undergraduates have been said to perceive themselves as possessing the necessary skills for practice (Langley and Aheer, 2010) but struggled to see the relevance of science content early in the undergraduate programme (Langley et al, 2012). A study by Willis et al (2009) concluded that Schools provide insufficient opportunity to practise skills or that students had unrealistic expectations of the skills needed (Willis et al, 2009). However, as this study was conducted with final year students an element of bias may have been introduced as they had not yet entered the workplace and so their perceptions of preparedness may have changed.

A more recent study has mapped preparedness against GPhC performance standards (Parmar, 2016) in order to show that curriculum reform in a school of pharmacy had increased graduate preparedness. This increase was attributed to course alignment and application of learning through new opportunities, such as observing other pharmacists in the workplace and undertaking Objective Structured Clinical Examinations (OSCEs) in all four years of the programme (Parmar, 2016).

Studies focusing on the preparedness of pharmacy graduates from countries outside the UK (including America, Australia and Canada) were not explicitly considered, as the professional regulator and hence degree schemes differ. The healthcare structures are also significantly different to the National Health Service (NHS) in the UK. However, it is worth acknowledging that such studies have also shown that opportunities for practice experiences are highly valued by pharmacy students. Their benefits include helping students cure their false pretenses about their own preparedness (Scott et al, 2010), giving students an idea of the role of the pharmacist and the feeling of becoming part of a community of practice (Noble et al, 2014). The work of Noble et al (2014) highlighted the importance of educators forming connections to positive role models. A Canadian study (Whelan et al, 2007) found that students from a Problem Based Learning (PBL) curriculum perceived themselves to be equally or better prepared than their 'traditional programme' counterparts, however this study is limited by its low response rate and the fact it included the views of graduates who were yet to enter the pharmacy workplace. As such, it is unclear whether these perceptions were still held when they began work.

To the researcher's knowledge the latest study to explore the perceptions of recent graduate participants towards their preparedness in the UK was conducted over 20 years ago (Mudhar et al, 1996). In a nationwide study questionnaires were sent to pre-registration pharmacists and identified that students rated topics such as pharmacognosy and areas in pharmaceutical

chemistry as being of little use to their preparedness for practice where as 'vocationally oriented' topics were of most use (Mudhar et al, 1996). The study also identified that undergraduate education need not be specialised (e.g. towards community of hospital pharmacy practice) as the perceptions between community and hospital participants were not significantly different (Mudhar et al, 1996). Mudhar suggested that problem solving, small group tutorials and seminars were considered very useful (Mudhar et al, 1996). However undergraduate MPharm programmes have since undergone significant reform, this work follows on by providing a more up to date contribution.

This chapter aimed to explore recent graduate perceptions of how they could be better prepared for the pre-registration year.

The objectives were to:

- Explore graduates' thoughts and feelings at the start of the pre-registration training year
- Explore graduates' feelings on their preparedness for the pre-registration training year
- Explore the factors influencing preparedness of individual pre-registration trainee pharmacists for their pre-registration training year
- Gather and explore recommendations for improvements that could be made to undergraduate programmes to better prepare students for the pre-registration training year and identify areas of good practice

## **5.2 Ethical approval**

Ethical approval was sought from CSPPS Research Ethics Committee. A favorable response was obtained on 20/02/15 following confirmation to the committee that the consent form would make reference to the fact that participants had the opportunity to ask questions and have them answered satisfactorily *before* consenting to participate. The addition of an additional statement to the consent form was required to state that if a participant

decided to withdraw from the study any data generated with the individual participant up until that point would not be included in the study.

### **5.3 Method**

Qualitative methods (described in Chapter Two) were employed for this part of the study.

Interview questions were designed according to the aims and objectives. A topic guide (Appendix 3.2) was employed during interviews with each section being explored in turn. Specific questions were written in order to explore each section of the topic guide and were refined throughout the study.

Questions were asked in the same order each time however not consistently. Open questions were used initially, followed by a series of closed questions to further probe or clarify a response. If there was ambiguity in a response the researcher sought to clarify the meaning by asking

*“Can I just check that I have understood you correctly...”*

The topic guide was split into three sections. The focus of and questions asked in each were decided upon based on topic guides used with success in other stakeholder interviews. The researcher acknowledged the importance of discussing the participants' background details, feelings at the very beginning of the pre-registration year and any factors which may have influenced this. Topics were decided within the research team to reflect this, with specific questions drafted and redrafted beforehand.

The first section sought to gain more information about the participant including their school of pharmacy, current area of practice (sector and site) and any work experience they had prior to commencing pre-reg training. This data was obtained solely for the purpose of contextualising participant responses. Section two sought to explore graduate opinions on their experiences as a pre-registration pharmacist and their views towards their preparedness for this. Participants were asked an open question which was

followed with a series of prompts (as described above). The final section served to summarise what was discussed by asking what the participants' school of pharmacy did well/less well to prepare them for their pre-registration year, along with suggestions for how this could be improved.

At the end of the interview recent graduates were reminded of the research question and encouraged to add any further points that were of importance to them.

### **5.3.1 Topic guide design and refinement**

An initial broad topic guide was designed with a series of prompts and probes (Appendix 3.2). Topic guide design was influenced by previous topic guides used with success in other stakeholder groups. For this reason the structure of exploring participant demographic data initially was employed. The second section sought to explore preparedness for tasks encountered in the past (at start of training), presently and anticipated tasks yet to be encountered. This was decided after a discussion within the research team as it was hoped this would allow the researcher to explore preparedness for a number of different facets of pre-registration training. For consistency the final section of the topic guide was based on the topic guide used in other stakeholder interviews, exploring areas in which Schools perform well, less well, suggestions for improvements and also anticipated barriers.

In line with an iterative process this was slightly modified in order to generate useful data, such modifications included enhancing section one in order to establish whether a graduate's pre-registration place was their first choice (as this may have had an impact on their perceived preparedness for pre-registration), as well as asking students to reflect upon whether there was anything further they'd expected to have been asked at the end of the interview. This was asked as a means of establishing any perceptions which may not have been discussed as part of the interview.



### **5.3.2 Recruitment and sampling**

A combination of non-probability sampling techniques was used namely purposive, convenience and snowball sampling to ensure a variety of individuals were invited to participate.

Interviewees were invited in order to ensure a variety of graduates were included in the sample, with a range of backgrounds and experiences (including those with significant pharmacy work experience and those with little prior exposure, individuals whose first degree was not pharmacy, those who live in rural and urban environments, individuals who had gaps in their pharmacy education for various reasons as well as those who went straight from school through to University and pre-registration training with no gap in their education). Purposive sampling was used to directly invite individuals by e-mail (Appendix 3.3) based on their gender, year of graduation, geographical location and their position as either a hospital or community pre-registration pharmacist. Pre-registration pharmacists working in a range of sites were also approached and invited to interview including those in independent, small chain and multiple community pharmacies as well as small and large teaching hospitals. Interviewees were then asked whether they knew of anyone else who would be interested in participating and whether they would be able to ask the individual whether they would be willing to participate and get in contact with the researcher, or whether they would be able to provide the researcher with their e-mail address in order for an invitation e-mail to be sent.

Social media was used as a form of advertising the study with posts made to Facebook (Appendix 3.4) (specifically the 'Welsh School of Pharmacy Past Students Association' page). The British Pharmaceutical Students Association (BPSA) was also used as a gatekeeper, and their postgraduate representative sent an invitation e-mail to their postgraduate members (that is, any member who was not an undergraduate student) on the researcher's behalf. A member of staff at the Wales Centre for Pharmacy Professional

Education (WCPPE) was also employed as a gatekeeper in the study, sending out an invitation e-mail to the recent graduates (Appendix 3.5) enrolled upon their pre-registration training programme.

### **5.3.3 Research diary**

A research diary was kept throughout the study. The researcher recorded post interview reflections in this as a means to document any thoughts or feelings on the interview, suggestions for the next interview or emerging themes (see diary excerpt in Appendix 3.1 for an example)

### **5.3.4 Analysis**

Verbatim transcription and inductive thematic analysis was undertaken according to the method outlined in Chapter Two.

A deductive approach was also applied where the researcher sought to identify the knowledge, skills, attitudes and values required to be a pre-registration pharmacist, recommendations for improvements and areas of good practice, as these questions were not explicitly asked during interviews. Inductive thematic analysis was conducted for all other elements in order to generate themes directly from the data.

### **5.3.5 The interviews**

Interviews (n=17) were conducted between 20/04/2015 and 12/09/2016 in accordance with the method outlined in Chapter Two. Four interviews were conducted by telephone owing to the geographical location of the participants and participant preference and the remaining fourteen interviews were conducted face-to-face. No participant withdrew consent. A number of mutually convenient locations were used including consulting rooms at CSPPS, a meeting room at the Hilton Hotel Newport (where a WCPPE training event was taking place), a meeting room at Cardiff University's Arts and Social Sciences Library and a Bristol city centre coffee shop. Interviewees were e-mailed the consent form (Appendix 3.6) and information sheet (Appendix 3.7) at least two weeks in advance of the interview so they

had the opportunity to read it and ask questions. They were also provided a hard copy of the consent form to sign at the interview itself.

A practice interview was conducted in order to “test” the topic guide and the wording of the interview questions. The data from the this interview has not been included in data analysis as the participant was interviewed three years post graduation and so their views related to a course which had undergone significant change since their undergraduate training. The participant was also unable to recall their experiences of pre-registration training in as much detail as more recent graduates and may have been subject to recall bias.

### **5.3.6 Interviewee characteristics**

Table 5.1 details the key characteristics of the participants (n=17) including their year of graduation, interview date, the number of months that had elapsed between starting their pre-registration training and taking part in the interview, area of current practice and length of the interview. Interviews lasted between 16 minutes and 40 minutes with a mean of 26 minutes. In addition to the characteristics described in the table below interviewees held a range of backgrounds and experiences. Eleven participants were based in Wales for their pre-registration training, four in England and two in Northern Ireland. Fourteen Pre-registration pharmacists graduated from Cardiff University, one from Aston, one from Reading and one from Ulster University. Community pre-registration pharmacists (a mixture of those in large chain, small chain and independent pharmacies) accounted for the majority of the sample (n=10) with slightly fewer hospital pre-registration pharmacists (from both large teaching and smaller hospitals) being interviewed (n=7). Also included in the sample was a participant who had prior work experience as a pharmacy technician before commencing the undergraduate pharmacy programme, two graduates who completed their MPharm programme as non-EU students and three graduates who took a year out of their MPharm studies at some point in the course. These details have been omitted from the table in order to protect participant anonymity.

The majority of participants were recruited through direct e-mail invitation (n=11), two responded to a Facebook post, three responded to a WCPPE gatekeeper e-mail and one responded to the BPSA gatekeeper e-mail.

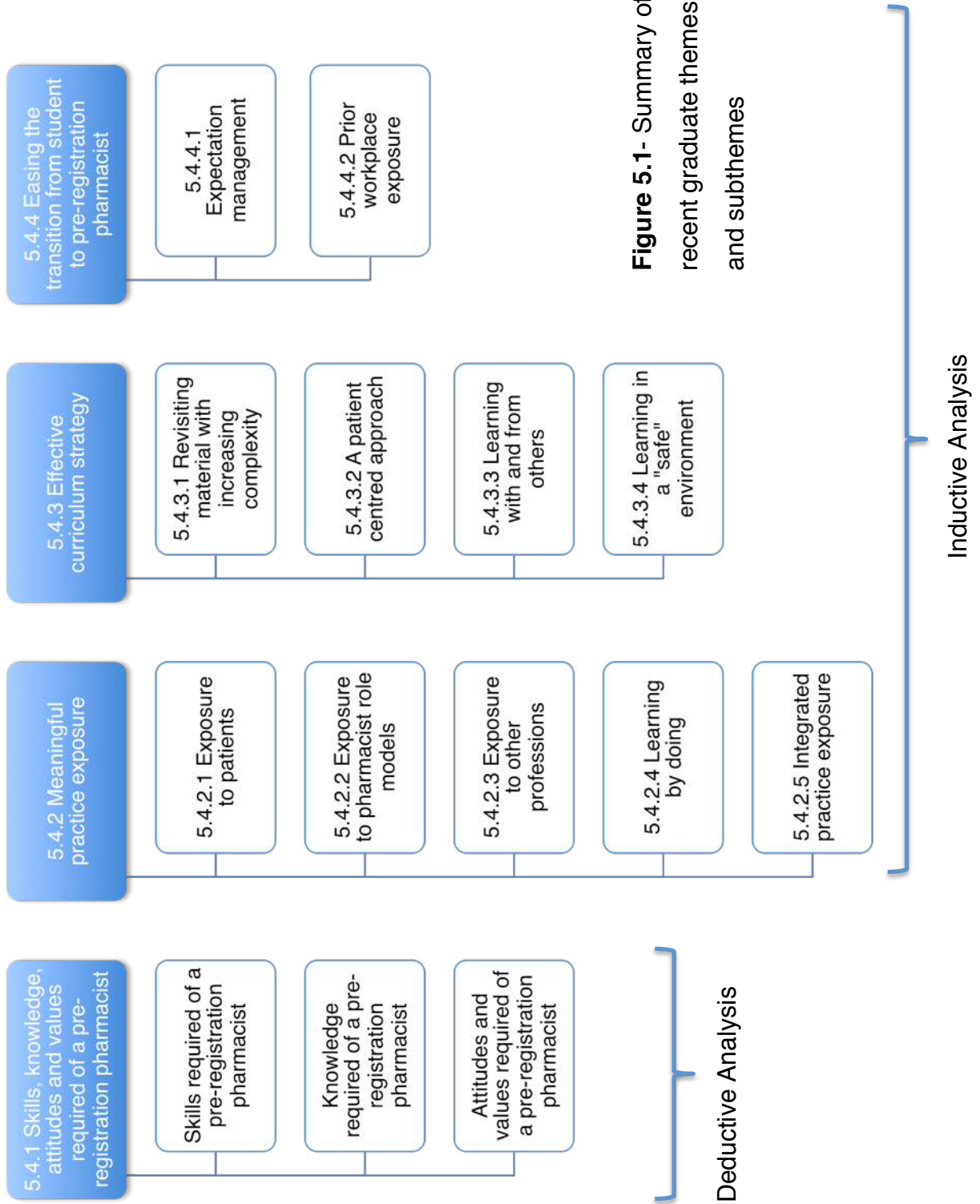
**Table 5.1:** Recent graduate interviewee characteristics

Participant	Year of graduation	Date of Interview	Months from starting –re-reg	Area of Practice	School of Pharmacy (Cardiff or other)	Duration of Interview (minutes)
RG1	2014	20/4/15	8	Hospital	Cardiff	29
RG2	2014	24/04/15	8	Hospital	Cardiff	21
RG3	2013	11/05/15	21	Community	Cardiff	20
RG4	2013	22/5/15	10	Hospital	Cardiff	31
RG5	2015	06/10/15	2	Hospital	Cardiff	23
RG6	2015	14/10/15	3	Community	Cardiff	16
RG7	2015	04/11/15	3	Community	Cardiff	23
RG8	2015	12/11/15	3	Hospital	Other*	27
RG9	2015	13/11/15	15	Community	Cardiff	33
RG10	2015	26/11/15	4	Community	Cardiff	29
RG11	2015	27/11/15	4	Community	Other*	24
RG12	2015	01/12/15	4	Community	Cardiff	22
RG13	2016	02/09/16	1	Community	Other*	19
RG14	2016	05/09/16	1	Hospital	Cardiff	40
RG15	2016	07/09/16	1	Community	Cardiff	28
RG16	2016	08/09/16	1	Community	Cardiff	35
RG17	2016	12/09/16	1	Hospital	Cardiff	28

\* Note that participants from ‘Other’ schools of pharmacy attended Reading (n=1), Ulster (n=1) and Bath School of Pharmacy (n=1).

## 5.4 Results

Figure 5.1 depicts the main findings of this part of the study. Themes and subthemes identified through thematic analysis are presented with the overarching themes shown in blue while the corresponding subthemes lie beneath in white.



**Figure 5.1 - Summary of recent graduate themes and subthemes**

#### 5.4.1 Skills, knowledge, attitudes and values required of a pre-registration pharmacist

Deductive analysis of interview transcripts allowed the researcher to identify the necessary skills, knowledge, attitudes and values needed to be a pre-registration pharmacist from the perspective of recent graduates themselves. These are presented in Appendix 3.8 with supporting participant quotes. Some representative issues are outlined here.

The ability to speak with patients, make decisions and use reference sources were important skills to pre-registration pharmacists.

RG17: *“when you start to speak to real patients...at the end of the day it’s real life now. So exciting but nervous...”*

RG3: *“I’m not worried about making a decision and going with it.”*

RG16: *“...we’re using the MEP now...I think you need to come out of university knowing these reference sources and how they can help you.”*

Knowing about medicines, the roles of others in the pharmacy team and underpinning scientific knowledge were deemed important also.

RG3: *“I just couldn’t remember any of the classes of them or how they worked or anything like that. And I felt really embarrassed.”*

RG17: *“...actually know what other staff do...the amount of times in the dispensary there’s one pharmacist doing the clinical check, but there’s two ACTs that are doing all the checking and that. You don’t know to begin with why they’re doing it.”*

RG4: *“...you’ve got the pharmacology and the science base behind what you want to recommend...”*

Taking responsibility for your own actions and having self-discipline were also viewed as essential.

RG7: *“I like the responsibility that comes with being a pre-reg...you’re not a pharmacist. You’re like a practice pharmacist”*

RG2: “...you need to be quite disciplined and everything and I think that’s really taught me how to make sure I’m getting the work done effectively”

Comparisons have been made between the characteristics identified by different stakeholder groups as being important and discussion around this is included in Chapter Six. Deductive analysis highlighted that pre-registration pharmacists place less importance on the attitudes and values required to be effective in the role and how these may be developed, compared with knowledge and skill development. This will be explored further in Chapter Six.

#### **5.4.2 Meaningful practice exposure**

All participants highlighted exposure to pharmacy practice as an important factor in their preparedness for pre-registration. While universities provide exposure opportunities to varying extents there is little acceptance on what constitutes a meaningful practice exposure. This theme explores what graduates perceived as being meaningful in their preparedness.

##### **5.4.2.1 Exposure to patients**

Without exception all participants spoke about the importance of exposure to patients in preparedness for pre-registration training. Frequent contact with patients was said to increase student confidence with respect to their communication skills.

RG15: “You meet different people with different... just having that confidence to speak to people, because I was really nervous the first time I started work in a pharmacy... but obviously my pharmacist kept on pushing me. She was like, just go out and talk to them. That’s how you get used to it and now it’s just second nature. It’s just easy for you to communicate what you need to. It’s just about confidence as well. It helps your confidence being able to interact with people like that on a day-to-day basis.”



Having exposure to patients over the counter in community practice as part of work experience and on pharmacy placement also appeared to increase graduate confidence in OTC consultations.

**BB:** *“So your confidence then with the over the counter stuff, what can you attribute that to?”*

**RG8:** *I suppose it is from your work experience as well and your placements and having had part-time work, and it was just like riding a bike.*

**BB:** *Just riding a bike, okay.*

**RG8:** *Yes. You can just jump back on. It’s never a bother”*

Further to having patient contact, being actively involved in patient care was said to positively impact participant RG2’s learning during hospital pre-registration training by allowing them to be in a position of responsibility. In doing so their motivation to learn was perceived to change for the better.

**RG2:** *“I think responsibility of having to have your own patients and being able to justify what’s going on, the medicines for them, and making decisions and yeah and kind of learning. You’re always constantly learning and you’re learning it because you have to learn it to help that patient, rather than just learning it because somebody has told you to learn it...”*

**BB:** *right. Have you found that beneficial to your learning?*

**RG2:** *yeah. A really really big change in how I learn is ‘cos of that. And it’s good.”*

#### **5.4.2.2 Exposure to pharmacist role models**

Participants valued exposure to pharmacist role models as part of their practice exposure. This includes teacher practitioners who were said to be able to provide workplace “anecdotes”, real life examples and ultimately allowed graduates to be prepared for what to expect when they entered the workplace.

**RG1:** *“...I feel I kind of knew what I was walking into ‘cause we’ve had quite a lot of contact with like teacher practitioners and stuff so they tell us a lot about what they see and you see like charts and stuff so you know what you were looking at on a chart.”*

**RG1:** *“The workshops run by teacher practitioners are really good...in workshops that they’d give examples and case studies and we’d come up with the answer and they’d say yes but in some patients you probably*

*wouldn't worry about that or some patients you'd want to do that instead, using their own experience..."*

Seeing other pharmacists at work in practice was said to be important in allowing individuals to develop their own idea of best practice and a wider appreciation of different ways of working. Both RG1 and RG7 (who worked in hospital and community pharmacy respectively) had worked in a variety of different pharmacies prior to commencing pre-registration training. Others who had not had such experiences did not comment on the benefits of seeing a range of working practices.

*RG1: "...you see other people, the way people work as well...I think that's definitely something you should keep in mind as well, and you might see someone do something differently in one hospital than another...and you won't be so stuck in your ways...if you see a broad range of places early on it keeps you more open minded I think later on..."*

*RG7: "I found that doing independent and Co-op and Boots just helped you appreciate how people do things differently because I'd only worked in my Saturday job...and I went to a different pharmacy and I was just confused how they did stuff, but it helps with like dealing with other professionals knowing that people do things differently and appreciating it's all what you prefer, not right or wrong"*

Contact with relatively newly qualified pharmacists as well as those who are more experienced was said to be a beneficial facet of practice exposure, allowing graduates to envisage their career path and progression.

*RG3: "... you see all the people who are a couple of stages above you and diploma students who have just passed and gone through the pre-reg and they're all like oh you'll get there eventually and it's like exciting then to know that you will eventually get there and be able to provide, well, have that knowledge and learn it."*

One graduate also valued the opportunity to spend time with pharmacists in new and emerging roles in order to gain an appreciation of the world of pharmacy as a whole and how they may envisage their career progression. This was highlighted by RG4 who had spent time shadowing a pharmacist in a Local Health Board as part of the pre-registration year. This was not

discussed by other participants as they may not have had the same opportunities.

RG4: *“But I suppose like the nature of the pharmacy profession is sort of like getting a bit more diverse isn’t it? So maybe looking at how independent prescribing fits into those areas, like how, going out and seeing independent prescribing in GP practices, or like seeing how pharmacists working in the locality and like how, what their job is, to sort of gain a wider view of the pharmacy profession, and what’s going on out there and like how we’ll fit in to it.”*

#### **5.4.2.3 Exposure to other professions**

Interaction with other professionals as part of practice exposure is useful. In particular allowing pre-registration trainees to learn their role within a multi-disciplinary team.

RG8: *“I think it just would have been nice to see where you kind of fit within a team...I feel as if pharmacy are thrown in within a hospital setting not knowing what they’re supposed to do or what they can do*

**BB: what would you like to see done about that?**

RG8: *more clinical time, like more experience in the hospital”*

One graduate attributed his exposure to a GP surgery as beneficial in allowing him to appreciate how they worked. As this was a self-organised experience no other graduates experienced, or mentioned exposure to GP practices.

RG16: *“I worked in a GP practice...so that was really good practice actually...so I empathise with a bit more with some of the staff perhaps at the moment because I do understand what’s going on on their [GP surgery] side.”*

Some Cardiff graduates stated the value of Inter-professional Education (IPE) sessions, and some made reference to the fact that they would like to see more of this within the MPharm programme, particularly to help them understand the roles of others and also to practice their communication skills with other healthcare professionals. Other interviewees did not refer to IPE

as they may not have experienced this as part of their undergraduate studies.

RG4: “...do more with other healthcare professionals. So like how to communicate with doctors and nursing teams and their role alongside pharmacy. So I don't know if that would be an inter-professional thing, just to sort of get experience in communicating with those professions....otherwise you are on the ward and you've never really spoken to a doctor about something before, and you're there like – I've got to speak to you...the junior doctors are all in the same boat to a certain extent. But then consultants can be a bit scary can't they?”

#### **5.4.2.4 Learning by doing**

Having the opportunity to be “hands on” during placements experienced through the MPharm programme and learning by doing were said to be positive attributes of learning through exposure to the pharmacy environment. Exposures where this was not possible were deemed to be less useful.

RG5: “...they don't let you get involved. I get why they don't let you get involved but I mean, you're still kind of sitting like in dispensary, sitting there twiddling your thumbs almost... not to get in the way

**BB: So I get the sense that you really wanted to be involved when you were on placements?**

RG5: Absolutely, yes.

**BB: what do you think that would have, sort of, given you?**

RG5: ...it helps first of all to reaffirm what you've done in University anyway. Like I remember second year we had PoP classes and, you know, I thought that was really difficult...it was all based off of theoretical knowledge, and I know people who had done work in community pharmacies kind of new a bit more about the medication and things like that just because they were always seeing them, but for me it was all new all the time. So everything I learnt was theoretical, if you know what I mean”

When graduates are allowed to partake in tasks they are more likely to learn as they identify their own learning needs. RG2 had been given their own ward to manage at the time of interviewing and the relatively new experience of taking responsibility for his own patients had a profound impact on his learning.

RG2: *“Um, and I think rather than being just given topics to learn, you know you have to learn it. You’ve identified your own learning needs, and I think that’s more beneficial because you are learning for yourself rather than because of what somebody else has suggested you learn...identifying your own learning needs is exactly an incentive to learn more.”*

#### **5.4.2.5 Integrated practice exposure**

While the benefits of exposure to practice were said to be beneficial more generally, the variety of, duration, timings and organisation of such exposures were identified as important. In essence, graduates desired practice exposure that was integrated with their university studies.

Graduates stated a desire for exposure to a variety of pharmacy environments and explained how this would allow them to learn about a range of specialties. RG2 had exposure to only one hospital pharmacy prior to starting pre-registration training and this was far smaller than the hospital he worked in for his pre-registration year. Other trainees who had visited a wide range of locations (e.g. RG1) used this experience to inform where they wanted to go for their pre-registration training year.

RG2: *“...more placements I think would be the best thing. ‘cause I think that’s a really good way to learn when you’re actually on there and I think you see more...it would be good if we could visit different hospital pharmacies...it would be good to see then how a bigger hospital than that or maybe a hospital which offered different services, ‘cause they only offered the core services, there was no aseptic department or anything...”*

Graduates also stated that longer periods of exposure would allow them to obtain a better idea of what goes on in practice and where they would like to spend their pre-registration year. Through a longer period of exposure RG5 (who spent a year working in community pharmacy in the middle of his studies) was able to obtain a better understanding of community pharmacy practice.

RG5: *“It was eye opening a lot more than the placements I had in uni. You learn a lot more about what community pharmacy is really like. So that helped... If anything it confirmed to me I didn’t want to do community. So it wasn’t for me, but it was good to have that because I didn’t experience that*

*at all really in doing placements in uni because they were only like a day long. So you don't really see anything and you've got a booklet to fill out anyway so you didn't see that, but then in community because you are there dispensing, labeling and so on you kind of get to grips with how things work and you have a much better understanding of it."*

*RG15: "I know in Bradford they do five years. Where one of the years it is six months in community, six months in some hospital. I'm pretty sure you've got a good idea of where you want to end up after that"*

Students who had community pharmacy jobs alongside their studies were deemed to fair better than those who did not, suggesting that exposure sustained throughout the MPharm programme (as opposed to brief periods on short placements) is beneficial. In particular this allowed students to see the links between and the relevance of what they were learning in university and what happens in practice. RG1 and RG6 both had experience in community pharmacies throughout their studies.

*RG1: "...I would always learn something form Uni, and then attribute it back to something that I've done or something that I see when I work on the weekend. So I always make that kind of connection and it kind of sticks with me better. So that, when I see it in practice then I'd be like ok yeah I remember seeing this before and oh I haven't seen this before but I remember it because of this and it just kind of I don't know if my mind works by making connections a bit easier that way."*

*RG6: "...being able to use that knowledge that I had from work in the workshop was helpful, then taking the knowledge that I learnt in the workshops to use while I was in work then was really good."*

Where graduates were not able to see the relevance to practice they deemed the learning as less important. RG5 did not have a pharmacy job alongside their studies.

*RG5: "...we didn't really have placements so I couldn't really see where pharmacy application could be placed. So it was just like well is there really much point you know, in what I'm doing"*

However a caviat to this was evident in that a graduate who had a job alongside their studies had a preconception of what was and was not

important to learn and was hence selective in the university sessions she attended.

RG7: *“I think my Saturday job made me feel a bit cocky as in I’ll never use that for practice. So in my mind I had an idea of like what I needed to get where I wanted in my career. Whereas I probably should have looked at the degree overall...I have had like one or two questions where if I’d known the actual deeper pharmacology and stuff of it I would understand it better, but I don’t necessarily regret not learning it.”*

Structured periods of practice exposure with defined aims, objectives and learning outcomes are also key to meaningful practice exposure. As was the opportunity to learn something at university then be able to see it applied in practice in a timely manner, before having the opportunity to apply the learning yourself.

RG4: *“I think we should have more practice based learning and more placements...better structured when you got there because I think sometimes you get there and pharmacists is like – oh yes I forgot you were coming, or what are we doing?... So actually learning about MURs, learning how to do MURs and then actually do an MUR in practice, so that you see the whole process rather than just see- this is what an MUR is, this is how you would do one, but then you don’t actually go and do one with a patient in practice”*

### **5.4.3 Effective curriculum strategy**

#### **5.4.3.1 Revisiting material with increasing complexity**

Graduates often made reference to their appreciation of revisiting content with increasing levels of difficulty. This was said to be responsible for confidence in performing pharmaceutical calculations and pharmacy law knowledge in particular.

RG14: *“So I think that was good, the way that they kind of slowly titrated us up, which was good I think.”*

RG1: *“I know in like um well the law and ethics sort of stuff that was covered [Anon lecturer] used to do a refresher every year...so there’s a lot of things that kind of like stuck with me about like what I should and shouldn’t be doing...”*

RG10: "...compared with other universities I'm more than happy to sit a calculations test...loads of people were panicking having really bad grades and stuff and you just know that Cardiff have taught you like so, yeah. Calculations was always good...they just drilled it into you. You do it every single year whereas I think [Anon Pharmacy School] only did it like, the last time they said one of them did it was second year or something... I feel like that's the same with everything. Like if you do something enough times like if you did something every year you're going to know it if you do it for four years.."

RG12: "...ours [calculations teaching] was broken off into the four years. Each year it got more difficult so it was a lot more fresh in our head. Whereas they [peers from another university] hadn't done it since second year"

While RG10 (as well as RG2, RG12, RG16 and RG17) stated that they felt well prepared to undertake pharmaceutical calculations, RG13 felt less well prepared in this area and wanted more practice. This difference may be attributed to the fact that RG13 attended a different University.

RG13: "I would have liked... a bit more calculations, focus on calculations would have been nice... I think I'm pretty decent, personally on calculations, but a lot of my other peers they're quite nervous about it...so I think overall I think we had two proper calculation exams throughout the course, and I think more would have been more beneficial..."

While others stated that material was often revisited RG3 had an opposing view and believed that material was not recapped. A potential explanation for this is that course changes may have been made since RG3 graduated.

RG3: "Everything at Uni was very sciencey...then we would do it once and then we wouldn't go back to it...there would be no recap or whatever a year later or stuff like that so it's hard to like rem, but I didn't go to a lot of lectures either so [laughs]"

Suggestions were made that curricula could be enhanced by providing greater emphasis on revisiting and building upon concepts, particularly prior to starting pre-registration training as a 'refresher'.



RG4: *“more just like maybe summaries of the groups. You know, a chapter of the BNF and going through it like a summary, so everyone was nice and refreshed on everything before they started. And just even like an hour on one topic or like one lecture you can come if you want to and we’ll just run through the basics about blood pressure medications and things like that...just to refresh everything through all the four years.”*

RG3: *“...more just like maybe summaries of the groups... even just like an hour on one topic or like one lecture you can come if you want to and we’ll just run through the basics about blood pressure medications and things like that...I think that would have been really helpful. Just to refresh everything through all the four years.”*

While building upon concepts year upon year was seen as useful, students also commented on having the ability to see things in practice then partake themselves as being beneficial.

RG4: *“... when I went on community placement you actually see what an MUR is and like how little or more like some patients knowing how better prepared patients are for their medication. It is seeing the varied patient contact, and then tailoring what you are saying to them. Just having that experience would allow you to sort of...better prepare you to engage with the patient a bit more maybe.”*

When clinical learning was perceived to be interrupted for a given period (for example by completion of the MPharm research project) the development of skills and knowledge also appeared to be halted. Two of the fourteen Cardiff graduates interviewed felt that knowledge “dipped” at this time point in the course.

RG1: *“...on my summer placements I knew loads of things and I knew when I saw things whether that was right and whether there’s guidelines and stuff like that. By the end of fourth year, you’ve finished your, you did all your exams and stuff in the first semester and then you did your research project, I felt like I lost loads of that knowledge. So I felt like I was having to retrace my steps and try and revise things I already had. So I think if they could have like try and maintained it throughout the year”*

RG4: *“...I suppose I felt more comfortable after third year with pharmacology and that because after fourth year...I think I’d, not lost it but it’s filed to the back of your memory once you are doing your project and*

*stuff...I did placements after third year, it was... when people were asking you questions and that and you were sort of like...you knew the answer to them, it was quite comforting. And then I got to fourth year like after fourth and starting pre-reg and I was like oh my god I just don't feel like I know anything"*

#### **5.4.3.2 A patient centred approach**

Six Interviewees made reference to the use of patient based case studies in workshops and the effectiveness of this method of teaching in developing an individual's knowledge and skills. Through application of learning to case studies, knowledge was able to be recalled easier upon graduation. Case studies allowed learning to be contextualised and served as an opportunity to view the patient holistically. In light of these benefits graduates recommended inclusion of case studies more frequently through MPharm curricula.

*RG4: "In fourth year especially we were able to apply all that knowledge we were given in case studies with the teacher pracs and things. I had to think ok well how would this work in practice...so I think if we didn't have those workshops where it was put into context a bit, then we might have struggled a bit more. So that was really good."*

*RG8: "Fourth year was very focused on case studies...we really got to look at a patient rather than a disease state...that gave you a much better idea of how to treat the patient...it forced you to consider everything. The kinetic side of it. The pharmacological side of it. It put everything into practice"*

*RG1: "...using case studies...I was able to connect a lot of things together, when it came to pre-reg and I'm out on the wards and I'm seeing things I make the connections myself and I remember something and I know what to do when I come across a problem."*

Being able to apply knowledge to patient centred clinical cases at university was said to allow learning by doing.

*RG4: "...a bit more case based sort of like questions and real life scenarios and having real life sort of like patients in front of you and then learning from their symptoms and experiences, like how to treat a condition...I guess I learn a lot by doing, that is just a personal thing for me. So having that person there would have made me realise ok like this is what diabetes is...it would have more of a bearing on me remembering it, and sort*

*of like applying it then in practice...rather than having it on a piece of paper, like learn it type thing. I find that quite hard to sort of like apply in practice then."*

**BB: "What is it about having that done as workshops that you like the idea of?"**

*RG15: Just the fact that we're doing it and not just sitting in a lecture listening. Experience is the best teacher. If you don't get that experience it comes in one ear, it goes out the other because you're not doing it. Even making mistakes while you're doing whatever you're doing, you learn from that. Whereas if you're just listening to someone speaking you're just going to take it in and tomorrow somebody else is going to be giving you some information as well and you're going to take that in and forget it. I don't know. It's better for you to do something"*

Similarly to other stakeholder groups involved in the study recent pharmacy graduates spoke about "integration" in a number of different ways. Some graduates described how approaching learning with a patient focus allowed them to integrate and apply their knowledge from all facets of the degree programme. This was said to be beneficial.

*RG14: "...so chemistry modules had clinical bits in. I think that was really helpful because in what we're doing now obviously it looks at everything. Its bringing all the different bits of pharmacology, chemistry and clinical all into one, and I think by changing that, when they did do that, is good, because we started looking...by getting that practice of looking at everything together from the start. Not segregating it into different aspects. We're already thinking like that it's looking at everything in one picture rather than separately."*

*RG8: "We really got to look at a patient rather than a disease state. We had case studies where you actually had to look at a person's renal function, etc, etc. Their comorbidities. What else they're taking. Their family history. Their social history and things like that and I think that gave you a much better, kind of, idea of how to treat the patient. What would be the best course of action in terms of how we manage the patient, different dosage forms and things like that and those are things which have just kind of been drilled into me from day one and they're the kind of things I consider when I'm screening a drug chart. Whereas some of the pre-reg students who I've spoken to just seem to focus on the drug and is this drug appropriate and they don't really consider the patient's needs. So in that sense [University A] was very, very good."*

**BB: So correct me if I'm wrong, it sounds like you've quite enjoyed then the patient, sort of, focus?**

RG8: Yes.

**BB: Okay. What was it about case studies that you particularly found useful in that fourth year?**

RG8: *I think it just managed to, kind of, put everything that you'd learnt prior to that into practice. It forced you to consider everything. The kinetic side of it. The pharmacological side of it. It put everything into practice.*

Conversely RG11 and RG6 highlighted the “bringing together” of different facets of teaching at university as an area that could be improved. This may be potentially attributed to the fact that RG11 went to a different university to RG8 and RG6 graduated before RG8, hence course amendments may have been made in this time.

RG11: *“...you learn all your pharmacology but you never really... and you do your OSCEs and your pharmacy practice, but like it never really properly came together for me until you're doing your pre-reg.”*

RG6: *“Like I'm constantly checking what drugs are for. Like the standard drugs that you see every day I can remember them but the ones that you give out now and again is hard to remember what they're for.*

**BB: What do you think might be the reason for that?**

RG6: *I guess in uni they teach um modular, so it would be like you do the cardiovascular system. You do the brain and it's split into different sections. You don't really think of it as a whole. You kind of like put things into different compartments when you're revising. I think that's the main thing.”*

Through workshops using patient based case studies individuals were also able to learn how to use resources. While RG5 expressed confidence in the ability to use resources RG16 stated that more sessions on how to use resources would have been useful. These differences may be attributed to the fact they were in different graduating years at university hence may have experienced slightly different curricula. Working in different sectors for their pre-registration training year may also mean that they are accustomed to using different resources encountered to a lesser or greater extent at university.

RG5: *"It [final year] was very much self-study. You have to find...you know, you had to read guidelines yourself. You had to find out where the good information was..."*

**BB: how do you feel that prepared you for your pre-reg?**

RG5: *...really, really good. I mean I've got to do it now...two weeks ago there was an outpatient clinic and all the patients were coming in, so the pharmacist was really busy...he [the pharmacist] asked me to go get the hatch and it was a patient's carer who wanted to know about whether I think pioglitazone tablets could be crushed and given via PEG...in the fourth year we'd done NEWT<sup>1</sup> guidelines and I knew where to look and everything. All I had to do was ask for a password and that was it, but then I knew where to find the information because I'd done it in Uni"*

RG16: *"I think there's a need for some workshops just on reference sources because we're using the MEP now. I don't think we did one workshop around the MEP... I don't even know half what's in there. In pre-reg you've really got to learn where can I find this information and I think we need to have maybe a bank of places that we go to."*

#### **5.4.3.3 Learning with and from others**

Graduates expressed their enjoyment of learning with and from others in groups, mirroring the group work they go on to do at pre-registration. By having the opportunity to discuss with others, students learned there was more than one way of doing something.

RG16: *"...care planning in the clinical sort of modules they're really good. Looking at prescriptions...they used to have ipads in each clinical session and then you could go on the NICE guidelines. I think the more of them you can do the better because they get you talking as well in groups. That's what you're doing in study days, and learning how to work together. So I think that was really good"*

RG4: *"...the workshops were always good and you like, different groups would come up with different ways and they would all be like confirmed by the lecturer that they were all fine to do it would just be how you would feel to do it. Whereas it must be in other places they weren't given that sort of thoughts"*

Learning with and from others as part of IPE opportunities were also valued.

RG4 wished to see more IPE in order to increase confidence in communicating with doctors. RG8 also mentioned IPE as potentially

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<sup>1</sup> A general guideline for administration of medications to patients with swallowing difficulties.

beneficial to helping understand the roles of healthcare professionals as this was something he had not had the opportunity to experience through his MPharm curricula.

RG4: *“...do more with other healthcare professions. So like know how to communicate with doctors and nursing teams and their role alongside pharmacy. So I don't know if that would be an inter-professional thing, just to sort of get experience in communicating with those professions and see where they are coming from, from that point of view. Otherwise you are on the ward and you've never really spoken to a doctor about something before, and you're there like- I've got to speak to you.”*

RG8: *“I think although it was very clinically focussed we didn't actually have that much clinical experience. We had all the knowledge behind it but we didn't have any, like, inter-disciplinary teaching for example, which I know other pharmacy schools have had. I think Cardiff have actually.”*

**BB: Yeah I believe they do. How do you think that would have helped you?**

RG8: *I think it just would have been nice to see where you kind of fit in within a team.”*

#### **5.4.3.4 Learning in a safe environment**

The opportunity to practice and make mistakes at university was appreciated and served as an opportunity to enhance skill development (in particular dispensing and communication skills).

RG9: *“... people made mistakes in those classes [controlled drugs dispensing] and that was the point, and then you corrected them in the proper way. So when people were writing in the register it was like well if I do mess it up I can fix it. So that's fine”*

RG15: *“...even making mistakes while you're doing whatever you're doing, you learn from that”*

While most participants mentioned OSCEs as a good environment to practice and hone their communication skills there were mixed views on their usefulness where scenarios were deemed to be unrealistic. Enhancements to communication practice provision were highlighted by the most recent graduates of Cardiff University who felt that the switch from using pharmacy staff to using actors in OSCE scenarios aided their preparedness for pre-registration training.

RG17: "...doing medication histories and that...in university the patient could be awkward, you know that it was still a fake scenario...University prepared us really well for getting the structures of things right and making sure you ask all the right questions... We did get a good amount of practice. So even like the workshops and that, it does help...because you feel you're not so much worried about what you're asking then because you feel confident..."

**BB: "Is there anything that you felt in those first couple of weeks that you could have been better prepared for?"**

RG7: *I think dealing with conflict potentially because I'd never been used to people being so rude to me... at Uni we have it, sort of, in the end of your OSCEs when they just introduced. We had, like a complex patient with a problem, but you never thought it was real because he was just going to be like an actor, but when it's real you don't know how to react because you want to remain professional but firm because they can't treat you like that. So stuff like that that you can only learn that on the job I guess."*

RG10: "...like the whole role play, it's way better with actors as well than when you have lecturers, like a billion percent. Um, and it's like good that you have to dress properly and things like that because it gets you like, thinking.

**BB: what was it about having actors that you preferred rather than lecturers during the OSCE's?**

G10: *you know lecturers. So it's just a lot more false kind of thing. Um and I know lecturers are there watching you even when you have the actors but you feel less um pressure when you've got the actors as well."*

#### **5.4.4 Easing the transition from student to pre-registration pharmacist**

##### **5.4.4.1 Expectation management**

Feelings of discontent were expressed where graduate expectations for their pre-registration training were not met. Universities may smooth the transition from student to pre-registration trainee by helping to manage these expectations.

Some graduates appeared frustrated that their expectations of what they'd be doing at the start of their training year didn't meet reality. Discontent was felt at being based in the dispensary and the lack of ability to use the skills and knowledge developed throughout university. This led to some feeling like they were "starting from scratch". This issue was particularly evident for

hospital pre-registration trainees and not encountered by community trainees. A potential reason for this may be that community trainees appear to be utilised as part of the pharmacy team early in the year whereas hospital pre-registration trainees appear to have to meet basic competencies before they feel included.

RG1: *"...they didn't really let us do very much so because basically all we were doing was being in a dispensary you never really had the opportunity to use some of the skills we were taught...by the time we were in our fourth year they've taught us so many clinical things, they're telling us this is what you should do when you are a pharmacist um so that when you start back, in your first week or first two weeks you kind of feel like oh I'm starting from scratch now. It feels like all that work that I've done has kind of like wasted at the moment, because I'm just being in the dispensary, I'm not being used for anything."*

Some graduates interviewed didn't know what to expect from their pre-registration training year and the workings of the sector that they had found themselves in upon graduation (regardless of the sector). RG2 may have had less knowledge of what was expected as they had less prior work experience. However, RG6 and RG12 had extensive prior work experience and still did not have a full appreciation of what was expected during the training year, potentially through lack of exposure to other pre-registration pharmacists.

RG6: *"...we didn't realise how much training we'd have to do extra on the pre-reg as well...it would have been nice to have like a pre-reg workshop explaining what the pre-reg year entails because all we're told is oh you need to apply for pre-reg and we're not told anything else"*

RG12: *"I still don't really know what a pre-reg is supposed to do, because I think at the moment I'm just being a dispenser and then occasionally I'm asked some questions about, like what does that drug do, but I don't know what the pre-reg is actually is supposed to do"*

RG2: *"I didn't understand fully what was going on in hospitals and I think not knowing about how the system works in terms of the whole medicines management aspect of it, I didn't have an appreciation of that until I started pre-reg and started being involved in it myself... other people*



*obviously did the placements, knew what they needed to know and then they kind of, guided their learning more.”*

Other challenges described during the transition period were adjusting to time no longer being the graduates own and adjusting from a “student mindset”. One graduate suggested a workshop introducing the pre-registration year may be helpful in easing this difficult period.

*RG8: “...adjusting to working life really. Obviously going from being in full-time education where you could, kind of, find your own time to do whatever you wanted, and then to have expectations of being here, there, whatever and dispensing. It was just that kind of adjustment”*

*RG6: “...It would have been nice to have, like, a pre-reg workshop explaining what the pre-reg year entails because all we’re told is oh you need to apply for pre-reg, and we’re not told anything else.*

**BB: Okay. So just a preparation workshop then what to expect?**

*RG6: Yeah.*

**BB: If you were going to, like, write that workshop what kind of things do you think that you’d put into it?**

*RG6: Talk about the fact that you’re going to have to collect evidence throughout the year, because I didn’t have a clue that I would have to be doing that...*

**BB: If you’d have known that before you went into your pre-reg how would that have affected you do you think?**

*RG6: I wouldn’t have been as shocked in the first month of finding I have to collect evidence. Whereas now I’m like running around trying to collect things, but if I knew from the start I’d have to collect evidence I could have spread it over the year a bit more I guess.”*

Some hospital trainees held the expectation of delving straight into tasks in the pharmacy environment but when arriving for pre-registration training perceived themselves to be surplus staff, while this was not always mentioned with a negative connotation some appeared to feel outside of the pharmacy team. Again this appeared to be an effect for hospital pre-registration trainees more than community.

*RG5: “...it’s very much different to community because there’s always like a lot of stuff and I’m only considered to be extra staff...”*

RG8: “...I always felt as if I was getting in the way of everybody. You know, as if I was just a pain in the arse really, a burden...”

#### **5.4.4.2 Prior workplace exposure**

Having prior exposure to the workplace was said to ease the transition from student to pre-registration trainee. There is debate evident in the data surrounding what type of work experience is best. What sector or site is most beneficial? Does the experience have to be pharmacy related? Overall, it may be concluded that any type of work experience is beneficial regardless of type or location. Graduates who had experience of dispensing in a different sector to the site in which they were completing their pre-registration year still found this experience to be beneficial.

RG9: “...there’s not much difference between dispensing in community and dispensing in hospital, like as far as the actual dispensing process is concerned. It’s all the same.”

Non-pharmacy work experience was also valuable in instilling life lessons.

RG9: “...they’ve [peers] come straight from school and gone into uni and then they try and do a job, a full-time job, and that’s a massive learning step on its own regardless of whatever job it is. It’s a big life change isn’t it?...work experience, just call it work experience, I think that’s a massive thing...I think generally people with experience faired a lot better...”

**BB: when you say work experience...**

RG9: just general work experience. Not necessarily in pharmacy...”

Some graduates found settling into a new team easy whereas others found it to be more of a challenge. This may be attributed to the fact that they did not have prior exposure to the site in which they did their pre-registration training. RG7 had experience in the same company and had met their pre-registration tutor while RG1 and RG5 had also had experience in the site where they were completing their training. RG8 found fitting into the team more difficult and had no prior exposure to the hospital or team members before starting pre-registration training.

RG1: “[Anon peer] had no experience there before other than just an open day and [Anon peer] had no community experience at all so he’s has

*kind of started from scratch really introducing himself to everyone, didn't recognize any faces, didn't really understand the way of working in it...I think some days he found it hard... It was quite nice the experience I did have on my placement just so that I recognised the faces...so you knew, you kind of have an idea of who people are”*

**BB: “The fact that you’d had experience before...”**

RG7: *“it felt like I’d cheated. I just walked in.”*

RG5: *“...I was quite comfortable because I’d had two placements there. I knew the majority of the staff. That was fine...It was quite seamless in a way, yeah so I was able to get on quickly and then also if I needed to ask for anything it wasn’t awkward...”*

RG15: *“In my company, you can see the difference between people who have been working there as students and people who just join the company. I mean, they know a lot more about who to call. Who to turn to, and just how to approach different cases.”*

RG8: *“... it was more of an adjustment issue than anything...I just didn't really know where I sat within the team. There wasn't really a place that I had a niche I could really fit anywhere if that makes sense.*

**BB: Okay. I understand what you mean. Do you think there was any, sort of, reason behind that?**

RG8: *No, I assume, you know, obviously anybody who's starting in a new place with an established, kind of team, anybody would kind of feel like that I suppose.*

**BB: How do you think that the other pre-reg's that you know, how do they feel about that kind of issue?**

RG8: *They didn't really have that much of an issue with it. So I don't know. Obviously I'm just talking from personal experience.”*

While pre-registration trainees with experience in the same sector often found it helped in their preparedness a caveat to this is that they were sometimes thrown into tasks straight away and were expected to get on with the job at hand, often dispensing, when this was not their expectation.

RG9: *“...because I went in with some pharmacy experience which helped massively...it was just a case of there's the work, get on with it...so it was a big shock to the system and I did kind of think what the hell.”*

RG7 mentioned the difficulty in adjusting to the long working day, however this was not mentioned by other participants. A possible explanation may be the relatively shorter period of time they spent in the workplace compared

with others. RG6 reflected upon the experience of colleagues who also found the working day tiring.

RG7: *“...just tired from full-time work. That was the biggest shock because I’d never worked full full-time for an extended period of time before”*

RG6: *“I know the ones that had never done any work experience in community bar the University organised ones [placements], it was a bit of a shock to them just because they weren’t expecting so much work in a day because it is a long day, like nine until six. You don’t realise how long it will be.”*

## **5.5 Discussion**

Discussion points specific to this stakeholder group are presented here. More general discussion points between stakeholder groups interviewed as part of the study can be found in Chapter Six.

As individuals who have experienced undergraduate pharmacy education first hand in the preceding twelve months this stakeholder group were appropriate to comment on ways in which schools of pharmacy may better prepare graduates for pre-registration training. Having had contact with pre-registration pharmacists from other schools of pharmacy some participants were able to draw useful comparisons between their own preparedness and the preparedness of others. As fee payers it is also important for schools to understand the views of their “service users”. In order to satisfy regulator requirements, it is also important that schools are able to demonstrate engagement with stakeholders and how this has influenced course design and review (General Pharmaceutical Council, 2011).

Recent graduates proved themselves to be an extremely useful resource in providing feedback on ways in which they may be better prepared for the pre-registration year. The views of recent pharmacy graduates in this study align with those of graduate views expressed in the most recent nationwide study exploring pharmacy graduate preparedness for pre-registration training

(Mudhar et al 1996). In particular 73% of respondents in Mudhar's study (1996) thought problem-solving was a useful element of the undergraduate course. Participants of this study too felt that problem-solving type activities were beneficial, particularly cases encountered during care planning sessions and clinical workshops. Mudhar et al (1996) also found that students found topics related to the practice of pharmacy most useful with 79% of participants in favour of adding clinical pharmacy by integration in a hospital environment. While this finding has not been quantified it was certainly reflected in this study that graduates saw benefits of integrating learning with practice environments. A final shared perception between the work of Mudhar et al (1996) and this study is the absence of difference in perceptions between graduates in different branches of practice (hospital vs community) in relation to the usefulness of certain topics on the MPharm programme. However, the former study (Mudhar et al, 1996) sought feedback through a questionnaire format with no space for free text comments and asked only for information relating to the perceived usefulness of topics, it is therefore difficult to establish fully students' preparedness for pre-registration training at the time. By conducting semi-structured interviews graduates in this study were able to reflect upon the early days of their pre-registration training and describe any issues encountered. This allowed them to explore potential solutions which may not have fit into predetermined boxes of a questionnaire survey. In using this methodology it was discovered that students had a shared difficulty in recalling and applying material learned at university to practice situations, a finding that was not reported by Mudhar et al (1996). While Mudhar et al (1996) found that 97% of respondents were in favour of adding 'drug abuse and addiction' to the syllabus, drug abuse was not mentioned as an area of knowledge improvement for any of the participants in this study. Potential reasons for this include modifications to MPharm curricula since the publication of the work by Mudhar, and also the changing role of the pharmacist/pre-registration pharmacist.

Graduates stressed the benefits of exposure to the pharmacy environment to their preparedness for the start of the pre-registration training year. Through discussions around prior placements and student work experiences it became apparent that exposures need to be meaningful in order to be of value to the student (i.e. the relevance of tasks that students undertake during practice exposures to preparedness for pre-registration training). This study found that in order to be meaningful exposure needs to be long enough (5.4.2.5) to allow students to become immersed in the culture of the workplace so that they can learn with and from pharmacist role models (5.4.2.2). Experiences should also include contact with patients (5.4.2.1) and other healthcare professionals (5.4.2.3) and be timely with university studies such that theory can be contextualised (5.4.2.5). Workplace exposure should also afford the student the opportunity to become involved in tasks so that students may learn through doing (5.4.2.4). This finding is supported by the work of Lave and Wenger (1991) who document that learning with and from others in the workplace and being given direct involvement in tasks is vital to student development (Lave and Wenger, 1991). This is discussed further in Chapter Six.

Those interviewed with extensive community pharmacy workplace exposure appeared better prepared for certain elements of pre-registration training, including OTC consultations. This corroborates with the findings of a 2009 study which used learning outcomes from the Royal Pharmaceutical Society of Great Britain (RPSGB) to assess perceptions of graduate preparedness for practice. It found that only 46.5% of final year students felt their course had provided them with a good knowledge of OTC medicines, however those on the a sandwich course (where professional training was incorporated into the MPharm) were more likely to have felt prepared for OTC medicines (Willis et al, 2009). Together with the findings of this study this may suggest that practice exposure is particularly important in graduate preparedness for OTC medicines. Since the publication of this study pharmacy education regulation in the UK has changed through introduction of Standards for the

Initial Education and Training of Pharmacists (General Pharmaceutical Council, 2011) and with it many of the learning outcomes, repeating this study may offer a more up to date insight into final year students' perceptions of preparedness.

Graduates expressed their appreciation of “on the job” learning and first hand experience of pharmacy practice, be that alongside their undergraduate studies as summer placements, weekend jobs or woven into the curricula. Suggestions for ways in which graduates may be better prepared by their university centered around a desire for increased time spent in the workplace and exposure to a variety of sites, sectors, pharmacists and other healthcare professionals. This is in line with the vision of the pharmacy regulator who states “The MPharm degree curriculum must include practical experience of working with patients, carers and other healthcare professionals. Practical experience should increase year on year. We are not suggesting that off-site placement visits are the only way to achieve this. Schools should articulate their strategy for meeting this criterion, which may include off-site placement visits, using patients, carers and other healthcare professionals in-class, and simulations” (General Pharmaceutical Council, 2011). This study has established that recent graduate views support and are consistent with this principle, outlined as a requirement for reaccreditation of schools of pharmacy. As such schools must ensure compliance with this standard when designing and modifying curricula.

RG1 found the transition into a new team for pre-registration easy, while RG8 appeared to find this more difficult. The fact that RG1 had prior exposure to the team they would be working in and was able to recognise faces and recall names in the early days of pre-registration training while RG8 did not would suggest that meeting colleagues through exposure to practice is beneficial in easing the transition to pre-registration trainee and ability to fit into the team. A study exploring the transition of nursing students to university revealed that students benefitted from being able to link names

with faces through social media contact and this facilitated interaction on campus (Ferguson et al, 2016). In a similar way, pharmacy students knowing the names and faces of individuals in their pre-registration pharmacy training environment may help facilitate their interactions with other members of the pharmacy team when they commence pre-registration training, hence alleviating anxieties in the transition period. Transition theory in relation to preparedness for pre-registration training is discussed further in Chapter Six.

RG1 was also able to make links between theory at University and what was seen in practice making it easy to recall information, however RG5 found this harder and could not initially see the point in what he was learning at University. RG1 had a pharmacy weekend job whereas RG5 did not, this may suggest that exposure to practice throughout degree studies may be beneficial in allowing students to see the relevance of the theory they are learning while giving them the opportunity to put this learning into practice. Further work may be beneficial in exploring the potential link between exposure to practice alongside and throughout MPharm studies and preparedness for pre-registration training.

Graduates separated speaking about exposure opportunities provided by university during term time and those they had arranged themselves in the holidays and at evenings/weekends when speaking about placement opportunities. Experiences they had arranged themselves were valued to a greater extent as they were longer and allowed students to become involved in tasks as opposed to shadowing. This finding agrees with those of others (Sheehan et al, 2005; Dornan et al, 2007) who found that medics also benefit from being actively encouraged to participate in tasks during practice exposure.

The majority of interviewees were satisfied with the curriculum at their university and conversations highlighted general principles which were valued in learning. One such principle is that of repeating content with



increasing levels of difficulty (5.4.3.1), also known as spirality. This principle is discussed in further detail in Chapter Six. While RG2, RG10, RG12, RG16 and RG17 stressed their confidence with performing pharmaceutical calculations RG13 appeared less satisfied with this element of their undergraduate training. RG13 attended a different university to the other participants where calculations were not revisited on an annual basis. The difference in views between RG13 and other participants may suggest that repetition is important in developing student confidence and abilities in relation to calculation skills. Further research in this area may be beneficial to explore this potential link or investigate other potential factors. Students in the study were also forthcoming in describing the benefits of incorporating communications teaching in a spiral manner, with simple OSCE scenarios presented in the early years of the programme, building to interactions with more complex patients and cases in the latter part of the MPharm programme. The regulator states that “curricula must be progressive, dealing with issues in an increasingly more complex way until the right level of understanding is reached” (General Pharmaceutical Council, 2011). Similarly to the requirements of the regulator in the US, there is no requirement for the entire programme to be spiral in nature or to prove how this has been incorporated (Loewen et al, 2016) thus spirality may be embraced to different extents between universities when reviewing MPharm programmes. While many graduates noted the benefits of revisiting material with increasing difficulty within curricula and highlighted examples of where this was evident, others stated from their experience that topics were sometimes covered once and were not revisited, thus highlighting a potential room for improvement. Published studies explore the benefits of a spiral curriculum and state that “achieving progressively higher levels of performance on competencies requires repeated exposure to variations on situations with escalating complexity of the problems to be solved” (Loewen et al, 2016). One such PharmD programme in the US which purports incorporating vertical (topics are related to previously encountered material) and horizontal (between disciplines) integration (Beckett et al, 2017) states that spirality allows

“material reinforcement, increasing depth and breadth with higher level objectives, logical sequencing and flexibility to course aims” (Beckett et al, 2017). The findings of this study suggest that the benefits of incorporating spirality may warrant further research and consideration by universities designing MPharm curricula.

Inter-individual differences were evident in the data. RG6 and RG11 talked about their lack of ability to bring together the knowledge they had from different facets of their MPharm course and how they felt things were taught in isolation whereas RG14 discussed how they were able to approach things holistically, synthesising knowledge from different modules and an appreciation of the way in which their university seemingly made efforts to integrate teaching from different subject areas. RG14 experienced a degree scheme which had undergone modification. The difference in views between RG14 and RG6/RG11 shows that integration of subject matter in teaching may play a role in preparedness for pre-registration training. The regulator states that “curricula must be integrated. This does not mean necessarily that initial education and training must be delivered as a five year MPharm degree with integrated pre-registration training, but the component parts of education and training must be linked in a coherent way” (General Pharmaceutical Council, 2011). While this statement may be interpreted to mean the integration of traditional curricula with practice exposure or integration of disparate sections of the MPharm curricula into a whole the findings of this study show that graduates would support greater “integration” in either of its forms. It should be noted that the most recent graduates interviewed (2016 year of graduation) perceived there to be a positive shift in the way in which universities integrate content, such that they can see where links are drawn between subject areas. This finding agrees with the earlier work of Mudhar et al (1996) who too found that science topics needed to be made more relevant to pharmacy, i.e. the subject areas needed to be ‘integrated’.

It is not possible to analyse the results and draw comparisons with the regulatory documentation in its entirety in order to establish whether graduates perceive the standards to have been met throughout their undergraduate education, neither was this an aim of the study. However, it appears that the regulator standards are aligned with the needs of recent pharmacy graduates, at least in the in the specific areas described. The standards produced by the GPhC and its predecessor the RPSGB were derived from evidence present in published literature and reflect the needs of pharmacy students at the time the standards were derived (General Pharmaceutical Council, 2011). It would be appropriate for the regulator to review current literature in future iterations of the regulation documentation.

Through participant storytelling it was identified that the time between leaving university and the first few weeks of pre-registration training is a challenging period of transition (5.4.4) (the length and difficulty of which may differ between individuals). A number of ways in which this may be smoothed were identified including having prior work experience in the place in which they were going for pre-registration training, meeting the staff they'd be working with and having a prior "job", regardless of whether this was pharmacy related or not. Familiarity with the school environment has been shown to decrease anxiety and ease adjustment of children entering the primary schooling system (Itskowitz et al, 1987), in a similar way pharmacy students may benefit from prior workplace exposure in order that they may lead to greater familiarity with the setting and "a greater amount of valid information..." on what pre-registration training will be like (Itskowitz et al, 1987) thus decreasing anxieties.

The transition period appeared most difficult for hospital pre-registration trainees who reported feeling in the way at the start and dissatisfaction of not being used for much. This may be due to the fact that hospital pre-registration trainees are classed as "supernumerary" staff whereas community trainees often enter a busy, understaffed environment and are

expected to undertake daily tasks such as dispensing straight away. This indicates that being given tasks and being made to feel part of the pharmacy team can ease the transition. The effect of supernumerary status is discussed further in Chapter Six.

Issues with pre-registration trainee expectations being unfulfilled were also identified (5.4.4.1). In particular RG6 and RG12 expressed that they did not know what was expected of them as a pre-registration trainee in the workplace. Both worked in community pharmacy and RG6 had far more prior workplace based experience than RG12 yet they both struggled to know their role in the team. A potential way in which this could have been remedied would be to ensure pharmacy graduates have contact with their outgoing pre-registration pharmacist counterpart before they begin their job, as suggested by RG8. The practicalities of which would require further research, however the findings of this study suggest that part of this transition period could involve an opportunity for the pharmacy graduate to learn what their roles and responsibilities will be when they become the pre-registration pharmacist from someone who has recently experienced this for themselves. The work of Van Hamel and Jenner (2015) confirm the benefits of this principle as in their study F1s were said to particularly appreciate obtaining tips from the outgoing F1 doctors during the transition from student to foundation training doctor.

A study into professional socialisation at an Australian School of Pharmacy found that students struggled with professional identity formation (Noble et al, 2014) with little idea of what being a pharmacist entailed. Students also experience dissonance between an idealistic notion of what the role is like and the realities of placements, as was found in this study (Noble et al, 2014). Early experiences were said to be important in giving students an idea of being a pharmacist and feeling that they are part of a community of practice. Student motivation can be strongly influenced by their environment and outlook towards learning (Sorbal, 2004) and so early clinical contact may

be beneficial in influencing this (Taylor and Hamdy, 2013). This concept is discussed further in Chapter Six.

While other studies have explored whether gender has an effect on preparedness for practice it was not the intention of this study to explore such a link. Previous studies (McRobbie et al, 2006; Willis et al 2009) concluded that female students were more likely to feel prepared for practice than male students. This study included 9 male and 8 female participants. No differences in preparedness were identified based on gender. In future studies it may be beneficial to explore if this is still the case and the reasoning behind such a link, in order to ensure that all MPharm students are as best prepared for practice (or pre-registration training) as they can be.

A study into medic preparedness for practice concluded that the vast knowledge base of clinical practice in medicine makes full preparation impossible (Taylor et al, 2010). The same may be said for pharmacy practice and so no graduate would expect to be entirely prepared for pre-registration training upon completion of their MPharm studies. What appears to be most important from this study is that graduates benefit from being able to know where to find information and how to use it as opposed to knowing all drug related information off hand (Appendix 2.7). However, it is important for Schools to receive feedback from their graduates on areas which may be improved.

The findings of this part of the study corroborate with the work of Cave et al (2009), Illing et al (2013), Lave and Wenger (1991) and Tallentire et al (2011) who endorse learning in the workplace environment. This is supported by Vygotsky's theory of situated cognition which states that knowledge is tied to the situation in which it is learned making it difficult to apply in other situations (Gauvain, 2008); hence the learning environment should be as close to the real life situation as possible. Vygotsky's theory is discussed in greater detail in Chapter Six.

Finally, a social constructivist approach in this study allowed joint meaning making between graduates with different perspectives and the researcher. Through social interaction and an iterative process of data analysis the researcher was able to construct an interpretation of how graduates may be better prepared for their pre-registration year.

## **5.6 Limitations**

This part of the study may be limited by elements of bias including recruitment, recall, social desirability and confirmation bias. These are discussed in greater detail in Chapter Six.

Another potential limitation to note is that interviewees were asked to comment upon their own preparedness for pre-registration (Davies et al, 2006). It may be the case that participants' assessment of their own preparedness may not correlate well with their actual performance as pre-registration pharmacists. Other studies have concluded that physicians have a limited ability to accurately self-assess (Gordon 1991; Davies et al, 2006). In order to explore this further it may have been beneficial to speak with participants' pre-registration tutors, or others who supervise them in the workplace in order to explore the extent to which their self-assessment aligns with assessment by others. Differences in perception on graduate preparedness in pharmacy has been evident in previous studies whereby overall employer perceptions of graduates preparedness were less favorable than graduates self-perceptions (Kairuz et al, 2010), this will be explored in further detail in Chapter Six.

There are also limitations relating to the timing of when interviews were conducted. Some participants were interviewed relatively soon after starting pre-registration training and others almost 12 months since completion of pre-registration training. This decision was both convenient and strategic. While the wide timeframe may be viewed as a limitation by some, it may also

been seen as a strength. The purpose of the study was not to form a generalisation and hence consistency in time points at which interviewees were engaged in the study was not necessary. Instead in some cases it was beneficial to capture views as and when they were being formed in some cases and upon reflection in others. This allowed a sense of experiences at different time points to be captured, though those at the start of their journey and those near the end may have views that differ. By interviewing graduates from different graduating years it was intended that potential impact of modifications to courses could be explored (though in reality this was limited by the low response rate). The fact that some participants were interviewed towards the end of their pre-registration training year and so may not have been able to recall early events in as much detail as others is noteworthy. It is also worth highlighting that performance and competence as a pre-registration pharmacist may be not be the same construct in the early weeks of pre-registration training as it is nearer the end of the year. As a pre-registration pharmacist develops and becomes more immersed in the community of practice their own ideas of performance and competence may change, hence their perceptions at interview may be different at different time points. In future studies it may be interesting to interview graduates early in their pre-registration year then again nearer the end, in order to explore how perceptions may change.

While a relatively small sample size was included in this part of the study the length and depth of the interviews undertaken were useful in providing an insight into preparedness for pre-registration training. Ideally a greater number of participants would have allowed preparedness of graduates from more UK schools of pharmacy to be explored with potential comparisons drawn between them, however it was very difficult to recruit for this part of the study, even though numerous gatekeepers were used. Recruitment of hard to reach potential interviewees, such as those graduates from other schools of pharmacy, was attempted through snowball sampling however this was unsuccessful on this occasion. Sufficient efforts were made in order

to recruit participants by a range of means and while the data may not be generalisable it provides a useful insight into the topic. Interviewees from universities other than Cardiff have been listed as 'other' (Table 5.1) in order to protect participant anonymity and so discussions on the findings between specific universities is limited by this. The high proportion of Cardiff graduates included in this study mean the findings are most applicable to CSPPS however this is not to say that similar findings may not be present in other schools. Wider inclusion of graduates from more schools across the UK would be preferable for future work.

A practice interview was conducted in order to test the topic guide, however the data generated through this interview was not included in data analysis as the participant was less able to recall their experiences at the start of their pre-registration training when compared with more recent graduates. If the study was to be conducted again, a more recent graduate would be interviewed first in order to test the topic guide.

Where interviews were conducted by telephone, it was not possible to see the non-verbal cues of a graduate. This made it difficult to interpret graduate feelings towards an issue and led to greater reliance on the researcher probing for this information. A poor quality telephone line for one telephone interview also meant that audio transcription was difficult and took substantially longer than for other interviews of similar duration.

## **5.7 Conclusion**

These findings cannot be generalised as they included the views of a relatively small sample of pre-registration trainees across Wales and England. The use of qualitative interviewing methods was useful in exploring graduate perceptions of their preparedness for pre-registration training and may be considered for use by other institutions who wish to evaluate their curricula and preparedness of graduates for pre-reg.



The aims and objectives of this part of the study were met. Through exploring recent graduate preparedness for pre-registration training (including comparisons with peers) the thoughts and feelings of graduates at the start of their pre-registration training year were explored and included a mixture of nervousness and excitement. In particular it was evident that the period between graduation and commencement of pre-registration training is a crucial transition point, with graduates having varied concerns upon entering the workplace. Areas in which graduates felt well prepared were identified, namely in performing calculations and also in communicating with patients whereas areas they felt less prepared included communicating with other healthcare professionals and applying their underpinning knowledge to practice. The major factor in influencing preparedness for pre-registration was found to be a graduates' prior work experience. Inter-individual differences between pre-registration pharmacists were apparent. No two graduates had the same background and experiences both prior to and during their pre-registration training, especially between sectors of practice.

The findings of Chapters Three, Four and Five are triangulated in Chapter Six where suggestions for further work, areas of good practice and recommendations are outlined.

Chapter Six

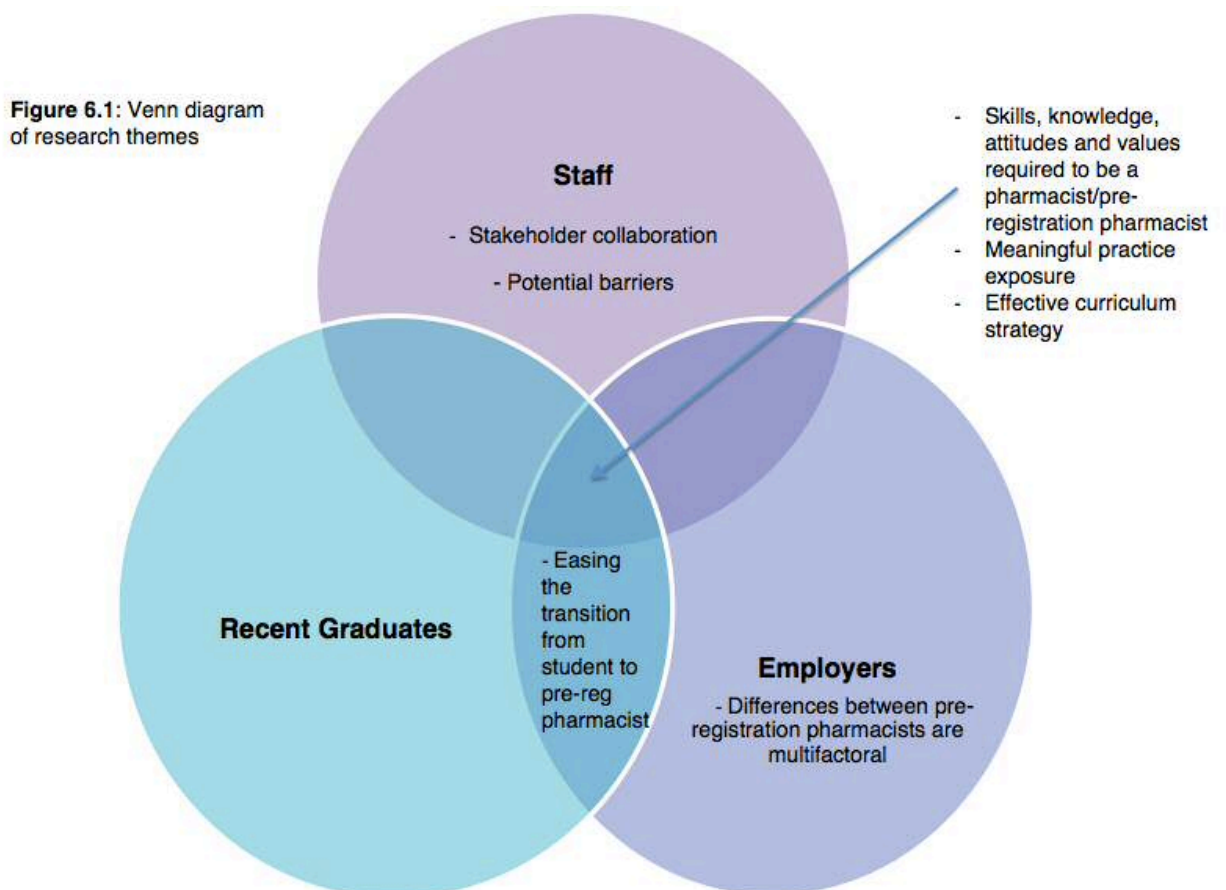
# Discussion

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## 6 Discussion

Semi-structured interviews conducted with three stakeholder groups were useful in establishing a range of perspectives relating to pharmacy graduate preparedness for pre-registration training. The objectives of each empirical chapter were met, revealing issues unique to each stakeholder group as well as shared perceptions. This chapter serves to triangulate the findings before recommendations are made (Chapter Seven) for ways in which pharmacy graduates may be better prepared for the pre-registration training year. While the lessons learned in the study may be applicable to other schools in the UK, the researcher acknowledges the high proportion of Cardiff based participants, hence reference to CSPPS is made throughout Chapter 6.

Figure 6.1 depicts the relationship between the findings from each part of the study and highlights where themes were common to more than one stakeholder group.



## 6.1 Exposure to practice

A common theme across all three stakeholder groups was the need for pharmacy students to obtain exposure to practice during their undergraduate degree schemes. The study did not aim to seek consensus on what this exposure should look like, instead the useful elements of placement exposure in preparing for pre-registration training were explored.

Namely, exposure to practice was said to be beneficial when students were allowed to “learn by doing” (5.4.3.2; 3.4.2.4) when compared with observation or shadowing without direct involvement. This was especially true for interviews with pharmacy staff and recent graduates themselves. Giving students the opportunity to be involved in processes within the workplace avoids feelings of uselessness and getting in the way as reported in the data (5.4.4.1). This has been reported in nursing whereby the supernumerary status of trainee nurses may result in them becoming observers as opposed to active learners (Hyde and Brady, 2002). Indeed it has been shown that student nurses may then experience feelings of detachment and ‘being a burden’ to others on the ward. They may also have “insufficient opportunities in the clinical area to prepare for the transition” from student to practicing nurse (Mooney and Dip, 2006). To aid students in preparing for the transition to pre-registration pharmacist it is imperative that they spend time in the clinical environment partaking in the tasks expected of them upon graduation.

Exposure to practice was also said to provide benefits to students through allowing them to gain knowledge and skills in the environment in which these are to be used upon graduation (4.4.3.4). This was acknowledged by employers in particular, as they are able to witness student learning in the practice environment and appreciate its effectiveness. Medics are also thought to benefit from experiential learning through the ability to develop competence in the specific clinical contexts (Yardley et al, 2012; Taylor et al, 2010; Illing et al 2013; Bleakley and Brennan 2011; Scicluna et al 2014;

Brennan et al, 2010; Rennie, 2009; Greeno, 1998; Regan-Smith et al, 1994; Norman et al. 2006). This can be explained by the theory of situated cognition presented first by Brown et al (1989) who stated that “activity and perception” should be the focus of conceptualisation and learning (Brown et al, 1989). Brown concluded that knowledge is “situated, being in part a product of the activity, context and culture in which it is developed...” (Brown et al, 1989). This theory supports the data derived from this study. In the current pharmacy education environment, where exposure to practice is limited, students are not able to situate their knowledge in the practice setting. It is therefore unsurprising that stakeholders perceived that students lack the ability to apply what is learned at university when they reach the pre-registration training year (4.4.3.4).

Having exposure to pharmacists and other health professionals was a valued part of placement exposure to all three groups of stakeholders interviewed (3.4.2.2, 3.4.2.3, 4.4.3.2, 4.4.3.3, 5.4.2.2; 5.4.2.3), which enabled students to develop through professional socialisation (as discussed in Chapter Three). Pharmacy students undergo professional socialisation from the very early days of their undergraduate programme, influenced by the ethos of their school (Schafheutle et al, 2013) however the impact of individuals in the pharmacy workplace can also have a dramatic impact on learners’ socialisation into the profession (Hammer D, 2006). Pharmacy workplace exposure (and subsequent exposure to healthcare professionals) allows students to see how role models behave in practice therefore mirror their behaviours accordingly. Learning is therefore considered to be a social activity, where thinking is affected by the setting in which the learning takes place (Wilson, 1993). This supports the findings of the thesis, that students benefit from exposure to other pharmacy professionals through periods of practice exposure.

Contact with teacher practitioners at an undergraduate level was highly valued. This is reflected in other healthcare degree schemes (Davis, 1989;

Dearmunn, 1993; McNally, 1994; Mason and Jinks, 1994), where teacher practitioners have a role in bridging the theory-practice gap. This is seen as 'critical to effective learning' from a student's perspective (Fairbrother and Ford, 1998). Teacher practitioners are essential in enabling student professional socialisation (Jee et al, 2016). From the data this group of individuals were identified as clear role models for undergraduate students. While their value was expressed by all stakeholder groups it became evident that teacher practitioners themselves may feel under-valued through their current teaching involvement (3.4.2.2). Recent graduates clearly highly valued their input to MPharm programmes, frequently mentioning specific teacher-practitioner staff when describing sessions that were of most use in preparing for pre-registration training (5.4.2.2). Academic staff themselves noted that teacher practitioners were sometimes used to deliver content which could be delivered by other members of staff, while practitioner skills could be put to more effective use. Teacher practitioners themselves concurred with this sentiment and also felt that their input to course design could be greater. Barriers to this were discussed, such as teacher practitioners' limited time spent in the university environment. With enhanced forward planning it may be possible to engage these individuals in course review and design such that their expert opinions are harvested and taken into consideration. Having a greater 'timetable presence' in delivering practical course content (such as clinical skills teaching and in providing examples of how teachings relate to practice 3.4.2.2) would also be beneficial to students, harnessing the unique knowledge and skills of teacher practitioners such that students may learn from role models. Schon (1987) states that as well as requiring opportunities to learn by doing students require coaching by individuals who have already been initiated into the profession. As such teacher practitioners (who are established members of the pharmacy profession) could provide coaching opportunities to MPharm students, in order to better their preparedness for practice.

Through exposure to practice students were also thought to benefit from seeing the way in which other healthcare professionals work in a multi-disciplinary team (3.4.2.3, 4.4.3.3, 5.4.2.3). This sentiment was shared across all three stakeholder groups. By gaining exposure to other healthcare professionals while on placement as students, undergraduates may begin to learn their role in the multidisciplinary team while also progressing their communication skills with colleagues. Learning with and from other healthcare students in the classroom environment was also perceived by all stakeholders interviewed to be of value in preparing for pre-registration training. The literature suggests that medic counterparts also perceive IPE to be beneficial (Shelvey et al, 2016). IPE “enables two or more professions to learn with, from and about each other to improve collaborative practice and quality of care” (CAIPE, 2002). It is acknowledged that IPE should begin before registration as a healthcare professional, but it should also continue through an individual’s career as a means of CPD (International Pharmaceutical Federation, 2015). Its benefits to adult learning are numerous and include offering an opportunity for students to gain an appreciation of safe and good practice while learning how to work together more “fully, more efficiently and more economically” (CAIPE, 2017). Discussions between individuals are said to increase the amount of practical knowledge a person has. Some things remain a mystery until an individual talks to someone with a different range of knowledge and understanding. The more diverse the learning groups’ membership the more likely the individuals are to learn (Luft and Ingham, 1955). Professional bodies and regulators recognise IPE as key to strategic policy (International Pharmaceutical Federation, 2015) and for this reason IPE should be considered as an integral aspect of pharmacy undergraduate curricula. Institutions may wish to refer to published guidelines when planning and refining IPE opportunities such that they are jointly planned between educators from all professions involved, based upon an agreed strategy, underpinned with theory, using a range of learning methods (case-based,

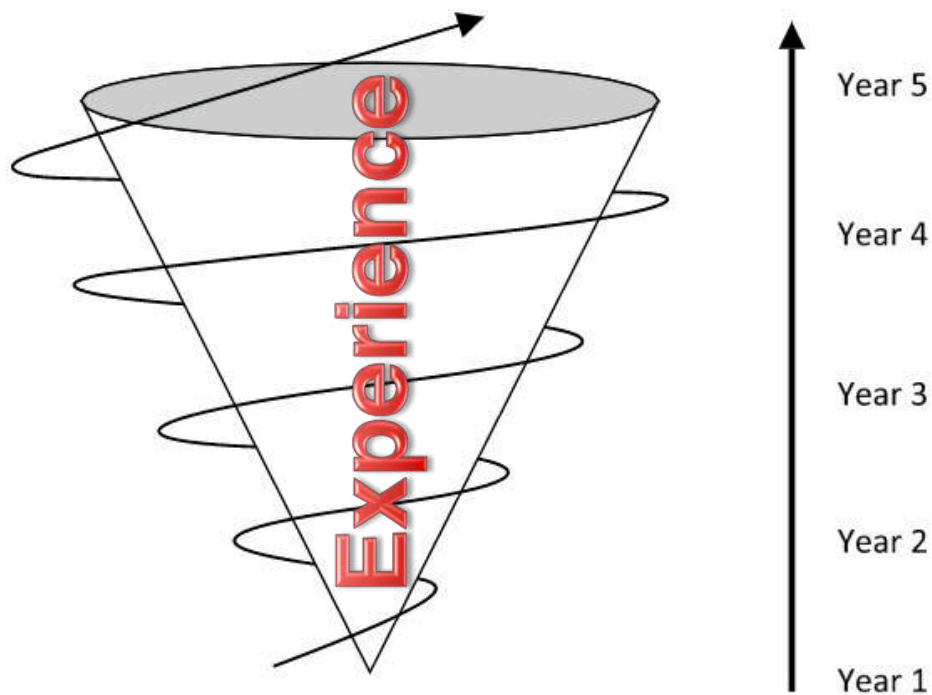
problem-based, experiential learning to name but a few) in line with defined outcomes (CAIPE, 2017).

Triangulation also highlighted the benefits of revisiting and building upon material with MPharm students (3.4.3.1; 4.4.4.1; 5.4.3.1). This view was shared by all stakeholders but was specifically referred to by academic staff (including teacher practitioners), potentially as a result of their background in education and familiarity with the GPhC reaccreditation criteria. This finding is in line with the work of Ausubel (1968) on subsumption (described in Chapter One) and the theory of 'spirality' put forward by Bruner (1960) which are central to the current standards for the initial education and training of pharmacists (General Pharmaceutical Council, 2011). According to this document curricula must be "progressive, dealing with issues in an increasingly more complex way until the right level of understanding is reached" (General Pharmaceutical Council, 2011). As depicted in Figure 1.1 (Chapter One) a curriculum involves iterative revisiting of subjects or themes (Bruner, 1960) where new objectives are presented with each visit (Harden and Stamper 1999). From the bottom of the 'spiral' where topics are introduced, material is revisited with the aim of increasing proficiency or expertise to the top of the spiral whereby 'eventual mastery' is reached (Bruner, 1960). Through spiral curricula new learning must be related to existing knowledge in 'prerequisite sequencing' (Dowding, 1993).

The data presented in this thesis suggests that all stakeholders perceive "spirality" in pharmacy curricula to be important, however the model may be further enhanced by making specific reference to the requirement for knowledge, skills, attitudes and values developed through MPharm curricula to be applied in a workplace environment at an MPharm level. Both recent graduates and employers referred to graduate inability to apply knowledge to situations in practice. By modifying the typical spirality model (Figure 1.1) through addition of an opportunity to see learning in a clinical context and become immersed in pharmacy practice environments, students may better



'situate' their learning and see its relevance. Figure 6.2 depicts such a model, where 'exposure to pharmacy practice' (red arrow) should be considered as a constant vein throughout all four years of undergraduate curricula.



**Figure 6.2:** An applied spiral curriculum. Adapted from: The General Pharmaceutical Council, 2011. Standards for the initial education and training of pharmacists.

Material taught out of context and without the opportunity for application leads to “poor retention” (Ausubel et al 1978) especially if it is not applied within a reasonable timeframe (Custers and Boshuizen, 2002). Indeed, some graduates stressed that they found details learned at university difficult to recall, and it was only when they saw things in practice that they were able to make meaning of the learning. For this reason it is recommended that CSPPS considers closely aligning a targeted period of exposure to practice periodically throughout MPharm curricula to coincide with the concepts introduced at university. Adding further evidence to this suggestion is the phenomena that students with a part time evening/weekend pharmacy job

alongside their studies spent much time during interviews ‘story-telling’ how they were able to recall and practise their learning with patients and colleagues in their workplace settings (5.4.2.5).

The benefits of students obtaining prior exposure to practice is evidenced by employers interviewed in this study stressing that the ‘best’ pre-registration trainees they have supervised have had pharmacy jobs, or extensive placement exposure (4.4.2.4). In doing so they become familiar with the workplace environment and have been able to contextualise their learning throughout their MPharm studies. It does not appear to matter *where* their workplace exposure has taken place (site or sector), as nuances specific to the individual workplace can be learned within the early weeks of pre-registration training.

The regulator does not currently define a period of exposure that MPharm students must receive, or where that exposure should be. While some participants of this study stated that they believe having *more* placements would benefit graduate preparedness for pre-registration training it is proposed that it is in fact the quality, not the quantity, of exposure that is most important. Academic staff participants perceived students to want ‘more’ placements when in reality what graduates expressed was most beneficial were longer periods of exposure, where they were able to see the relevance of their learning in practice and to obtain exposure to a range of places (in order to establish an idea of ‘best practice’ and ways in which things may be done differently between sites) (5.4.2.2). While increasing student exposure to practice at an undergraduate level would be viewed as a positive advancement by all stakeholder groups, ultimately it may be argued that there is no substitute for ‘the real thing’. That is, it is impossible to be 100% prepared for life as a pre-registration pharmacist. An element of classroom education must also remain, as opposed to pharmacy becoming an ‘apprenticeship’ model. This enables basic knowledge required to be learned before it is put into practice (as shown in Bloom’s pyramid- Figure

1.3), failure to do so may lead to “incomplete acquisition of knowledge and skills over time, which may result in poor performance...” (Austin, 2016). Students must understand the core concepts underpinning pharmacy practice, in order to develop as knowledgeable, well-rounded practitioners. This is evidenced in the data also where recent graduates spoke about the benefits of classroom learning (5.4.3.4) to their development, such as the opportunity to make mistakes and practise their skills.

Introducing a requirement for CSPPS to provide practice exposure in line with content delivered such that students may apply their learning is a large undertaking. Such a change would have significant financial and logistical consequences, the extent of which is not known. However, if graduates are to be better prepared for the pre-registration year the most significant factor, according to this study, would be that graduate application of knowledge to practice must be enhanced. Both the data and the theory suggest that this may be achieved through timely (soon after ideas are presented in a classroom context) exposure to pharmacy practice.

## **6.2 Integration of course content and relevance to all students**

‘Integration’ has been a reaccreditation requirement since GPhC standards changed. Standard 5 criterion 5.1 states that the pharmacy curriculum “must be integrated” (General Pharmaceutical Council, 2011). It is thought that this integration can create relevance for new learning allowing facts to be related to the practice setting (Schmidt, 1983). Some studies have shown that students are better able to retain information and apply it in real life when it is integrated (Rosse, 1974; Lam et al, 2002).

The term integration was used frequently in both employer and academic staff interviews. The specific term was used to a lesser extent with recent graduates, however they did make reference to the need for subject material to be linked (as opposed to being isolated in separate silos) and for this to be related to practice. As already identified there was discrepancy in the way in

which the term 'integration' was interpreted by academic staff in particular (3.4.3.1). This is unsurprising as the term is used in a number of ways throughout the GPhC's regulation documentation (General Pharmaceutical Council, 2011). While this document states that courses must be "integrated [such that] component parts are linked in a coherent way" (General Pharmaceutical Council, 2011) there is little guidance on *how* this should be done. The data from this study suggests that students are less able to recall information that they perceive to be 'science oriented' and lack clinical relevance. This is supported by the findings of Jesson et al (2006) who reported that students perceived too much emphasis to be placed on science early in their pharmacy studies. Though they recognised the relevance later in the programme they suggest it would be beneficial to include more practice-based material in order to make the course more interesting, aid contextualisation of learning and also to help students in their early pharmacy placements (Jesson et al, 2006). The regulation documentation may therefore be enhanced to stress the importance of ensuring content delivered is related to current pharmacy practice. This is supported by the data from this study that shows that where students do not see the relevance to practice they are less motivated to learn (5.4.2.5).

There is no substantial evidence from longitudinal studies on the effectiveness of integration and its impact on performance as a practitioner (Pearson and Hubball, 2012). In fact there is some debate in the literature and concern over whether integrated curricula is formed at the expense of depth, resulting in superficiality (Smith, 2005). Studies that do state integrated curricula are superior also describe this effect as "marginal" (Schmidt et al, 1996).

While schools may strive to achieve an integrated curricula, students' ability to making integrations in their own minds is of equal importance (Husband et al, 2014). Though not made explicit, academic staff spoke about the perceived benefits of 'white space' in the timetable, this may be beneficial in

providing students with the “flexibility to become integrative thinkers” (Husband et al, 2014).

### **6.3 Self-directed learning and reflection**

Academic staff and employers alike stated that students wanted to be “spoon-fed” information (3.4.3.7; 4.4.5.1). This term was not used by recent graduates, potentially as they do not acknowledge their perceived reliance on being ‘fed’ information. Students were perceived to want more contact hours as this was said to be seen as value for money. This has also been reflected recently in the media whereby a survey of 14,000 UK students revealed that “fewer than two in five think they are getting value for money” (BBC, 2018). However, this study revealed that graduates did value the opportunity to conduct self-directed study, although this only appeared to become apparent upon graduation. A potential solution to this may be encouraging undergraduate students to spend time with pre-registration pharmacists. In doing so they may glean the importance and value of self-directed study, as well as other useful advice that can only be imparted by a current pre-registration trainee pharmacist.

Self-directed learning may be described as “a method of organising teaching and learning in which the learning tasks are largely within the learners’ control” (Kaufman, 2003). Through mastering self-directed learning students become able to accept responsibility for their learning. This may avoid ‘spoon-feeding’ which was referred to by numerous employers interviewed in this study. The current GPhC reaccreditation guidance for schools states that “systems and structures should be in place to manage the learning of students in the academic environment. They must take account of...directed-learning and student/trainee self-study time” (General Pharmaceutical Council, 2011). The guidance is not prescriptive as to how much self-directed study time curricula should include, but the results from this study would reiterate that students benefit from inclusion of an opportunity for self-study. Students may also benefit from being given the skills to manage their own

learning. In other words, they may benefit from being ‘taught how to learn’ while at university. There is no current requirement for this to be included in the MPharm curricula. CSPPS may wish to consider dedicating a proportion of time to helping students ‘learn to learn’ such that they may be successful in their own self-directed learning in their future career (George, 2011).

The results also suggest that “white space” in the MPharm curricula is beneficial (3.4.3.6). This was discussed by academic staff in particular, who are familiar with the MPharm timetable and the space (or lack of thereof) within it. Such free time would give students the opportunity to practice self-directed learning, reflect upon experiences encountered and consolidate their learning. The current GPhC regulation documentation does not currently refer to the need for ‘white space’; this may be a consideration for future iterations of the policy document.

#### **6.4 The journey from student to pre-registration pharmacist as a period of transition**

Triangulation between stakeholder groups identified the period between leaving university and starting pre-registration as a period of transition (4.4.5, 5.4.4).. Each student’s experience of this transition is different, depending on a range of factors including their personality, background, life experience and prior pharmacy exposure to name but a few. The transition into a new team can be difficult as students assume a new identity (Wenger, 1998). A sense of discomfort is felt when students do not understand the rules or context of a new situation, this is referred to as a state of liminality (Land et al, 2008; Meyer et al, 2010).

Bridges proposes that transition is a psychological concept that has three parts (Bridges, 2009) letting go of old ways and old identity, going through an ‘in between’ time (also know as the neutral zone, where critical psychological changes take place) and finally making a new beginning (developing a new identity and sense of purpose) (Bridges, 2009). Bridges states that organisational transitions are often mismanaged with catastrophic

consequence when employees do not let go of their old identity/reality, 'psychological transition depends on letting go...' (Bridges, 2009). Applied to a pharmacy education context, graduates must 'let go' of their student identity before embarking on their journey as a pre-registration trainee pharmacist. Students must also embrace the 'neutral zone', failing to do so may make students feel discouraged or think something is 'wrong with them' (Bridges, 2009).

Recent graduates spoke of feelings of uncertainty, discomfort and frustration at the beginning of the pre-registration year (5.4.4). Employers in particular spoke of graduates holding a 'student mentality' (4.4.5.1) and this having a negative consequence on their behavior in the workplace. It is proposed that this may result from pre-registration trainee pharmacists being unsuccessful in one or all of the three periods of psychological transition, described by Bridges (2009). In order to alleviate this CSPPS may wish to recognise the period of leaving university and entering the workforce as a period of transition while providing students help to work through the three transitional phases.

In general, those who had prior work experience found the transition to the workplace easier, even more so if they had experience in the site in which they were doing their pre-registration training. This is understandable as they were familiar with faces and places and able to establish themselves within the pharmacy team. While employers and students were forthcoming in describing this period of change, academic staff made less reference to student transition to pre-registration pharmacist. This may be because they do not supervise students in this time, rather, their focus appeared to be on the transition of students from school/college to university.

The transition to pre-registration pharmacist was identified as a critical time point. Greater emphasis should be placed on preparing for this at a university level. Currently, the regulation documentation makes no reference to this

period of transition or factors which may ease it. CSPPS and employers may wish to consider providing graduates with an opportunity to 'bed in' to their new workplace during the end of their MPharm studies, in a similar way to the 'induction' programme, compulsory in UK medicine programmes. Mandatory induction for foundation year 1 doctors (F1s) began in 2012 in an attempt to ease the transition from student to doctor (Van Hamel and Jenner, 2015). An evaluation of one such programme at a UK district general hospital revealed that the newly qualified doctor participants' perceptions of their own capabilities improved after an extended 5-day ward-based induction, their preparedness for some (but not all) clinical areas also improved (Evans et al, 2004). A nationwide survey of F1s also found that for each additional day a graduate spent in 'induction', anxiety levels reduced (Van Hamel and Jenner, 2015). Medical education literature also states that the stress of transition is eased by the level of clinical experience students obtain in their undergraduate years (Brennan et al, 2010). As such greater clinical exposure in MPharm programmes would also be beneficial in aiding transition, in addition to the benefits already presented.

The benefits of students being able to familiarise themselves with the 'faces and places' they will be seeing during pre-registration training has been shown (5.4.4.2). As has the desire for employers to find out more about their pre-registration trainee pharmacist prior to them starting work (4.4.5.3). The practicalities of introducing induction periods or similar are yet to be explored, however, potential barriers include funding, geographical distance between universities and training sites, the practicalities of travel and accommodation and workplace pressures preventing supervising pharmacists having time to conduct inductions. The effects of the recently introduced Oriel recruitment system (where applicants apply for pre-registration places via a single route and attend selection centres) on this suggestion are also unknown. The Oriel system was introduced in 2017 and applies to all Health Education England (HEE) funded pre-registration training posts and is optional for community pharmacy places funded by NHS



England (Health Education England, 2018). Its aim is to “eliminate variation in recruitment into these training posts and bring it into line with other professions, notably medicine, dentistry and health care science”(Health Education England, 2018). Early indications suggest the scheme is effective with 75% of pre-registration places being filled (all hospital spaces but only 62% of community spaces) (Health Education England, 2018). However, filling places is not the only measure of success. Longitudinal studies are required in order to explore the wider impacts and effectiveness of the scheme.

The duration and composition of suggested induction periods is also unknown but data from this study would suggest that students about to embark on the transition to pre-registration trainee pharmacist would benefit from being introduced to the outgoing pre-registration trainee in order to ‘learn the ropes’ of the specific site, gleaning an insight into their roles and responsibilities while adjusting their expectations of what pre-registration training will be like (5.4.4.1). Literature states that through observing others students will obtain an idea of how new behaviours are performed, when they next need to perform said behaviours they will have a benchmark against which to base their actions (Bandura, 1977). Observing the outgoing pre-registration pharmacist would serve as a benchmark for actions and behaviours for recent pharmacy graduates.

## **6.5 Improving preparedness through greater collaboration**

Triangulation of the data highlighted a number of areas where graduate preparedness may be improved through greater collaboration. Firstly, members of academic staff may collaborate to a greater extent, ensuring curricula content is integrated (3.4.3.8). While there is evidence that this is currently taking place, all three stakeholder groups placed high value on science being taught alongside clinical practice, and the abolition of perceived ‘modular’ barriers. Enhanced collaboration within CSPPS staff could also see teacher practitioners better utilised, as discussed (3.4.5.1).

The results of this study show that there is also potential for increasing collaboration between CSPPS and its stakeholders, particularly employers (4.4.5.3). This collaboration may exist in two forms; in course design (two way feedback on what should/should not be included in undergraduate programmes) and delivery (sharing responsibility for students both in the workplace for example on placements and also in classroom environments). In enhancing collaboration through course delivery, interviewees were keen for specific aims and objectives of student placement exposure to be set in order that students got the most out of their practice experiences. This notion is supported by the work of Quantrill and Tun (2012) who state that assessing learners in the workplace has an influence on learning and allows students to gain a better understanding on their performance, competence and further learning needs (Quantrill and Tun, 2012). Employers taking greater responsibility for the education of students in the workplace would help achieve this but would require a major up-skilling of the workforce and close regulation. In order to introduce an element of standardisation and quality assurance workplace supervisors would require a degree of training in education provision. It is proposed that this could be provided by CSPPS, such that responsibilities for monitoring and assessing students in the workplace could be conducted by practice based staff, for various elements of the degree scheme. This change would also mean a change in the way in which pharmacy degree schemes are funded. Currently, pharmacy is funded as a science subject. The data from this study suggests that 'science degree' banded funding is currently insufficient to produce graduates with the level of patient-centredness and the ability to apply knowledge in the practice environment that is expected in the workplace upon graduation (4.4.3.4). This necessitates a review of the way in which pharmacy programmes in the UK are funded, as there is currently no 'clinical supplement' in place to provide such changes (Smith and Darracott, 2011).

A potential mechanism by which employers and universities can collaborate is through the introduction of Entrustable Professional Activities (EPAs). An EPA may be defined as a 'unit of professional practice that can be fully entrusted to a trainee, as soon as he or she has demonstrated the necessary competence to execute the activity unsupervised' (Ten Cate et al, 2015). When EPAs are the focus of assessment they are said to provide 'more integrated, holistic evaluation of trainees' (Ten Cate et al, 2015). While established in a medical education context, the literature surrounding EPAs from a pharmacy perspective is limited. That said, Haines et al (2017) suggest that EPAs for new pharmacy graduates are 'discrete, essential activities that all new pharmacy graduates must be able to perform without direct supervision upon entering practice' (Haines et al, 2017). In the US, one college of pharmacy has implemented EPAs as a strategy to define graduation standards ensuring graduates are 'practice ready' (Pittenger et al, 2016), in other words the baseline level a student must attain before graduating is set through EPAs. The utility of EPAs in UK MPharm curricula requires further research. Discussions amongst stakeholders should surround the types of activities included, the level at which they should be introduced (undergraduate or postgraduate), who would have ultimate responsibility for assessing and signing off a student as 'competent' to name a few key issues. Introducing EPAs to undergraduate curricula may allow students to leave university and 'hit the ground running', a term used frequently in interviews during this present study. Employers could be confident that graduates have met a minimal threshold standard in exhibiting their skills in a practice environment and students would be able to feel a part of the team and workplace as soon as they start pre-registration training through conducting specific tasks unaided. Such tasks may include (but are not limited to) performing medication histories with patients or carers, determining a patient's adherence to their medication or using a validated tool to assess a patient's health literacy (Haines et al, 2017). This would not be without challenges. Establishing EPAs in UK pharmacy schools would require extensive work, financial input and collaboration with stakeholders.

A 'root and branch' review conducted by Smith and Darracott (2011) established that pharmacy education in the UK was in need of reform. Namely a five-year period of "teaching, learning and assessment leading to graduation" (incorporating two placements of six months in duration each) was proposed, with employers and universities being held jointly responsible for delivering such programmes (Smith and Darracott, 2011). It was also proposed that the integrated five-year programme should receive "at least 12 months' funding as a clinical subject in addition to the existing funding as a science-based subject" (Smith and Darracott, 2011). While this study did not seek to establish participant opinions towards the proposals by Smith and Darracott (2011) or provide evidence for its specific recommendations it is clear that the data is in support of the principles of providing integrated practice exposure alongside university education, enhanced funding for such opportunities and closer working between universities and employers.

The Modernising Pharmacy Careers (MPC) Wales Programme Board was established with a view of ensuring the workforce has the sufficient "knowledge, skills and competencies to deliver the future health services required by the populations of Wales" (NHS Wales, 2018b) and the ultimate goal of establishing the five year integrated programme (NHS Wales, 2018b). Such a change would mean major reform for undergraduate pharmacy education in Wales. Further changes made by the MPC Programme Board require evaluation in order to establish potential changes in preparedness of students for practice.

Two-way collaboration between schools and employers to aid course design is also beneficial. The data shows that stakeholders expect different things of pre-registration trainee pharmacists with no consensus of what a day one pre-registration trainee should look like/be able to do. Differences between the knowledge, skills, attitudes and values perceived to be required of trainees vary between employers and CSPPS staff. Attributes common to

both stakeholder groups included the importance of communication skills, knowledge of the underpinning science and empathy for patients. However, academic staff also mentioned critical appraisal, presentation skills and diagnostic skills as being important to possess. Employers did not mention these however viewed retail skills (in community practice), English language skills (even though staff acknowledge importance of communication skills the poor English language skills of some pre-registration trainees is concerning to employers), adaptability, ability to deal with conflict, motivating and negotiating skills and an ability to work under pressure as being important. This highlights need for collaboration between these two groups of stakeholders in course design.

Data revealed significant overlap in perceived knowledge requirements of pre-registration trainees too (including knowledge of medicines, pharmacy law and underpinning science), however employers were said to require students to also have an understanding of their chosen work sector, a knowledge of learning styles, health beliefs, the charts and documentation used in practice, knowledge of prescribing and also of the roles of others in the healthcare team. Students also perceive knowledge of the role of the pre-reg, of others in the pharmacy and wider healthcare team as important.

Particular overlap in the desired attitudes and values of students was seen between employers and academic staff (including teacher practitioners), such as the need to be empathetic, confident and patient centred, whereas recent graduates placed less emphasis on this. In addition to attributes mentioned by academic staff employers also require that students be punctual, positive and proactive. Perhaps as these are practical elements that may only become apparent in the workplace. Students also acknowledged the need to work under pressure. This was not a consideration mentioned by academic staff.

Graduates and employers acknowledge the relative importance of being able to apply knowledge to practice, however this was less of a focus for academic staff. This is an unsurprising finding considering the way in which the degree is taught, with current limited opportunity to apply knowledge to practice.

Inviting/continuing to invite employers of MPharm graduates to engagement events within schools of pharmacy (including CSPPS) may prove vital in ensuring curricula reflects current pharmacy practice and forming the links required to provide practical workplace exposure throughout the MPharm programme. The current GPhC reaccreditation standards require that schools provide “evidence that MPharm degrees are developed with input from external stakeholder, including patients and the public” (General Pharmaceutical Council, 2011). The documentation does not include reference towards engagement with employers and recent school graduates specifically. It is recommended, based on the usefulness of engagement with these stakeholder groups through this study, that specific reference be made to the requirement to provide evidence that the opinions of these individuals has been sought, in order for schools to receive accreditation/reaccreditation.

## **6.6 Improving preparedness for practice through social constructivism**

The data generated through this study can be explained by social constructivist learning theory. The findings reiterate that students learn by playing an active role in making sense of information presented to them (Kalpana, 2014) e.g. through workshops and role play. Thus the learning environment should be ‘active’ as opposed to passive listening, and should be collaborative whereby students learn with and from each other (Kalpana, 2014) including small group and inter-professional teaching and learning.

Social constructivism stresses the importance of social learning contexts and how knowledge is mutually built and constructed (Bodrova and Leong, 2012; Gauvin, 2008). This learning may be positively influenced by situating it in

the context in which students have the opportunity to co-create meaning with and from others (including pharmacy role models). The zone of proximal development is one in which students find tasks too difficult to complete alone but can gain mastery where they are aided by more experienced peers (Gredler, 2008). This too highlights that students may benefit from exposure to role models (3.4.2.2; 4.4.3.2; 5.4.2.2) such as teacher practitioners and others (including the out-going pre-registration trainees) through a proposed induction period so they can learn in the zone of proximal development.

Knowledge is influenced by the culture including the language, beliefs and skills of the culture (Holzman, 2010), this adds weight to the argument for immersing students in the culture of pharmacy practice, with pharmacy practitioners.

Knowledge is said to be tied to the situation in which it is learned and is difficult to apply in other situations (Kalpana, 2014). It is therefore unsurprising that employers reflected upon student inability to apply knowledge, because they have learnt it in a different environment to the one in which it is applied (3.4.3.8; 4.4.3.4; 5.4.2.5)

The aim of social constructivism is to encourage students to learn how to learn and take greater responsibility for their learning, becoming active participants in it (Kalpana, 2014). Employers in particular were forthcoming in stating the requirement for students to be better equipped in this area, as such CSPPS must embrace the principles of constructivist learning (including increasing exposure to real life pharmacy problems, the workplace, collaborative working and developing student ownership of their own learning) in order to best prepare its graduates for the pre-registration training year and beyond. Encouraging a constructivist learning environment whereby students are invited to contribute in modifying the programme may also aid students in becoming autonomous learners (Kalpana, 2014).

## **6.7 Research strengths**

This is the first substantial research study the researcher is aware of that has evaluated preparedness of graduates for pharmacy pre-registration training in Great Britain since the change of accreditation criteria came into place (General Pharmaceutical Council, 2011). Including the views of recent graduates themselves, academic staff (including teacher practitioners) and employers allowed views from a range of perspectives to be triangulated. The methodology was a particular strength. Rooted in a social constructivist paradigm, semi-structured interviews allowed depth of exploration and the issues of greatest importance to the participants to be captured. The life experiences of participants and effect of these on their preparedness for pre-registration have been acknowledged. Individuals' perceptions of reality were heard, with no one person's version of reality being regarded as more or less true. The researcher maintains that research is mediated by values and the link between researcher and participant was acknowledged throughout the research process. Rather than trying to minimise the effect the researcher remained reflexive.

As an under-researched area this study has formed the beginnings of an evidence base upon which schools of pharmacy may base curricular design/reform.

## **6.8 Research limitations**

The research could have been enhanced by inclusion of a greater number of participants. Some elements of the study had a disappointing uptake from invitations to interview, however sufficient efforts were made in order to recruit a wide and varied sample of participants through numerous recruitment methods (see Chapter Two). The study incorporates a higher percentage of participants based at or graduating from the Cardiff School of Pharmacy due to the geographical location of the researcher. This has been referenced in the study results, as such the findings cannot be generalised.



However, some general themes may be applicable to other schools in the UK.

The study may have also been affected by the researcher's position as a graduate of the Cardiff School of Pharmacy and Pharmaceutical Sciences. As such the researcher was known to some participants, who may have responded to invitations in light of this and answered questions in a way that they may not have necessarily done so if the interviews were conducted by someone else. As opposed to making efforts to negate this potential bias the researcher remained reflexive throughout the project, questioning why the data may look a certain way and accepting that it may look different if the study had been conducted by someone else.

While the study included the views of three stakeholder groups it could also have included the views of many others for example the general public, pharmacy service users, undergraduate students, representatives from the General Pharmaceutical Council, Royal Pharmaceutical Society and pharmaceutical industry to name but a few. Interviews with other stakeholder groups may form the basis of future work.

Interviews were conducted over a wide time frame and this may have affected the findings. Viewpoints were not captured at one discreet time point, rather participants were interviewed at different stages of their training/the academic year/the training year supervising a trainee. Therefore participants will have held different experiences and different priorities at the time, however this may also be viewed as an advantage in obtaining a wide spread of views.

The researcher's interviewing and analysis skills were developed over the period of the study with increased practice (questioning technique became more concise, repetition decreased, time taken to transcribe and code decreased). However early interviews and interpretations are still valid as

data generated is in line with the data generated later in the study. Frequent contact with the supervisory team and 'code checking' exercises ensured validity of data interpretation.

The study may also be limited by elements of bias associated with conducting social science research. Self-selection bias may have led to the most motivated graduates/staff/employers responding to e-mails and being interviewed (Sedgwick, 2014). Reporter self-bias (Donaldson and Grant-Vallone, 2002) of interpretation of results must also be considered, though the researcher has endeavored to make clear the epistemological standpoint and background. Recall bias (Coughlin, S, 1990) may have also led individuals to tell stories which have undergone transformation over time, especially if they were less recent experiences. Social desirability bias (Schaeffer, 2000) may have also led individuals to answer in a way that makes themselves or others appear in a more favorable light. As the study included a self-selection sample, it is unlikely that saturation was reached. While the number of new emerging themes dramatically lessened with each successive interview, including a wider range of participants may have meant that additional issues were identified.

Finally, but importantly, the term 'preparedness' may be interpreted differently by different individuals (Cave et al, 2009), as discussed in Chapter One. Preparedness may have been interpreted to mean capability, competence or even nervousness (Burford and Vance, 2014; Cave et al 2009) as such this may have led to variation in response. What is more individuals may have different perceptions of what 'prepared' looks like in terms of preparedness for pre-registration training.

## 6.9 Future research

This study focused on preparedness of graduates for pre-registration training from the perspective of three stakeholder groups. Future studies could include a wider range of stakeholders (section 6.5).

Though the lessons learned are widely applicable across the UK it is acknowledged that the study is largely 'Cardiff centric', including graduates from other schools and well as academics from other schools in future studies would add to the evidence base.

A member of academic staff highlighted that they believe it is in fact the pre-registration year itself that is 'broken' and so it would be of interest to conduct a similar study with recent pharmacist registrants in order to explore how their pre-registration year prepared them for the early days of pharmacy practice.

The benefits of learning with and from others during IPE was highlighted. Future studies could focus on what constitutes as meaningful IPE in order to assist schools when introducing such sessions to their programmes. Longitudinal studies into the effectiveness of IPE for pharmacy student preparedness for practice would also be useful.

This study explored pharmacy experiential placements and their effectiveness in preparing graduates for pre-registration training. Future work may include evaluations of such workplace exposures and EPAs and their benefits to graduates.

The use of quantitative methods in future studies may be helpful in establishing a consensus opinion. For example a questionnaire could be administered to all recent graduates or employers in order to establish what elements they would like to see added/removed from MPharm programmes.

This study employed semi-structured interviews as the method of choice. It has been described how students may interpret the term 'preparedness' differently and also perceive themselves to be prepared while others may disagree. Future work may include observational studies in the pharmacy workplace to further explore graduate preparedness for pre-registration.

As this study revealed there are different perceptions of what a 'day one' pre-registration pharmacist should be able to do, future work may focus on exploring this in a wider population, with a greater number of stakeholders. A Delphi survey may be useful in developing a consensus opinion.

Introducing a compulsory induction period for pharmacy students before they become pre-registration trainee pharmacists may be beneficial, but would require further exploration. A future study may focus on the factors that make induction periods 'meaningful', the barriers to induction provision as well as exploring other factors that may influence induction uptake and success.

Future studies may also benefit from exploring the transition from student to healthcare professional. Establishing the factors that interplay to affect preparedness for and success in transitions would aid schools in helping pharmacy graduates approach this important milestone.

Chapter Seven

# Conclusion and Recommendations

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## 7 Conclusion and Recommendations

The study met its aims and objectives by exploring current perceptions of how pharmacy graduates are prepared for pre-registration training. The views of different stakeholder groups were compared, contrasted and triangulated in order to make recommendations. In an era of change in the pharmacy profession it is important that education stays abreast of emerging roles for pharmacists and transforms in line with this. While the lessons from this study may apply to other pharmacy schools in the UK, the researcher acknowledges the relatively high proportion of Cardiff based participants.

As such, the recommendations for CSPPS include:

- **Embedding social constructivist learning principles throughout undergraduate curriculum**

This includes encouraging active participation in learning so that students can make sense of the information presented to them (5.4.3.2) (Kalpana, 2014) and situating learning in practice environments where possible so that learning can take place in the environment in which it is to be applied. Importance should be placed on the social contexts of learning so that students can learn with and from others (5.4.3.3) (Gauvin 2008; Bodrova and Lueng 2012; Kalpana, 2014) including pharmacist role models. In particular CSPPS should review the way in which teacher practitioner members of staff are involved in MPharm curricula such that they are involved in facilitation of sessions where their unique skills and experience can be utilised (3.4.2.2) in order to help students understand the relevance of learning to practice. CSPPS should consider current IPE provision to ensure there is sufficient opportunity for undergraduates to develop their knowledge and skills with other healthcare professionals. Encouraging students to take responsibility for their learning will enhance their ability to become lifelong independent learners (Knowles, 1988).

Spirality within the curriculum should be enhanced and applied, as appropriate, across the curriculum (3.4.3.1; 4.4.4.1) (Harden and Stamper, 2009), as well as factoring in timely exposure to concepts learned in a practice based setting. CSPPS may consider introducing a compulsory requirement for students to obtain self-organised pharmacy practice placements during the four years of the programme. The relevance of learning to students should also be made explicit, in order to sustain motivation (5.4.2.5)(Sorbal, 2004). To achieve this examples from both community and hospital practice should be used in teaching where possible.

- **Ensure collaboration with stakeholders including current undergraduates, recent graduates, teacher practitioners and employers of pharmacy graduates in programme design**

CSPPS should endeavour to incorporate the views of recent graduates as well as engaging in two-way communication with teacher practitioners and employers (4.4.5.3) for the purpose of course design on an annual basis. In doing so the curricula will be informed by pharmacy practice and the way in which graduates are performing in practice.

- **Ensure collaboration with employers of pharmacy graduates through workplace learning activities**

In collaborating with employers, students' time spent in the workplace may be enhanced (4.4.3.4). Suggestions include establishing shared objectives and identifying tasks which students may conduct independently or under supervision while visiting the workplace as part of placements so that they may learn by doing in the context where the learning is to be applied (Brown et al, 1989).

- **Explore the potential for introduction of an induction period to pre-registration training**

In order to smooth the transition from student to pre-registration pharmacist students may benefit from a period of exposure to the workplace in which

they are to conduct their pre-registration training before they officially start. In particular it would be beneficial for students to meet and learn what is expected of them in their new role from the out-going pre-registration pharmacist (Gredler, 2008; Van Hammel and Jenner, 2015). CSPPS could also provide a question and answer session early in the MPharm programme delivered by one or more recent pharmacy graduates, currently undertaking pre-registration training. This would allow students to visualise what life after university will be like thus affording them the opportunity to learn how to help themselves become prepared for pre-registration training.

The recommendations for policy makers include:

- **Review the current potential for undergraduate pharmacy education provision in the workplace**

The data highlights the importance of learning taking place in the pharmacy workplace environment. Evaluation of financial plus workforce factors to establish feasibility of introducing more significant periods of practice exposure during MPharm programmes is required. The potential for pharmacy to receive a 'clinical supplement' in line with other healthcare education programmes should be revisited. MPharm programmes which currently offer an integrated pre-registration year should be evaluated in order to establish programme effectiveness, potential limitations and barriers to widespread adoption of such programmes by other universities.

The recommendations for pharmacy undergraduate students include:

- **Seek work experience in pharmacy practice or other environments**

In order to increase preparedness for practice students should seek opportunities to spend time in the pharmacy workplace environment alongside their studies (5.4.2.5; 4.4.2.4). In doing so students will be able to gain familiarity with the workplace and an appreciation of where their learning



can be applied in practice. Failing this, students should be encouraged to obtain other work experiences in order to develop transferrable skills (4.4.2.4).

The recommendations for employers of pharmacy graduates include:

- **Explore the potential for introduction of an induction period to pre-registration training**

Employers should collaborate with schools in order to plan and deliver an induction to pre-registration training. Having a period of induction at the start of pre-registration training, when graduates have moved to their place of work, may overcome some of the barriers to providing induction while students are still at university, such as travel and financial barriers. However, induction may still be possible before the start of pre-registration training whereby MPharm four students and current pre-registration trainees at their training site communicate remotely via Skype or similar, enabling question and answer sessions.

- **Collaborate with schools of pharmacy in course design and delivery**

By providing annual feedback on the performance of graduates to their school of pharmacy employers may be involved in curricula reform (4.4.5.3). Employers should also collaborate with schools in providing workplace exposure to students throughout MPharm programmes (4.4.3.4), allowing students to situate their learning and improve ability to apply knowledge in practice upon graduation (Gauvin, 2008).

## **Conclusion**

In conclusion, the findings presented in this thesis provide an insight into graduate preparedness for the pre-registration training year and beyond. It is the first substantial study the researcher is aware of that has evaluated preparedness of graduates for pharmacy pre-registration training in Great Britain since the most recent change in accreditation criteria. While exploratory, important themes have been identified for further research and consideration, in view of the limitations identified (Chapter Six). The need for universities to maintain and enhance spirality throughout curricula while providing significant opportunities to practise the application of knowledge in the pharmacy workplace has been shown. This study has identified the period between graduation and the early weeks of pre-registration training as a crucial period of transition; which may be eased by prior exposure of students to the workplace as well as pharmacist role models. Pharmacy education reform has been the subject of debate for a number of years. The findings of this study add further weight to the proposal that MPharm programmes should receive supplemental clinical funding such that pharmacy education is brought in line with other healthcare education degrees (Smith and Darracott, 2011).

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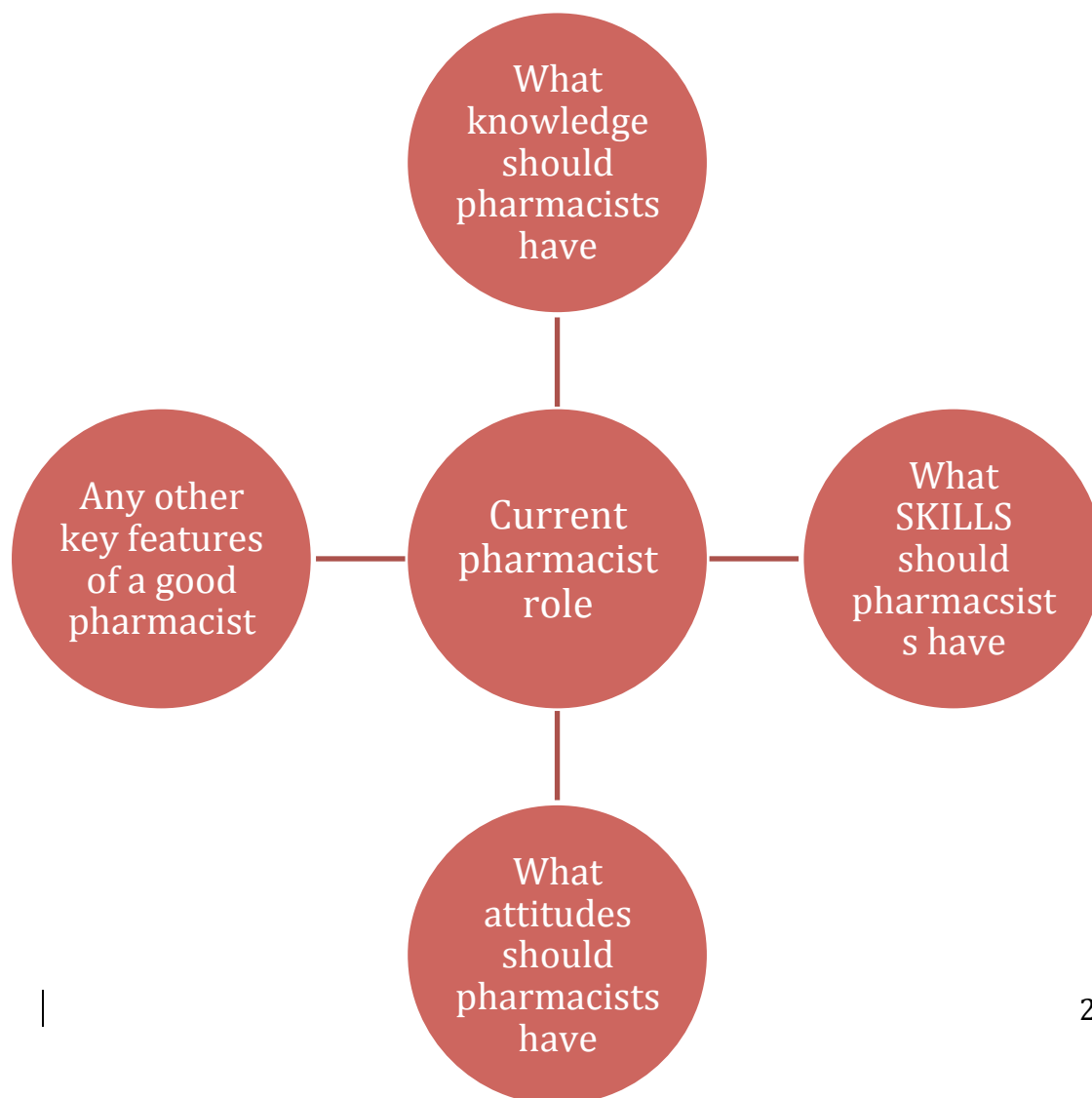
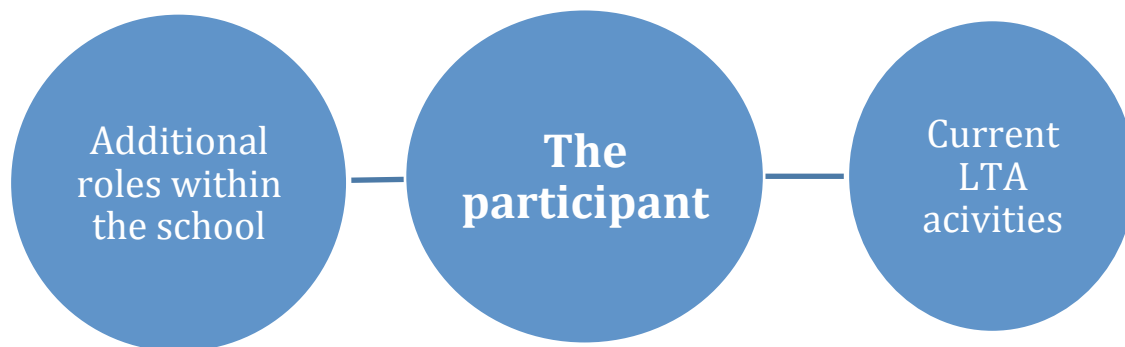
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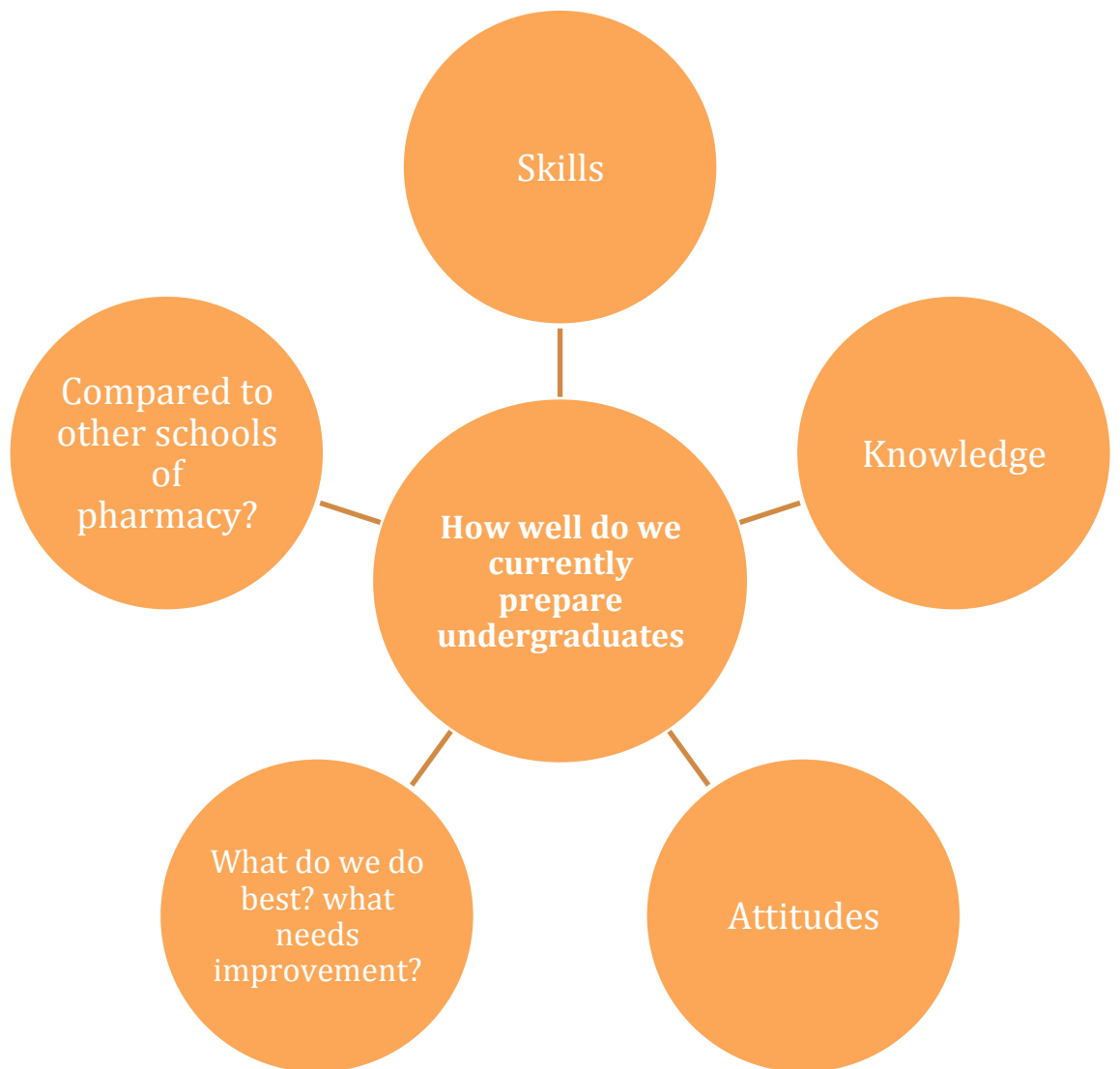
## Appendix 1

### Appendix 1.1- Topic guide for use with academic staff

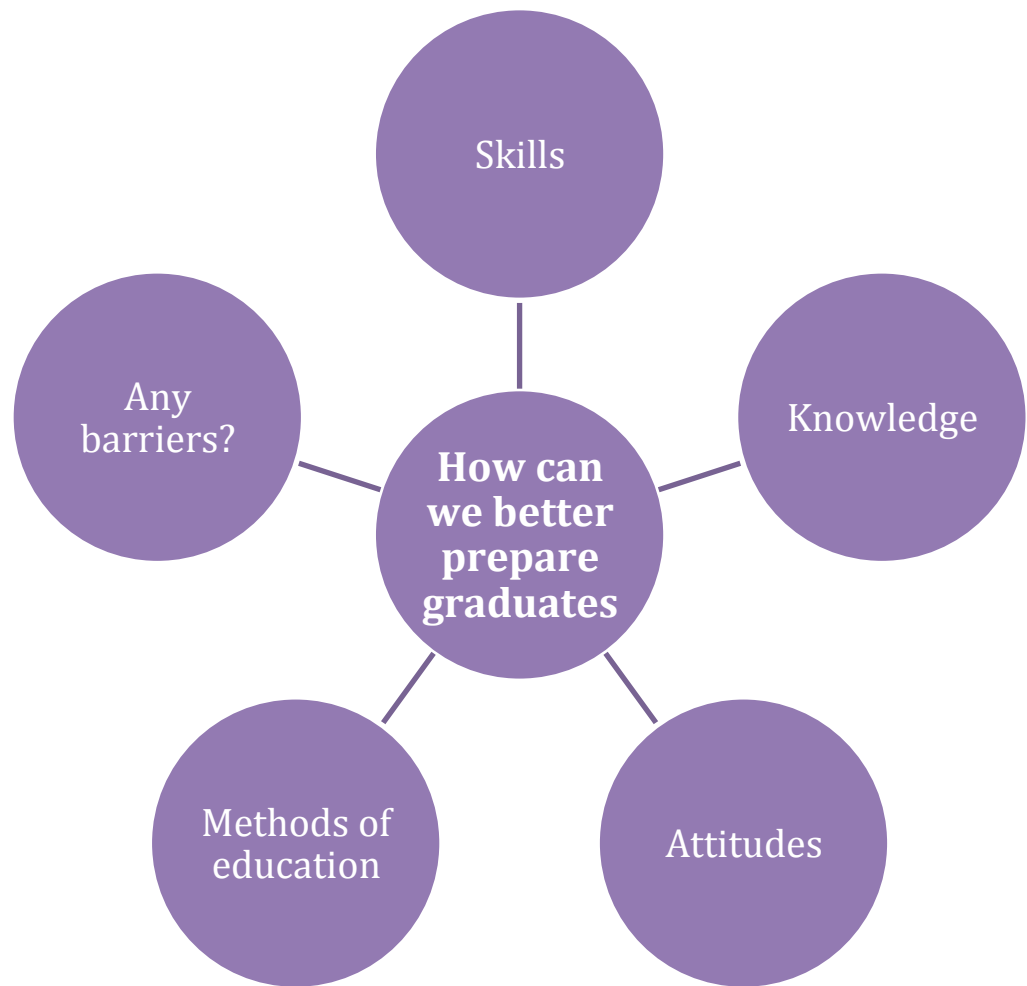
*What are the ways in which The Cardiff School of Pharmacy and Pharmaceutical Sciences can better prepare MPharm graduates for practice?*

#### Topic Guide





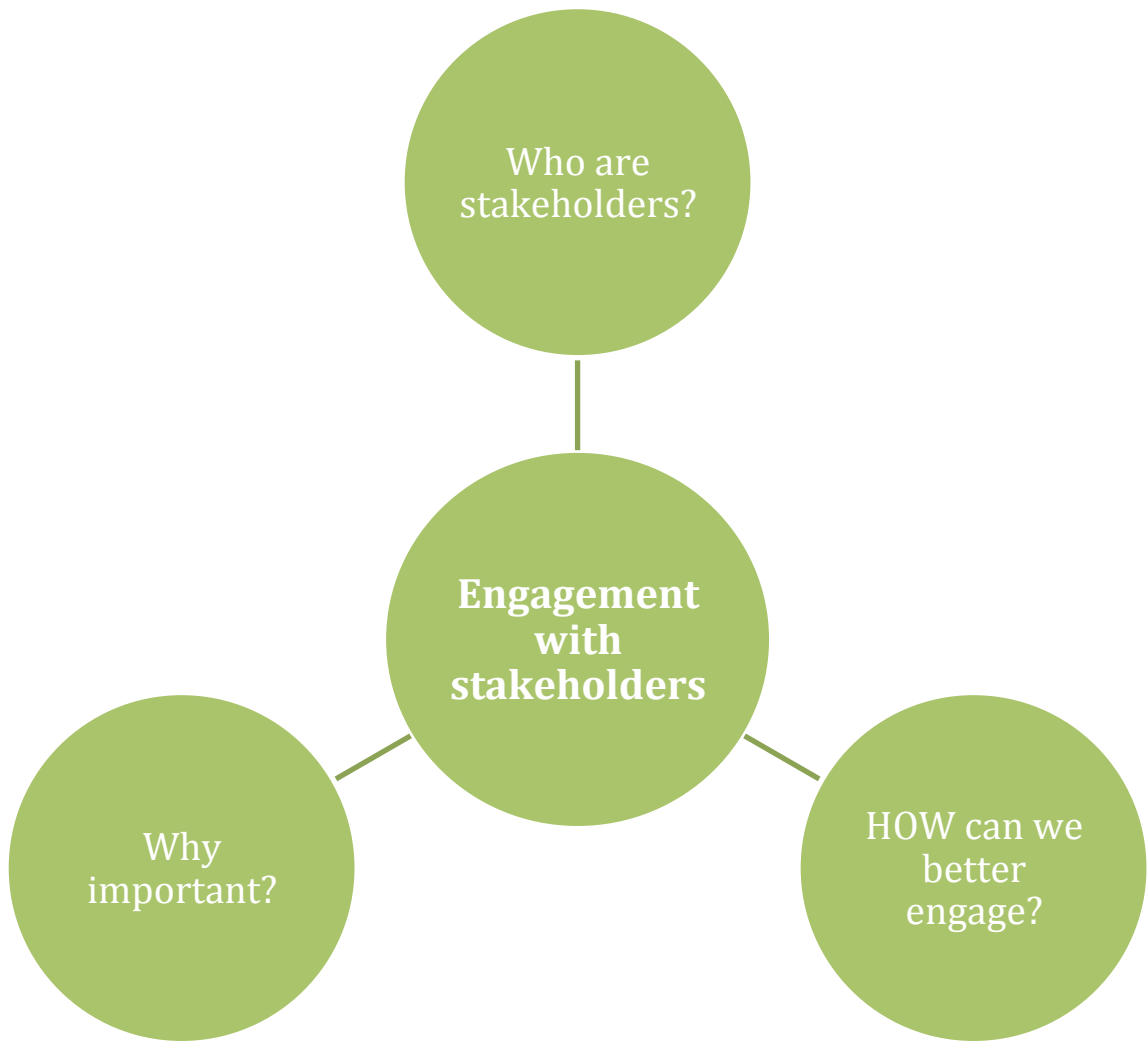




Is there anything else you would like to add?

Prompts and probes

- Can you give an example?
- Why do you think that?
- Is that for all students?
- Can you tell me more about that?
- How can we change this?



Thanks and closure

## Appendix 1.2- Participant Information Sheet

### What are the ways in which The Cardiff School of Pharmacy and Pharmaceutical Sciences can better prepare MPharm graduates for practice?

As a member of academic staff who teaches at The Cardiff School of Pharmacy and Pharmaceutical Sciences (CSPPS) you are invited to take in part in a research project. Please read the following information before you decide whether or not to take part in the study.

#### **What is the purpose of the study?**

The purpose of this study is to identify possible ways in which CSPPS may better prepare graduates for practice. This includes their pre-registration year and the subsequent early years of their career.

#### **Who are the researchers?**

The interviews will be conducted by a first year PhD student (Bethan Copp) under the supervision of Dr Dai John, Dr Louise Hughes and Dr Sion Coulman. This study has been approved by the CSPPS Research Ethics Committee.

#### **How will the research take place?**

If you consent, semi-structured one to one interviews will be conducted at a mutually convenient time and location. Interviews will be audio recorded and transcribed with all quotes anonymised.

#### **How long will the interviews take?**

Your assistance will only be required for one interview session which should take approximately 30-60 minutes.

#### **What are the potential benefits?**

There are no specific benefits to you but the results of this study will be collated to provide insight into staff perceptions of education at CSPPS. This may highlight areas of the course which may be improved for future undergraduate cohorts.

#### **What about anonymity and confidentiality?**

Confidentiality will be ensured at every stage of the research process. Interviews will be audio recorded and transcribed anonymously (i.e. no personal identifiers will be published.) All audio recordings and documents containing identifiable information will be kept securely at CSPPS for a period of no longer than 3 months after the final output of research.

#### **How will the information collected be disseminated?**

In addition to submission of a PhD thesis, the information may be used internally and externally for example as part of reports, presentations or other outputs.

#### **Do I have to take part?**

You do not have to take part. Participation in this study is entirely optional, in addition you may withdraw at any time without giving a reason. You do not have to answer all of the questions.

#### **Who can I contact for more information?**

For more information please contact Beth via the contact details below. If further information is required the project supervisors are Dr Dai John, Dr Louise Hughes and Dr Sion Coulman. Please note that contacting the investigator does not commit you to participating.

Researcher: Bethan Copp ([coppbn@cf.ac.uk](mailto:coppbn@cf.ac.uk))

## Appendix 1.3- Consent Form

*What are the ways in which The Cardiff School of Pharmacy and Pharmaceutical Sciences can better prepare MPharm graduates for practice?*

### **Consent form**

Please read the following statements and initial in the boxes if you agree to give your consent.

1. I confirm that I have read and understood the participant information sheet.
2. I understand that I have the opportunity to ask questions at any time.
3. I consent to take part in this study and understand that I can withdraw at any time.
4. I give consent for my interview to be audio recorded.
5. I agree to be contacted by the researcher for example if clarification of any points is needed.

#### Participant details

Name (please print):

Signature:

Date:

#### Researcher details

Name:

Signature:

Date:

## **Appendix 1.4- Recruitment e-mail**

*What are the ways in which The Cardiff School of Pharmacy and  
Pharmaceutical Sciences can better prepare MPharm graduates for practice?*

### **Recruitment e-mail**

Dear [ ],

As a member of staff of The Cardiff School of Pharmacy and Pharmaceutical Sciences (CSPPS) I am writing to let you know about a research project I am carrying out as part of my PhD. The main aim of this research is to establish the views of members of staff surrounding the area of pharmacy education in our School. In particular I believe staff have valuable views on ways in which CSPPS may better prepare graduates for their pre-registration year and the early years of their career and as such your participation would be greatly appreciated.

The research will be a qualitative project in the form of one to one semi-structured interviews at a mutually convenient time and place. Interviews should take 30-60 minutes. Please be assured that all data collected will be anonymised and stored securely.

If you would be interested in taking part and offering your views on ways that we could improve pharmacy education in Cardiff, please respond to this e-mail. For further information on the study please see the attached participant information sheet and consent form. Feel free to contact me with any additional questions you may have.

Best wishes,

Beth

## Appendix 1.5- Tables of knowledge, skills, attitudes and values required to be a pharmacist

### Skills required of a pharmacist

Skill	Participant Quote
Ability to recognise own limitations	AS1: "...recognising the limitations of what you can and can't do"
Attention to detail	AS2: "team working skills or an attention to detail or there are loads of skills I guess that are important..."
Teamwork	AS7: "So instead of just doing the pharmacy stuff now it's much more part of a team and you might be doing similar stuff but as part of a team so responding to their questions or the other way, you kind of promote, prompting things that need doing or sorting"
Business skills	AS1: "sort of business skills and things like that which again you can argue should be something that comes in the pre-reg anyway?"
Calculations	AS9: "...Cardiff students don't ever seem to come out and struggle with the calculations aspect of the pre-reg."
Checking	AS1: "Other skills obviously you've got your uhm practical skills or the sort of old school stuff like the dispensing and the uhm checking aspects"
Dispensing	AS11: "When I first started for example everything was said to be 80% on dispensing and 20% on OTC. That was always the way that they said your profit, your business, your time and everything like that. And that's definitely changed now. You're probably down to 70 maybe even 65% on dispensing"
Communication	AS13: "...they need to be able to communicate that to an audience of many people."  AS1: "Now it's very different skills needed 'cos if you're asking someone for example to, not get undressed, but you know roll their sleeves up and things to actually touch the patient and take their blood pressure...that obviously needs a slightly different skills set than just counseling in a more distant relationship."  AS5: "role of the pharmacist has become much more patient-centred and therefore it is just such an integral part of their role now that they can communicate."

Skills required of a pharmacist (contd)

Consultation	AS5: <i>“consultation, compassion for patients um the knowledge skills attributes those sorts of things are quite content specific aren’t they”</i>
Critical appraisal	AS1: <i>“I’ve just thought of something that should have come in my mind straight away in terms of skills ...it’s critical appraisal, of course.”</i>
Diagnostic skills	AS10: <i>“I think our diagnostic skills need to be much greater um I think our er [pause] our ability to recognise our authority in medication is something which is increasingly important because we have to make sure that we place our skills and our expertise squarely in a collective of health practitioners”</i>  AS14: <i>“Whereas before you would have learnt about blood pressure very much from the point of view of- this is the range, this is what happens when you go outside it, these are the drugs that work, but not actually necessarily how you measured it”</i>
Formulations (however there was debate about whether the requirement for formulations skills had diminished over time)	AS6: <i>“I think it changed a long time ago...the ability to, the knowledge the skill to actually formulate and make things umm, the need for that probably passed away as long ago as 30 years...”</i>  AS4: <i>“formulations... it’s not what most pharmacists will end up doing... I think it’s changed with the changing role of the um pharmacist, particularly in hospital practice”</i>
Independent working	AS3: <i>“...they should be able to work independently...”</i>
Interpretation of information	AS2: <i>“so a patient focused role I guess interpretation of information and communication and dissemination of that information”</i>
IT skills	AS2: <i>“I mean you know important things are things like IT skills as well and they’re becoming increasingly more and more important.”</i>
Listening	AS10: <i>“And I think communication is in part about um, changing, quite rapidly sometimes the way, what you’re trying to say. The way you say it. Um, the way you draw others in to saying it, the way you listen to others rather than speak...”</i>

Skills required of a pharmacist (contd)

Managerial skills	AS1: <i>“uhm the sort of broader skills around um things around just sort of dealing with people those kind of mentoring or managing other people”</i>
Organisation skills	AS14: <i>“And organisation of themselves, which are, I don’t think I mentioned those as skills, but they need them”</i>
Presentation skills	AS5: <i>“professional skills, oral presentation skills, written skills, a lot of those transferrable skills um I would say are taught to a very high level.”</i>
Problem Solving	AS3: <i>“they should be able to problem solve...”</i>
Reflection	AS5: <i>“uhm ethical approach uhm reflection you know, being able to reflect on ones own practice”</i>
Time management	AS12: <i>“And I would say, other skills, um. Time management...”</i>



## Knowledge required of a pharmacist

<b>Knowledge</b>	<b>Participant quote</b>
Additional Services	AS8: <i>"I think you need to know the ins and outs of all your services so for me the key areas will be contraceptives and the morning after pill because we offer EHC at our pharmacy um also smoking advice"</i>
Anatomy	AS4: <i>"...so they need to have some anatomy and they certainly need physiology"</i>
Chemistry	AS4: <i>"...if you were prioritising them I'd probably put some of the physic-chemical and um you know sort of chemistry knowledge lower down"</i>
Formulations	AS2: <i>"they should know things about formulation and how formulations work and how they deliver drugs into the body"</i>
Interactions	AS3: <i>"...some of the key things they need to know I would suggest would be the major um interactions between drug groups."</i>
Medicines	AS8: <i>"...the key areas will be um obviously on the medication that is being dispensed but also public health. So um we work on several campaigns throughout the year whenever there's an issue like maybe an outbreak of meningitis, people look to us for that information...also campaigns like stop smoking"</i>
Public Health	
Pharmacy Law	AS14: <i>"They need to understand the law around the profession"</i>
Physiology (Pathophysiology)	AS13: <i>"...they need to know all about the body systems that drugs work on"</i>  AS14: <i>"...they need to know about...the physiology and pathophysiology of what happens in disease"</i>
Scientific Underpinning (Including pharmacology, therapeutics and kinetics)	AS4: <i>"I mean if you were asking me to sort of prioritise...I think that the scientific knowledge underpinning drug action, drug selection and drug use. So pharmacology and therapeutics are probably at the top of my list"</i>  AS1: <i>"...having the scientific understanding to be able to or knowledge to be able to explain some of those other things, if you don't understand the pharmacokinetics then how do you deal with understanding about different doses?"</i>

## Attitudes and values required of a pharmacist

<b>Attitude/Value</b>	<b>Participant Quote</b>
Ability to work with uncertainty	AS10: <i>“there has to be the ability to um work with uncertainty”</i>
Authoritative	AS14: <i>“So they need to authoritative. That’s probably the right word, not assertive”</i>
Beauchamp principles (autonomy, beneficence, non-maleficence and justice)	AS3: <i>“um they should abide by Beauchamp principles of healthcare ethics in terms of respect, autonomy, beneficence, non-maleficence and justice treating people who are equal the same not treating everybody the same because not everybody wants to be treated the same”</i>
Cheerfulness	AS6: <i>“They’ll have to be resilient and resourceful um they’ll have to be cheerful [laughs]”</i>
Resilience	
Resourcefulness	
‘Can-do’ attitude	AS11: <i>“I think it’s definitely a can do. And that is a big big attitude wise. Is definitely that needs to be the can do attitude.”</i>
Compassion	AS5: <i>“...compassion for patients...”</i>
Confidence	AS10: <i>“I think a degree of confidence in being able to articulate something and to be able to justify an approach gives much more of an opportunity then when you are in practice to say “yeah I’m gonna do this, um, and I’m going to bring together a few people who will help me do it”</i>
Diplomacy	AS10: <i>“to have diplomacy [pause] [coughs] and I think um, [pause] once again I think the ability to engage with people in a manner which allows conversations to take place at an appropriate level of understanding.”</i>
Empathy	AS11: <i>“I’m [pharmacists] going to be empathetic with you and understand where you’re coming from, your problems and be able to work with you to solve that.”</i>
Friendly	AS14: <i>“...they should be professional. Um, [pause] they should be professional, respectful, friendly, but not over friendly”</i>
Professionalism	
Respectful	
Honesty	AS6: <i>“I think they’ve got to be honest, umm [pause] with themselves and with others”</i>
Independence	AS2: <i>“So attitudes, I think personally is an independence, um responsibility for care of the patient and safety”</i>

Attitudes and values required of a pharmacist (contd)

Inquisitiveness	AS13: <i>"I think that's important as well so students have that inquiring mind I think. "</i>
Open mindedness	AS12: <i>"I think you need to be um, you need to be open minded. Um because it's an evolving discipline and there are obviously lots of evolving elements to the medications that they are delivering that they need to be open minded towards"</i>
Patient centredness	AS12: <i>"so again coming back to that kind of patient centred, [inaudible] I think a lot of things stem from being patient orientated rather than business orientated"</i>
Sense of professional belonging	AS4: <i>"I mean I think that this sense of professional identity um is er really important, I mean students should have it"</i>

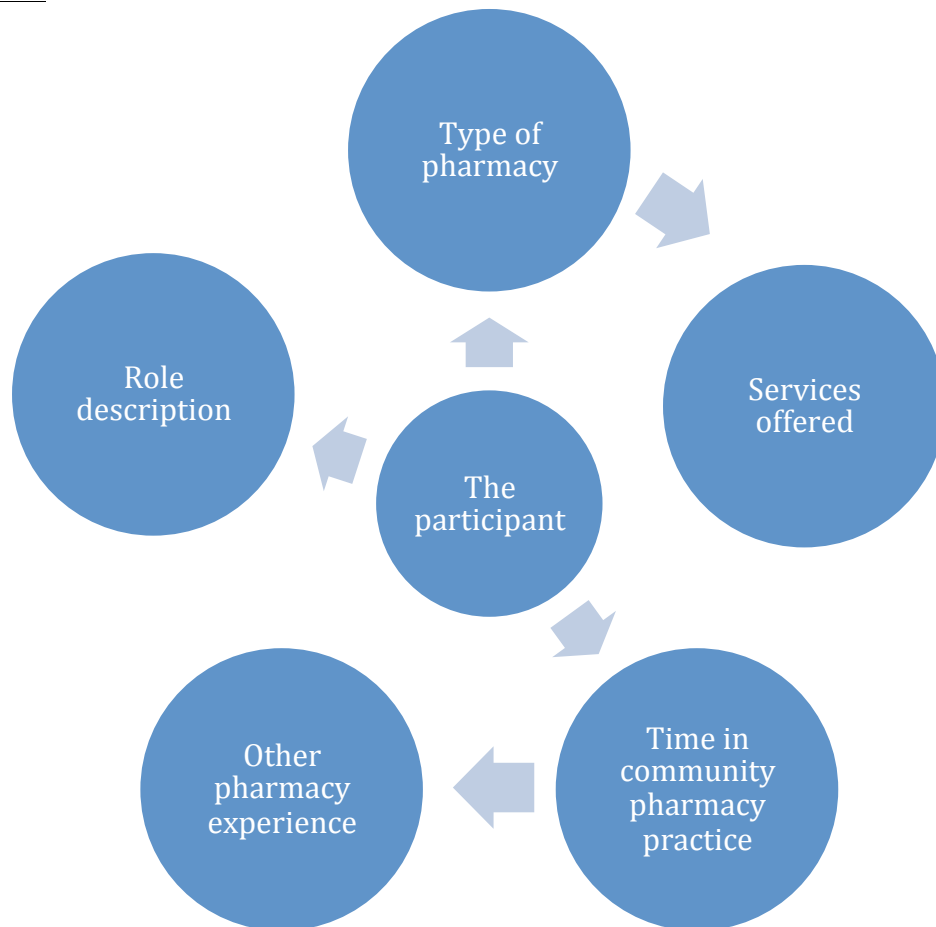
## Appendix 2

### Appendix 2.1- Topic Guide

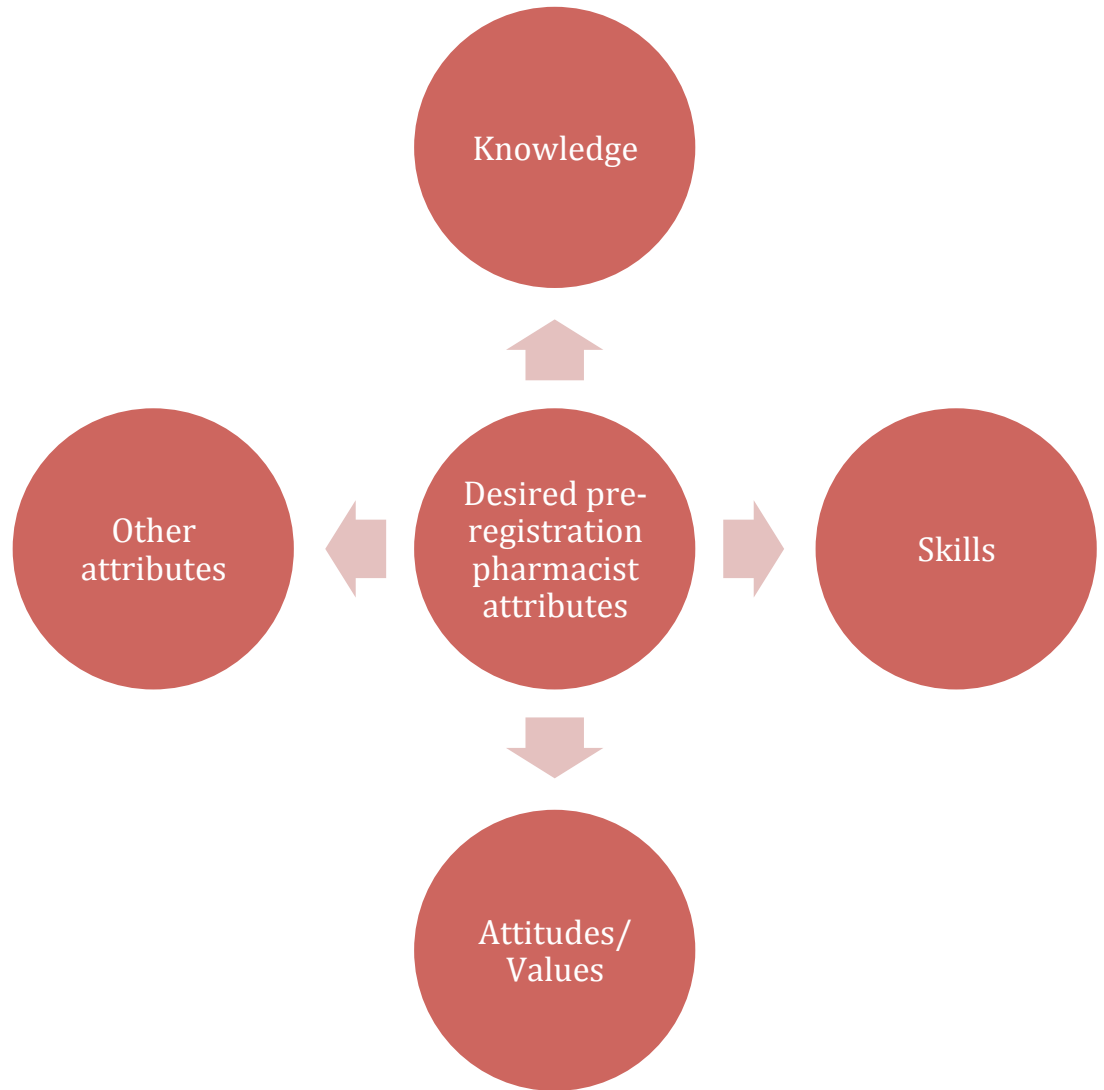
How can schools of pharmacy better prepare graduates for practice?  
Community pharmacists' perspectives.

#### Topic Guide

#### Section 1

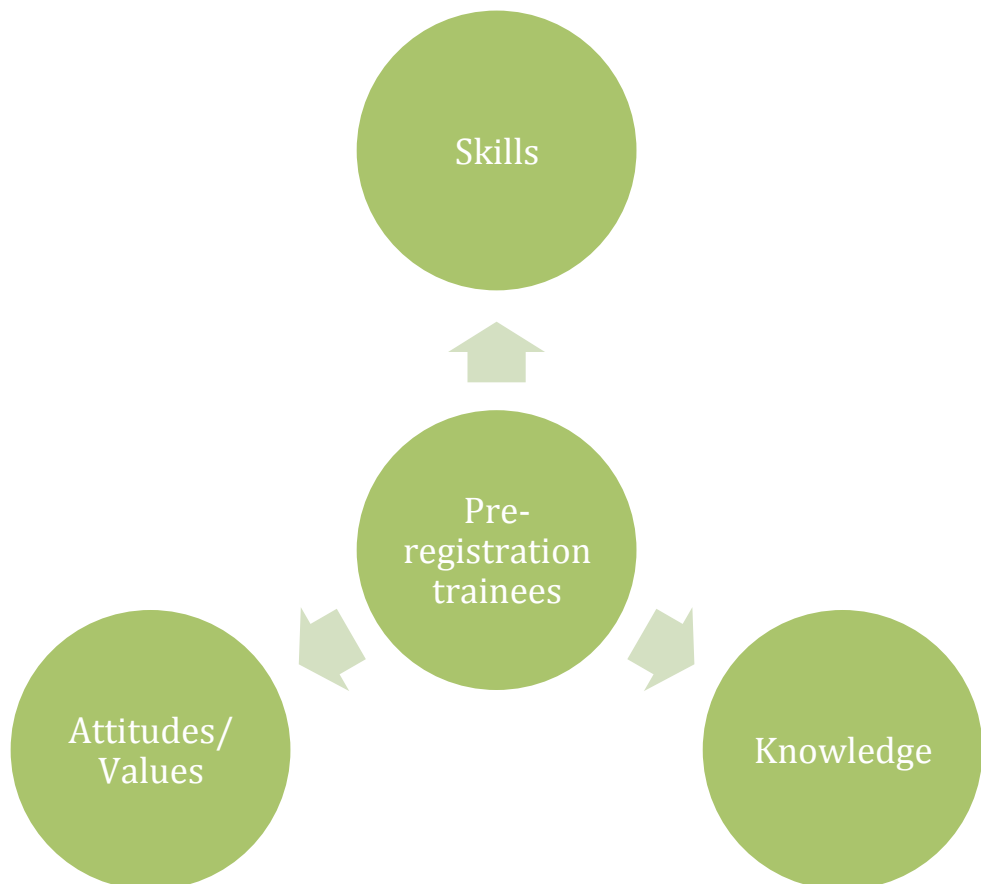


Section 2



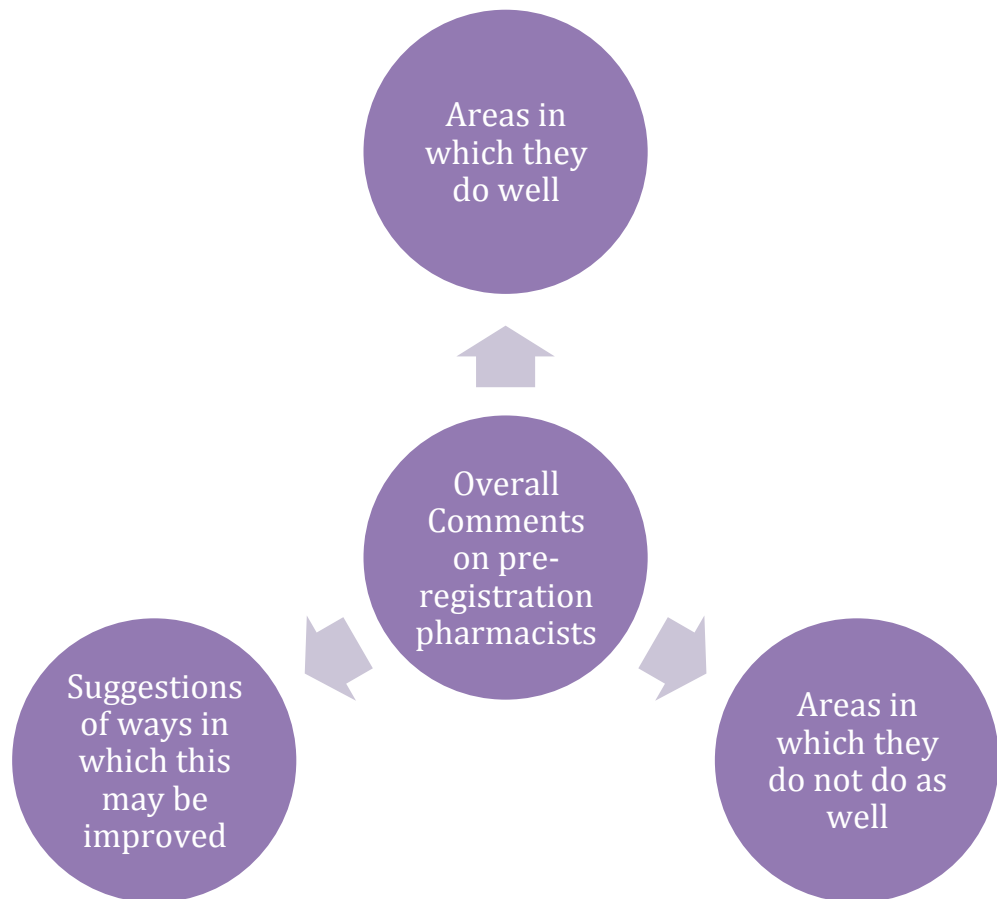
### Section 3

Thinking about the pre-registration students whom you have worked with, please can you tell me about their...



- Which school of pharmacy did the individual/s attend?
- Is this true for all pre-registration pharmacists whom you've worked with?

## Section 4



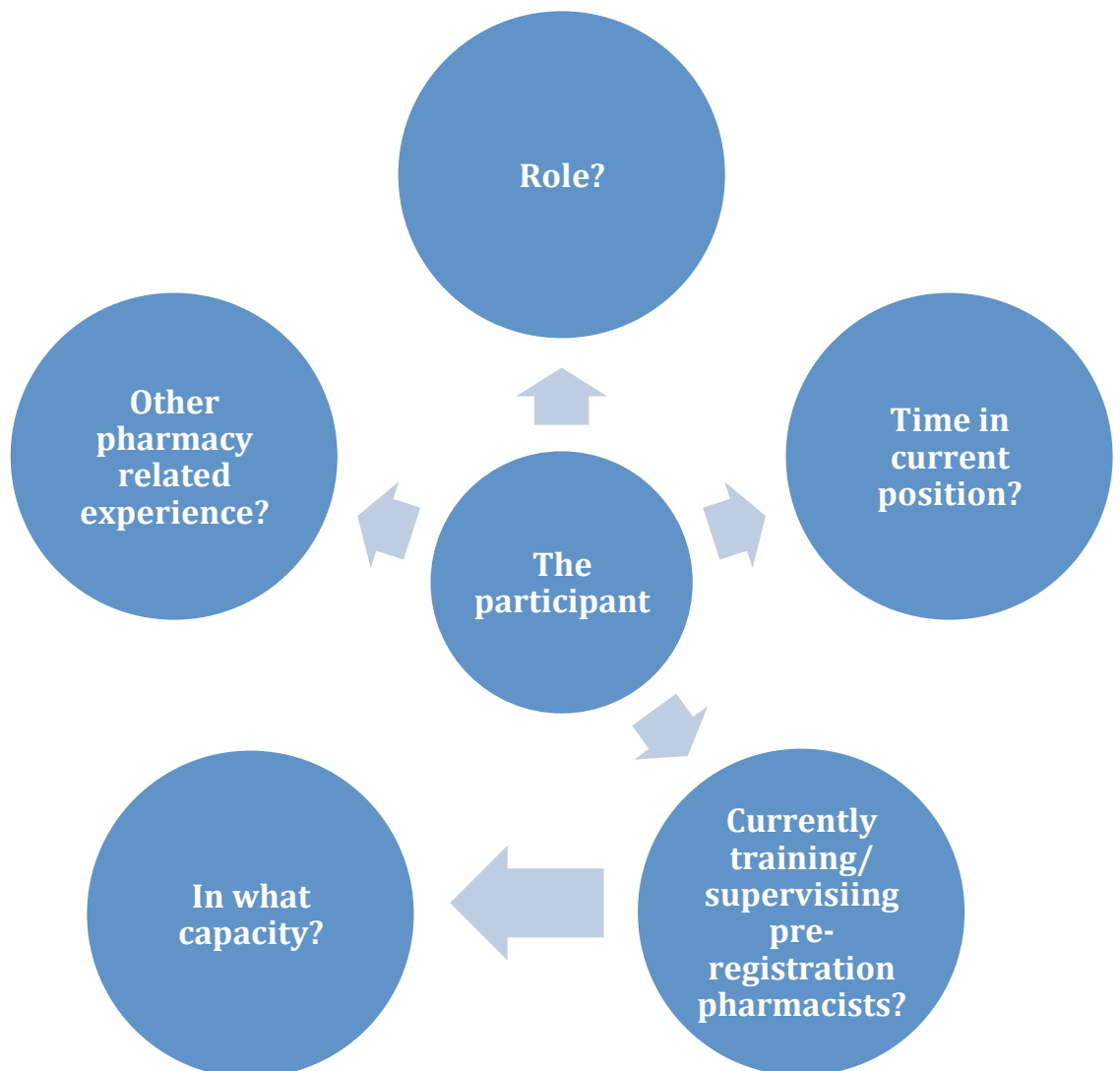
- Could you tell me a bit more about this?
- Why do you think that is?
- What school of pharmacy did the individual/s attend?

How can schools of pharmacy best prepare their graduates for the pre-registration year? The public sector perspective.

Topic Guide

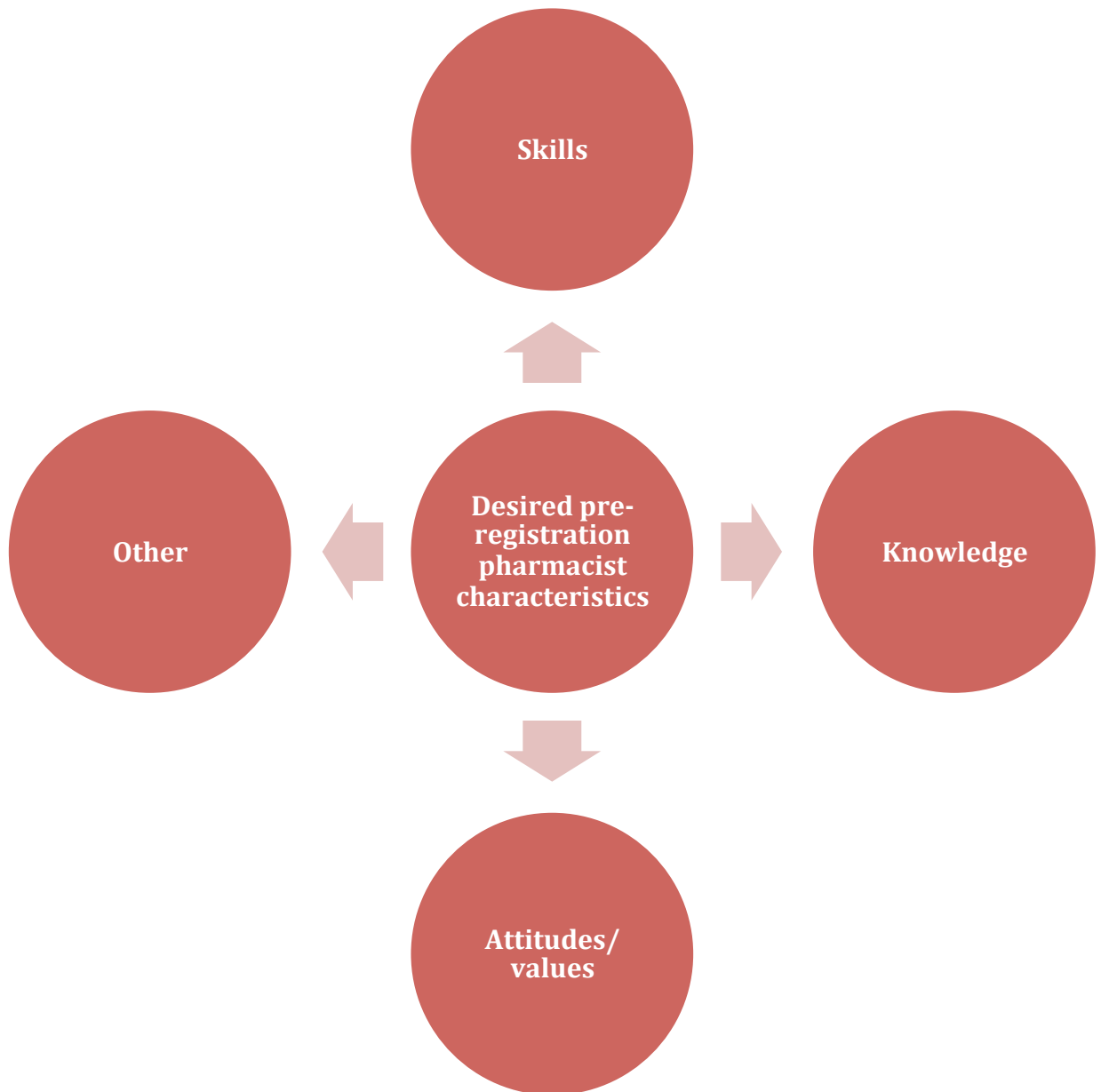
(If more than one individual is to be interviewed at a time give a reminder to respect anonymity in their response to questions)

Section 1



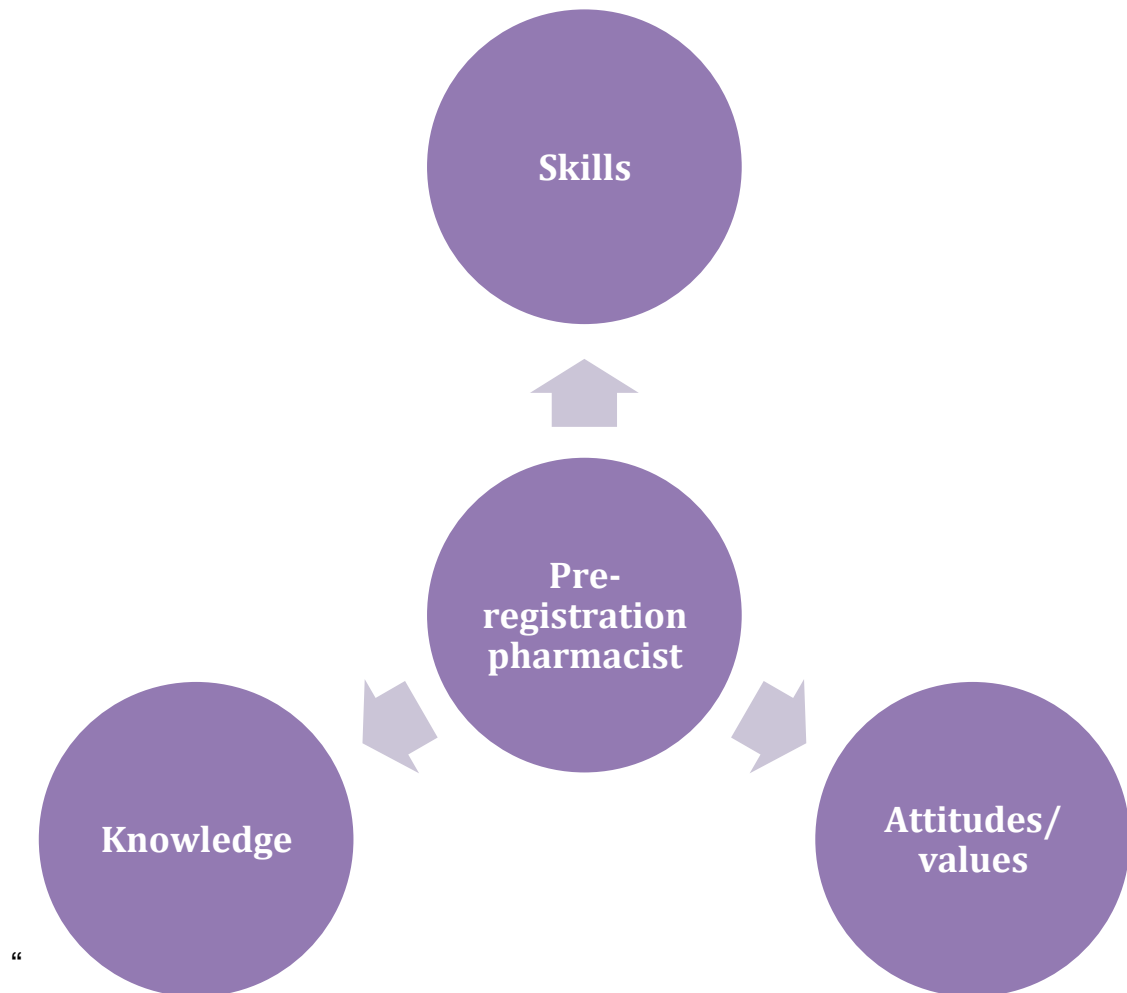


Section 2



### Section 3

“Thinking about the pre-registration pharmacists you have recently/are currently supervising. Tell me about their...”

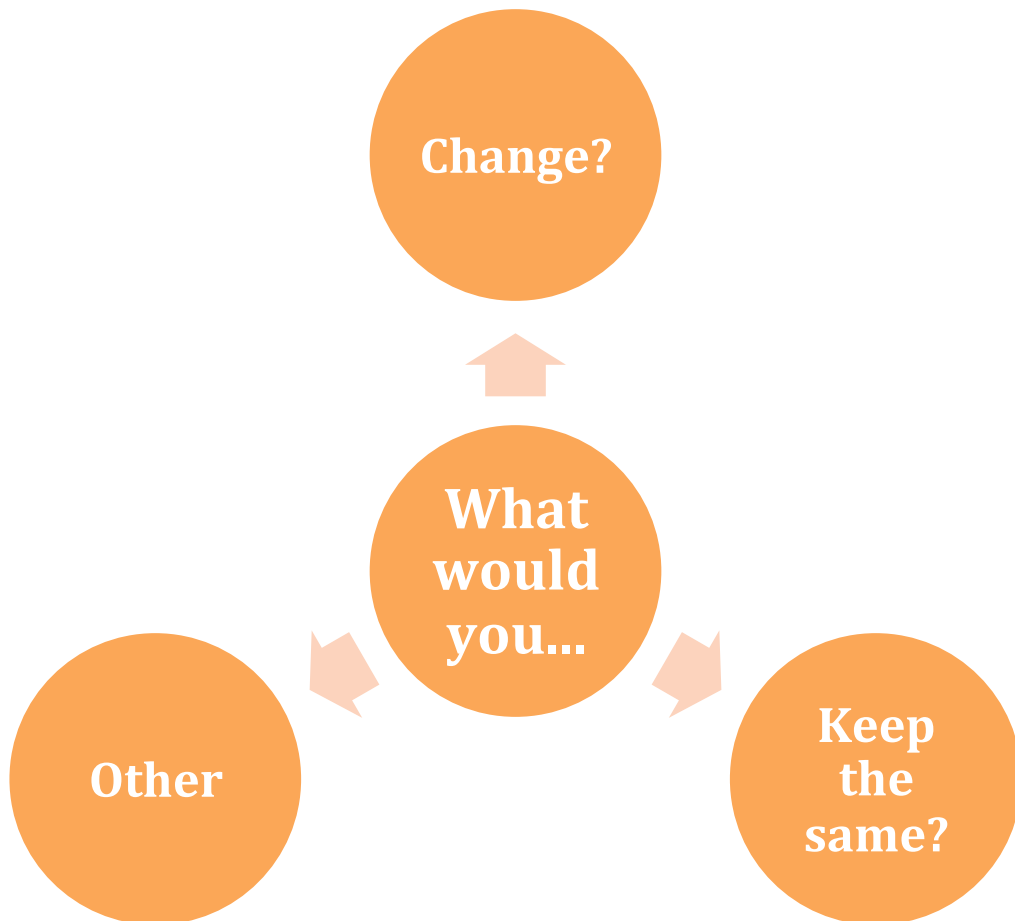


### Probe

Can you attribute this to anything in particular? (Individual personality/ school of pharmacy/ other experience etc)  
How did this change?

Section 4

If you were in control of the MPharm programme...



Closure and Thanks

## **Appendix 2.2- Facebook Advertisement Post**

How can schools of pharmacy better prepare graduates for practice?

Community pharmacists' perspectives.

### Facebook Advertisement

To be posted on the CSPPS past students' Facebook page.

Hello graduates of the Cardiff School of Pharmacy,

Are you a community pharmacist?

Are you currently/have you recently been involved in the training and supervision of pre-registration pharmacists?

If the answer is "yes" then you may be interested in taking part in a research project. The main aim of the research is to establish the views of community pharmacists who train and supervise pre-registration pharmacists on the ways in which pharmacy graduates may be better prepared for practice. Your assistance would be required for one interview (lasting approximately 20 minutes) at a mutually convenient time and location. For further information please e-mail Beth Copp via the e-mail address provided below (this does not commit you to taking part in the research).

Many thanks  
Beth Copp  
[coppbn@cf.ac.uk](mailto:coppbn@cf.ac.uk)

## **Appendix 2.3- Advertisement Flyer**

How can schools of pharmacy best prepare their graduates for the pre-registration year? The public sector perspective.

Recruitment flyer to be posted to Twitter, used at Local Practice Forum events and displayed in hospital pharmacy staff rooms.

(A post with similar wording may be posted on the researchers Facebook page, posted to the Welsh School of Pharmacy Past Students Facebook page or circulated via RPS mailing lists to aid recruitment)

## **Are you currently/have you recently been involved in the training and supervision of pre-registration pharmacists in the public sector?**

**If so, you may be interested in taking part in a study, as part of PhD research.**

**My name is Beth Copp and I am currently carrying out research into the ways in which pharmacy graduates may be best prepared for their pre-registration year.**

**Your unique perspective and views are highly valued and hence your participation would be greatly appreciated. I am seeking individuals who would be able to give up approximately 20-30 minutes of their time to be interviewed at a convenient time and location. Interviews may be one to one or if you prefer more than one person may be interviewed at a time.**

**If you would like any further information please feel free to contact me via e-mail ([coppbn@cf.ac.uk](mailto:coppbn@cf.ac.uk)). This does not commit you to taking part.**

## **Appendix 2.4- Recruitment e-mail**

How can schools of pharmacy better prepare graduates for practice?

Community pharmacists' perspectives.

Recruitment e-mail to pre-registration recruiters

Dear [ ],

As a recruiter of pre-registration pharmacists I am writing to let you know about a research project I am carrying out as part of my PhD. The main aim of this research is to establish the views of community pharmacists who train and supervise pre-registration pharmacists on the ways in which graduates may be better prepared for practice. Their unique perspective and views are highly valued. I would appreciate if you would be able to identify pharmacists who are currently/have recently been involved in the training and supervision of pre-registration pharmacists within your company and forward them the e-mail below. If you require any further information please contact me via the e-mail address provided.

Best wishes

Beth Copp

PhD researcher

Cardiff School of Pharmacy and Pharmaceutical Sciences

[coppbn@cf.ac.uk](mailto:coppbn@cf.ac.uk)

Recruitment e-mail to be forwarded by pre-registration recruiters

Dear pharmacist,

As an individual who is currently/has recently been involved in the training and supervision of pre-registration pharmacists I am writing to let you know about a research project I am carrying out as part of my PhD. The main aim of this research is to establish the views of community pharmacists who train and supervise pre-registration pharmacists on the ways in which graduates may be better prepared for practice. Your unique perspective and views are highly valued and hence your participation would be greatly appreciated.

The research will be a qualitative project in the form of one to one semi-structured interviews at a mutually convenient time and place. Interviews should take approximately 20 minutes. Please be assured that all data collected will be anonymised and stored securely.

For further information on the study please see the attached participant information sheet and consent form. If you would like to take part please e-mail Beth Copp (details below). Feel free to contact me with any additional questions you may have, please note this does not commit you to participating.

Best wishes,

Beth Copp

PhD Researcher

Cardiff School of Pharmacy and Pharmaceutical Sciences

[coppbn@cf.ac.uk](mailto:coppbn@cf.ac.uk)

How can schools of pharmacy best prepare their graduates for the pre-registration year? The public sector perspective.

Recruitment e-mail

Dear.....

I am writing to let you know about a study I am conducting as part of my PhD. The main aim of this research is to establish the views of individuals who are currently/have recently been involved in the training and supervision of pre-registration pharmacists in the public sector on the ways in which pharmacy graduates may be best prepared for their pre-registration year. Your unique perspective and views are highly valued and hence your participation would be greatly appreciated.

The research will be a qualitative project in the form of semi-structured interviews. Participants may choose to be interviewed one-to-one or if you prefer more than one person may be interviewed at the same time. Interviews should take approximately 20-30 minutes and can take place at a convenient time and location. Please be assured that all data collected will be anonymised and stored securely.

For further information please see the attached information leaflet and consent form. If you would like to take part please e-mail me directly ([coppbn@cf.ac.uk](mailto:coppbn@cf.ac.uk)). Feel free to contact me with any additional questions you may have. Please note this does not commit you to participating.

Best wishes,  
Beth Copp  
PhD Researcher  
Cardiff School of Pharmacy and Pharmaceutical Sciences

## **Appendix 2.5- Participant Information Sheet**

How can schools of pharmacy better prepare graduates for practice?

Community pharmacists' perspectives.

### **Participant Information Sheet**

As a community pharmacist who is/has recently been involved in the training and supervision of pre-registration pharmacists, you are invited to take part in a research project. Please read the following information before you decide whether or not to take part in the study.

#### **What is the purpose of the study?**

The purpose of this study is to identify possible ways in which schools of pharmacy may better prepare graduates for practice. This includes their pre-registration year and early years as a pharmacist.

#### **Who are the researchers?**

The interviews will be conducted by a second year PhD student (Beth Copp) under the supervision of Professor Dai John, Dr Louise Hughes and Dr Sion Coulman. This study has been approved by the Cardiff School of Pharmacy and Pharmaceutical Sciences Research Ethics Committee.

#### **How will the research take place?**

If you consent, one to one semi-structured interviews will be conducted at a mutually convenient time and location. Interviews will be audio recorded and transcribed verbatim with all quotes anonymised.

#### **How long will the interviews take?**

Your assistance will be required for one interview lasting approximately 20 minutes, however you may be contacted by the researcher for clarification of points.

#### **What are the potential benefits?**

There are no specific benefits to you but the results of this study will be collated to provide insight into community pharmacist perceptions of pharmacy education. This may highlight areas of the course at Cardiff that may be improved for future undergraduate cohorts.

#### **What about anonymity and confidentiality?**

Confidentiality will be maintained within the research team at every stage of the research process. All reports will be anonymised (i.e. no personal identifiers will be published.) Audio recordings and documents containing identifiable information will be kept securely at the Cardiff School of Pharmacy and Pharmaceutical Sciences for a period of no longer than one year after the study has ended.

#### **How will the information collected be disseminated?**

In addition to submission of a PhD thesis, the information may be used internally and externally for example as part of reports, presentations or other outputs (please note that all quotes used in research outputs will be anonymised.)

#### **Do I have to take part?**

You do not have to take part. Participation in this study is entirely optional. In addition you may withdraw at any time without giving a reason (data obtained



prior to withdrawal with not be included in the study). You do not have to answer all of the questions.

### **Who can I contact for more information?**

For more information please contact Beth (coppbn@cf.ac.uk). If further information is required the project supervisors are Professor Dai John (johndn@cf.ac.uk), Dr Louise Hughes and Dr Sion Coulman. Please note that contacting the investigator does not commit you to participating.

## **How can schools of pharmacy best prepare their graduates for the pre-registration year? The public sector perspective.**

### **Participant Information Sheet**

As an individual who is currently/has recently been involved in the training and supervision of pre-registration pharmacists, you are invited to take part in a research project. Please read the following information before you decide whether or not to take part in the study.

### **What is the purpose of the study?**

The purpose of this study is to identify possible ways in which schools of pharmacy may best prepare graduates for practice. This includes their pre-registration year and early years as a pharmacist.

### **Who are the researchers?**

The interviews will be conducted by a second year PhD student (Beth Copp) under the supervision of Professor Dai John, Dr Louise Hughes and Dr Sion Coulman. This study has been approved by the Cardiff School of Pharmacy and Pharmaceutical Sciences Research Ethics Committee.

### **How will the research take place?**

If you consent, one to one semi-structured interviews will be conducted at a mutually convenient time and location. Where convenient and if you prefer more than one person may be interviewed at the same time. Interviews will be audio recorded and transcribed verbatim with all quotes anonymised.

### **How long will the interviews take?**

Your assistance will be required for one interview lasting approximately 20-30 minutes, however you may be contacted by the researcher for clarification of points.

### **What are the potential benefits?**

There are no specific benefits to you but the results of this study will be collated to provide insight into public sector employee perceptions on pharmacy education. This may highlight areas for improvement in undergraduate degree schemes, including the Cardiff University MPharm programme.

### **What about anonymity and confidentiality?**

Confidentiality will be maintained within the research team at every stage of the research process. All reports will be anonymised (i.e. no personal identifiers will be published.) Audio recordings and documents containing identifiable information will be kept securely at the Cardiff School of Pharmacy and Pharmaceutical Sciences for a period of three years (or twelve months after publication of the last research

output, whichever is longer). Please note that participants involved in group interviews (>2 people) must keep information shared confidential.

**How will the information collected be disseminated?**

In addition to submission of a PhD thesis, the information may be used internally and externally for example as part of reports, presentations or other outputs (please note that all quotes used in research outputs will be anonymised.)

**Do I have to take part?**

You do not have to take part. Participation in this study is entirely optional. In addition you may withdraw at any time without giving a reason (data obtained prior to withdrawal will not be included in the study). You do not have to answer all of the questions.

**Who can I contact for more information?**

For more information please contact Beth (coppbn@cf.ac.uk). If further information is required the project supervisors are Professor Dai John, Dr Louise Hughes and Dr Sion Coulman. Please note that contacting the investigator does not commit you to participating.

**What happens if there is a problem?**

If you have a concern about any aspect of the study, you should ask to speak with Professor Dai John (johndn@cf.ac.uk) who will do their best to answer your questions. If you remain unhappy and wish to complain formally, you can do this through the Cardiff University Complaints Procedure. Details can be obtained from the University Governance and Complaints Division, Cardiff University, 4<sup>th</sup> Floor, McKenzie House, 30-36 Newport Road, Cardiff CF24 0DE.

## Appendix 2.6- Consent Form

How can schools of pharmacy better prepare graduates for practice?

Community pharmacists' perspectives.

### Consent Form

Please read the following statements and initial the boxes if you agree to give your consent.

1. I confirm that I have read and understood the participant information sheet
2. I confirm that I have had the opportunity to ask questions and that these have been answered satisfactorily.
3. I consent to take part in this study and understand that I can withdraw at any time (data obtained prior to withdrawal will not be included in the study).
4. I give consent for my interview to be audio recorded
5. I give consent for anonymised verbatim quotes to be used in reports
6. I agree to be contacted by the researcher for example if clarification of points is needed

### Participant Information

Name:

Date:

Signature:

### Researcher Information

Name:

Date:

Signature:

How can schools of pharmacy best prepare their graduates for the pre-registration year? The public sector perspective.

Consent Form

Please read the following statements and initial the boxes if you agree to give your consent.

1. I confirm that I have read and understood the participant information sheet
2. I confirm that I have had the opportunity to ask questions and that these have been answered satisfactorily
3. I consent to take part in this study and understand that I can withdraw at any time (data obtained prior to withdrawal will not be included in the study).
4. I give consent for my interview to be audio recorded
5. I give consent for anonymised verbatim quotes to be used in reports
6. I agree to be contacted by the researcher for example if clarification of points is needed
7. I agree to keep information discussed during group interviews confidential

Participant Information

Name:

Date:

Signature:

Researcher Information

Name:

Date:

Signature:

## Appendix 2.7- Tables of knowledge, skills, attitudes and values required of a pre-registration pharmacist

### Skills required of a pre-registration pharmacist

<b>Skill</b>	<b>Participant quote</b>
Ability to apply knowledge	HP9: "...somebody who has foundation knowledge um who is able to then take that foundation knowledge then apply it in practical context um something that trainees struggle with..."
Ability to assimilate knowledge from different areas	CP11: "So all of a sudden you've gone from cardiovascular to endocrinology and you join the two together because they're taking one particular tablet that's got an iodine base in it that can upset your thyroid disorder. That's something I think that they're not really picking up on."
Ability to deal with conflict	CP9: "I guess those are things that are most lacking I would say if there is, sort of, a conflict or some difficulty the ones I've seen have not really got involved."
Ability to find information	CP12: "I don't expect people to know everything, but I expect people to know where to go and find that information and look it up."
Ability to perform calculations	CP2: "um skills again I'm going to tie it in with knowledge things like the calculations etc"
Ability to prioritise learning	HP4: "...being able to manage their time and prioritise; particularly when they first come in..."
Ability to utilise feedback	CP1: "...take on board criticism both positive and negative. If criticism is the right word for positive [laughs] you know what I mean..."
Ability to work under pressure	HP11: "...not everyone copes with the work life and the pressure that's put on the pre-reg's now with all the assessments they have to do during the course of a year, and having that working towards that one final exam, not everyone copes with that pressure as well"
Adaptability	HP8: "we want to see somebody...that they know how to adapt to their workplace..."
Attention to detail	HP10: "...in terms of what I'd like to see in a pre-reg in terms of skills I suppose one of the things would be accuracy and attention to detail"

Skills required of a pre-registration pharmacist (contd)

Clinical checking	HP2: <i>"I hope that they could carry out a basic clinical check of a drug, you know understand that you need to check the specific appropriateness for each patient in terms of things like, I don't know, renal function, interactions, side effects..."</i>
Communication	CP14: <i>"...in community they need to be able to communicate well. We've had about two now who... their English was fine, but sometimes their communication wasn't maybe the best that it could be"</i>
Decision making	CP4: <i>"...they find it really hard to be decision makers and it takes them a long time to develop that when really, and in particular in light of what is happening with the registration assessment, they need to be those decision makers from day 1 of their pre-reg."</i>
Dispensing	CP2: <i>"...I think you'd be a little bit annoyed if somebody I mean totally void of communication skills, dispensing skills um and frankly didn't have a clue..."</i>
English language proficiency	CP1: <i>"I've had a few along the way where English hasn't necessarily been their first language and sometimes there have been issues with misunderstandings and so on..."</i>
Fit into new team	CP7: <i>"...it's an exception that someone doesn't take to it. Doesn't fit in. generally, I mean, all the staff that I've worked with have been absolutely fine."</i>
Independent learning	CP8: <i>" So you have to think independently on what you need to prioritise and what needs completed within a certain timeframe. You set your goals rather than the goal has been set for you".</i>
IT skills	HP1: <i>"...skills you take for granted actually that they would have up-to-date sort of IT skills..."</i>
Listening	CP3: <i>"...generally they are very much- ok I need to ask questions. Um and get the answers back and tell somebody what to do. And actually they need more to listen to the patients point of view, opinions and take them into consideration."</i>
Management and leadership	CP10: <i>"I'd also say they need from day one...and I suppose it's the pre-reg you're coming through to then you're going to having be leading a team and I don't think there's particularly much understanding coming out and what that would entail really"</i>

Skills required of a pre-registration pharmacist (contd)

Motivating skills	CP9: <i>"I guess there's other ones like negotiating and motivating and stuff. So I think what I've seen is they do the best they can but they've never had any, well as far as I know, haven't had any formal training detail"</i>
Negotiating skills	
Problem solving	HP2: <i>"Problem solving would be another big desirable characteristic for me. I think it would be relevant across all fields but from the point of view of a hospital pharmacy I think it's integral to everything they do"</i>
Recognise own limitations	HP2: <i>"I think also knowledge of their limitations is very important. Perhaps you don't know what you don't know but you can spot the difference between a pre-reg who perhaps registers that I feel that there's something I need to check here versus the ones who maybe don't 100% know the answer to something, but they think they can have a go or guess and they think that that is okay"</i>
Reflection	HP2: <i>"I've spoken a little bit about perhaps having insight into the things they do and maybe being a reflective sort of practitioner in terms of being able to recognise when you make a mistake and doing something about it so that you don't make that same mistake again"</i>
Retail skills	CP6: <i>"...I don't expect them to know exactly what to do, but to be able to answer the phone. So you know they need the rudiments of being able to work [laughs] in a shop"</i>
Teamwork	CP7: <i>"You have to go in there and show that you are a team player as well."</i>
Time management	CP10: <i>"Well probably they need to be able to manage their time and it's probably very much multi-task"</i>

## Knowledge required of a pre-registration pharmacist

<b>Knowledge</b>	<b>Participant Quote</b>
Basic medication details	HP8: "...I would say with knowledge base that they have a good understanding of how the drugs work um what to look out for sort of drug interactions, doses, that type of thing so I would probably call that clinical therapeutic knowledge. A basic foundation of that"
Blood testing and levels	CP11: "I don't think they're taught a lot of this stuff. You know, ACE inhibitors, angiotensin II blockers. If you start talking about renal function, what might throw potassium levels off?...what blood tests do you need?"
Business awareness	CP3: "...they have to have very sort of like um patient focus but also be, have some business awareness as well."
Business pressures	CP3: "...and understanding their role within pharmacy and the other pressures within pharmacy... understanding the pressures of the business will always have an impact on what happens in the pharmacy I suppose"
Clinical knowledge	CP14: "Their clinical knowledge well, yes, they do need to know... frankly my clinical knowledge is probably not as good as their clinical knowledge..."
Drug charts and other documentation	HP3: "I would expect in hospital to have some understanding of the hospital paperwork, drug charts and how it differs from community..."
Ethics	HP6: "... I don't know whether we do enough on general ethics..."
Health beliefs	HP1: "What I've realised from being in practice more is it's really helpful if some health beliefs and some issues around psychology have been covered at undergraduate level"
Knowledge of what pre-reg year entails	HP6: "I would expect them to have an understanding of what the pre-reg year entails. The challenges that they'll face. To understand that it's not just about the exam"
Law	CP2: "Law again, something I would expect graduates to come out and you should really, I mean you could check knowledge but I would like to think that you wouldn't have to teach them anything about aspects of pharmacy law."
Learning styles	HP7: "I like to see their ability to know their strengths and their weaknesses and also what their preferred learning style is. Because I think that helps the tutor-student relationship get off on a good start"
Narrow therapeutic index drugs	CP7: "...every pre-reg should recognise narrow therapeutics and things like warfarin interaction and stuff like that"



Knowledge required of a pre-registration pharmacist (contd)

NHS structures	HP2: "...I think that it's quite important that they have a good understanding generally of the NHS and pharmacy health care provision"
Medicine safety	HP10: "It sort of goes back to being that safety-net. So how to make things safe is important. Knowledge of things like the never events. So which drugs can cause harm and how do you prevent that, I think as a pharmacist, what policies, what procedures are there. What's the legislation that surrounds medicine safety? How do you flag up concerns? What do you do if there's an error?"
OTC products	CP8: "...I think a good knowledge of OTC treatment. I think that's essential to be on par with the pharmacy technician"
Physiology	CP5: "what would I expect them to know? There's an element of they should understand the, you know about body systems"
Prescribing	HP10: "...in terms of knowledge, prescribing knowledge and how things are prescribed, that's important"
Role of others in the healthcare team	HP1: "I don't think they always recognise the value in talking, if there was a speech and language therapist there would think about, "Oh gosh, what about their swallow"...I think that possibly it might start on a social footing first, but then as they understand more each other's roles, I mean there's a lot in common about pharmacists and physios from a falls point of view... I don't think necessarily that the pre-reg are aware of that...I'd be interested to know how confident or not they are with junior doctors now"
Scientific underpinning	CP10: "Well I think they obviously have to have underpinning knowledge around the pharmacology and everything and all the science based around the actual medications"
Understanding of chosen sector	HP2: "Also I guess I would hope that they had a semi-decent understanding of the sector that they have signed up to work in"

## Attitudes and values required of a pre-registration pharmacist

Attitude/value	Participant Quote
Ability to show initiative	HP8: <i>"We want to see somebody who is ...going to be taking the initiative um that they're keen and willing to go right at the beginning"</i>
Approachability	HP11: <i>"Being approachable. Some people, being able to approach them if they've got a problem, because people do ask pre-reg's for advice."</i>
Autonomy	HP1: <i>"What else do they need that we haven't covered? Confidence and autonomy and a curiosity..."</i>
Curiosity	
Confidence	
Compassionate	HP1: <i>"I think what we've realised now more than ever is that compassionate side, isn't it, post Andrews and post Francis that you need to be motivated to want to help people..."</i>
Enthusiasm	CP6: <i>"I mean they've all got a degree. So academically it doesn't matter. What I need is ideally enthusiasm."</i>
Empathy	CP2: <i>"... empathy and the like is probably the biggest thing."</i>
Good work ethic	CP9: <i>"I would expect them to want to work hard. You know, be keen to improve, like to learn more about how they can do things better."</i>
Patient centredness	<b>BB: "what about their attitudes and values, what would you think makes a good pre-reg in that sense?"</b> CP8: <i>One that cares about the outcome for the patient. So doesn't just see a prescription you know, a list of medication..."</i>
Positive	HP2: <i>"I would want them to be really positive and sort of have a really positive perhaps outlook or give out a positive impression of their job and their role..."</i>
Proactive	HP7: <i>"We want to see somebody who is quite proactive when they start..."</i>
Professionalism	HP3: <i>"I'd like them I suppose to come into the workplace as a professional fro day one. I'd say that's somewhere far too, but they take a while to get over not being a student any more"</i>
Punctuality	CP2: <i>"Some of them are quite basic attitudes, you'd expect punctuality, commitment..."</i>
Relaxed	HP11: <i>"A relaxed attitude but not too laid back, but also when I say relaxed it's relaxed as in being easy to get on with."</i>

Attitudes and values required of a pre-registration pharmacist (contd)

Rounded	HP5: "...they're interested in sports or charity or something else outside of academia that means that they have amore rounded personality..."
Self-motivation	HP1: "...it's difficult being a tutor to somebody who needs motivation. So some sort of internal motivation to do well..."
Willingness to do all jobs in the running of a pharmacy	CP6: "They need to appreciate that when they're coming to their pre-reg they will be required... you know, you're not just going to be shadowing the pharmacist all the time. You will be doing the tasks and to a lesser or greater extent it does very much depend on the business you go into, but certainly if you go into a small independent pharmacy you're going to need to do everything. You're going to need to make the tea. You're going to need to be, you know, brush up"
Willingness to learn	CP13: "She was very very good but she was keen to learn. She was always out there talking to people, but that was also her personality. Being mature."

## Appendix 3

### Appendix 3.1- Example Diary Excerpts

#### Example research diary excerpts

##### Interview 1- 20/04/15

*Interview went really well. I am confident that the topic guide is working well and have no further modifications to make at this time. Participant suggested the names of lots of other potential interviewees (snowball sample) and is going to ask them if they are willing for him to pass me their e-mail addresses and away to go.*

*Really interesting interview lasting 27 minutes. Overwhelming issue that emerged is the high value students attribute to work experience external to university. Also the fact that practical pharmacy experience allows students to "draw a link" between what they are learning and where it applies in practice, when they get to pre-reg this helps them recall the information a lot more quickly and easily as they can relate it to a real life incident.*

*For future interviews add a note to the topic guide to remember to snowball sample. Participant also spoke about a lot of prior pharmacy experiences they had but make sure to probe about non-pharmacy related jobs too.*

##### Interview 2 – 24/04/15

*A few notes from today's interview. Went well, 30 mins duration, felt a lot shorter (for me and interviewee)- I guess because there were no real gaps where I had to drag things out or think about questions. It was just pretty free flowing. Felt a bit less structured now that i'm getting to grips with focussing on the participant's agenda and I don't feel like I need to cover **everything**.*

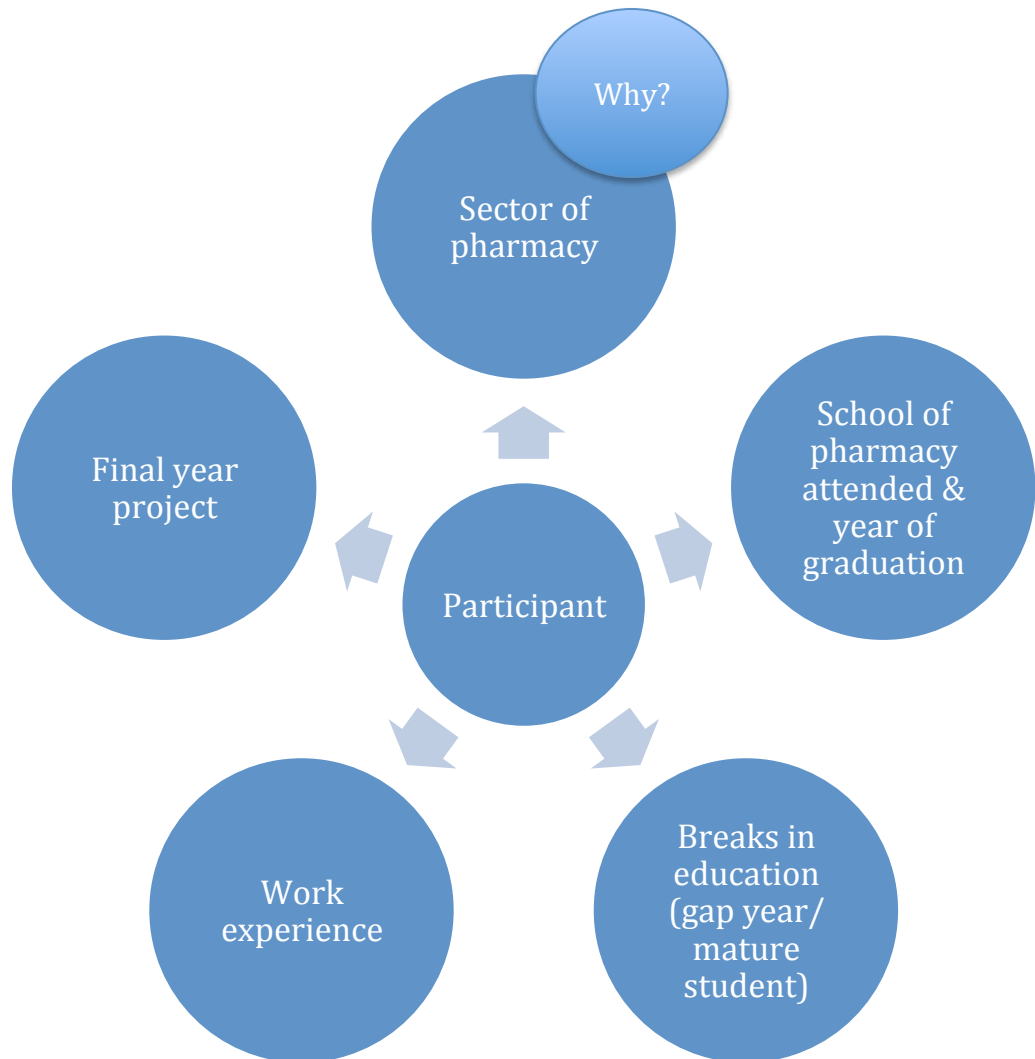
*Much of what other participant said was reiterated, though from a different viewpoint and with different examples. Fewer new emerging issues but some interesting points from listening to the audio:-*

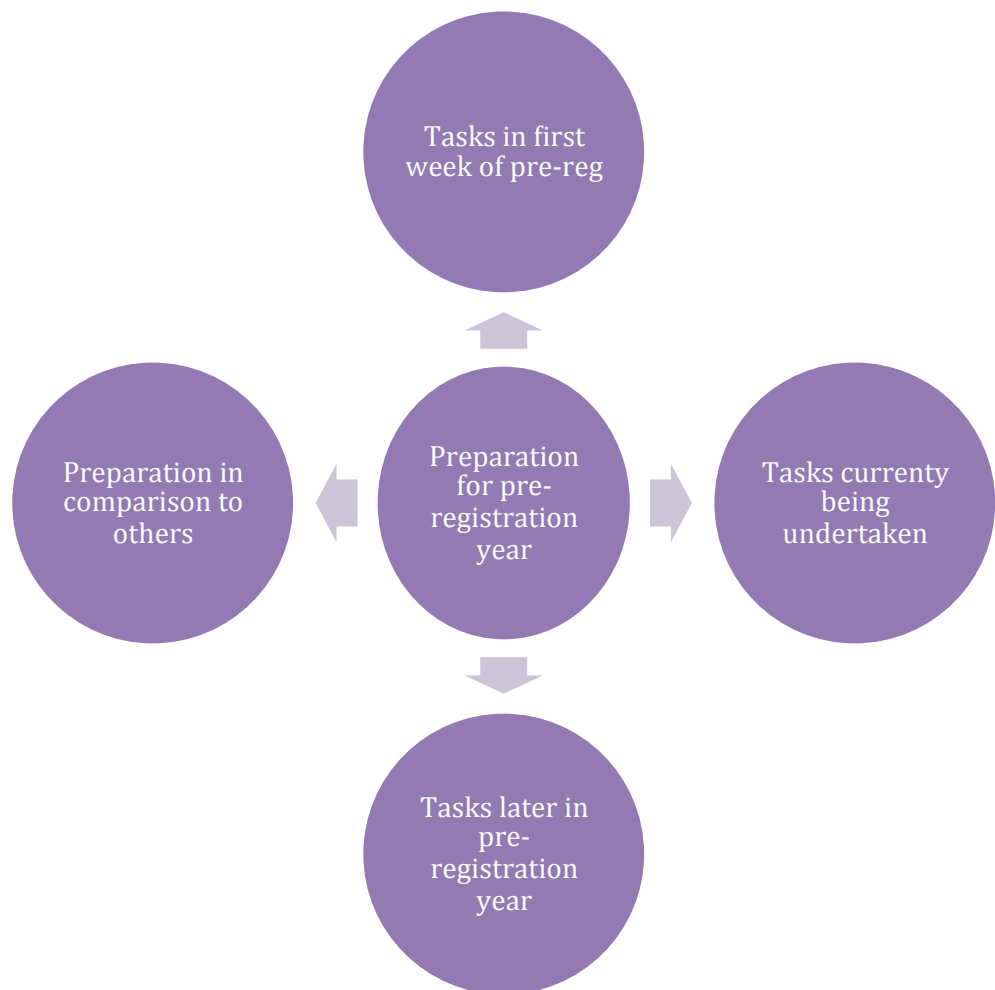
- Extensive pharmacy and non-pharmacy experience seems to have helped in preparedness
- Again didn't count "jobs" as work experience, had to be prompted for this info
- Participant felt frustrated at start of pre-reg as didn't feel like much use. Being competent in dispensing and ACT'ing when leaving uni would have helped fit into the team.
- Big range of drugs daunting, nervous of dispensing IV's, depot injections etc.
- Felt more comfortable at end of 3rd year than end of 4th. Knowledge "filed to the back of my memory" made them nervous to start pre-reg.
- Felt prepared for communication, felt able to involve patients in consultations which may not have been the case without the training uni provided.
- Communicating with HCP's would be an area for improvement- particularly nervous to speak to consultants (not so much junior doctors)
- Contact with real patients desired earlier
- Placement supervisors could have been better prepared to take uni students i.e. some didn't know students were coming and others hadn't read/didn't understand the placement manual.

## Appendix 3.2- Topic Guide

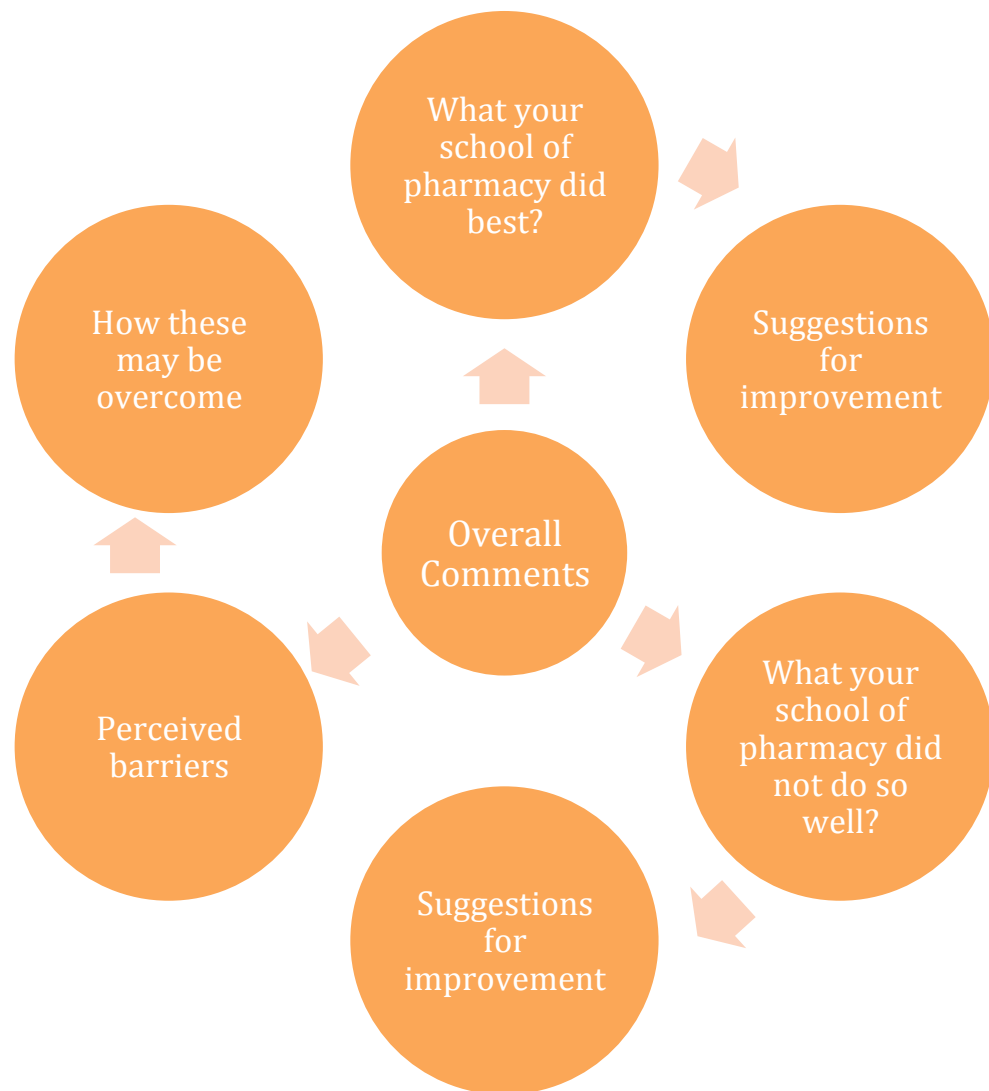
How can schools of pharmacy better prepare graduates for practice? A recent graduate perspective.

### Topic Guide





- How have you found this?
- How prepared did you feel for these tasks?
- Why do you think that is?
- What could have been done differently?
- What is most/least enjoyable?



### **Appendix 3.3- Recruitment e-mail**

How can schools of pharmacy better prepare graduates for practice? A recent graduate perspective.

#### Recruitment e-mail – Cardiff graduates

Dear recent pharmacy graduate,

I am writing to invite you to participate in a PhD research project. The main aim of this research is to establish the opinions of recent graduates surrounding the area of pharmacy education. In particular I believe that graduates have valuable views on the ways in which schools of pharmacy, including Cardiff, may better prepare students for their pre-registration year and the early years of their career. As such, your participation in this research would be greatly appreciated.

The research will be a qualitative project in the form of semi-structured, one to one interviews. Interviews will be conducted in the coming months at a mutually convenient time and location. Interviews should take approximately 20-30 minutes. Please be assured that all data generated will be anonymised and stored securely.

If you are interested in taking part in this project please send an e-mail to Beth Copp via the e-mail address provided below, detailing your area practice and current geographical location (in order for a suitable interview time and location to be arranged). Please note that this does not commit you to taking part.

For further information please see the attached participant information sheet and consent form. Feel free to contact me with any additional questions you may have.

Best wishes,

Beth Copp

PhD student in Pharmacy Practice  
Cardiff School of Pharmacy and Pharmaceutical Sciences  
[coppbn@cf.ac.uk](mailto:coppbn@cf.ac.uk)



How can schools of pharmacy better prepare graduates for practice? A recent graduate perspective.

Recruitment e-mail – Graduates from other schools of pharmacy (for invitation of individuals highlighted through snowball sampling)

Dear recent pharmacy graduate,

I am writing to invite you to participate in a PhD research project. The main aim of this research is to establish the opinions of recent graduates surrounding the area of pharmacy education. In particular I believe that graduates have valuable views on the ways in which schools of pharmacy, may better prepare students for their pre-registration year and the early years of their career. As such, your participation in this research would be greatly appreciated.

The research will be a qualitative project in the form of semi-structured, one to one interviews. Interviews will be conducted in the coming months at a mutually convenient time and location. Interviews should take approximately 20-30 minutes. Please be assured that all data generated will be anonymised and stored securely.

If you are interested in taking part in this project please send an e-mail to Beth Copp via the e-mail address provided below, detailing your area practice and current geographical location (in order for a suitable interview time and location to be arranged). Please note that this does not commit you to taking part.

For further information please see the attached participant information sheet and consent form. Feel free to contact me with any additional questions you may have.

Best wishes,

Beth Copp

PhD student in Pharmacy Practice  
Cardiff School of Pharmacy and Pharmaceutical Sciences  
[coppbn@cf.ac.uk](mailto:coppbn@cf.ac.uk)

### **Appendix 3.4- Facebook Advertisement Post**

How can schools of pharmacy better prepare graduates for practice? A recent graduate perspective.

#### Facebook post

Hello recent graduates of the Cardiff School of Pharmacy and Pharmaceutical Sciences

Are you currently undertaking/have you completed your pre-registration training in the past year? If the answer is “yes” then you may be interested in taking part in a research project as part of my PhD. The main aim of this research is to establish the opinions of recent graduates surrounding the area of pharmacy education. In particular I believe that graduates have valuable views on the ways in which schools of pharmacy may better prepare students for their pre-registration year and the early years of their career. As such, your participation in this research would be greatly appreciated.

If you would like more information please e-mail me – [coppbn@cf.ac.uk](mailto:coppbn@cf.ac.uk) detailing your current area of practice and location (please note this does not commit you to taking part in the study).

Many thanks  
Beth Copp

### **Appendix 3.5- Gatekeeper e-mail**

How can schools of pharmacy better prepare graduates for practice? A  
recent graduate perspective.

Gatekeeper e-mail

Dear recent pharmacy graduate,

I am writing to invite you to participate in a PhD research project. The main aim of this research is to establish the opinions of recent graduates surrounding the area of pharmacy education. In particular I believe that graduates have valuable views on the ways in which schools of pharmacy may better prepare students for their pre-registration year and the early years of their career. As such, your participation in this research would be greatly appreciated.

The research will be a qualitative project in the form of semi-structured, one to one interviews. Interviews will be conducted in the coming months at a mutually convenient time and location. Interviews should take approximately 20-30 minutes. Please be assured that all data generated will be anonymised and stored securely.

If you are interested in taking part in this project please send an e-mail to Beth Copp via the e-mail address provided below. Please note that this does not commit you to taking part.

For further information please see the attached participant information sheet and consent form. Feel free to contact me with any additional questions you may have.

Best wishes,

Beth Copp

PhD student in Pharmacy Practice  
Cardiff School of Pharmacy and Pharmaceutical Sciences  
[coppbn@cf.ac.uk](mailto:coppbn@cf.ac.uk)

## Appendix 3.6- Consent Form

How can schools of pharmacy better prepare graduates for practice? A recent graduate perspective.

### Consent Form

Please read the following statements and initial the boxes if you agree to give your consent.

7. I confirm that I have read and understood the participant information sheet.
8. I have had the opportunity to ask questions and have had these answered satisfactorily.
9. I consent to take part in this study and understand that I can withdraw at any time (data obtained prior to withdrawal will not be included in the study).
10. I give consent for my interview to be audio recorded
11. I give consent for anonymised verbatim quotes to be used in reports
12. I agree to be contacted by the researcher for example if clarification of points is needed

### Participant Information

Name:

Date:

Signature:

### Researcher Information

Name:

Date:

Signature:

## **Appendix 3.7- Participant Information Sheet**

How can schools of pharmacy better prepare graduates for practice? A recent graduate perspective.

### **Participant Information Sheet**

As a recent pharmacy graduate you are invited to take part in a research project. Please read the following information before you decide whether or not to take part in the study.

#### **What is the purpose of the study?**

The purpose of this study is to identify possible ways in which schools of pharmacy may better prepare graduates for practice. This includes their pre-registration year and early years as a pharmacist.

#### **Who are the researchers?**

The interviews will be conducted by a second year PhD student (Beth Copp) under the supervision of Professor Dai John, Dr Louise Hughes and Dr Sion Coulman. This study has been approved by the Cardiff School of Pharmacy and Pharmaceutical Sciences Research Ethics Committee.

#### **How will the research take place?**

If you consent, one to one semi-structured interviews will be conducted at a mutually convenient time and location. Interviews will be audio recorded and transcribed verbatim with all quotes anonymised.

#### **How long will the interviews take?**

Your assistance will only be required for one interview, which should take approximately 20-30 minutes.

#### **What are the potential benefits?**

There are no specific benefits to you but the results of this study will be collated to provide insight into graduate perceptions of pharmacy education. This may highlight areas of the course at Cardiff that may be improved for future undergraduate cohorts.

#### **What about anonymity and confidentiality?**

Confidentiality will be maintained within the research team at every stage of the research process. All reports will be anonymised (i.e. no personal identifiers will be published.) Audio recordings and documents containing identifiable information will be kept securely at the Cardiff School of Pharmacy and Pharmaceutical Sciences for a period of no longer than one year after the study has ended.

#### **How will the information collected be disseminated?**

In addition to submission of a PhD thesis, the information may be used internally and externally for example as part of reports, presentations or other outputs.

#### **Do I have to take part?**

You do not have to take part. Participation in this study is entirely optional. In addition you may withdraw at any time without giving a reason (data obtained prior to this will not be included in the study). You do not have to answer all of the questions.

#### **Who can I contact for more information?**

For more information please contact Beth via the contact details below. If further information is required the project supervisors are Professor Dai John, Dr Louise Hughes and Dr Sion Coulman. Please note that contacting the investigator does not commit you to participating.

Researcher: Bethan Copp ([coppbn@cf.ac.uk](mailto:coppbn@cf.ac.uk))

## Appendix 3.8- Tables of knowledge, skills, attitudes and values required of a pre-registration pharmacist

### Skills required of a pre-registration pharmacist

Skill	Participant quote
Ability to speak with patients	RG17: "...when you start to speak to real patients ...at the end of the day it's real life now. So exciting but nervous at the same time to make sure that you're doing it right".
Ability to perform calculations	<b>BB: Can you talk about anything in particular that you think that University prepared you well for in your pre-reg?</b> RG17: "So calculations. I'm sure a lot of people say that...you could see the difference between probably Cardiff students and other students".
Ability to make decisions	RG3: "I'm not worried about making a decision and going with it."
Time management	RG11: "...you get to after Christmas and you think oh crap I need to revise for a pre-reg exam, but then if you're trying to do competencies as well that's a bit of a bitch"
Ability to self-direct learning	RG10: "there's no syllabus or like a list where you can be like alright okay cool I know that...trying to revise that is difficult...I'm like okay I'll go and do this this and this. Next thing I go off on a tangent reading about antipsychotics for like two hours and... I haven't done all the other things..."
Ability to use the BNF	RG16: "So they [other pre-reg] weren't familiar with the new layout of the BNF 70 which came out, I think, over a year ago now...they got the new one and they have no idea what to do."
Ability to approach patient holistically	RG16: "...it's just become natural to me now. So I don't have to think about it too much, but it's just looking at it holistically".
Ability to utilise reference sources	RG16: "...we're using the MEP now...I think you need to come out of University knowing these reference sources and how they can help you..."
Ability to work under pressure	RG15: "...so the whole day it's just like constantly...customers are just constantly coming in. So it was kind of really busy and I had to get my head around it for the first two weeks"
Accuracy checking	RG15: "...accuracy checking...it's a little nerve wracking. I'm really nervous about that..."
People management	RG15: "I'm the new person here. I'm the student...you're not really used to delegating tasks and asking people to carry out certain tasks..."

Skills required of a pre-registration pharmacist (contd)

Dispensing	RG14: "...dispensing at the moment. We've got to do 200 items"
Ability to conduct medicine histories	RG14: "...we're doing medicine histories already...looking at the charts"
Ability to combine and synthesise different facets of knowledge	RG15: "...what we're doing now obviously is looking at everything. It's bringing all the different bits of pharmacology, chemistry and clinical all into one..."
Adaptability	RG2: "I've got over the change now of having to adapt how I learn from getting spoon fed to learning yourself"
Ability to apply knowledge to practice	RG14: "...we've got a whole year now where we're learning what we've actually been taught and put into practice..."
Keep abreast of changes	RG13: "...it's just a matter of familiarising myself with where things were. Like any major changes that had occurred..."
Ability to guide own pre-reg experience	RG13: "... it's a matter of pushing either your tutor or store manager to being quite firm that you are a pre-reg student saying that, I want to not just stick at one place and be able to rotate throughout the pharmacy to know what tasks are."
Use dispensary systems	RG15: "It's a different system but it's easier to learn because you know what's important. You know it's important to endorse prescriptions..."
Ability to speak with other healthcare professionals	<b>BB: "If you had actors being the doctor for you to practice with..."</b> RG12: "I probably wouldn't have been so nervous about talking to doctors for the first time"
Ability to learn from mistakes	RG11: "I think it really, like, hits me personally if I make an error...we do kind of record them pretty much all the time...it's an opportunity to learn"
Ability to conduct audit	RG11: "I've been doing audits and loss prevention and stuff..."
Clinically assess prescriptions	RG9: "...clinical screening that you should be doing when it comes through the door and things like that, and things of appropriateness..."
English language skills	RG9: "...lots of them [peers] struggled massively with the bump form being a student to full-time members of staff...lots of them English wasn't their first languages..."

Skills required of a pre-registration pharmacist (contd)

Deal with controlled drugs	RG9: "...they [peers] should be able to deal with CDs when they go into community really..."
Interpret drug charts	RG9: "...the skills that you need to do that job...reading drug charts"
Use professional judgment	RG9: "...there's an area of professional judgment that I think is not well taught..."
Fit into new team	RG8: "I had a lot of, like I said, it was a settling issue...that was a bit disheartening really...I just didn't really know where I sat within the team."
Deal with conflict	RG7: "I think dealing with conflict...I'd never been used to people being so rude to me. It just happens to be the area I work in"
Problem solve	RG7: "...it's just simple problems like I don't have my medicine...I just feel like I'm getting used to the problem solving"
Ability to identify own learning needs	RG2: "...you've identified your own learning needs, and I think that's more beneficial..."



## Knowledge required of a pre-registration pharmacist

Knowledge	Participant Quote
Polypharmacy	RG17: "...the amount of patients you're speaking to these days now about polypharmacy...it's such a buzz word at the minute."
Roles of others in the pharmacy team	RG17: "...actually know what other staff do...the amount of times in the dispensary there's one pharmacist doing the clinical check, but there's two ACTs that are doing all the checking and that. You don't know to begin with why they're doing it..."
Understanding of how GP surgeries work	RG16: "...it gives me a better perspective now when you're phoning GP surgeries every day chasing prescriptions it's really good then that you can actually think actually they're not going to be able to get that prescription signed until lunch time...I do understand what's going on their side."
Knowing when to refer	RG16: "I know you have to know when to refer, but you've also got to go with your gut instinct at some point..."
Knowledge of formulations and blood monitoring parameters	RG16: "...all the nebulas and the injections and things and the aseptics. All that sort of IV...and all the blood results. I think we don't do that in community enough"
Prescription pricing	RG15: "...I'd been given the task to count prescriptions in the morning and just separate them into the different groups and I didn't know anything about that during Uni. I only learnt that when I got to the pharmacy..."
How to meet competencies	RG14: "...I don't know what tasks I'm going to be able to do that's going to get them [competencies] signed off and things like that..."
Knowledge of medicines	RG3: "I just couldn't remember any of the classes of them or how they worked or anything like that. And I felt really embarrassed..."
Knowing the role of a pre-reg pharmacist	RG12: "I still don't really know what a pre-reg is supposed to do..."
Underpinning scientific knowledge	RG4: "...you've got the pharmacology and the science base behind what you want to recommend..."
Day to day running of a pharmacy	RG2: "...it's quite easy to pick up but I didn't understand fully what was going on in hospitals...I didn't know, about how the system works until I started pre-reg"

Knowledge of a pre-registration pharmacist (contd)

<p>“Fingertip” drug knowledge (e.g. doses)</p>	<p>RG2: “...it’s kind of learning doses I didn’t feel like I needed to learn the doses where I could just learn how it worked and that would get me through but then when you actually get there, no, you need to know those doses otherwise the patient’s life is at risk”</p>
<p>Law and ethics</p>	<p>RG1: “...there was a lot of things that the pharmacist would say oh now would you supply this, how would you do things, I would always try and think back [law teaching] to know whether I should be doing it or not”</p>
<p>Drug interactions</p>	<p>RG1: “...you need to be looking out for what ones kind of interact with what...”</p>
<p>Clinical significance of problems</p>	<p>RG1: “someone is on omeprazole 40mg and they are going to be started on warfarin, there is an interaction, but they are going to be started on warfarin the dose is going to be tapered to the INR so it’s not going to make a difference...”</p>

Attitudes and values required of a pre-registration pharmacist

<b>Attitude/value</b>	<b>Participant Quote</b>
Taking responsibility for own actions	RG7: <i>"I like the responsibility that comes with being a pre-reg...you're not a pharmacist. You're like a practice pharmacist..."</i>
Self-discipline	RG2: <i>"...you need to be quite disciplined and everything and I think that's really taught me how to make sure I'm getting the work done effectively..."</i>