

**DESIGN, IMPLEMENTATION AND EVALUATION OF A MODEL
FOR SERVICE-LEARNING IN PHARMACY (SLIP) AT A
TERTIARY HOSPITAL**



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DESIGN, IMPLEMENTATION AND EVALUATION OF A MODEL FOR SERVICE-
LEARNING IN PHARMACY (SLIP) AT A TERTIARY HOSPITAL

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A thesis submitted in partial fulfilment of the requirements for the degree of Magister
Pharmaceuticae in the School of Pharmacy, University of the Western Cape.



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Declaration

I, Mariam Bibi Parker, hereby declare that the Design, Implementation and Evaluation of a Model for Service-learning at a Tertiary hospital is my original work, that it has not been previously submitted to any other university for the purpose of obtaining a degree, and that all the sources I have used or quoted have been indicated and acknowledged as complete references.

Mariam Bibi Parker

Signed:.....

May 2009



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DEDICATION

To my mother and father for their sacrifices, patience, love and support.



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ACRONYMS

AACP	American Association for Colleges of Pharmacy
ACCP	American College of Clinical Pharmacy
ADR	Adverse Drug Reaction
APhA	American Pharmacist Association
ARV	Antiretroviral
CHC	Community Health Centre
CPD	Continuing Professional Development
CHESP	Community Higher Education Services Partnerships
EDL	Essential Drug List
GMP	Good Manufacturing Practice
GPP	Good Pharmacy Practice
HIV	Human Immunodeficiency Virus
NACDS	National Association of Chain Drug Stores
n.d.	No date
OSDE	Objective Structured Dispensing Exam
SAPC	South African Pharmacy Council
S-D	Semantic Differential
SL	Service-learning
SOP	Standard Operating Procedure
SPSS	Statistical Package for Social Science
SLIP	Service-learning In Pharmacy
SAMF	South African Medicines Formulary
UWC	University of the Western Cape
WHO	World Health Organization

ABSTRACT

Background

In recent years the focus of pharmacy practice has changed from being primarily 'drug-centred to' one which is 'patient-centred' (El-Awady et al., 2006, p.1). Developments in pharmacy curricula worldwide are reflecting this change. Pharmacy courses no longer concentrate primarily on theoretical content, but increasingly on the ability of students to apply their theoretical knowledge in practice.

The South African Pharmacy Council (SAPC) requires that pharmacy education and training in South Africa equips pharmacists for the roles they will take on in practice. In order to accomplish this, the SAPC has prescribed competency unit standards for entry level pharmacists which may serve as a guide for pharmacy educators. A significant challenge in pharmacy education is the application of theory in practice settings (Bucciarelli et al., 2007), which possibly affects the ability of entry-level pharmacists to meet the SAPC unit standard competencies. The dire shortage of pharmacists in public sector health settings further emphasizes the need for a level of competency of entry level pharmacists so that they may enter the workplace ready to serve the medicine related needs of society.

Service-learning is defined as experiential learning in which students engage in structured activities that address community needs and promote learning. The purpose of this study was to design, implement and evaluate a Service-learning in Pharmacy (SLIP) intervention which is intended to serve as a generic model which can be used in tertiary hospital pharmacies. The SLIP intervention aimed to promote student learning by providing opportunities for students to engage in structured activities, while simultaneously alleviating pharmacy workload.

Methods

The study was directed to UWC final year pharmacy students and pharmacists employed at a hospital pharmacy. Qualitative and quantitative research methods were used in

evaluating this pre- and post-intervention enquiry. Qualitative evaluation methods included pre- and post- focus group discussions with students to assess student knowledge and expectations of SLIP. Covert observation of pharmacists was used to assess current views and receptivity toward student activities during the SLIP course. Quantitative evaluation methods included pre- and post-intervention student competency assessments in areas of hospital pharmacy practice (compounding, dispensing and clinic/ward pharmacy), and pre- and post-intervention questionnaires which assessed pharmacists' views and receptivity toward SLIP.

Results

Students (n=16) and pharmacists (n=9) who were involved in the intervention comprised the study cohort.

Qualitative: Pre-intervention, students indicated a lack of confidence and apprehension toward SLIP. Pharmacy managers were anxious about lack of time and space and the additional burden of training students. Post- intervention, students experienced a sense of professionalism and could connect with varied theoretical knowledge. They were both enthusiastic about this style of learning (“saw the pharmacy profession with new eyes”) and realized the need for more skills development in clinical pharmacy. Pharmacists' receptivity to SLIP increased once student contribution to service delivery became evident.

Quantitative: Student competency in areas of hospital pharmacy practice increased as a result of their participation in the Tygerberg SLIP model. Students also made a valuable contribution to service delivery at Tygerberg hospital pharmacy. This was quantified as the total number of services in compounding (n= 807), dispensing (n=2090) and clinic/ward services (n= 37).

Conclusion

The SLIP intervention resulted in improved perceptions and receptivity of pharmacists to service learning initiatives. Students' level of competency increased in hospital pharmacy

practice and they contributed to service delivery at Tygerberg hospital pharmacy. Further studies are needed to evaluate the impact of the SLIP model on patient care and health outcomes.

Key Words

- Service-learning
- Undergraduate pharmacy curriculum
- Hospital pharmacy
- Integrated learning



CHAPTER 1

INTRODUCTION

Pharmacy as a profession is in a transitional state. Its focus is changing from merely the dispensing of medicines to that concerned with the safe, effective and appropriate use of medication and enhanced pharmacy services to patients. (Sharma, Dua, Singh Sara, Samad, & Yadav, 2008). This orientation toward patient-centeredness is known as pharmaceutical care (ASHP, 1993).

Reflection of this change can be seen in pharmacy curricula worldwide. Traditional pharmacy education characterized by 'didactic, subject-orientated and knowledge-based teaching' is developing to introduce more appropriate methods of learning and teaching (El-Awady, Moss, Mottram & O'Donnell, 2006, p.1). Pharmacy education is responsible for preparing students to enter into the practice of pharmacy and function with the values necessary to serve society as ethical, learning professionals. Pharmacy education should provide:

- General education in sciences and humanities.
- A foundation in biological, clinical, biomedical, chemical, and administrative and social sciences as well as ethical and legal issues pertaining to pharmacy practice.
- Skills development in communication and problem-solving in a variety of pharmacy practice settings and environments.
- Exposure to pharmacy practice settings, including community pharmacy, hospital pharmacy and pharmaceutical industry (Wertheimer, 1994, p.35s).

The transition of pharmacy practice emphasis toward the patient, coupled with inadequacies of pharmacy education to keep up with this transition has caused the average pharmacy student entering the workplace to seem somewhat 'under prepared' (Frieslaar, 2002, p.5). While schools of pharmacy have been able to effect curricular revision, they have not yet focused on optimizing the amalgamation of general and professional education to better prepare patient-centred pharmacists (ACCP, 2000). The

role of the South African Pharmacy Council (SAPC) includes the registration of pharmacists and the development of competency standards for use in the accreditation of pharmacy educational programs (Summers et al., 2001). The SAPC has developed a set of seven competency unit standards for entry-level pharmacists (Table 1), (Republic of South Africa, 2000). These unit standards may serve as a guide for pharmacist employees and employers, as well as for pharmacy faculty as they implement curricular changes that would produce professionals prepared to fulfil the evolving role of a pharmacist. The SAPC envisions the future of the pharmacy profession to encompass both scientific and civic responsibility (Summers et al, 2001). The pharmacy profession is however characterized by significant manpower shortages (Summers et al., 2001), leaving a 56% vacancy rate in public sector pharmacy posts (SAPC, 2006) and much needed services in public sector pharmacies (Bheekie, Adonis, & Daniels, 2007), which possibly creates a barrier to social responsibility of pharmacists.

Service-learning is a teaching approach that aids health professionals and academic institutions in facilitating curricular changes to augment the competency of pharmacy graduates (Bheekie et al, 2007). Service-learning is seen as a form of practical learning with the following attributes:

- Addresses actual community needs.
- Institutes a relationship between the community and the academic institution.
- Supports the fostering of community responsibility.
- Is incorporated into the curriculum.
- Provides structured time for reflection on the service experience.
- Attempts to strike a balance between services provided and learning that takes place (Peters & MacKinnon III et al., 2004).

As a multi-faceted teaching approach, service-learning has successfully led to an improved professional competency of pharmacy students. A generic service-learning model for tertiary hospitals has not yet been implemented in South Africa.

1.1 Aim

The aim of this study was to design, implement and evaluate a service-learning model for final year pharmacy students at a tertiary hospital pharmacy.

The main objectives of the study were:

- to assess pharmacists' existing views of and receptivity toward service learning in a tertiary hospital pharmacy
- to assess the competency level of final year pharmacy students in areas of hospital pharmacy practice: Dispensing; Clinic/ward Pharmacy and Compounding
- to design and implement a multi-faceted educational intervention to address possible gaps in the undergraduate pharmacy curriculum and contribute to service delivery at public tertiary hospital

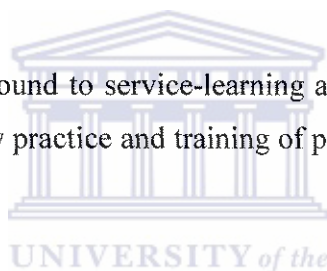
1.2 Chapter description

Chapter 2 provides a background to service-learning and reviews its application in pharmacy curricula. Pharmacy practice and training of pharmacists in South Africa is discussed.

Chapter 3 provides a summary of qualitative and quantitative research methods. An outline describing the details of the design, implementation and evaluation of the SLIP model is given, and the research methods employed in this study are discussed.

Chapter 4 provides the results of the baseline study. Pharmacists' and students' views and receptivity toward SLIP before implementation of the SLIP model are discussed. In addition, the competency of final year pharmacy students in areas of hospital pharmacy practiced is assessed.

Chapter 5 provides the results of pharmacist and student acceptability of the SLIP model, and student competency in areas of hospital pharmacy practice, after implementation of the SLIP model. Student contribution to service delivery at Tygerberg hospital pharmacy by is also shown.



Chapter 6 discusses the overall findings of the study. Emphasis is placed on the similarities or differences in pre- and post- data obtained from implementation of the SLIP model.

1.3 Use of Personal pronoun

In this thesis I use the personal pronoun, instead of 'the researcher' or 'the author'. This enabled me to capture the incidents to strongly resemble that of the actual situation.

1.4 Referencing

The American Psychological Association (APA) style of referencing is employed in this dissertation and appears in parenthesis in the text.



CHAPTER 2

LITERATURE REVIEW

This chapter provides a synopsis of the philosophy of service-learning and its prevalence and processes in pharmacy curricula. The challenges involved in service-learning in pharmacy as well benefits to service-learning partners are discussed. Further, pharmacy practice in South Africa is reviewed.

2.1 Overview of Service-learning

Service-learning is an educational approach which integrates academic study with service to the community. Essentially, it is the merging of two complex aspects: the 'service' aspect, as seen in community action; and the 'learning' aspect, as seen in efforts to learn from community experiences and to link that which is learnt to existing academic knowledge (Stanton, 2008, p2). Through addressing community needs, students enhance their understanding of theoretical concepts and develop a sense of civic responsibility and sensitivity to societal needs. While service-learning was first conceptualized in the 1960s and 1970s, it only became accepted and recognized as a branch of higher education curricula in the 1990s (Stanton, Giles & Cruz, 1999). Around the same time, South Africa was undergoing radical political transformation which called for societal change at all levels. Service-learning became an attractive innovation to South African higher education institutions as they played a role in reconstruction of previously disadvantaged communities (Stanton, 2008).

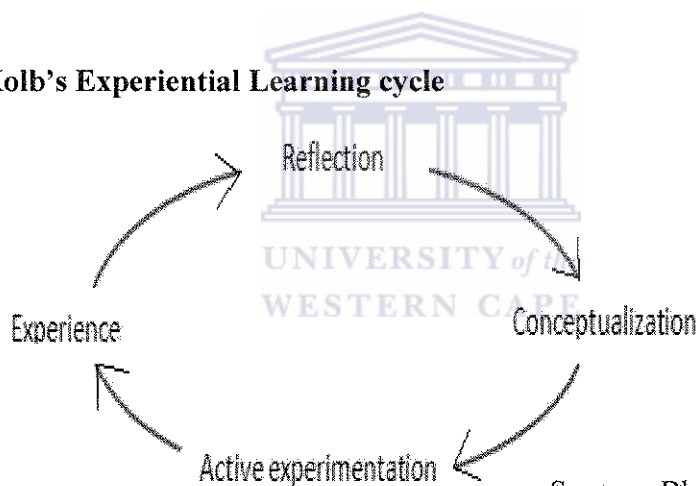
Jacoby (1996, p.8) presents a widely accepted definition of service-learning as 'a form of experiential education in which students engage in activities that address human and community needs together with structured opportunities intentionally designed to promote student learning and development.' Service-learning in South Africa is a Community Higher Education Services Partnerships (CHESP) initiative to collaborate higher education institutions, local communities and the service sectors to address

national reconstruction and development through teaching, research and training (Lazarus, 2007).

2.2 Reflection in Service-learning

‘More than volunteerism, service-learning combines community work with classroom instruction, emphasizing reflection as well as action. It empowers students by making them responsible in a real world context, while giving them support, encouragement, information and skills to be effective’ (Rosenberg, 2001. p 8.). As seen in Kolb’s (1984) experiential learning cycle (Figure 2.2), service-learning involves conceptualization of an activity, experimentation and actual experience of the activity, followed by reflection. The ‘learning’ aspect of service-learning is said to occur through reflection on the experience. Reflection and action are thus distinct characteristics of service-learning.

Figure 2.2: Kolb’s Experiential Learning cycle



Source: Bheekie et al., 2006

“Reflection is the glue that holds service-learning together to provide optimal educative experiences” (Eyler, Giles, & Schmeide, 1996, p.16). The writing of journals is a common reflective activity in service-learning courses (Bringle & Hatcher, 2001). Types of journals include personal journals, dialogue journals and critical incident journals among others. The advantages of journals are that they are undemanding to assign, and that they present a way for students to convey their thoughts and feelings about their service experiences. Further, it is a way to link personal learning with course content. The disadvantages of journals include that they may be difficult to score, and that they often

are seen merely as a 'log of events' rather than a reflective activity. (Bringle & Hatcher, 2001, p.1).

Portfolios serve as a means for reflection and a valuable assessment instrument for service-learning. They can be used to reflect the students' professional progress from the commencement of a program through to completion, and to assess application and evaluation of knowledge and skills (Drab et al, 2004).

2.3 Benefits associated with Service-learning

2.3.1 Benefits for Academic Institution

Service-learning modules have been shown to contribute to the personal development of teaching staff, as well as having the effect of enhanced teaching methods and improved knowledge of assessments. Further, service-learning modules have presented research opportunities for academic staff and have enabled staff to network both within the academic institution and with community partners (Lazarus 2007).

Academic benefits of service-learning modules for students involve the opportunity to apply theoretical knowledge into practice, improved writing skills and fostering the ability to think at a conceptual level. On a social level, students benefit through developing communication skills and an improved tolerance to different cultures and races (Lazarus 2007).

2.3.2 Benefits for Service Partners

The most apparent benefit for service partners would be the additional help that students offer, enabling the service partners to provide 'more services, or more effective services' as a result of the additional help (Nemire, Margulis, & Frenzel-Sheperd, 2004). Another benefit is an 'enhanced image' for the service-partner as a link with a university can impart credibility just by association (Nemire et al 2004).

2.3.3 Community benefits of Service-learning

Mouton and Wildschutt (2002) have identified the need for “serious consideration of the community voice” (Nduna, 2007, p. 70) in service-learning endeavours. Most research has been conducted on student outcomes rather than community benefits. Mitchell and Rautenbach (2005) have found the lack of research on the community dimension to be a significant omission in the literature. In attempting to fill this gap in the literature, Nduna (2007) studied the community partners’ views about service-learning practices in relation to community needs, benefits to student performance and in relation to areas of improvement of service-learning practices in the community. It was found that the positive outcomes of service-learning overshadow the negative aspects, and that involving community partners in service-learning planning, implementation and evaluation helps to ensure optimal outcomes. Positive outcomes for the community partners included free skills transfer, gaining of new knowledge and getting additional help where there are limited human resources.

2.4 Challenges associated with Service-learning

2.4.1 Human Resources

The successful implementation of a service-learning module is not without challenges. Failure to recognize administrative issues including the need for additional personnel to organize and facilitate service-learning may hamper the success of the module (Bheekie et al, 2007). Rubin (2001, p.16) describes the course development for service-learning as having seven steps for faculty members:

1. Define service-learning outcomes.
2. Define personal scholarship outcomes.
3. Plan community collaboration.
4. Design the course.
5. Arrange logistics and create forms.
6. Reflect, analyze and deliver.
7. Perform assessment and evaluation of and among all critical audiences.

Permission to conduct service-learning is to be acquired from both faculty and the service partners. The availability of time and human resources is required for curriculum design and facilitation of the module at service-learning sites. Students and academic staff involved in service-learning also have teaching and other school activities occupying their time. Both time and monetary resources need to be committed to service-learning, and relationships between the healthcare centres and the school need to be developed in order to minimize faculty time spent at the health centre (Bheekie et al, 2007).

2.4.2 Perceived attitude among faculty and service partners

Service-learning may be met with disparaging stances and opposition by key stakeholders including pharmacy faculty members and service agencies.

Faculty: Support at a faculty level can be met by negative attitudes that may act as a barrier to the implementation of a service-learning module. Faculty members may dismiss the idea because they see internships as service-learning. Another perception is that “service is volunteerism - we are lowering our standards to give academic credit for service” (O’Byrne, 2001, p.81). Service is seen as taking students’ time and attention away from learning course content. Service-learning may also be seen as additional workload for faculty due to its demands of time and effort (O’Byrne, 2001).

Service Partners: Service partners may display reluctance and objection to service-learning initiatives due to perceptions that students would interfere with routine work at the service sites (Bheekie et al., 2007). Alternatively, service partners may see students merely as volunteers or a source of “free help”. Service partners need to be reminded that service-learning is not merely a volunteer programme, but a credit bearing academic course. Students receive credit for meeting the required course goals and objectives in their participation in service-learning (Nemire et al, 2003).

2.5 Service-learning in pharmacy curricula

Service-learning is not a new concept in pharmacy curricula. Internationally and nationally, several schools of pharmacy offer service-learning courses. Many of these courses differ in terms of the service-learning sites, activities and evaluations.

At the University of Pittsburgh's school of pharmacy, service-learning is incorporated into the post-graduate curriculum (Pharm. D), rather than the undergraduate curriculum, and service-learning activities occur at various community organizations such as disability homes, shelters and mental health centres rather than at community and hospital pharmacies. For first year students, sites that require "non-pharmacy" work are preferred. The goal of service-learning is to allow students to develop a sense of social responsibility, practice communication skills and work in culturally diverse environments. Student learning occurs informally through written exercises and verbal discussions. A portfolio that is to be maintained throughout their undergraduate study serves as a service-learning assessment tool (Drab et al, 2004).

At the Eugene Applebaum College of Pharmaceutical Sciences, the service-learning course involves students in service of elderly people who are affected by intricate health needs, isolation and diminished quality of life. The course objectives include:

- Recognizing the importance of serving the community.
- Increased awareness of patient needs for social support.
- Being able to form relationships across human differences.

Student assessment occurs through reflection in journals, in-class assessments and group sessions. An assessment of the service-learning course found that students valued experiential learning and reported an increased sensitivity to aged individuals and their hardships (Schumann et al, 2004).

The School of Pharmacy-Worcester, University of Massachusetts also has a civic approach to service-learning. Prior to starting the course, students are required to choose their preference for community service from a list and description of service-learning sites. Students are assigned to sites which closely resemble their preferences. Non-

pharmacy service-learning activities are also offered here. These include tutoring and mentoring children in public schools, assisting with a soup kitchen and a food and clothing distribution centre (Kearney, 2003).

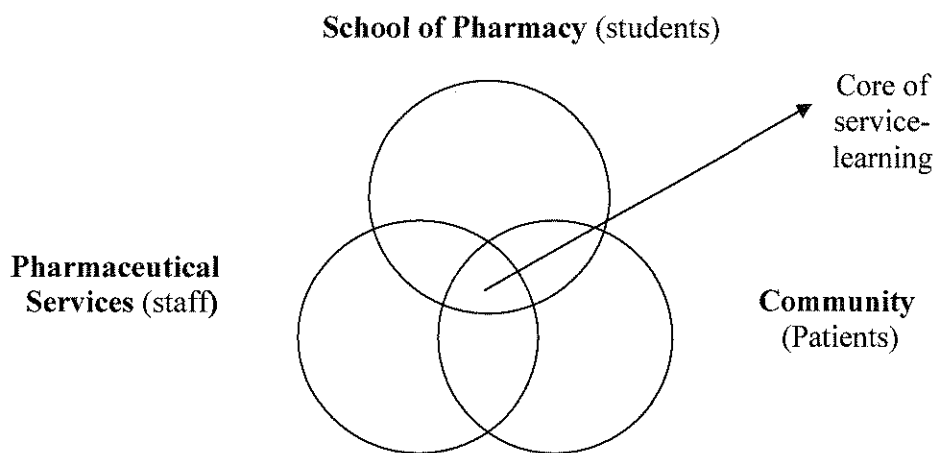
In the South African milieu, a service-learning elective incorporating health promotion was designed and implemented at Rhodes University. In order to prepare pharmacy students for their changing role, the school of pharmacy aimed to provide students with the opportunity to carry out 'critical cross-field outcomes', and to educate the community in order to prevent and manage chronic health conditions including Diabetes, Asthma and Hypertension (Karakezi, 2007).

In 2002, the University of the Western Cape's (UWC) school of pharmacy engaged in the development of a service-learning module in Pharmacotherapy (Bheekie, 2006). Existing learning objectives and activities were adapted to support the implementation of the Pharmacotherapy service-learning module at five Community Health Centres (CHCs). In 2005, service-learning was introduced at 2 academic hospitals (Groote Schuur and Red Cross Hospitals), as well as at a pre-packing and a quality control laboratory. Among the learning objectives for these sites were:

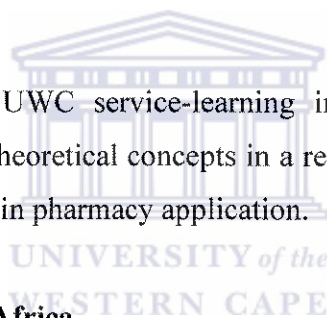
- to develop skills in appropriate medicine use,
- to develop competence in critical analysis of prescriptions, therapeutic counselling,
- to practice good manufacturing practices (GMP) in pharmacy and
- to acquire knowledge of Standard Operating Procedures (SOP) (Bheekie, 2006).

Envisioned for the SLIP module was the establishment of a triad relationship (Figure 2.4) between the UWC School of Pharmacy, Pharmacy Services (Western Cape) and the community, with reciprocal gain between the partners (Bheekie, 2006).

Figure 2.4: Tripartite Partnership: Consists of the School of Pharmacy (students), community (patients) and the pharmaceutical services (staff) at public sector health facilities.



Bheekie (2006) found that the UWC service-learning initiative allowed pharmacy students the opportunity to apply theoretical concepts in a real-world setting and enabled the development of essential skills in pharmacy application.



2.6 Pharmacy Practice in South Africa

In South Africa, pharmacy practitioners are registered with the South African Pharmacy Council - a statutory body established by Parliament to control the pharmacy profession and its functions in terms of the Pharmacy Act, (Republic of South Africa, 1974) as amended. Pharmacy is the profession concerned with the discovery, development, production and distribution of medicines. The SAPC presents the underlying philosophy of pharmacy as 'a dynamic, information-driven, patient-orientated profession', committed to fulfilling the healthcare needs of South Africa by being the 'custodians of medicines and advising on safe, rational and appropriate use of medicines' (SAPC, 2008). The scope of practice of pharmacists in South Africa is described in the Regulations to the Pharmacy Act to include the following activities:

- provision of patient information and advice (pharmaceutical care)
- manufacturing, compounding and distribution of medicines

- accurate dispensing of medicines
- ensuring safe and effective use of medicines
- provision of pharmacist-initiated therapy
- provision of clinical pharmacy services
- aseptic (sterile) dispensing services E.g. oncology, chemotherapy
- provision of medicine related information and advice and
- promotion of public health (SAPC, 2008)

Types of pharmacy practice areas include hospital, retail, pharmaceutical manufacturing industry, clinics, nursing homes and regulatory agencies (SAPC, 2008).

2.6.1 Hospital Pharmacy

The practice of pharmacy in hospital settings includes the monitoring of medicine regimens of the individual patient (clinical pharmacy), the compounding of pharmaceutical preparations, provision of pharmaceuticals to nursing stations (e.g. wards) and the provision of information to health professionals including nurses and doctors. The following services are among those which are rendered by pharmacy staff in a hospital pharmacy:

- Taking responsibility for the patient's medicine related needs by dispensing medicines from a prescription.
- Compounding and preparation of medicines.
- Repackaging medicines into patient-ready packs.
- Promoting public health.
- Aseptic practices for preparation of chemotherapeutic agents (SAPC, 2008).

2.6.2 Dispensing

The GPP presents dispensing as a 3 phased process:

- PHASE 1: Interpretation and evaluation of the prescription.
- PHASE 2: Preparation and labelling of the prescribed medicine.
- PHASE 3: Instruction and information to the patient to ensure the safe and effective use of medicines (SAPC, 2008).

Phase 1 involves the receipt of the prescription and verification of the integrity thereof. This includes identifying the patient for whom the medicine is intended, as well as the prescriber. It also includes correctly identifying the medicine, dosage, strength, pharmaceutical form and duration of treatment as well as ensuring the legality of the prescription. Assessment of the prescription is done to ensure the safety of medicine use and detect possible drug interactions, contra-indications and therapeutic duplication, all of which can cause significant harm to a patient.

Phase 2 involves selecting, preparing and labelling the medicine in an accurate and complete manner.

Phase 3 involves structuring information and advice to patients about their medicines. This information must be tailored to meet the needs of the individual patient. Patient information is vital to ensure the correct safe use of medicines (SAPC, 2008).

2.6.3 Compounding

Compounding refers to the practice of preparing customised medicines for patients. Essentially, in order to suit patients' needs, drugs are modified into a form that differs from its original form. For example, if a manufacturer prepares a drug in only a tablet form, the compounding pharmacist may make a medicated lollipop from the tablet form. The lollipop thus contains the same drug, and patients who have difficulty swallowing do not take the tablet, but suck on the lollipop instead (Stanley Apothecary Compounding Pharmacy, n.d.). Compounding requires trained personnel, suitable equipment, correct materials (ingredients), containers, labels and suitable storage. An approved procedure, commonly known as the working formula or 'recipe' for the compounding must be written up in an instructional form (SAPC, 2008).

2.6.4 Pre-packing

Pre-packing refers to the repackaging of medicines from bulk containers into smaller packs which are ready for patient use. Dosage units such as tablets must be counted manually or electronically. Pre-packing must be performed in accordance with Good Manufacturing and Distribution practices (SAPC, 2008).

2.6.5 Ward Pharmacy

Ward pharmacy is a patient-orientated service in which a pharmacist becomes an integral part of the healthcare team. The pharmacist's role includes communicating with doctors and nurses to promote safety, efficacy and the cost-effective use of medicines. Ward pharmacy also entails the distribution of medicine to wards, departments and theatres. It involves regular stock-checking by pharmacy personnel to ensure correct stock rotation (SAPC, 2008).

2.6.6 Clinical pharmacy

Clinical pharmacy entails applying one's pharmaceutical expertise in order to maximize medicine efficacy and minimize medicine toxicity in individual patients (SAPC, 2008). Clinical pharmacy involves both the management of medicines in the ward and playing a part in individual patient care through providing medicine-related information and participating in problem-solving activities (SAPC, 2008).

Exposure of pharmacy students to the structured dispensing process, compounding of pharmaceuticals and clinic/ward pharmacy activities could better prepare them for the workplace.

2.7 Patient-centred pharmacy practice

Pharmacists are gradually embracing the changing philosophy of practice which is centred on the patient rather than the product. This patient-centeredness, known as Pharmaceutical Care, is the 'direct, responsible provision of medication-related care for the purpose of achieving definite outcomes that improve a patient's quality of life' (ASHP, 1993). However, the shift from a product-based approach to a patient-based approach remains a controversial matter, and prompts serious consideration of the professionalism of pharmacy practitioners. Despite their opposing protests, pharmacists seem to have lent credibility to the portrayal of their image as being profit-orientated, 'fee-for-product' practitioners who are driven by monetary incentives rather than patient-centred intentions (Williams, 2006, p.1286). In a contrasting judgement between the South African Health Ministry and representatives from the South African

pharmaceutical industry, Judge Sachs provides a sympathetic view of the pharmacy profession:

“The familiar figures of the township or Main Road Chemist or the white-coated person behind the medicines counter at the far end of the chain store. These men and women are by vocation dedicated people who express themselves through their work and are publicly identified by the concern they show in their relationships with their customers. With their professional skill and human concern, they calm anxieties and turn their places of work into important ports of call for wide sectors of the community”.

- Judge Sachs (Williams, 2006)

Patient-centred practice thus forms a key element in the professionalism of pharmacists. Pharmaceutical care is an important concept that represents growth of the pharmacy profession beyond the product, and beyond clinical pharmacy, medication preparation and dispensing. While these activities still make up a significant portion of the pharmacist’s role, the profession must expand to include pharmaceutical care (ASHP, 1993).

2.8 Pharmacy Education and Training

The SAPC requires that ‘the education and training of pharmacists in South Africa must equip them for the roles they have to undertake in practice ’ (SAPC, 2008, p.1), and must be in line with the prescribed unit standards for entry-level pharmacists” (Table 2.8) (Republic of South Africa, 2000).

Table 2.8: SAPC Entry Level (EL) Unit Standards for pharmacists

	Unit standard
EL 1	Organize and control the manufacturing, compounding and packaging of pharmaceutical products.
EL 2	Organize the procurement, storage and distribution of pharmaceutical

	materials and products.
EL 3	Dispense and ensure the optimal use of medicines prescribed to the patient.
EL 4	Provide pharmacist-initiated care to the patient to ensure the optimal use of medicines.
EL 5	Provide information and education on healthcare and medicines.
EL 6	Promote community health and provide related information and advice.
EL 7	Participate in research to ensure optimal use of medicines.

Pharmacy training in South Africa is provided by eight pharmacy schools which have been approved by the SAPC. On the successful completion of four years of full-time study, the student is awarded a Bachelor of Pharmacy degree. The SAPC prescribes the four major subjects for the course to be:

1. *Pharmaceutics*: the branch of science concerned with the preparation and dosage of medicinal products (Dox, Melonni, & Eisner, 1985).
2. *Pharmacology*: the branch of science concerned with the unified study of all aspects of the interaction of drugs and their effect on living organisms (Dox et al., 1985).
3. *Pharmacy Practice*
4. *Pharmaceutical Chemistry* (Republic of South Africa, 1974).

The graduate must then complete a compulsory 12 month internship followed by 12 months of community service prior to registration as a qualified pharmacist (Republic of South Africa, 1974). The most important outcome of training should be a skilled productive workforce. Undergraduate pharmacy courses should be designed to address each unit standard. In order to prepare pharmacy students better for their working environment, members of the Department of Pharmacy at the University of the North suggest that the training institution, government and the SAPC work together to sensitize pharmacy students to the health system through adequate clinical exposure and experiential learning (Dambisya, Modipa, & Legodi, 2005).

In order to meet SAPC requirements pharmacy students may engage in experiential learning programmes at community pharmacies and/or public sector healthcare facilities. Their technical competency may be assessed formatively, or by the use of summative processes.

2.8.1. Aspects of assessment and evaluation

Educational assessments reflect the amount of learning that individual students have done and serve as an accountability tool for both students and education systems (Hunt & Pellegrino, 2002). Assessments and evaluation allow the instructor to determine the extent to which a student has attained an educational objective. Assessments may be summative or formative. *Summative assessments* determine students' knowledge and skills at a given point in time, and are usually used at the end of a unit of teaching, from which it may be used to compile progress reports. (Instructional Resources Unit, 2006). Examples of summative assessments for service-learning include oral or written tests and reflective assignments (Higher Education Quality Committee, 2006). *Formative assessments* focus on learning process and produces information which may be used to improve learning (Instructional Resources Unit, 2006). Reflection sessions, peer evaluation and the use of pre-designed assessment sheets include formative assessment methods which may be used in service-learning programmes (Higher Education Quality Committee, 2006).

2.8.2 Scope of Practice of pharmacy students

The scope of practice of pharmacy personnel refers to acts or services which may be legally performed by personnel as relevant to the category in which they are registered. The scope of practice differs for a pharmacist, a pharmacist intern, a pharmacist assistant (basic and post-basic), and pharmacy student. The scope of practice for pharmacy students who have successfully completed their second year of study includes all the services or acts pertaining to the scope of practice of a pharmacist's assistant (post-basic) (Appendix I), under the direct personal supervision of a pharmacist in a pharmacy. Direct personal supervision means guidance and support by a pharmacist whilst physically present in the pharmacy (Republic of South Africa, 1974).

2.9 The Pharmacy Crisis

Worldwide, the dire shortage of human resources for healthcare poses a significant hurdle to achieving the 'three millennium development goals: to reduce child mortality, improve maternal health and combat HIV AIDS and other diseases' (World Health Report 2006, p.19). South Africa also faces a major crisis with regard to human resources for healthcare. There is a shortage of professionals in the country coupled with a skewed distribution to the private healthcare sectors (Padarath, Ntuli, & Berthiaum, 2003/4). The distribution of pharmacists between the private and public sectors reflects significant inequities. More than 10 000 pharmacists were registered with the SAPC in 2003, of which approximately only 11% were employed in the public sector (Padarath et al, 2003/4).

Nationally the public sector distribution is 3.1 pharmacists per 100 000 population (Padarath, Ntuli, & Berthiaum, 2003/4) with a 56% vacancy rate in public sector pharmacist posts (SAPC, 2006). South Africa faces considerable shortage of pharmacists. This shortage has a negative impact on pharmaceutical service delivery. Reports of exhaustingly long queues at public sector facility pharmacies are common. Queues are considered to be shocking with hundreds of people standing in line. In the Western Cape, patient waiting times for medicine were found to be up to 12 hours in some cases (Ntuli, 2007). Inadequate pharmaceutical service delivery in the public sector has been the subject of media attention. Media reports have highlighted that long queues for medication are a "bitter pill to swallow", due to the struggle of hospital authorities to fill vacant pharmacy posts (Ryan & Peters, 2007).

2.10 Continuing Professional Development (CPD) for pharmacists

Human resource development and continuing professional development (CPD) for pharmacy personnel is supported by the SAPC and outlined in the Code of Conduct for Pharmacists and other persons registered in terms of the Pharmacy Act (Department of Health, 2006a). According to the Pharmacy Code of Conduct, CPD is defined as 'the process by which pharmacists continuously enhance their knowledge, skills and personal qualities throughout their professional careers.' Successful professionals must stay

abreast of current knowledge, legislative policies and practices (Department of Health, 2006a, p. 5). Service-learning presents CPD opportunities for pharmacists as they take on the role of mentors and role models to student pharmacists, thereby acquiring instructional and mentoring skills (American Pharmacists Association & National Association of Chain Drug Stores Foundation, 2007). In addition, pharmacist preceptors report that they too gain knowledge from student pharmacists, who may share novel knowledge or skills that they have acquired in the classroom or at previous sites. Pharmacists find the mentoring of students to be both personally and professionally rewarding (American Pharmacists Association & National Association of Chain Drug Stores Foundation, 2007).

2.11 Health Services in the Western Cape

The South African health system consists of a large, under-resourced, over-used public sector which provides for eighty percent of the population, while a smaller private sector serves the remaining twenty percent (Ntuli & Day, 2004). The private sector employs sixty percent of the country's doctors and more than seventy percent of its pharmacists (Padarath et al 2003/4). The public health system in the Cape Metropole consists of 11 health sub-districts which are serviced by the Department of Health through the Metropole District Health Services (MDHS), primary healthcare services and secondary and tertiary hospitals (Haynes & Hall, 2002).

Primary healthcare refers to a set of prescribed services which are generally either the first point of contact for patient care, or the provision of follow-up care. Primary healthcare services are provided by the Provincial Government of the Western Cape (PGWC) and City Health, and falls within the skills base of a professional nurse, technician, mid-level worker or community health worker. The intervention of a specialist is not required for primary care. A Community Health Centre (CHC) is an example of a primary healthcare facility (Department of Health, 2006b).

Secondary care refers to services which are generally beyond the scope of primary care and requires the input of a registered specialist. The intervention of specialists as well as

general medical services is required. A 'Level 2' hospital is an example of secondary health care (Department of Health, 2006b).

Tertiary care is beyond the normal scope of specialist and requires the service of a registered sub-specialist. Both specialist and sub-specialist care is provided (National Department of Health, 2006b). An academic hospital, such as Tygerberg hospital is an example of a tertiary hospital (Cummins, 2002).



CHAPTER 2

RESEARCH METHODOLOGY

Qualitative and quantitative research methods were used in this descriptive study. Section A provides an overview of research methods, while Section B describes how these methods were used in the study. The target groups of the study were:

- (i) A cohort of UWC fourth(final) year pharmacy students
- (ii) Pharmacists employed at a tertiary hospital pharmacy

Section A: Review of Study Methods

Descriptive studies are commonly carried out to report on the background or context of a situation and may be used to describe what is prevalent regarding a programme (Kumar, 2005). Qualitative and quantitative research methods may be employed in descriptive research.

3.1 Qualitative Research Methods

Qualitative research can be defined as ‘any kind of research which produces findings that is not arrived at by means of statistical procedures’ (Strauss and Corbin, 1990, p.17). Qualitative research encompasses the subjective understandings of target group members about that which is happening around them. It is an in-depth description of events and collecting, analyzing and interpreting data is done by observing what people do and say (Neuman, 2000).

Pauly (1991, p.7) describes qualitative research as a five-step process: finding a topic; formulating the research question; gathering evidence; interpreting the evidence and telling the researcher’s story. Direct observation, recorded speech or behaviour, video or audio tapes and interviews are qualitative research processes. Different types of data that may be included during a qualitative enquiry include jotted notes, full field notes, interview and focus group transcripts as well as the researcher’s own records and a field diary which gives a chronology of the events witnessed in the research. (Pope et al,

2000). Qualitative research seeks to explore an in-depth understanding of the behaviour of the culture under study.

3.2 Quantitative Research Methods

Quantitative measurement provides data which is objective, numerical and statistically valid. Procedures that are likely to produce quantified and possibly generalized conclusions are used (Bell, 1993). Quantitative data measures facts and focuses on variables (Neuman, 2003). Numerical data can be statistically analyzed to test hypotheses (Armstrong, Calnan & Grace 1990).

3.3 Triangulation

Triangulation describes the use of more than one method to understand the research topic (Creswell, Fetters & Ivankova, 2004). Looking at an object of research from multiple perspectives provides researchers and theorists with more comprehensive understanding about the object of study (Silverman, 2004). Methodological triangulation is used to exploit the strengths of qualitative and quantitative approaches (Miller & Brewer, 2003), and has the advantage of producing understanding of the topic under investigation in ways that cannot be realized by use of a single method (Bernard, 1994).

3.4 Mixing of research methods

Researchers often merge qualitative and quantitative methods to gain a deeper understanding of the research topic to explore the strengths of each (Miller & Brewer, 2003). Qualitative and quantitative data are united into a single study and the data may be combined in four ways:

1. Qualitative methods are used to develop quantitative instruments.
2. Qualitative methods can be employed to clarify quantitative results.
3. A qualitative study can be augmented by quantitative data.
4. The study may be carried out by using qualitative and quantitative methods simultaneously and equally (Steckler, McLeroy, Goodman, Bird & McCormick, 1992).

3.5 The Research Design

A research design is a 'procedural plan that is adopted by the researcher to answer questions validly, objectively, accurately and economically' (Kumar, 2005, p.84). It can also be seen as a blueprint detailing how a study is to be completed (Thyer, 1993). The research design has two main functions:

1. The development of an operational plan and logistical arrangements to complete the study.
2. Ensuring that this plan is of sufficient quality that it produces data that is valid, accurate and objective (Kumar, 2005).

3.6 Data collection methods

Several data collection methods may be employed in a mixed method study. These methods include observation, questionnaire administration, focus group discussions and the taking of field notes.

3.6.1 Observation

Observation is a methodical way of watching and listening to people's actions and interactions, and the recording, analysing, and interpreting of their behaviours (Gray, 2004). There are two main types of observation, namely participant observation and non-participant observation. In participant observation the investigator becomes an active functioning member of the culture under study. This type of observation is principally qualitative; it emphasizes the meanings that people give to their actions (Gray, 2004). The investigator participates in activities as the members of the culture under study, and attempts to see through the eyes of the member rather than that of an outsider. A holistic view of people and the behaviours they exhibit is sought and this produces narrative accounts as data (Mertler, 2005).

In non-participant observation the researcher assumes an inert role and does not get involved in the activities of the group. The researcher takes the role of an on-looker rather than a participant (Patton, 1990).

Observation is either overt or covert. In overt observation, the subjects under study are aware that they are being observed (Gray, 2004). A drawback of such observation is known as the *Hawthorne effect*, which describes a change in the behaviour of persons or a group as a result of their awareness that they are being observed (Kumar, 2005). This may result in data which is distorted; what is observed may not reflect the normal behaviour of the group. Conversely, in covert observation, subjects under study are not aware that they are being observed. The data produced should provide a naturalistic, real reflection of the phenomenon under study as subjects are shielded from possible negative effects of being aware that they are being observed (Gray, 2004). A disadvantage of covert observation is that it may be perceived as being unethical due to the absence of full informed consent of participants. An argument against this is that covert observation is legitimate because people tend to 'obscure the truth through misinformation, evasion, lies and fronts' (Douglas, 1976 p.239). If the researcher does decide to assume covert observation, confidentiality must be maintained by concealing the names and locations of the study subjects (Gray, 2004). Covert observation may be a useful technique to assess the receptivity of an intervention in the workplace.

Structured observation is an observational data collection method which produces quantitative data as compared to qualitative data obtained from field notes (Gray, 2004). Structured observation may be used as a method of summative educational assessment (Instructional Resources Unit, 2006). Participants are observed while performing a task and their actions are recorded on pre-designed data collection sheets (Gray, 2004) or checklists with predetermined criteria. The advantages of structured observation are that data can be collected at the same time that it occurs and that the results obtained have added reliability because these results can be reproduced at a different time or by a different researcher (Gray, 2004). An OSDE (Objective Structured Dispensing Exam) is an observational checklist used to assess student dispensing skills, and can be used as a formative assessment tool in service-learning courses (Frieslaar, 2004).

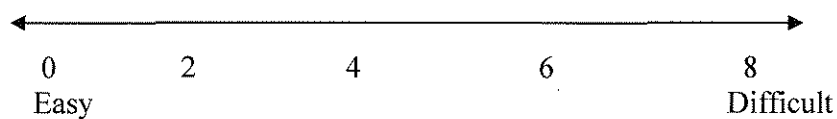
3.6.2 Questionnaires

Questionnaires are among the most popular methods for collecting data in research studies. Questionnaires may be completed under either supervised or unsupervised administration (Bourque & Fielder, 2002). Supervised administration comprises face-to-face or in-person interviews, where the respondent is in a one-to-one situation with the surveyor. The surveyor is able to answer any questions that the respondent may need to ask. In unsupervised administration, the respondent is not in the presence of the surveyor whilst completing the questionnaire (Bourque & Fielder, 2002). Self administered questionnaires are used to obtain data from persons who complete the questionnaires by themselves, and therefore are typical of unsupervised administration. These questionnaires may be administered via traditional mail, e-mail, the internet (online) or by the drop-and-collect system, where the questionnaire is left with the respondent and collected later. When questionnaire administration is entirely unsupervised, the questionnaire must be self-sufficient or able to stand alone, as the researcher is not available to answer any questions or issues which may arise (Bourque & Fielder, 2002).

Form and wording are key elements of a questionnaire and are important as they affect the quality of the data obtained. The questions which make up a questionnaire may be asked in either an open-ended or closed-ended format. An open-ended question is one for which a possible response is not provided. The respondent thus gives a written answer in his/her own words. Closed-ended questions are those for which the possible answers are provided in the questionnaire (Kumar, 2005). The respondent selects one answer from a set of given answers, for example Yes-No or True-False type answers (Gray, 2004). Another way of posing questions is by the use of attitudinal scales. Attitudinal scales are useful for the researcher who wants to establish the respondent's attitude toward a certain matter (Kumar, 2005). There are various types of attitudinal scales including the Likert scale and the Semantic-differential scale. Likert scales allow the respondents to select a category which best describes their attitude toward a statement or topic (Kumar, 2005). For example, for a particular statement respondents may be required to select one of the following responses: Agree, Neutral or Disagree, to express their attitude toward the statement (Miller & Brewer, 2003). Likert scales show the strength of one respondent's

attitude in relation to another (Kumar, 2005). The Semantic-differential (S-D) Scale is a type of survey question where respondents are asked to rate their opinion on a linear scale between two end-points. It makes use of 'polar opposite adjectives', for example good, bad; slow, fast to create a rating scale. The S-D scale is composed of paired adjectives describing an attitude toward a statement, with a range of seven to eleven points between them (Neuman, 2003, p.204).

Example: Rate the difficulty of the exam on the following scale



3.6.3 Focus Groups

A focus group is an exploratory approach in which a group of participants is selected to discuss the topic of research in a moderated manner (Miller & Brewer, 2003). A distinctive feature of focus groups is the interaction between research participants. In this interaction, the sharing of views, stories and experiences between the respondents is what produces the 'rich, insightful data' (Miller & Brewer, 2003). Focus groups are a quick and convenient way to collect data from several people simultaneously. Instead of the researcher asking each person to respond to a question in turn, people are encouraged to talk to one another, raising questions, sharing experiences and exchanging stories (Kritzing, 2000). Without the element of interaction within the group, data is not as accessible (Morgan, 1998). Neuman (2003) describes the following advantages and disadvantages of focus groups:

Advantages of focus groups:

- Respondents express views freely in a natural setting.
- Members of marginal groups are encouraged to convey their beliefs and opinions openly.
- People tend to feel empowered.
- Researchers have the opportunity to experience how respondents discuss survey topics.

- Participants may query one another and are given the opportunity to explain their answers.

Limitations of focus groups

- The number of topics that can be discussed in a focus group are limited.
- ‘Polarization effects’ may occur- mind-sets become more extreme after group discussion.
- The researcher may unintentionally limit open free discussions.
- Participants generate fewer ideas in focus groups than in individual interviews.
- Researchers cannot reconcile the differences that arise between individual-only and focus group setting responses.

3.6.4 Field Notes

The starting point of field research is a ‘loosely formulated’ research topic (Neuman 2003, p.38). The researcher then decides on the social group or site to study. Once the study group or site becomes accessible to the researcher, he/she takes on a role in the setting and begins the observation. The researcher personally establishes familiarity with the members of the study group. Comprehensive notes are taken daily (Neuman, 2003). Field notes are the ‘backbone of collecting and analyzing field data’ (Bailey, 1996, p.80). Gray (2004) suggests that field notes be written up immediately after the observation. The first step in writing field notes is to orient one’s mind to the task of remembering matters such as the physical character of the setting, who said what to whom and in which manner, and who was there. This is the process of taking mental notes, which will later be recalled to produce jotted notes (Gray 2004). Field notes are the fundamental data from which the analysis will surface and comprises everything the fieldworker believes to be important (Lofland, J. & Lofland, L.H, 1984).

3.7 Validity and Reliability

Validity and reliability are fundamental concerns in research and are ideals which the researcher should endeavour to achieve. Neuman (2003 p.183) describes validity as the “true measure” and reliability as the ‘dependable measure’. Validity refers to the extent

to which a research instrument measures what it was intended to measure. Reliability refers to the consistency of data obtained if the same study were repeated under very similar conditions (Neuman, 2003).

SECTION B: Work-plan

This section details the working process regarding the development and implementation of the SLIP model at Tygerberg Hospital, a tertiary care institution situated in the Western Cape. The conceptual framework upon which the model was built is provided. The site of implementation as well as model facilitation and student placement and activities are discussed.

The aim of this study was to design, implement and evaluate a service-learning model for final year pharmacy students at a tertiary hospital pharmacy. The main objectives of the study were:

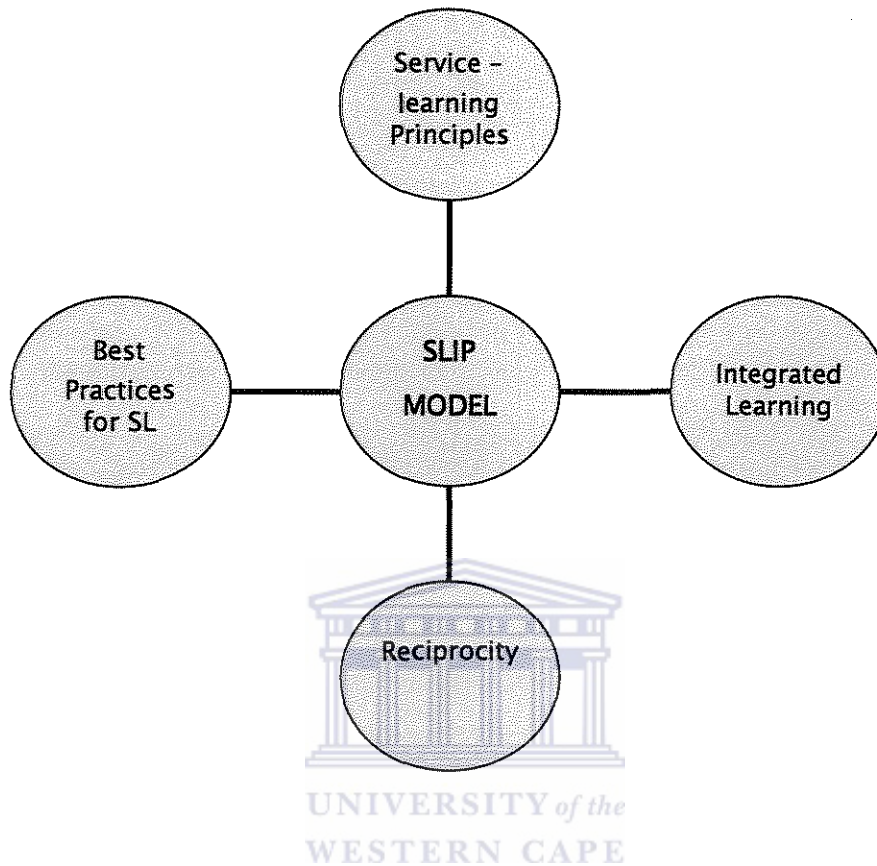
- to assess pharmacists' existing views of and receptivity toward service-learning in a tertiary hospital pharmacy
- to assess the competency level of final year pharmacy students in areas of hospital pharmacy practice: Dispensing; Clinic/ward Pharmacy and Compounding
- to design and implement a multi-faceted educational intervention to address possible gaps in the undergraduate pharmacy curriculum and contribute to service delivery at public tertiary hospital

Study outcomes to be determined were whether students exposed to such a model would (a) show increasing competence in areas of dispensing, compounding and clinical pharmacy and (b) become a valued part of the workforce in the pharmacy.

3.8 Conceptual framework for the SLIP model

In developing curricula for service-learning courses, consideration must be given to both academic content and the service experience, attempting to build a synapse between the two. The Tygerberg SLIP model was built on a number of foundational elements as seen in Figure 3.8 below:

Figure 3.8: Conceptual framework for the SLIP model



3.8.1 Principles for implementation of service-learning

Central to service-learning courses are opportunities for students to partake in Preparation, Action, Reflection and Evaluation and Demonstration (Pollack, n.d). The Preparation phase of service-learning involves clarifying for students the learning objectives of the course, the length of service, the evaluation process, responsibility of the partnership and insight into the community profile. The Action phase of service-learning comprises student participation in the service activities, which forms the 'hands-on' component of the course and is often specific to academic content (Pollack, n.d). For example, engineering students may have their service experiences in construction areas, while medical students may deal with patients and disease conditions in their service-learning courses.

Reflection is a platform which allows students to contemplate their own experiences, actions and reactions. The aim of reflection is to step back and be thoughtful about their experience, and also to share their experiences with other students. Reflection opportunities steer students toward ‘discovering, exploring, and evaluating relationships between the course content as they encounter it in readings and lectures, and in their actual experiences in the community’ (Ahmed, Hutter and Plaut, 2008). Evaluation in service-learning may include an assessment of the service by the recipients of service, the service institution or academic staff. Formal evaluation including feedback, allows students to learn from the experience as they progress.

3.8.2 Best Practices in service-learning

Students and service-learning practitioners share coherent views regarding characteristics of a good service-learning program (Eyler & Giles, 1999). Characteristics which result in positive outcomes include the following:

- Service activities linked with curriculum goals
- Academic credit for learning, rather than for service
- High-quality placement for student exposure
- Opportunities for reflection
- Facilitation/ coaching at service sites (Eyler & Giles, 1999).

These ‘best practice’ characteristics were cornerstone in the design and implementation of the SLIP model.

Integrated learning

The academic objectives of the UWC SLIP course included aspects from the disciplines of Pharmacology, Pharmaceutics and Pharmacy Practice, as noted in the following excerpt from the UWC SLIP handbook (2007):

‘SLIP is a fully integrated course. It attempts to incorporate theoretical concepts from the disciplines of pharmacology, pharmaceutics and pharmacy practice in real life service so that learning becomes more relevant and meaningful.’

The Tygerberg SLIP model needed to be coherent with the ‘integrated-learning’ concept, which was already established and embedded in the SLIP course.

Reciprocity

Service-learning is based on a reciprocal relationship in which the ‘service reinforces and strengthens the learning, and the learning reinforces and strengthens the service’ (Penn State College of Agricultural Sciences, 2008). Development of a service-learning program thus takes into consideration the service aspect of the programme, and attempts to contribute to, support or strengthen the service. In doing so the service-learning course becomes reciprocal, with the service partner or community becoming the beneficiaries of the strengthened service.

3.9 Duration of the SLIP model

The Tygerberg SLIP model was designed to fit into an already established SLIP course. This means that the model would be implemented when students attend their scheduled SLIP blocks. Table 3.9.1 below outlines terms and dates for the scheduled SLIP blocks (2007) that could be accommodated within the fourth year academic programme.

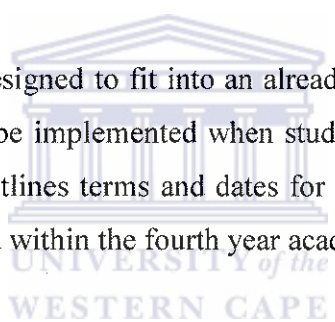


Table 3.9.1: Outline of integrated SLIP schedule (2007)

Term 1		Term 2		Term 3		Term 4	
March 12 th -23 rd		May 7 th -18 th		August 20 th - 31 st		October 1 st -5 th	
Block 1	Block 2	Block 3	Block 4	Block 5	Block 6	Block 7	Block 8

The duration of each block session as seen in Table 3.9.2 was also determined by the SLIP course. The time that students spent at the SLIP sites took into consideration additional activities in which students participate, such as practical sessions that students attend on Tuesday and Wednesday afternoons. This accounts for the shorter time (4.5 hours) students spent at the hospital on these days, as compared to the 7.5 hours completed on the remaining workdays.

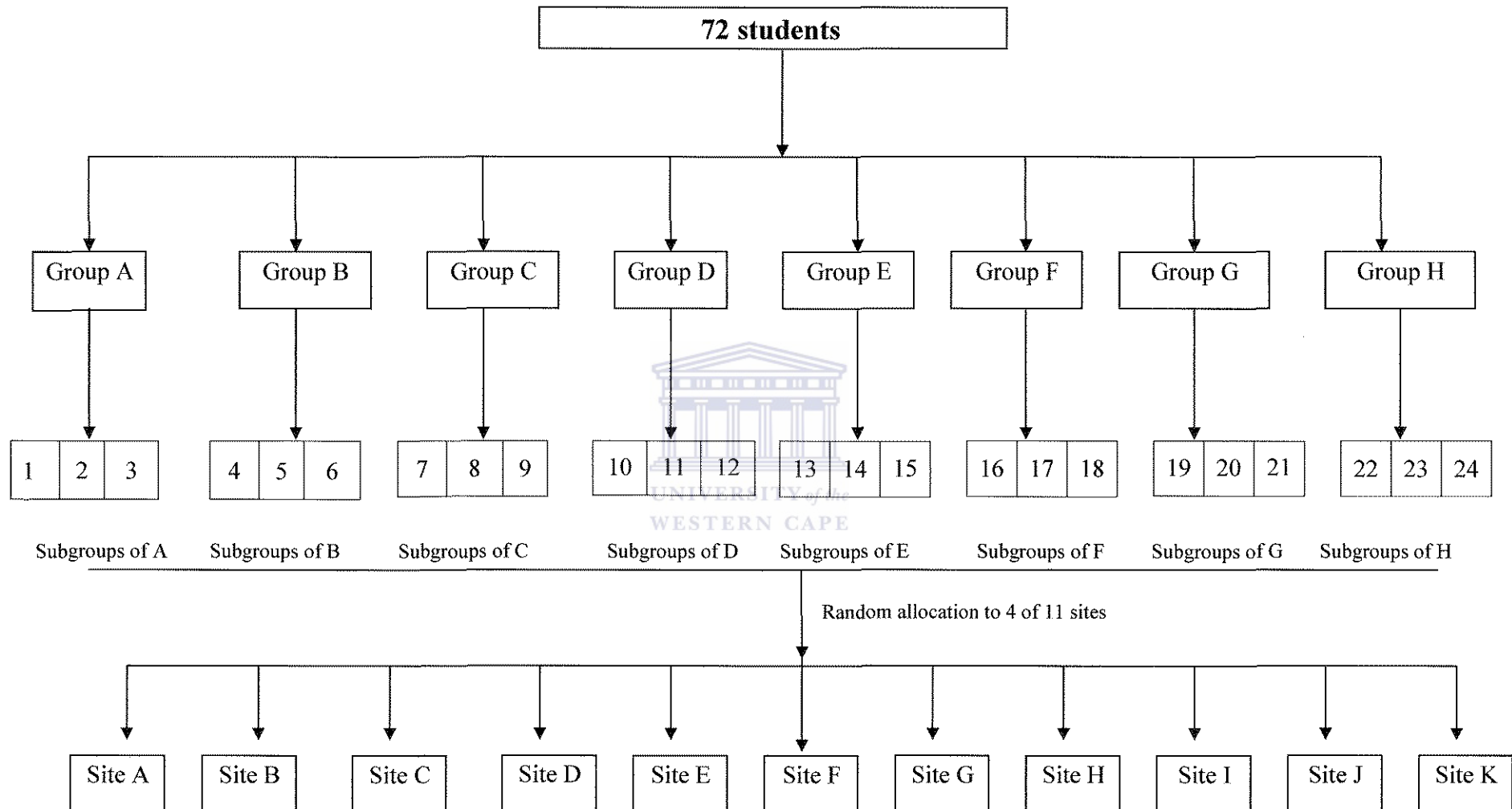
Table 3.9.2: Duration of SLIP Block Session across all sites

Day	Time	Hours
Monday	8.30am – 4.00pm	7.5
Tuesday	8.30am – 1.00pm	4.5
Wednesday	8.30am – 1.00pm	4.5
Thursday	8.30am – 4.00pm	7.5
Friday	8.30am – 4.00pm	7.5
TOTAL HOURS per week		31.5

3.10 Selection of students

The SLIP course (2007) was run across eleven different SLIP sites (Appendix II), including primary healthcare facilities such as CHCs, secondary hospitals and tertiary hospitals. Figure 3.10 below provides a diagrammatic illustration of student allocation to SLIP sites. The B. Pharm. IV class of 2007 consisted of 72 students. These students were divided into 12 honour's thesis project groups (Group A-H). For purposes of the SLIP course these 12 groups were further divided into 24 subgroups. The subgroups were then randomly allocated to one of the eleven SLIP sites.

Figure 3.10: Random allocation of student groups to SLIP sites



3.11 Role of the facilitator/researcher

I was introduced to public sector pharmacy practice during my internship year (2006) at Tygerberg hospital, subsequent to which I completed my compulsory twelve month employment as a community service pharmacist, at the same institution. Data collection for this study was initiated during my community service year (2007). Prior to conducting this study, I had an established professional relationship with pharmacy staff and I was familiar with operational procedures within the pharmacy and the hospital. My role in this project vacillated between that of a researcher and the SLIP facilitator. As a researcher my duties included obtaining permission to conduct the study from Tygerberg hospital management and my superiors, designing and implementing the SLIP model, keeping an open communication with the academic partner (UWC), and evaluating the model through collecting data. As a facilitator, my role included mentorship and guidance of students in practice activities while simultaneously assuming accountability and signing responsibility for any activity completed by students.

3.12 Site for implementation

Tygerberg hospital pharmacy was already an established service-learning site, and it was hypothesized that (i) the service-learning model could easily be designed to accommodate the time and student number constraints set by the service-learning course and (ii) that the model could be designed to be complementary to the layout of a hospital pharmacy. Being a tertiary hospital pharmacy, the activities which constitute the daily work of the pharmacists include:

- Large and small scale compounding of various pharmaceutical dosage forms (e.g. creams, ointments, syrups, suppositories).
- Ward pharmacy.
- Outpatient and inpatient dispensing.
- Schedule 5, 6 dispensing (separate dispensing of higher scheduled drugs).
- ARV (anti-retroviral) dispensing.

Tygerberg hospital pharmacy has designated areas for each of the activities listed above. It is typical of tertiary hospital pharmacies in South Africa to have such designated areas. Appendix III provides an approximate illustration of the floor plan of Tygerberg hospital

pharmacy. The large overall area of the pharmacy as well as the separately designated areas is fitting for SLIP practices.

3.13 Design of the model

This section discusses the conceptualization and site for implementation of the SLIP model, the role of the researcher/facilitator who would be responsible for executing the model, and the selection of students who participated in the model and consequently made up the study sample.

Conceptualization of the SLIP model

The SLIP model was conceptualized to consist of three fundamental elements:

1. Rotation Schedule
2. Assessment
3. Facilitation

The rotation schedule (Figure 3.15) is essentially a timetable detailing the utilization of students' SLIP time at Tygerberg hospital. Important aspects that were considered in developing the rotation schedule were:

- i. what the site had to offer students in terms of activities for their learning and development,
- ii. whether the activities in the rotation would meet SLIP objectives and course goals
- iii. site logistics e.g. physical pharmacy layout
- iv. how the rotation could be devised to fit in with and improve existing service delivery at the pharmacy
- v. how and when students would be assessed

The rotation schedule details the activities that students would partake in and the time allocated to each activity. It allows for students to actively participate in three components of hospital pharmacy practice: compounding, dispensing and clinical pharmacy, and for their competence to be assessed both before and after their participation in this component. The components of the SLIP model: Compounding, Dispensing and Clinical Review were chosen to support academic objectives of the UWC

SLIP course Pharmacology, Pharmaceutics and Pharmacy Practice, as noted in the following excerpt from the UWC SLIP handbook (2007):

*'SLIP is a fully integrated course. It attempts to incorporate theoretical concepts from the disciplines of **pharmacology, pharmaceutics and pharmacy practice** in the real life service so that learning becomes more relevant and meaningful.'*

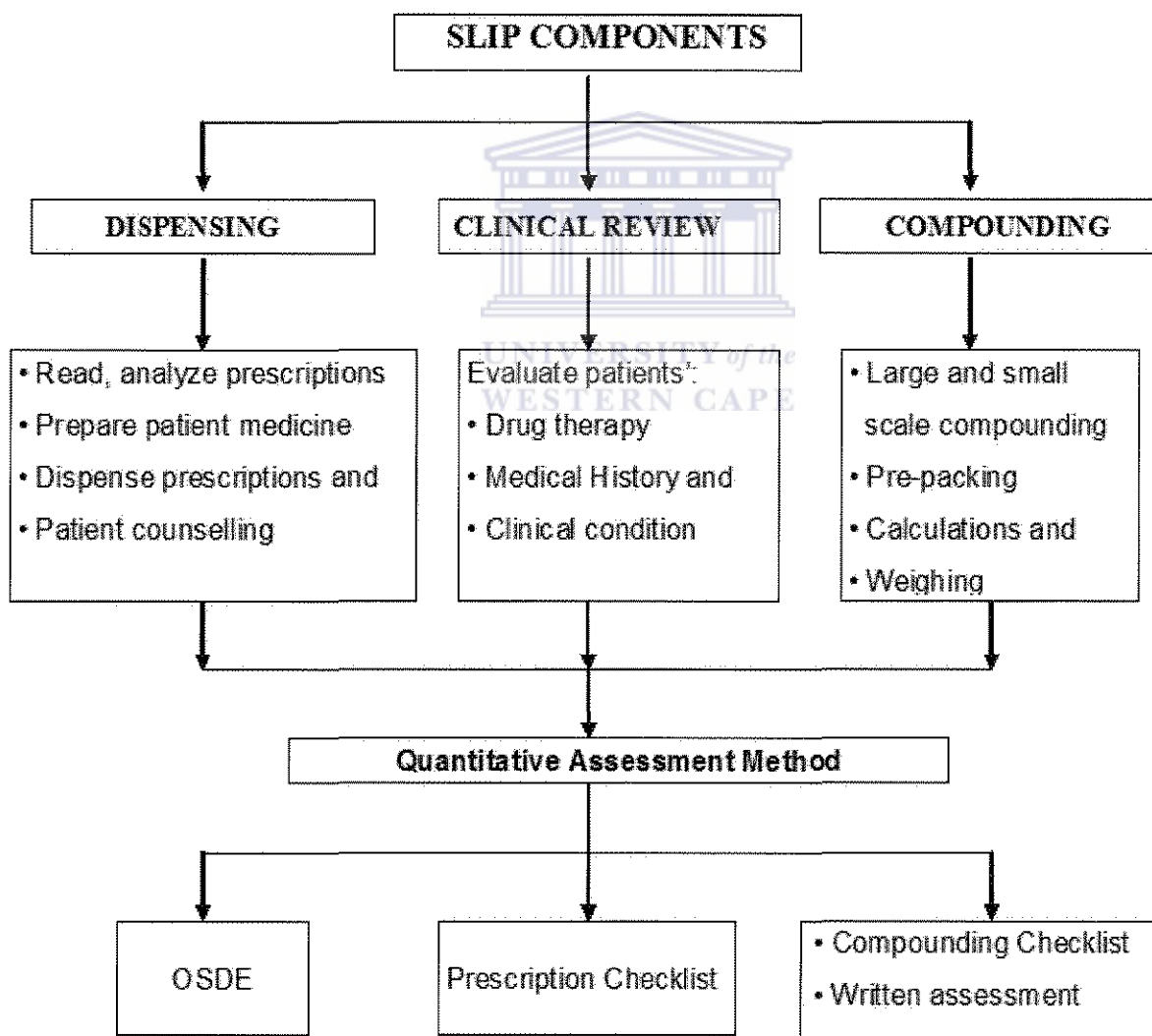
Within each component, activities were selected to be in line with the learning objectives. Table 3.13 below outlines the learning activities students participated in for each discipline-related objective set out by the UWC SLIP course.

Table 3.13: Outline of learning activities for each SLIP objective

SLIP Discipline Objective	Activity in SLIP Model
Pharmacology	<ul style="list-style-type: none"> • Medicine dispensing • Prepare patient medicine • Read and analyze prescription • Evaluate patient's drug therapy • Evaluate patient's medical history • Evaluate patient's clinical condition
Pharmaceutics	<ul style="list-style-type: none"> • Compound creams, syrups on large and small scale • Calculate amounts for working formula • Assist in pre-packing • Use of equipment: Weighing and calibrating • Observe adherence to SOP
Pharmacy Practice	<ul style="list-style-type: none"> • Practice patient counselling • Observe respect for patient confidentiality • Practice empathetic listening • Observe and practice ethics and adherence to law • Communicate with pharmacists and other health professionals

With the components and activities of the SLIP model chosen to be in line with learning objectives, the next step in conceptualization was to arrive at a means of assessing each component. The method of assessment would be required to test student competency in components of hospital practice, thereby reflecting whether experiential learning was in fact taking place. Student competency was assessed by means of unobtrusive observation, using pre-designed checklists as tools for data collection. Figure 3.12 below outlines the activities and assessment checklists used for each component of the SLIP model.

Figure 3.13: Overview of student activities and assessment methods for each component of the SLIP model



Once the model components and assessments for each component were decided upon, the rotation schedule, which would detail the time and duration for each component and assessment, needed to be developed.

In devising the rotation schedule (Figure 3 .14), it was necessary to consider the normal operational activities of the pharmacy, and arrive at one that would be both compatible and complementary therewith. For example if Tuesdays were considered to be a particularly busy day at Compounding, students were rotated there because (i) it allowed for a good level of exposure thereby gaining competency and (ii) students could perhaps help out with the workload and relieve some of the burden on the compounding pharmacist. Times for tea and lunch breaks were included in the rotation schedule, as were slots for orientation to the pharmacy and student assessment.

Prior to the initiation of SLIP blocks for the academic year, students attend an on-campus SLIP orientation which provides them with an overview of course expectations, activities and learning objectives. In addition to the on-campus orientation, the Tygerberg SLIP model included a two-hour slot for on-site orientation. This on-site orientation comprised:

- A tour of the pharmacy premises pharmacy and the location of the different departments within the pharmacy.
- The location of various items in the pharmacy including surgical items (e.g. syringes) SOPs, and reference books, as well as the arrangement of medicines on shelves.
- Introduction of students to key staff members.
- Induction to operational procedures within the pharmacy, for example the course of a patient's prescription once it enters the pharmacy.
- Overview of activities that students would partake in at the site.

Figure 3.14: Rotation Schedule for SLIP at Tygerberg Hospital Pharmacy

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8.45am – 9.15am	Introduction	Compounding Pre-intervention Checklist	Ward Pre-intervention Checklist	Dispensing: out-patients	Dispensing: in-patients
9.15am - 10.00am	Focus group	Compounding	Clinic / Ward	Dispensing: out-patients	Dispensing: in-patients
10.00am -10.20am	Tea break	Tea break	Tea break	Tea break	Tea
10.20am 12.30pm	Orientation to pharmacy	Compounding	Clinic /ward	Dispensing: out-patients	Dispensing: in-patients
12.30pm-1.00pm	Lunch break	Compounding Post-intervention Checklist	Ward Post-intervention Checklist	Lunch break	Lunch
1.00pm-2.00pm	Dispensing: Pre-intervention checklist			Dispensing: out-patients	Dispensing: in-patients
2.00pm-3.00pm	Dispensing: out-patients			Dispensing: out-patients	Dispensing: in-patients
3.00pm-4.00pm	Dispensing: out-patients			Dispensing: out-patients	Compounding : Post Assessment
4.00-4.30	Compounding: Pre-Assessment			Dispensing: Post-intervention checklist	Focus Group

Another key element of the SLIP model was the model facilitator. It is reasonable to suggest that student learning needs to be guided and directed by a facilitator. For the SLIP model, the facilitator would be a pharmacist who would be responsible for mentoring students and guiding their learning in the activities of the SLIP model, and would also assume accountability for student actions.

3.14 Prior planning with pharmacy service staff

It was necessary to organise certain aspects of the SLIP rotation schedule in the week preceding each SLIP block. For example, specific times had to be arranged with nursing staff to allow students to access the gastroenterology and/or paediatric clinics for the clinical activity. The availability of ingredients and equipment for the compounding activity had to be ensured. Furthermore, I informed all pharmacy managers that SLIP students were expected in the following week.

3.15 Plan for unforeseen events

The execution of the SLIP model as designed relied on a number of aspects including:

- i. Punctual arrival of students.
- ii. Attendance of students allocated to the site.
- iii. Availability of patients in clinics and in the waiting room.
- iv. Availability of ingredients for pharmaceutical compounding.
- v. Presence of the designated facilitator.

While the activities and times were clearly planned in the rotation schedule, a change in any of the aspects above would have an effect on the implementation of the rotation schedule. For example if students arrived thirty minutes late the activities of the rotation schedule would be delayed, or if a student that was scheduled to be at the site did not arrive he/she may miss out on a learning component needed to do the succeeding activities in the model. Similarly if there were no patients in the clinics or if no ingredients were available for compounding, the student activity that involved these factors might not be able to occur on their scheduled day. For this reason the SLIP model, despite its rigid, planned nature, had to be somewhat flexible and open to

change. The model was devised in such a way that activities in allocated timeslots could be interchanged with other activities in alternate timeslots. In the unanticipated event that the facilitator could not be at the site, it would be arranged for another pharmacist to be the substitute SLIP facilitator for the duration of time that the facilitator was unavailable.

3.16 Implementation of the SLIP model at Tygerberg hospital

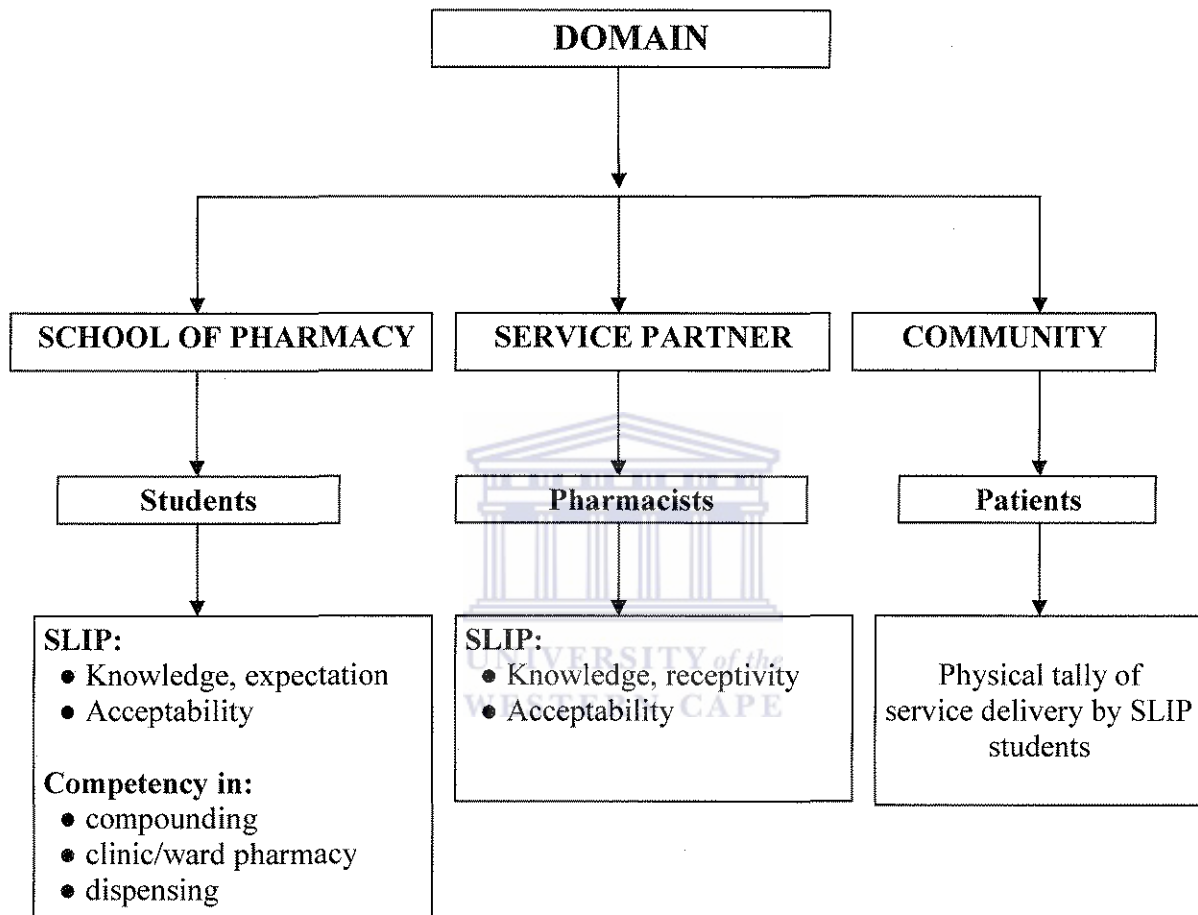
Permission to conduct SLIP was obtained from the management of Tygerberg hospital (Appendix IV), and discussions were held with pharmacy management in order to devise a strategy for service-learning within the pharmacy. The SLIP model was implemented as part of the CHESP-initiated service-learning course offered at the UWC School of Pharmacy. The course entailed students being assembled on campus, from where they were transported to and dropped off at the SLIP site by university-arranged transport. A given group was assigned to a site for 1 week per term, comprising 5 days. A group of students attended 4 different sites for the year (2007). On their arrival at the site, students were required to sign an Indemnity Form (Appendix VI), thereby indemnifying the service partners of any harm the student may incur during the SLIP Block.

3.17 Evaluation of the SLIP model

This study evaluated the impact of the SLIP model on three domains: the School of Pharmacy, the Service partner and the Community. A separate group of study subjects existed for each domain. For the School of Pharmacy domain, students were evaluated; for the Service Partner domain, pharmacists employed at the service site (Tygerberg hospital pharmacy) were evaluated and for the Community domain, the effect of the SLIP model on patients was evaluated. For students, the data to be obtained would reflect student perception and view of SLIP and their competency in the components of the model. For pharmacists, the data obtained would reflect pharmacists' attitude and receptivity toward SLIP and for patients, the data would reflect quantitatively the

service delivery impact of SLIP. Figure 3.17 below outlines the study domains, the study subjects for each domain and the focus of the study for each domain.

Figure 3.17: Domains to be evaluated in this study



Data collection was to occur prior to, during and after implementation of the model. The data collected prior to executing the model formed the baseline data of this inquiry and this was done to obtain data reflecting (i) the students' existing views of service learning at a tertiary hospital, (ii) their existing competence level in the types of work done at a tertiary hospital and (iii) pharmacists' knowledge, views and attitudes about service-learning. Immediately after the collection of the baseline data, the model was implemented. Data collection continued during and after the implementation of the model. Figure 3.18 illustrates the study design.

Figure 3.18: Outline of study design and research methods used

Stage 1 : Pre-intervention/ Baseline Study		
Aim: ● obtain pharmacists' view of, and receptivity toward SLIP ● obtain students' knowledge of, and attitude toward SLIP ● assess student competency in components (compounding, dispensing, clinic/ward)		
Research Method	Pharmacists	Students
Qualitative	Participant observation	Focus group
Quantitative	Questionnaire	Assessment: Compounding Checklist: Compounding Checklist: Dispensing Checklist : Clinic / ward
↓		
Stage 2: Implementation of model for SLIP		
Aim: ● physical count of student contribution in pharmaceutical service delivery		
Research Method	Pharmacists	Students
Qualitative	-	-
Quantitative	-	Physical tally of completed pharmaceutical services by students in each component
↓		
Stage 3: Post-intervention Study		
Aim: ● obtain pharmacists' view of, receptivity toward SLIP ● obtain students' knowledge of, attitude toward SLIP ● assess student competency in activity (compounding, dispensing, clinic/ward)		
Research Method	Pharmacists	Students
Qualitative	Participant observation	Focus group
Quantitative	Questionnaire	Assessment: Compounding Checklist: Compounding Checklist: Dispensing Checklist : Clinic / ward

Section C: Research Methods used in the study

3.18 Pharmacist questionnaires

Two questionnaires were employed in this pre- and post-intervention enquiry. The first questionnaire, which was distributed pre-intervention (Appendix VI), was aimed at obtaining pharmacists' views about their working environment and their attitude toward student presence in the pharmacy for SLIP activities. The aim of the second questionnaire (Appendix VII), which was distributed post-intervention, was to assess pharmacists' views of and receptivity toward the SLIP model. Likert and Semantic Differential (S-D) type questions, which allowed a range of attitudes to be represented as data, were used. An additional space was included, allowing the respondent to further comment on any issues. S-D scale questions were identical for the pre- and post intervention questionnaire so as to allow comparability of results.

The questionnaires used in the pre- and post- intervention study were checked for content validity by an experienced researcher who is knowledgeable about service-learning and pharmacy practice patterns at a tertiary hospital. Questionnaires were piloted with two independent reviewers.

3.19 Administration of the questionnaires

The questionnaires were hand-delivered to the respondents. Being colleagues with whom I worked on a daily basis, I was secure in the knowledge of its completion and its return to me. In view of their demanding workload, the pharmacists were initially given five days to complete the questionnaires, after which I would collect them. However, a low response rate for the baseline questionnaire was initially achieved. Many respondents only completed the first page of the questionnaire, which indicated that the questionnaire may have been too long, or that pharmacists needed guidance in comprehending the questions. I separated the sections of the questionnaire and strategically re-delivered them, and waited for each pharmacist to complete it. This resulted in a one-to-one situation with the pharmacist, to whom I was able to provide

necessary support in the completion of the questionnaires. The strategy for completion of the questionnaire thus changed from being self-administered questionnaires to a supervised administration type strategy. A higher response rate (78%) was then obtained. The same approach was employed for the post-intervention questionnaire, for which a response rate of 88% was obtained.

3.20 Student focus groups

For each of the five student groups, a pre-intervention and post-intervention focus group was conducted. The purpose of the pre-intervention focus groups was both to explore student expectations and understanding of service-learning as well as to establish their knowledge of hospital pharmacy practice. Pre-intervention focus groups were held with students within the first hour of their SLIP block, before they had entered the pharmacy or had any SLIP experiences in the pharmacy. This presented an opportunity for me as the service-learning facilitator and researcher to establish rapport with the students and to get an outlook of the student's view of SLIP. Post-intervention focus groups, held in the last hour of the SLIP block, explored student's perceptions about service-learning and their thoughts on the Tygerberg hospital SLIP model.

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Focus group guidelines (Appendix VIII and IX) developed for this study was used to steer the course of the focus group discussion. While the focus group guideline consisted of a set of questions, care was taken to pose these questions in a comfortable, conversational style, to avoid possible anxiety or intimidation of students that may be caused by posing questions in a formal, dictatorial style. The focus group strategy served its purpose well because it provided considerable understanding of students' thoughts and feelings about their SLIP block, while it also presented an opportunity for the students to reflect on the week that had passed and to summarize the lessons learnt and situations experienced. A broad theme of questions was explored and new themes surfaced. Different colours representing responses from different students are used to present quoted data from focus groups.

3.21 Participant observation

Participant observation was conducted with pharmacists on-site in an unobtrusive covert manner, prior to, during and immediately after the implementation of the SLIP model. This unobtrusive observation yielded a naturalistic, real reflection of pharmacists' views and concerns of the SLIP model.

Participant observation was also employed as a method to evaluate student competency in the areas of dispensing, clinic/ward pharmacy and compounding. Unobtrusive observation was employed as the method of assessment and checklists were used to record the observation. The observation was done covertly to avoid student nervousness that may have resulted from obtrusive overt observation which would involve visually inspecting students' actions in the component being assessed. Data from the observations were recorded on pre-designed checklists. The checklists for compounding and clinic/ward pharmacy were specifically designed for the study (Appendix X, XII), while the checklist used for dispensing was the OSDE sheet (Appendix XI) which formed part of the SLIP course. Students were assessed both prior to and after participation in the activity to ascertain whether learning had in fact occurred. An additional written assessment was done for compounding as the checklist measured actions carried out but was unable to assess whether students were thinking of and applying pharmaceutical principles in compounding.

3.22 Baseline study

The aim of the baseline observation was twofold. Firstly, to assess pre-intervention, pharmacists' attitudes toward and willingness to participate in SLIP, and secondly, to assess students' attitudes toward and expectations of SLIP, as well as their competency in various areas of hospital pharmacy practice.

A questionnaire survey (Appendix VI), as well as field notes obtained from covert participant observation, were used to assess pharmacist's attitudes toward service-learning. This included pharmacist receptivity to student presence in their working

environment, whether they were willing to play a mentor role to the students and if they thought students helped to lessen their daily workload or conversely, if the students created an extra chore in their task load. Questionnaires were handed to pharmacists, one section at a time. This was done to avoid a low response rate which could possibly be obtained as a result of the lengthiness of the questionnaire.

Focus groups were employed as a technique to assess student willingness to participate in service-learning. Field notes were jotted down during the focus groups. Student responses are represented using different colours for different students. This allows for ease in reading and distinction between responses. Student competence in areas of compounding, clinic/ward pharmacy and dispensing was assessed through observation and data was recorded using checklists. Participation in the SLIP study was mandatory. Although this seems to be contrary to the tenets of informed consent, such informed consent was not applicable as this was considered part of their course work. During their SLIP introduction session at Tygerberg hospital, students were informed that their participation in the SLIP model would render them members of the group for this study. Data was coded and kept confidential.

3.23 Data presentation and analyses

Qualitative analysis

Responses from student focus groups and observation of pharmacists were classified as being positive, negative or neutral responses. This helped to identify significant themes and patterns that emerged from the analyzed data.

Quantitative Analysis

Questionnaire responses and observation checklist data were calculated and presented as proportions of scores for each parameter tested. Responses marked as yes, strongly agree, or agree were identified as positive feedback, while answers marked as no, strongly disagree or disagree were regarded as negative responses. Data from the questionnaires and competency checklists was entered into a statistical package for

social sciences (SPSS) and semantic-differential (SD) scale responses and the compounding assessments were matched and analysed using the Wilcoxon Signed Ranks test.

3.24 Ethics

The proposed study was authorized by the Senate Ethics Research Committee of the University of the Western Cape. A letter of permission to conduct SLIP was obtained from management of Tygerberg Hospital (Appendix IV).

3.25 Conclusion

This chapter provided a review of research methods and the design of the Tygerberg SLIP model was discussed. The research methods employed in the study design were also discussed.



CHAPTER 4

RESULTS AND DISCUSSION: BASELINE STUDY

The baseline study explored SLIP on two dimensions, viz. the student and the pharmacist. The aim of the pharmacists' baseline enquiry was to assess current views and perceptions and attitude towards the service-learning process and to SLIP being conducted in their workplace. The students and pharmacists were studied using qualitative and quantitative methods. The student baseline study was aimed at obtaining student views and perceptions of SLIP as part of the pharmacy curriculum. Secondly, pre-intervention knowledge and competency in three components of pharmacy practice were assessed.

Section A: Pharmacists' Baseline Enquiry

The pharmacists' qualitative enquiry comprised unobtrusive participant observation, while quantitative data was obtained by means of self-administered questionnaires. This section details the results obtained from the participant observation (qualitative data) of pharmacists and their questionnaire responses (quantitative data).

Part 1: Participant observation

4.1 Method

Management of Tygerberg hospital pharmacy had primed staff about the research taking place within their work environment. Observation of pharmacists was initiated as soon as pharmacy staff members were aware of imminent student presence in the pharmacy for SLIP activities. The observation was unstructured and covert as I did not want to be over-bearing, and tried to capture a natural, real reflection of pharmacists' attitude toward SLIP being conducted within their workplace. Being a community-service pharmacist at the time, I constituted part of the staff and a relationship of trust and familiarity, which supported the observation process, already existed.

4.2 Results

Table 4.2: Profile of pharmacists in the pre- intervention observation study (n = 8)

Gender	Number of pharmacists	Percentage	Age range (years)
Male	2	25	30-40
Female	6	75	23-60

Key for observation of pharmacy staff

Ph: represents a pharmacist

Ph1: represents the first pharmacist I had observed

Ph2: represents the second pharmacist I had observed. This successive order is followed for all the subsequent pharmacists whom I had observed and interacted with.

M: represents Mariam Parker (myself)

4.3 Pharmacist's responses

The observations of pharmacists were classified into three main themes: those who responded positively, those who had a neutral or passive response and those who had negative reactions toward SLIP and student presence in their working environment.

4.3.1 Positive responses to SLIP

For each observation, the context is given followed by the actual scenario observed.

Context: Pharmacist 2 (Ph2) responds to a conversation in which I mention the students' forthcoming first SLIP block:

Ph2: *mmhhh (nodding). They (the students) can probably do things we have always wanted to do but never had the time to. Such as maybe sorting out the medicine shelves in the wards (Afrikaans)*

Ph2 saw the possibility of the student contribution and how the pharmacy could benefit as a result. This perception echoes the tripartite relationship (Figure 2.4) that is envisioned for the SLIP program.

Context: Pharmacist 7 (Ph7) makes teasing comments regarding the students who are coming for the SLIP blocks. He/she addresses me (M).

Ph7: *Hey are there nice girls coming...then bring them to my department*
(laughing, joking)

Ph8: (smiling) *your mind just thinks of girls...they're too young for you...*

M: *No seriously they're coming to learn and you do a lot of interesting work in your department. What do you think of giving them a talk?*

Ph7: *Ja we'll see...but then it must be on a Friday because that is the best day for me...but we'll see...I'll let you know. But you must remind me...*

Ph7 was enjoying a humorous interaction with pharmacist 8 (Ph8) about student presence in SLIP. The teasing indicated that he/she did not have a problem with students spending time in the pharmacy, but could also be construed as not taking the students and SLIP seriously. When reminded of the purpose of SLIP, Ph 7 seemed open to accommodating the students and even alluded to Fridays being the most suitable day.

Context: Pharmacist 3 (Ph3) responds to another staff member who is complaining about the possibility of students making medicine related errors:

Ph 3: *Ag man (smile) stop nagging...we'll put them to work. They can be like our slaves* (teasing, joking)...

While Ph3's response may be interpreted as being condescending toward students, it was in fact more to placate the pharmacist to whom the response was given. Making a light-hearted comment was meant to put the other pharmacist at ease. This light-heartedness illustrated the fact that Ph3 had no objection toward student presence in SLIP, and furthermore that he/she tried to influence other pharmacists to be more positive about SLIP.

4.3.2 Passive responses to SLIP

Context: While working, pharmacist 4 (Ph4) asks me (M) about student visits:

Ph4: *So tell me a bit about this thing that's happening? Students are coming and then? (Afrikaans)*

M: *Ja it's a service-learning program meaning that students provide a service and learn while doing it. So they will come and do some work in the pharmacy and the experience will help them hopefully increase their skills. But that is what I am researching, whether it is feasible and actually works or not.*

Ph4: *Oh, oh... I see... (Nodding...continues with her work)*

Ph4 was new to Tygerberg hospital and had studied and practiced in another province. Ph4 was curious about what was going to take place in the pharmacy and was content once he/she received the answer. Neither objection nor approval was expressed; rather simply an acknowledgement of understanding what SLIP was about.

Context: I approached pharmacist 3 (Ph3) who was in charge of a department within the pharmacy, to enquire whether students could spend time in this department.

M: *Hey *** (name withheld), the students are coming next week. Will it be alright if they work here in (his/her department) on Thursday? It will be three students; I will be with them and check their work.*

Ph 3: *Ja its fine, but you will be with them so I don't have to worry...So....what's up for the weekend?*

While Ph3 was willing to allow students in his/her department, he/she neither objected to nor showed any interest in interacting with the students or getting involved in the service-learning process. Instead, Ph3 confirmed that I would be responsible for seeing to the students so that he/she did not "have to worry." As soon as I confirmed this, Ph3 changed the subject and ended the conversation about SLIP, once again indicating no further interest.

4.3.3 Negative responses to SLIP

Context: Pharmacist 1 (Ph1) seems annoyed immediately after the meeting in which they were informed about student presence. She discusses her annoyance with Ph2 (Afrikaans):

Ph1: *It's as if we don't have enough work to do as it is. This is unfair. We are already overburdened and working late. We are not getting paid extra to train students.*

Ph1 addressing the researcher (frowning)

Ph1: *What is this new thing about? Is it only UWC doing it or other universities also?*

M: *No it's a program called SLIP; it stands for service-learning in pharmacy. It's an initiative to increase the competence of the graduates so they can be of more help to our country once they graduate.*

Ph2: *Sigh! (frown). Well I don't have the time to get involved.*

M: *We'll see what happens; the idea is not to over-burden the staff.*

Ph1: ***** must put her foot down and stop accepting things, we are after all her staff; she should put our needs first.*

This interaction occurred very soon after the pharmacists first heard about the research being conducted and the concept of the structured SLIP model. The reaction by Ph1 indicated anger and a perception that his/her workload would increase due to extra work in training students. This showed a lack of insight and understanding of service-learning and a misperception about the roles of the pharmacists in the SLIP model. Ph1 openly conveyed the inconvenience of the SLIP model and then went on to express dissatisfaction with a senior staff member for allowing SLIP to be conducted at Tygerberg hospital pharmacy. Ph2 initially seemed to emulate this anger. Later in the conversation, when I was involved, he/she seemed more saddened by the fact that he/she did not have time to spend with the students. The fact that he/she expressed sadness only when I was part of the conversation indicates that either he/she initially was not as angered by the SLIP concept and was merely influenced by Ph1, or that

he/she was angry and tried to conceal his/her anger by making excuses about not having the time to spend with the students. Once again, a lack of understanding and misconception of their role in the SLIP model was evident.

Context: *Pharmacist 5 (Ph5) spoke to a locum pharmacist about the SLIP model.*

Ph 5: *What if one of these students makes a mistake with medicine? Who is going to take responsibility then? It's good for them to gain experience, but I don't know....*

Ph5's tone of voice was neither negative nor positive. It seemed as though he/she was open to the idea of students in his/her work area but expressed concern about who would take responsibility if the students were to make possible medicine-related errors.

Context: *Pharmacist 6 (Ph6) responded to me in a conversation about students coming to Tygerberg hospital for participation in the Tygerberg SLIP model:*

Ph6: *No its fine we will keep them busy. As long as they don't complain about the tasks being repetitive and boring because it is what they are going to be doing a lot of the time. Students like to complain that they must count tablets (pre-packing) all week. They do not see the value in it. It teaches them hand co-ordination and they will become really good at it.*

M: *This is not like an externship course where they can do that sort of thing; the idea is that they gain experience, so we must expose them to all practical aspects of pharmacy, such as dispensing and compounding and so on.*

Ph6: *Well I'm not going to baby-sit the students in out-patients - I can't - I have other work to do.*

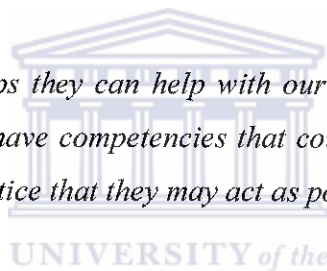
Ph6 at first seemed positive about students spending time in the pharmacy and saw the possibility of student contribution and even alluded to student benefit and learning taking place. Ph6 however was envisioning students doing the work which was not very stimulating nor allowed for different learning outcomes. Ph6 detached himself/herself

from the model once I informed him/her that students would be doing different things. The conversation continues below with pharmacist 1 included in the dialogue:

M: *The idea is that they will be working in the various departments just as a pharmacist would, except of course they will be under supervision. So I will devise a program for them in which they move through the different departments, for example on day 1 they may be dispensing at out-patients, day 2 at manufacturing and so forth.*

Ph1: *So that means they are coming to my department as well (frowning, irritated). Now see this is what annoys me, it's as if we have no say in the matter. Well I will see what to do when they come to me, I'm not promising anything. I don't even have space in my department for four other people.*

M: *I think that perhaps they can help with our heavy load. They are final years and should have competencies that could help us. It is actually in their scope of practice that they may act as post-basic assistants.*



Ph1 indicated that he/she did not have the space for students in his/her department and expressed dissatisfaction that the pharmacists' protestation to SLIP was not being considered seriously enough to stop the students from coming. I replied by attempting to indicate the possible benefits for the pharmacy.

4.4 Discussion

The pre-intervention observation reflects pharmacists' attitudes to service-learning and student presence in the pharmacy prior to the implementation of the SLIP model. Few pharmacists were positive toward the SLIP initiative. A response was classified as positive if the pharmacist displayed optimism or enthusiasm about SLIP, or if the pharmacist was willing to interact with students. Pharmacists who saw any potential benefit for any partners in the tripartite relationship were also considered as a positive response. Three positive observations were obtained. The positivism was rather vague,

pharmacists did not seem to be overly optimistic or enthusiastic or willing to spend time with the students, but obliged if I asked them. One pharmacist saw opportunity for student contribution but it was in a task that nobody had the time to get to in previous years, indicating that it was not one of high priority or importance.

Passive responses were those which conveyed neither objection nor approval to the SLIP initiative or student presence. These pharmacists did not appear to think that the SLIP model would affect them at all.

Many pharmacists responded negatively to the idea of students working in various departments within the pharmacy as part of the Tygerberg SLIP model. Pharmacists had several concerns and objections including space constraints in their work area; possible medicine-related errors made by students and anticipated time demands made on pharmacist by the SLIP model. The objections and concerns of the pharmacists may have stemmed from experience with SLIP students in previous years, as well as apprehension about the introduction of a SLIP model. SLIP had run at Tygerberg Hospital before, with the guidance of a UWC facilitator and without a SLIP model. For the current year, (2007), the facilitator, myself, was a full-time staff member at the hospital. This was not received well because it was perceived that I was getting 'time off' to teach students during the SLIP block. That would mean one less member of staff in a pharmacy already characterized by staff shortages and high workload. While this perception was incorrect, it was a cause of anxiety in the pharmacy and may have been a contributing factor to the negativity around the SLIP model.

Part 2: Questionnaire

4.5 Method

The baseline questionnaire (Appendix VI) was distributed to 9 pharmacists. 7 questionnaires were returned indicating a response rate of 78% (Table 4.5).

Table 4.5: Profile of pharmacists in the pre intervention questionnaire (n = 7)

Gender	Number of pharmacists	Percentage	Age range
Male	2	25	30-40
Female	5	75	23-40

The response rate was initially low (22%). On collecting the questionnaires most pharmacists had only completed the first or second page. It seemed that the length of the questionnaire was a deterrent as it was perceived as time consuming in a busy workday. A higher response rate was achieved by separating the pages and asking pharmacists to complete one page at a time, on separate days. I would wait for them to complete it and it was then returned to me. Table 4.6 displays pharmacists' responses to the pre-intervention questionnaire.

Table 4.6: Results of the pre-intervention questionnaire

	Score allocated for each parameter (n= 7)	Percentage (%)
<i>2.1) Pharmacists who estimated the average number of patients seen at the pharmacy daily to be...</i>		
<200	0	0
200-300	0	0
300-400	5	71
500-600	2	29
<i>2.2) Pharmacists who estimated the average waiting time of a patient to be...</i>		
<2 hours	0	0
2-4 hours	2	29
4-6 hours	5	71
6-8 hours	0	0
<i>2.3). Pharmacists who felt that the staff complement at the pharmacy was large enough to handle the workload</i>		
Yes	1	14
No	6	86

2.4) <i>Pharmacists who rated the quality of service to the patients as being...</i>		
Excellent	2	29
Good	3	43
Mediocre	2	29
Poor	0	0
2.5) <i>Pharmacists who felt that the departments which are problematic in terms of high workload and few staff were...</i>		
Out-patients	6	86
Inpatients	2	29
Compounding	1	14
Wards and Clinics	1	14
2.6) <i>Pharmacists who felt that barriers to good pharmacy practice in their workplace include</i>		
Staff shortage	6	86
Inadequate training of personnel	2	29
Low morale of personnel	4	57
Low Job satisfaction	4	57
High workload	7	100
3.1) <i>Pharmacists who felt they were familiar with the concept of SLIP</i>		
Yes	6	86
No	1	14
3.2) <i>Pharmacists who claimed to have read material on SLIP</i>		
Yes	1	14
No	6	86
3.3) <i>Pharmacists who felt SLIP was devised to benefit...</i>		
Patients	0	0
Students	7	100
Pharmacists	2	29
4.1) <i>Pharmacists who felt that student presence at the hospital can be of benefit because students...</i>		
knowledge is fresh, updated	3	43
can help with the workload	2	29
will be more valuable as interns	6	86

4.2) <i>Pharmacists who felt that student presence at the hospital can be of detriment because students...</i>		
are likely to get in the way	5	71
are likely to make errors	7	100
increase our workload	4	57
presence may confuse patients	1	14
4.3) <i>Pharmacists who felt that their role in the service-learning process was ...</i>		
To teach, lecture	3	43
To mentor, advise	5	71
Not a matter to be concerned with	2	29
5.1) <i>From your experience, do intern pharmacists show the following competencies as prescribed by the SAPC unit standards?</i>		
• Manufacturing, compounding pharmaceuticals	3	43
• Procurement, storage , distribution of pharmaceuticals	2	29
• Dispensing, ensuring optimal use of medicines	4	57
• Provision of pharmacist initiated therapy and optimal use of medicines	1	14
• Providing education and information on medicine and healthcare	2	29
• Promoting community health	0	0
• Participating in research	0	0
5.2) <i>Pharmacists who felt the reason for interns not being competent in certain unit standards was...</i>		
Inadequate training	2	29
Not enough experience	6	86
Not enough confidence	4	57
Poor attitude, work ethic	1	14

S-D Scale responses:

S-D scales were used in the questionnaire to obtain pharmacist responses to two questions. Pharmacists marked responses to the questions on a scale ranging from point 0 to point 10, where point 0 was labelled hindered and point 10 was labelled 'benefited'. The midpoint was labelled 'not affected.'

Question 1: How do you expect student presence to affect your work in a personal capacity?

Question 2: How do you expect student presence will affect the work of the pharmacy at large?

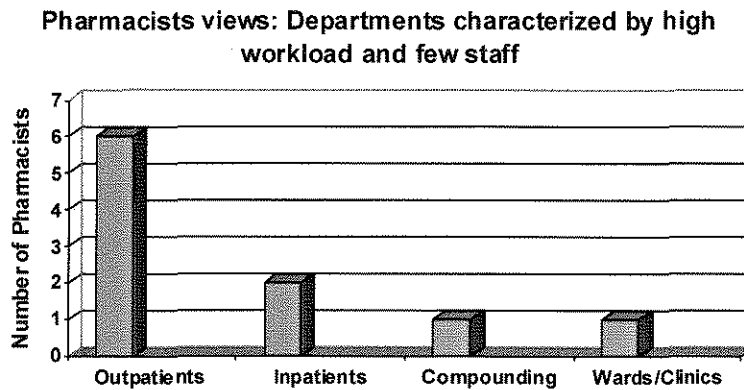
Table 4.7: Pharmacists' S-D scales responses

Pharmacist	Question 1	Question 2
Ph1	2	1
Ph2	2	1
Ph3	2	3
Ph4	2	1
Ph5	5	9
Ph6	2	8
Ph7	6	8

4.6 Results

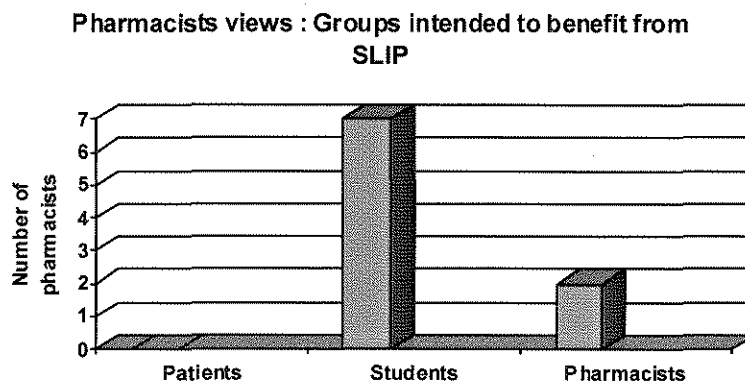
A high response rate (78%) was obtained as a result of separating pages of the questionnaire and waiting for the pharmacists to complete them. More than half of the pharmacists (5; 71%) estimated that the average number of patients seen at the pharmacy were between 300 and 400, while two pharmacists (29%) estimated it to be between 500 and 600. Majority of the pharmacists (5; 71%) estimated the patient waiting time to be between four to six hours and felt that the staff complement at the pharmacy was not sufficient to handle the workload. Pharmacists rating of the quality of pharmaceutical services provided at Tygerberg Hospital pharmacy varied: 2 pharmacists (29 %) rated the service as excellent, 3 pharmacists (43%) rated it as good; 2 (29%) rated it as mediocre and none of the pharmacists rated the service as poor. As seen in Figure 4.6.1, pharmacists felt that the out-patients department (6; 86%) was most problematic in terms of high workload, followed by in-patients (2; 29%) while one pharmacist (14%) found wards/clinics and compounding to be problematic.

Figure 4.6.1: Pre-intervention questionnaire responses regarding pharmacy departments



Pharmacists felt that barriers to good pharmacy practice in their workplace include staff shortage (6; 86%), inadequate training of personnel (2; 29%), low morale of personnel (4; 57%), lack of job satisfaction (4; 57%) and all (100%) felt that high workload was a barrier. Most pharmacists (6; 86%) felt they were familiar with the concept of SLIP while only one (14%) claimed unfamiliarity. Conversely only one (14%) pharmacist had read material on SLIP while six (86%) had not. Figure 4.6.2 demonstrates that all pharmacists (7; 100%) felt that SLIP was devised to benefit students and two pharmacists indicated that SLIP was devised to benefit pharmacists. None of the pharmacists indicated that SLIP could benefit patients.

Figure 4.6.2: Pre-intervention questionnaire responses regarding groups intended to benefit from SLIP



Pharmacists felt that student presence at the hospital can be of benefit because student knowledge is fresh and updated (3; 43%), that students can help with the workload (2; 29%) and that students will be more valuable as interns (6, 86%). Pharmacists felt that student presence at the hospital can be of detriment because students are likely to get in the way (5; 71%) are likely to make errors (7; 100%), and increase workload (4; 57%). With regard to their role in SLIP, three (43%) of pharmacists felt their role was to teach, lecture, while five (71%) felt that they were meant to mentor, advise students, and two (29%) pharmacists thought the students were not their concern.

With regard to competency in entry-level unit standards pharmacists indicated that intern pharmacists showed competency in manufacturing and compounding of pharmaceuticals (3, 43%); procurement, storage, distribution of pharmaceuticals (2; 29%); dispensing and ensuring optimal use of medicines (4, 57%); provision of pharmacist initiated therapy and optimal use of medicines (1; 14%); and providing education and information on medicine and healthcare (2; 29%). None of the pharmacists felt that interns were competent in promoting community health and participating in research.

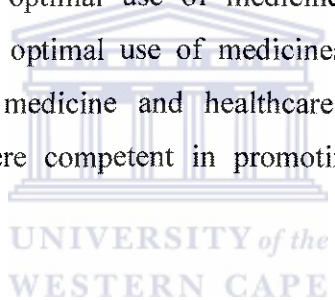
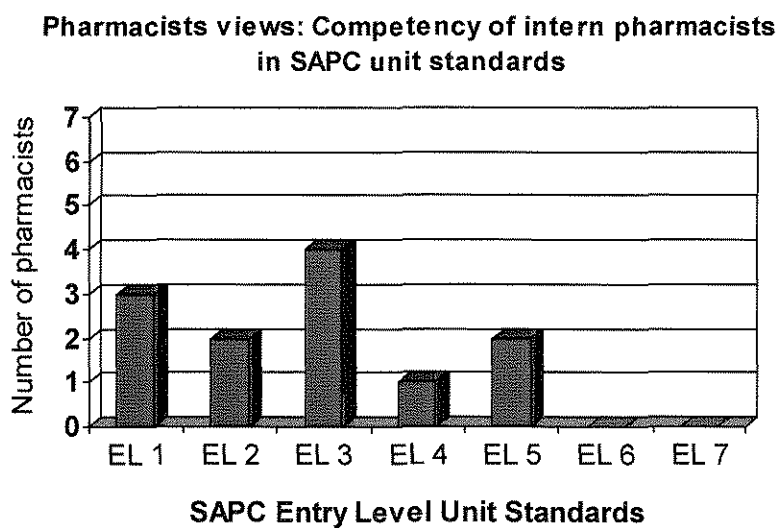


Figure 4.6.3: Pre-intervention questionnaire regarding SAPC Unit standards for entry level pharmacists



Most pharmacists felt that the reason for poor competency of interns was lack of experience (6; 86%), while some marked lack of confidence as a reason (4; 57%).

The mean score among pharmacists' responses to the first S-D scale was 3 which indicated that pharmacists generally felt that students would hinder their work in a personal capacity. The mean for the second S-D scale was 4.4 indicating that pharmacists felt that students would hinder the workflow in the pharmacy.

4.7 Discussion

The results obtained from questions 2.1 to 2.6 reflect that there was a need to increase human resources and service delivery at Tygerberg hospital pharmacy. This emulates the findings of the 2007 Provincial Synthesis Report (Ntuli, 2007) which details a Western Cape public enquiry into the right to have access to healthcare services. The majority of the pharmacists responded that the waiting time for patients is approximately 4 to 6 hours long, and that the pharmacy did not have enough staff to handle the workload. Pharmacists however noted that waiting times differ with the time of day (e.g. shorter wait in the morning), day of the week and depending on the staff complement for the day. High workload and staff shortages were among the most significant barriers to good pharmacy practice in their workplace. Low job satisfaction and low morale of pharmacy personnel were also reported as significant barriers to good pharmacy practice. Pharmacists' responses varied with regard to the average daily number of patients seen at the pharmacy and with regard to the quality of service rendered at the pharmacy. This may be due to the fact that some pharmacists work in different departments on a rotational basis while departmental managers' were primarily appointed to their departments with no rotation to other departments. Pharmacists therefore may perceive workload and service quality differently depending on the department in which they spend most of their time. All pharmacists reported out-patients to be most problematic in terms of workload.

Most pharmacists felt that they were familiar with the concept of SLIP but many reported not having read any material on SLIP. The familiarity may be due to the fact

that students attended SLIP at Tygerberg hospital in previous years. The fact that they had not read any material on SLIP means that they did not read the SLIP handbook that was given to the sites by UWC School of Pharmacy as part of the SLIP course. All pharmacists thought that SLIP would benefit students while none thought that patients would benefit. Two pharmacists thought that pharmacists could benefit from SLIP. This indicates that pharmacists do not see the potential for experiential learning programs to be of benefit to communities or service partners, but rather only for the students. Most pharmacists felt that the benefit for the hospital would be the following year when as interns the students would be more valuable, this may be due to increased skill and competency or familiarity with the site as a result of SLIP. Many pharmacists reported that student presence may be of detriment to the pharmacy because students would get in the way, were bound to make errors and would generally increase the workload of the pharmacists. The majority of the pharmacists felt that their role was to teach, mentor and advise students on their work and this is possibly why they felt their workload would increase. Pharmacists were generally of the opinion that interns were not competent in most of the SAPC entry level unit standards until later in their internship year. This is of concern in an already strained profession which would benefit from interns who could take their place in the workplace as soon as possible. Nearly all pharmacists felt that this lack of competency was due to the students not having enough experience. This justifies the need for experiential learning programs in undergraduate pharmacy curriculums. S-D scales reflected that most pharmacists had negative perceptions about SLIP being conducted in their workplace. This may have been due to previous experiences or it may be due to concern that students would have a negative impact on workflow in the pharmacy.

Section B: Student Baseline Enquiry

The student qualitative enquiry comprised focus group discussions, while the quantitative data was obtained from using on site checklists (unobtrusive observation) in the areas of dispensing, clinic/ward pharmacy and compounding. A written assessment for compounding produced quantitative data.

Part 1: Student Qualitative Enquiry

4.8 Focus Group: Overall impression

A pre-intervention focus group was conducted lasting approximately 30 minutes with each of the 5 student groups, consisting of either 3 or 4 students per group, depending on the group number (n=3, n=4), allocated by the UWC school of pharmacy. The focus group was conducted in the pharmacy boardroom within the first hour of the students' arrival for the SLIP block. Initially students seemed uneasy in the discussion, perhaps because it was the first focus group in which they participated and did not expect participation in a focus group. Students' responses to questions were limited, while some students did not respond at all. The manner in which questions were initially asked may have been too formal. The unresponsiveness of participants necessitated an adjustment in the focus group technique. I attempted to adopt a non-direct, informal style and used wording that was conversational rather than dictatorial. Questions were posed as topics. As the discussion progressed, some students became relaxed and adopted a conversational comfortable stance. It seemed that students who were reserved at first were influenced by their peers who were more forthcoming in their responses, and that students were pleased about this type of forum in which they could air their views and opinions. The focus group discussion served as a platform for the students to express themselves as they responded to the pre-arranged topics in the focus group guideline (Appendix XIV). Notes detailing student focus group responses were taken. Italicised quotes in different colours represent the responses of different students.

4.9 Results and Discussion

Common themes were extracted from the focus group discussions held with five student groups.

4.9.1. Inadequate understanding of service-learning

Students showed limited understanding of service-learning principles. None of the students mentioned the tripartite relationship even though it is illustrated in their SLIP handbooks. Students' understanding of service-learning seemed to be limited to

pharmacy learning outcomes only and that the sole purpose of SLIP was academic, not service to the community or for pharmacy services. Many students mentioned “watching the pharmacist” or “seeing what the pharmacist does” and assumed that this was how they would learn, which indicated that their understanding of experiential learning was lacking. The quotes below illustrate this:

...I just heard that it is about going to the pharmacies and seeing what happens there.

Err... I think it is about going to learn in the pharmacy

As time progressed and students had already been on a previous SLIP block, some students became aware of a service aspect. There were varying responses between students who thought they themselves were providing a service, and those students who thought that the pharmacists were providing the experience from which they could learn.

Service-learning is learning through providing a service. In providing the service you gain experience and that is how you learn.

I think it is learning from the people who do a service, like in our case pharmacists who give a pharmacy service to patients.

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4.9.2 Limited knowledge of hospital pharmacy

Many students had never been in a hospital pharmacy prior to SLIP. Students were uncertain of functions of a hospital pharmacy, and compared it to other sectors such as retail or community pharmacy

I have never been in a hospital pharmacy before.

...When we think of studying pharmacy you just think of a normal retail pharmacy

I don't know how patients get their medicine

Some students showed knowledge of hospital pharmacy, often because they had attended a previous externship or SLIP block at a hospital pharmacy.

Yes I think here the work is much more clinical. Like seeing to patients in the wards and so on, you really get to apply your drug knowledge...

Students perceived the condition of hospital pharmacies to be poor, characterized by inadequate facilities and staff shortages. Many of their perceptions stemmed from what they had heard and seen in the media

Not good...I don't think patients receive very good care.

Well it is a government hospital and reputations of government hospitals are not good. I haven't seen it so I can't comment on that.

Students who had been to hospitals on previous SLIP blocks reported that condition of hospital pharmacies was generally better than what they initially thought it to be.

It's not so bad as what I first expected. It's been quite good actually...

4.9.3 Academic inclination

Students displayed a strong interest and inclination to academic aspects of SLIP. When asked about their hopes of the SLIP program, many students indicated that they hope to see first hand implications of health systems and services, patient counselling, drug effects and interactions with other health professionals. This pointed out that students were eager to learn in spite of accounts of negative experiences in SLIP from the previous final year students and students' own experiences at previous SLIP sites.

I would like to learn more about medicines and doses and drug interactions. When we study this stuff we forget it quickly if we can't physically picture it or haven't worked with it.

I think I will learn a lot through the hands-on experience because things become more real when you actually see it.

Students also hoped that their Tygerberg SLIP experience would provide them with evidence to use in compiling their portfolios. Students are required to submit a portfolio illustrating their professional growth across their four years of pharmacy study. Their eagerness to collect evidence for their portfolios indicates a willingness to participate in reflective writing such as the portfolio.

I would like to see different and interesting things which we could use as case studies for our portfolios.

4.9.4 Eagerness to help patients

Some students were very keen for one-on-one patient interaction and “making a difference” in patient’s lives, as opposed to the rushed, mechanical dispensing process seen at some of the other sites.

I hope we can speak to patients about their medicine. I think we can really make a difference in people's lives and that they would appreciate somebody just taking the time to take interest in their health and life.

4.9.5 SLIP as preparation for internship

Students made an apparent association between SLIP and being better prepared for their internships as a result of SLIP. This indicated that students were seeing the value of SLIP for their professional development prior to participation in the Tygerberg SLIP model. One student mentioned making a good impression on a future employer, indicating that this student was considering public sector practice as a possible option for an internship.

I've never been in a hospital pharmacy and I would really love to shadow a pharmacist so I can get a good idea of what I am in for next year.

In orientation they told us that we are meeting our future employers. I am looking forward to making a good impression.

4.9.6 Expectations based on previous SLIP repute and experiences

Students often referred to the SLIP experiences of the previous year’s fourth year students and used this as an indication of what they could expect. Interaction between students of different years of study (2nd, 3rd and 4th years at the UWC School of Pharmacy is frequent - the senior students are often demonstrators in practical sessions for the junior students and students experience further contact through forums such as UWCAPS (UWC Association of Pharmacy Students). It appeared that 4th year students converse with their 3rd year peers about their experiences in SLIP and this leads to students coming into 4th year and into the SLIP course with preconceived perceptions and notions of what SLIP encompasses. Students from the previous year seemed to see

SLIP negatively and relayed stories of doing monotonous tasks and SLIP being a waste of time.

I don't know what to expect, in orientation it sounded so interesting but the class of last year complained about SLIP. They said they had to do silly things like packing shelves all the time and that was all they were allowed to do.

The students from last year said it was very boring and that it was a waste of time. They felt like they could have spent that time better in working on their research projects or studying.

Some students compared SLIP to, and provided anecdotes about their own experiences at sites on previous SLIP blocks. The experiences differed among students, some told of positive experiences while other experiences were negative. Positive occurrences included being exposed to different areas of pharmacy and being stimulated by various activities, while negative experiences relayed incidences of being used as a source of labour, and interactions with unapproachable, aloof pharmacists.

We are here to learn and some pharmacists think we are just cheap labour, like we are just there to do their work all day. But we have to work so fast we don't get the time to even read the SAMF about the meds we are counting, because then you are holding up the queue.

Some pharmacists are unapproachable and stay out of our way. It made us feel like we were in the way. It would be nice if they would interact with us here and show us what they are doing.

4.9.7 Student anxieties concerning SLIP

Length of SLIP Block: Students commented on the lengthy time they would spend on their SLIP blocks and wondered if it would be worth their time. They were anticipating boredom in the pharmacy and exhaustion by the time they were scheduled to leave. Students may have felt this way because they were unaccustomed to the 7.5 hour long working days in the pharmacies.

Ja... the time is very long. We're not used to such long days...our legs will be so tired.

I'm dreading the long hours that we will be on SLIP. What we will be doing all the time, I would not like to be bored and watch the time waiting for it to pass.

Counselling patients: Some students were not looking forward to speaking to patients. They were nervous which indicated a lack of confidence in their patient counselling abilities. This was of concern because patient counselling forms a significant part of the role of the pharmacist. This apprehension may be due to the fact that students lack experience in practicing pharmacy. Furthermore students were aware of the OSDE assessment done at the sites which examines their patient counselling abilities. The OSDE assessment consists of a checklist which the facilitator ticks while directly observing the student in a consultation with a patient during dispensing. The scrutinizing nature of this type of assessment can further bring on nervousness and anxiety for the student. Students also quoted language barriers as a reason for their apprehension in speaking to patients.

Something which I am scared of is speaking to patients; actually it's more nervous than scared. I'm not good with that, especially patients who speak different languages that I can't speak.

Medicine Errors: The matter of medication errors in dispensing surfaced when students were asked about their anxieties and fears regarding SLIP. This indicated a lack of confidence in their ability. In addition, it alludes to student awareness of the possible margin of error in practicing pharmacy and points to a degree of caution on the part of the student when they handle medication. This is considered as an encouraging finding because it means that students show a level of responsibility for their actions.

I want to know what happens if we pick the wrong medicine or make some other kind of mistake. The pharmacists should not expect that we will know everything.

When we are working with the prescriptions you get nervous because I keep thinking I am going to make a mistake. That's the worst feeling.

4.9.8 Tripartite relationship perceived as unrealistic

Students were informed about the philosophy of SLIP - that it is based on the idea of a tripartite relationship between the school of pharmacy, pharmacy services and the patient community; with intended benefits for all parties involved. Majority of the students found this to be an unrealistic expectation and felt that they would not be able to benefit the pharmacy or the patients because of their lack of expertise and experience in practice scenarios. This indicated a lack of confidence in their abilities.

I think in theory its good but it is unrealistic in practice.

Some students felt that a disservice would be done to them if they were required to do a lot of work while their learning took second priority. Another student reported learning opportunities were missed out on because of the work that was being done by the students. It seemed that service took precedence over learning.

Some sites just expect us to do their work and then we miss out on opportunities to learn.

Students did not agree that they could help patients faster. They explained that they often take longer to process a patient's medicines because they are not familiar with medicine location in the pharmacy. The speed of services was key in a busy out-patients department. Some students mentioned that following the OSDE sheet means that they took more time to counsel and therefore could not help patients much faster. In contrast, one student noted the thoroughness of the OSDE and the resulting benefit for the patient. Another student replied that patients do not want the extra information.

That's actually a different way of benefiting patients like you just said. Because we are giving them more information and we're being much more thorough.

They do not always want the information though, they just say " ja, ja I know I'm taking it for very long already'

One student commented that pharmacy services benefited from the amount of work done by the students. This was not the only student that noted that a lot of work was done by students, but he/she was the only student who made the connection between the work done and benefit for pharmacy services.

We actually did find that we did quite a lot of work at the other sites so it does work like that to an extent.

4.9.9 Facilitator

Although they were not asked about SLIP facilitation, students seemed to see the role of the facilitators as suboptimal and related accounts of students being left in the pharmacist's care, and facilitators not playing an active role in service-learning facilitation. Students also mentioned that some facilitators were not well acquainted with the SLIP site and were not well equipped to guide student learning.

We can't learn if we are not given the chance and if the facilitator just roams about not knowing what to do himself. Or if he just leaves us and goes to read a newspaper then we are left there. The pharmacists get irritated because they must watch us.

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Part 2: Student Quantitative Inquiry

Quantitative data was recorded on predesigned observation checklists that were used to assess competency in clinic/ward pharmacy, dispensing and pharmaceutical compounding.

4.10. Clinic/ward pharmacy:

Table 4.10.1 represents the proportion of students who scored in the various parameters on the clinic/ ward pharmacy checklist (Appendix X).

Table 4.10.1: Results of pre-intervention clinic/ ward practices (n=16)

	Score allocated for each parameter (n=16)	Percent age (%)
1. Students who checked for SOPs	0	0
2. Students who checked for patient name, age, birth date	13	81
3. Students who checked for patient history, weight	11	69
4. Students who checked for allergies	5	31
5. Students who checked for completeness of prescriber information	2	13
6. Students who checked for validity of the script: date and signature of prescriber	6	38
7. Students who checked for medicine related information	5	31
8. Students who checked for generic or propriety name of medicine	16	100
9. Students who checked for strength of medication	12	75
10. Students who checked for dosage and dose frequency	12	75
11. Students who checked for duration of treatment	7	44
12. Students who checked for diagnosis	9	56
13. Students who checked for dose complications	3	19
14. Students who checked for adherence to EDL/other formulary guidelines	6	38
15. Students who checked for drug-drug or drug-disease interactions	12	75

No student checked for SOPs relating to clinic/ward pharmacy. Thirteen students (81 %) checked patient name, age and date of birth while eleven (69 %) students checked patient weight and patient history. Less than a third of students (5; 31%) checked for allergies and completeness of prescriber information. Six students (38%) checked for validity of the prescription and less than a third of students (5; 31%) checked for medicine related information. All students checked for generic or proprietary name of medicine and twelve students (75%) checked for strength of medication. Three quarters of students checked for dosage and dose frequency of medicines. Less than half the students (7; 44%) checked for duration of treatment and nine students (56%) checked for diagnosis. Less than quarter (3; 19%) of students checked for dose complications. Six students (38%) checked for adherence to formulary guidelines and twelve (75%) looked at drug-drug and drug /disease interactions.

4.10.2 Discussion

All students failed to check for SOPs relating to clinic and ward pharmacy. While the majority of students checked patient details such as name, age, date of birth, patient history and weight most of them did not check specifically for patient allergies. Most students failed to make sure that prescriber details were filled out and also failed to ensure the validity of the prescription by checking for a date and prescriber signature. This indicates that students were more concerned with matters relating to the patient rather than ensuring that the forensic details such as legality and date were in order. All students checked for the names of the drugs on the prescription and most checked for strength and dosage of the medication as well as drug interactions. Students are advised in the SLIP orientation to have SAMFs (South African Medicine Formulary) and confirmed these details in the SAMF. Most students did not check other medicine related information such as a diagnosis, duration of treatment and dose complications. These details are relatively patient specific and would not appear as conspicuously as other details in the SAMF, on which students seemed to rely heavily.

4.11 Dispensing

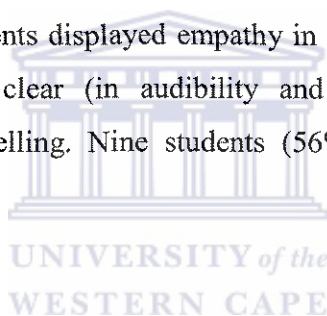
Table 4.11.1 represents the proportion of students who scored in the various parameters on the OSDE dispensing Checklist (Appendix XI)

Table 4.11.1: Results of pre-intervention dispensing practices (n=16)

Dispensing Activity	Score allocated for each parameter (n= 16)	Percentage (%)
STEP 1: Evaluation of patient therapy		
1. Defines the clinical condition (s)	9	56
2. Identifies inappropriate therapy	3	19
3. Labels medicines correctly	8	50
STEP 2: Dispensing the prescription		
1. Specifically states treatment objectives	9	56
2. Advises on lifestyle and health promotion	8	50
3. Gives advice on correct medicine use	11	69
4. Mentions drug and product names	13	81
5. Mentions how drug works	6	38
6. Gives instructions for administration	16	100
7. Gives advice on ADR, contra-indications	6	38
8. Assesses patient knowledge and recall	9	56
STEP 3:		
Evaluate student's communication style		
1. Greets patient, establishes language	11	69
2. Verifies folder number, patient name	12	75
3. Displays empathy	6	38
4. Clear (audibility, pronunciation)	16	100
5. Understandable	16	100
6. Structures conversation (logical)	9	56
7. Invites patient feedback	8	50

4.11.1 Results

Nine (56%) students defined the clinical condition and three students (19%) identified inappropriate therapy or errors. Eight (50%) students labelled medicines correctly. Nine (56%) students stated treatment objectives and half of students encouraged lifestyle change and health promotion. Eleven (69%) students provided advice on correct medicine use and thirteen (81%) students mentioned drug and product names. More than a third (6; 38%) of students mentioned how the drugs work and all (100%) of students mentioned instructions for administration. Six (38%) students gave advice on adverse drug reactions (ADR), special precautions and possible contraindications. More than half (9; 56%) of the students assessed patient knowledge and recall. In communicating with patients eleven (69 %) students greeted the patient and established the appropriate language to use. Twelve (75%) students verified folder number, and patient name and six (38%) students displayed empathy in interacting with the patient. All (100%) of students were clear (in audibility and pronunciation) and were understandable in patient counselling. Nine students (56%) structured conversation logically.



4.11.2 Discussion

Unlike the compounding and clinic/ward checklist assessments which were specially designed for the Tygerberg SLIP model and not supplied to students, the OSDE checklist was supplied to students as part of the UWC SLIP course.

In dispensing medication to patients, students seemed dependant on the OSDE checklist and rigorously followed the steps on the checklist. While it may be seen as an effective learning tool, some students were distracted by the need to follow the OSDE checklist so rigorously. It seemed that their concentration was with their checklists rather than with the patient to whom they were dispensing. Nevertheless the OSDE checklist served as a reminder of the checks and counselling points that students needed to follow in the patient interaction. In evaluating patient therapy some students were generally not able to identify the clinical condition for the drugs they were dispensing. This depended on their familiarity with the drug. Another significant factor was the number

of different indications for which a particular drug could be used, for example if a drug is limited to two conditions students were more likely to determine the correct condition as opposed to a drug used for several different conditions. Most students did not identify inappropriate therapy on the prescriptions. This was however dependent on the prevalence of inappropriate therapy on the prescription. In other words if all prescriptions were correct then no students would pick up inappropriate therapy because no inappropriate therapy was present. Half the students failed to label medication correctly with a batch number and expiry date.

Step 2 of the OSDE checklist evaluated the dispensing process. Students used the checklist as a guide. Prior to dispensing most students consulted their SAMFs and jotted notes they would use in dispensing the patients' medication. As a result students scored positively for many aspects of Step 2. However most students did not mention how the drugs work. Many students also failed to advise patients on special precautions and contra-indications. It must be noted though that students only had access to patient's prescription and not the entire folder in which medical history reflecting situations for special precautions. All students instructed patients on how to use their medicines.

Step 3 of the OSDE checklist evaluated students' communication style. An area of concern was their lack of empathy in speaking to patients. This may be due to the fact that their concentration was on following the checklist rather than the patient interaction. Many students were nervous and as a result did not structure conversation logically.

4.12 Compounding

The compounding component of the SLIP model comprised students compounding various pharmaceutical dosage forms for patient use. Dosage forms that were compounded by students included ointments, creams, syrups and solutions depending on the needs of the pharmacy at the time. Table 4.12.1 represents the proportion of students who scored in the various parameters on the compounding checklist (Appendix XII).

Table 4.12.1: Results of pre-intervention compounding practices (n=16)

	Score allocated for each parameter (n= 16)	Percent -age (%)
1. Students who checked for SOPs	2	13
1. Students who checked the physical conditions of the compounding area (e.g. light, temperature)	4	25
2. Students who checked that all ingredients were at hand before beginning	2	13
3. Students who checked that all the necessary equipment was available	0	0
4. Students who signed off the necessary documentation	10	63
5. Students who cleaned the working area	12	75
6. Students who weighed ingredients and had it confirmed by second person	11	69
7. Students who used clean equipment and utensils	16	100
8. Students who applied pharmaceutical principles	2	13
9. Students who packaged products appropriately	10	63
10. Students who cleaned the working area afterwards	12	75
11. Students who packaged and labelled the product correctly, with a expiry date and batch number	7	44
12. Students who did the necessary calculations accurately	5	31

Less than a quarter (2; 13%) of students checked for SOPs relating to clinical pharmacy, while a quarter of students (4; 25 %) checked environmental parameters such as temperature and light in the compounding area. Two students checked that all ingredients were on hand before beginning the compounding process and no students checked that all the equipment that they would need was available. Less than two thirds (63%) of students signed necessary documentation and three quarters (75 %) cleaned the working area before beginning. Eleven students (69%) had their weighed ingredients confirmed and checked by a second person. All students used clean

equipment and utensils and two (13%) students applied pharmaceutical principles in the mixing process. Ten students (63%) packaged compounded products following standard operational procedures and twelve students (75%) cleaned the work area after compounding. Less than half the students (7; 44%) labelled products with the appropriate batch number and expiry date and 5 students (31%) did all calculations correctly.

4.12.2 Discussion

Students fared poorly at completing the preparatory work which needs to be done before starting to compound pharmaceutical products. Most students did not check that SOPs were in place or that the environmental condition of the compounding area such as light and temperature was suitable for compounding. This could be due to an assumption by the students that everything was already in order seeing that compounding was taking place on a daily basis. Nevertheless, failure of students to check these parameters opposes GMP (Good Manufacturing Practice) guidelines. Most students did not check that all ingredients and equipment were on hand before starting the compounding process. Students seemed to take for granted that the ingredients would be at their disposal should they need them, as is the case in their simulated laboratory practices. All students used clean utensils and the majority cleaned the working area before and after compounding. Most students had their weighed ingredients checked and signed off documentation. Students were eager to sign as proof that they participated in an activity because they would later use this proof as evidence in their portfolios. Students failed to apply their theoretical and scientific knowledge in calculations and the application of pharmaceutical principles in the compounding activity.

4.13 Written Assessment: Compounding

Students completed a written assessment (Appendix XIII) which produced data reflecting student knowledge of pharmaceutical principles applied in compounding processes. Table 4.13 reflects students' marks of the written assessment as a percentage.

Table 4.13: Compounding pre-implementation assessment marks

STUDENT	Test mark (%)
1	62
2	53
3	58
4	51
5	54
6	42
7	51
8	48
9	66
10	74
11	92
12	87
13	64
14	60
15	56
16	60
Mean Score	61

For the compounding assessments, the Wilcoxon Signed Ranks test demonstrated a pre-intervention mean score of 61.1 %. Pre-intervention scores differed notably among students, the lowest score being 42% while the highest score obtained was 92%. Nevertheless, the mean score obtained (61.1%) shows that there was fair understanding of pharmaceutical principles among students.

CHAPTER 5

RESULTS AND DISCUSSION: POST-INTERVENTION

In this Chapter I discuss the post-intervention data obtained from pharmacists (Section A) and students (Section B). Each section comprises both qualitative and quantitative data. I also provide a comparison between the pre- and post-intervention data.

Section A: Post-intervention Pharmacists' Enquiry

Part 1: Participant Observation

Table 5.1: Profile of pharmacists in the post- intervention observation study (n =6)

Gender	Number of pharmacists	Percentage	Age range
Male	2	33	30-40
Female	4	67	20-60

5.1 Method

Management of Tygerberg hospital pharmacy had primed staff about the research taking place within their environment. Observation of pharmacists, including departmental pharmacy managers was started after the implementation of the first SLIP block as this formed the Post-implementation data.

5.2 Key for observation of pharmacy staff

Ph: represents a pharmacist

Ph1: represents the first pharmacist I had observed

Ph2: represents the second pharmacist I had observed. This successive order is followed for all the subsequent pharmacists whom I had observed and interacted with

M: represents Mariam Parker (myself)

5.3 Pharmacists' responses

The observations of the pharmacists were classified into three main themes: pharmacists' acceptance of students' role, pharmacist enquiries about the next SLIP visit and pharmacists' concerns.

5.3.1 Pharmacists' acceptance of students' role

Many of the pharmacists started to receive students positively and some even accepted students as part of the workforce. Students were asked to help out in the pharmacy when the need arose and this further indicated that pharmacy personnel placed a certain amount of trust in students' capabilities.

Context: the following scene took place during a SLIP block. Pharmacist 3 (Ph 3) is addressing me (M)

Ph3: *Are your students busy now? Can't you ask them to fill the linbins (shelf storage container for medicines), they're empty and we need the stuff here in front.*

M: *Okay they are nearly done anyway. We're coming now...*

Context: the following scene took place during a SLIP block. Pharmacist 5 (Ph5) is addressing me (M):

Ph5: *Bibi where are the students today, because we're very short of people here in out-patients.*

M: *They are scheduled to be in manufacturing (compounding) today*

Ph5: *Can't they rather come here; they spent little time in department.*

M: *I'll see what time they get done by *****. I'll try for later.*

5.3.2 Pharmacists enquiring about the next SLIP visit.

At one point when pharmacists were expecting a drop in the number of their normal personnel, one pharmacist looked at the possibility of students working during the time that the pharmacy would have fewer staff.

Context: Pharmacist 1 (Ph1) talking to Pharmacist 5 (Ph5) about how many patients are still in the waiting room. I (M) am also included in the conversation. The school holidays are approaching and the pharmacy expects to have very few locum pharmacists. Locums make up a substantial proportion of the workforce in out-patient department.

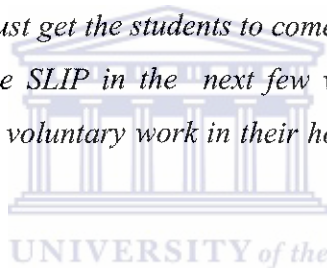
Ph1: *How many patients are still outside? It's late already and the waiting room is still full. We're probably going to work so late tonight!*

Ph5: *Ja well there is only so much we can do. The scripts come in late and they are long. **** And ***** are not at work today so we are people short also.*

Ph1: *In a few weeks its holidays again and then we don't have locums...then we work even later*

Ph5: *I think Bibi (M) must get the students to come and help us again.*

M: *No they don't have SLIP in the next few weeks, but maybe they will come and do some voluntary work in their holidays...I don't know when that is though.*



Context: Pharmacist 4 (Ph4) asks when the students were coming again and comments that I must phone them to help out at the pharmacy. While it seems that Ph4 is merely making casual conversation, the connotation of 'help' is seen as a positive response. Ph4 addresses me (M) while walking by:

Ph4: *When are your students coming again? They haven't been here in a long time. You must phone them, they can come to help us.*

Some pharmacists enquired about the dates for the next SLIP block and used the information to plan the work flow and lessening of workload in departments, particularly when there was a work backlog in the departments. Community service pharmacists at Tygerberg Hospital rotate through various departments on a monthly basis.

Context: Ph1 asks me (M) about which department I am scheduled to work in the following month.

Ph1: *Where are you working next month? I want to take a half day (off) and want to know if you can fill in for me that day.*

M: *The students are coming. What day do you want to go early?*

Ph1: *I must still see. When are they coming? I could do with some help-they can fill up for me...I'm a bit low on stock.*

Context: Pharmacist 5 (Ph5) asks me (M) about when students were due to come again as he/she needed help with pre-packing:

Ph5: *addressing me. I was meaning to ask you...when are the students coming again...I am really very behind with the pre-packing and could really use some of them to help me.*

M: *I must check for you, I think it's in a few weeks time. I will try get them do to some for you; I'll see how I can work it around their other activities....*

It is evident that students' services in assisting with pharmaceutical activities was both needed and appreciated by pharmacy staff.

5.3.3 Pharmacist Concerns

Some pharmacists reported that while they were receptive to SLIP they still had reservations.

Context: Ph1 speaking to me about SLIP students:

Ph1: *SLIP is obviously very good for the pharmacy and students do help us a lot, but SLIP must not replace varsity work. The importance of students' theory must not be taken for granted; otherwise students won't really understand what they do*

Pharmacist comment seemed to be motivated by the fact that he/she was concerned that SLIP was in part replacing classroom instruction and that students were missing out on

being taught theoretical and scientific pharmacy knowledge. This indicated a lack of understanding of service-learning and its role in pharmacy curricula.

Context: Pharmacist 6 (Ph6) speaks to me about my role in SLIP, and the implications of possible student errors.

Ph6: *It must be tiring explaining everything and checking three students' work...But you have to, because if they make a mistake it can be a big problem if you don't pick it up.*

5.4 Discussion

The post-intervention observation reflected pharmacists' attitudes to SLIP and student presence in the pharmacy after implementation of the SLIP model. After student contribution became visible during the Tygerberg SLIP blocks, pharmacists gradually realized the role that students could play in lessening pharmacists' workload, thereby contributing to service delivery at the pharmacy. Pharmacists seemed receptive and even eager to have students at the site fulfilling much needed pharmaceutical service activities. Pharmacists enquired about when students were due to come to the site again and seemed to look forward to student presence at the site. However, some pharmacists still had reservations about SLIP, including its effect on student foundational knowledge and the possibility of medicine related errors.

Part 2: Post-intervention Questionnaire

5.5 Questionnaire

The post-intervention questionnaire (Appendix VII) was distributed to 9 pharmacists. 8 questionnaires were returned indicating a response rate of 88%.

Table 5.5: Profile of pharmacists in the post-intervention questionnaire study

(n =8)

Gender	Number of pharmacists	Percentage	Age range
Male	2	25	30-40
Female	6	75	20-40

The post-intervention questionnaire enquired about pharmacists' views of the impact of SLIP on the hospital, the students and the patients. In addition, pharmacists' views on the SLIP model, as well as facilitation of the model, were obtained. Pharmacists were asked about the UWC SLIP manual and their overall view of SLIP.

Table 5.6: Results of post-intervention questionnaire (n=8)

	Strongly agree or agree n=8 (%)	Neutral or did not respond n=8 (%)	Disagree or strongly disagree n=8 (%)
Pharmacist opinion about student effect on the service institution i.e. hospital			
Pharmacists who felt that students...			
1. Helped to ease the workload in departments within the pharmacy.	6 (75)	1 (13)	1 (13)
2. Made valuable recommendations regarding various processes in the pharmacy.	3 (38)	3 (38)	2 (25)
3. Created a positive atmosphere in the pharmacy because they were enthusiastic.	4 (50)	2 (25)	2 (25)
4. Helped to compound and pre- pack stock so that they were more readily available on pharmacy shelves.	7 (88)	1 (13)	0 (0)
5. Were in the way of the pharmacists and thus caused frustration of pharmacists.	1 (13)	2 (25)	5 (63)
6. Communicated well with pharmacists and imparted up to date information.	3 (38)	3 (38)	2 (25)
7. Had to be supervised in executing tasks and thus created additional work for the pharmacist.	3 (38)	1 (13)	4 (50)
8. Through mentoring students pharmacists were exposed to a different facet of practice. This stimulated and contributed toward continuing professional development.	3 (38)	2 (25)	3 (38)
9. The program allowed a relationship to be formed between the hospital and the university.	1 (13)	1 (13)	6 (75)
Effect of the SLIP program on the students.			
1. Students learned from the patient community at the hospital.	1 (13)	2 (25)	5 (63)

2. Students learned from the service staff i.e. doctors and nurses.	0 (0)	3 (38)	5 (63)
3. Students learned from the pharmacists	7 (88)	1 (13)	0 (0)
4. SLIP contributed toward the personal development of the students	5 (63)	3 (38)	0 (0)
5. The program increases the competence of students	7 (88)	1 (13)	0 (0)
6. The program exposes them to practice areas of pharmacy and equips them to make informed decisions regarding which sector of pharmacy they would like to practice in.	6 (75)	0 (0)	2 (25)
7. Through exposure in a state hospital the program helps to dispel myths and incorrect beliefs about state hospitals and working for the government.	4 (50)	2 (25)	2 (25)
Effect of student presence on patients			
1. Students interacted frequently and intensely with patients.	2 (25)	1 (13)	5 (63)
2. Students were able to provide patients with useful information regarding their health and medication.	3 (38)	2 (25)	3 (38)
3. Patients were confused and perturbed by students.	0 (0)	3 (38)	5 (63)
Implementation of the model for SLIP			
1. It is essential that the SLIP program is conducted according to a structured model.	6 (75)	0 (0)	2 (25)
2. The model is too structured, students should report to areas where they are most needed.	2 (25)	1 (13)	5 (63)
3. The model is well-structured as it informs you of when the students will be in your work area	5 (63)	0 (0)	3 (38)
4. The model is quite didactic-students can be taught the same things in a lecture or classroom setting.	1 (13)	1 (13)	6 (75)
5. The model does not provide enough instruction-students are left to their own devices.	0 (0)	0 (0)	8 (100)
6. The model is conducted in a manner which allows optimal experiential learning- students learn through what they are seeing and doing.	7 (88)	1 (13)	0 (0)
7. The on-site tests through which students are assessed are fair and reasonable	3 (38)	5 (63)	0 (0)
8. Would you agree to have students in your department			

as part of this model again in the future?	6 (75)	2 (25)	0 (0)
Opinion of facilitator			
1. It is essential that the SLIP model is conducted by a pharmacist employed at the hospital.	5 (63)	1 (13)	2 (25)
2. The facilitator aided and reinforced my understanding of service-learning.	3 (38)	2 (25)	3 (38)
3. The facilitator informed me well in advance of when the students would come, so that I could do the necessary preparation.	4 (50)	2 (25)	2 (25)
4. The facilitator guided student learning in such a manner that served the needs of both the students and the pharmacists.	6 (75)	2 (25)	0 (0)
Opinion of the SLIP Manual			
1. The manual provided useful information about the SLIP programme.	0 (0)	8 (100)	0 (0)
Overall view of the SLIP program			
1. The SLIP model should be introduced and run in all the tertiary hospitals in the Western Cape.	6 (75)	1 (13)	1 (13)
2. The SLIP model should continue to run at my workplace in future years to come.	7 (88)	0 (0)	1 (13)

5.6 Results and Discussion

Pharmacist's outlook toward students participating in SLIP at Tygerberg hospital pharmacy was positive as seen in responses to the post-intervention questionnaire. Many pharmacists (75%) felt that students helped to ease workload in the pharmacy and the majority (88%) agreed that students helped to make stock more available on pharmacy shelves. Half the pharmacists felt that students created a positive atmosphere in the pharmacy and half the pharmacists disagreed that students created extra work for the pharmacists. It may seem contradictory that many pharmacists felt students eased their workload but that three (38%) felt that they created additional workload. This could be due to the fact that the pharmacy was less one full time staff member (myself) when students were on SLIP because I had to supervise students. This contradiction

demonstrates that pharmacists were conscious of the change in my role for the duration of SLIP, but that they were also aware that students were making a contribution to the pharmacy, even though the pharmacy workforce was less one person due to my role in SLIP facilitation. While it seemed that links were being established between the School of Pharmacy and Tygerberg hospital pharmacy, most pharmacists (75%) disagreed that SLIP allowed a relationship to be established. This may be due to the fact that communication and discussions were held mainly with the Chief Pharmacist and not with those pharmacists who practiced in the pharmacy and completed the questionnaires. Regular communication from senior management to the rest of the staff is crucial in ensuring the successful implementation of a service-learning programme.

5.6.1 Effect of the SLIP program on the students

Many pharmacists (5; 63%) did not agree that students learned from the patients and service staff (nurses and doctors) at the hospital while some pharmacists had a neutral response or did not respond at all. Pharmacists were witness to student-patient interaction in the pharmacy while students were dispensing, and may have based their response on the length of time students spoke to patients and concluded that students may not have learnt much. Pharmacists had not witnessed student interaction with doctors and nurses in wards and clinics and this may have resulted in their disagreement that students learned from the service staff. All pharmacists agreed that students learned from pharmacists and pharmacists' assistants in the pharmacy and most pharmacists (88%) agreed that the program increases student competency. Most pharmacists (75%) felt that students would be better equipped to make career choices based on their exposure to practice settings, while half the pharmacists agreed that the program helps to dispel incorrect beliefs about state hospitals and working for the government.

5.6.2 Effect of student presence on patients

Many pharmacists disagreed that students interacted frequently and intensely with patients (63%) and some pharmacists disagreed that students provided useful health-

related information to patients. The reason for this may be that the Tygerberg SLIP model was not designed particularly to include lengthy consultations with patients. Instead students were exposed to different practice areas and their interaction with patients in the pharmacy was no more than that seen in regular dispensing. Many pharmacists (63%) did not think that the presence of students in the pharmacy confused patients.

5.6.3 Implementation of the model for SLIP

Most pharmacists (75%) agreed that SLIP must be conducted according to a structured model and many pharmacists (63%) felt that the model informs pharmacists of when they should expect students in their work area. Two pharmacists (25%) felt that the model was too structured and that students should report to areas where they are most needed in the pharmacy. Most pharmacists did not agree that students could be taught the same concepts in a classroom lecture and all pharmacists disagreed with the statement that the model does not offer enough instruction, leaving students to their own devices. Most pharmacists (88%) felt that the model allows optimal experiential learning and many (75%) agreed to have students in their departments on SLIP again in the future. These responses show that the majority of pharmacists had positive opinions about and attitudes toward the SLIP model. This however was not true for all pharmacists.

5.6.4 Opinion of facilitator

Many (63%) of the pharmacists felt that the SLIP model should be facilitated by a pharmacist who is employed at the hospital. While the SLIP model is intended to be a generic model for tertiary hospital pharmacies, the success of the model relies on the familiarity of the facilitator with the pharmacy. A facilitator who is unfamiliar with operational procedures at the pharmacy would struggle to facilitate the activities in the SLIP model. The resulting student learning and student contribution to service delivery may not be as significant if the facilitator is unfamiliar with the site. Three pharmacists agreed that the facilitator aided understanding of service-learning, while just as many

disagreed. While my role as facilitator included liaising with pharmacy departmental managers regarding student activities, I did not set out to educate pharmacists on service-learning ideologies. Most pharmacists (75%) felt that student-learning at the site was facilitated in a manner that served the needs of both students and pharmacists. A dedicated staff member who is employed at the site would serve as a valuable resource for a service-learning initiative.

5.6.5 Opinion of the SLIP Manual

All pharmacists either had a neutral response or no response to the statement that the UWC SLIP manual provided useful information about the SLIP Program. This indicates that pharmacists did not read the manual or that they did not receive the manual. A copy of the manual was in fact sent to the Hospital by the UWC School of Pharmacy, but it was not circulated to all pharmacists. Service staff orientation to a service-learning programme would be deemed necessary to consolidate student learning.

5.6.6 Overall view of the SLIP program

The majority (75%) of pharmacists felt that the Tygerberg SLIP model should be conducted at other tertiary hospitals in the Western Cape and that the model should continue in the future (88%).

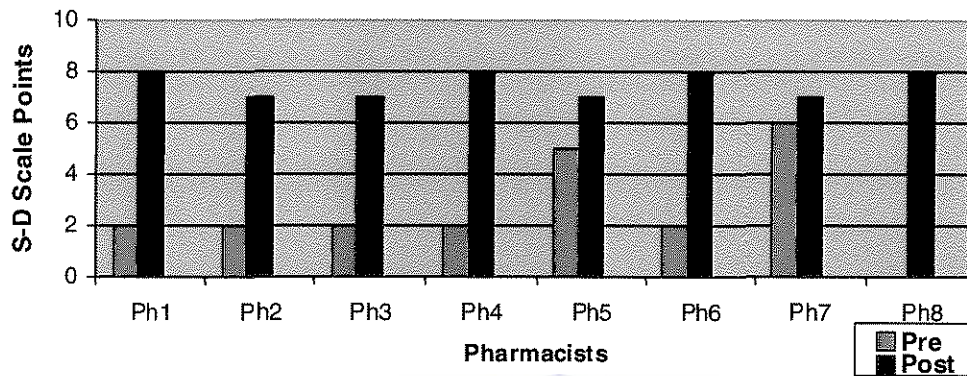
5.6.7 S-D Scale Responses: Post-intervention questionnaire

To allow comparability, post-intervention S-D scale responses were matched with the pre-intervention response by the same pharmacists. This enabled a direct comparison between a pharmacist's view pre-intervention and the same pharmacist's response to the S-D scale question post-intervention. Pharmacist's responses on the S-D scales were processed by the Wilcoxon Signed Ranks Test.

Figure 5.6.7 illustrates pharmacists' pre- and post-intervention responses to how they perceived students to affect their work in a personal capacity, where point 0 was labelled "hindered" and point 10 was labelled "benefited". Figure 5.6.8 illustrates

pharmacists' pre-and post-intervention responses to how they perceived students would affect the pharmacy at large.

Figure 5.6.7: Pre- and Post-intervention pharmacists' responses: S-D Scale Question 1



The mean scores for the first Likert scale question were 3 (pre-intervention) and 7.5 (post-intervention). This demonstrates a significant improvement (z -value= -2.39; p -value = 0.017) in pharmacists' perception of how student presence would affect their work in a personal capacity.

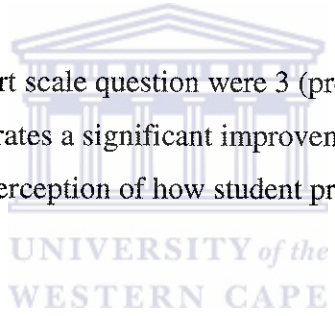
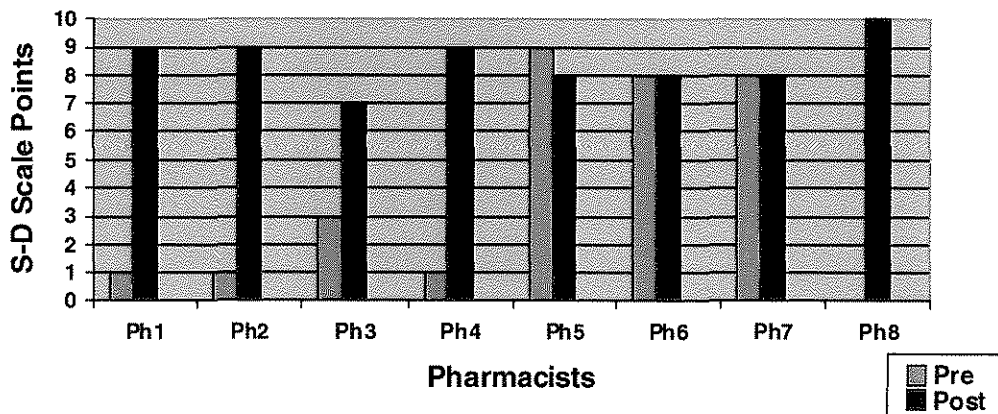


Figure 5.6.8: Pre- and Post-intervention pharmacists' responses: S-D Scale Question 2



The mean scores for the second Likert scale question were 4.5 (pre-intervention) and 8.5 (post-intervention). This demonstrates a significant improvement (z -value= -2.52; p -

value= 0.012) in pharmacists' perception of how student presence would affect the work of the pharmacy.

Section B: Post-intervention Student Enquiry

The post-intervention student enquiry comprised qualitative and quantitative assessments of activities that the students had engaged in. For the qualitative assessment, a focus group was conducted to explore students' acceptability and opinion of the SLIP model. For the quantitative assessment, student competency in the three components of the SLIP model (clinic/ward pharmacy, dispensing and compounding) was assessed using on-site checklists. An additional written assessment was conducted for compounding. A physical tally of the number of services in clinics/wards, the number of pharmaceutical products compounded, and number of items dispensed by students further contributed to the quantitative data.

Part 1: Focus group

5.7 Overall impression

The post-intervention focus group, lasting approximately 45 minutes, was conducted with each of the five student groups, consisting of either 3 or 4 students per group (n=3, n=4), depending on the group allocated by the SLIP course at UWC School of Pharmacy. The focus group was conducted in the pharmacy boardroom within the last hour of the students' SLIP block, after all the activities and assessments had been completed. Students seemed very comfortable and open to express their views and opinions about the Tygerberg SLIP Block and were enthusiastic about their input. Students responded to a set of pre-arranged topics in the Focus group guideline (Appendix IX). Notes were taken of what was said in the focus group forum.

5.8 Results and Discussion

Common themes were extracted from the focus group discussions that were held with the five student groups. Italicised quotes in different colours represent the responses of different students.

5.8.1. Hospital pharmacy

Students reported that the SLIP model changed and enlightened their view of hospital pharmacy. They learnt about how pharmacy is practiced in tertiary hospitals and the role of pharmacists in the various departments in hospital pharmacy..

...my view of hospital pharmacy was very different to what it is now. I had no idea that it involved ward rounds and clinics and so many other things.

Some students noted that the exposure to hospital pharmacy impacted their future career choices and allowed them to make informed decisions regarding their work preferences for different sectors of pharmacy practice such as retail or hospital.

Something that is really good for me at least is that I am able to make a choice of where I would like to work next year.

5.8.2. Academic benefits

Many students realized the academic benefits of service-learning. They believed that experiential learning is complementary to didactic lectures, as learning becomes more meaningful in the practice environment. Students claimed that concepts and drugs would be easier to grasp and study as a result of service-learning. Students also learnt from practice scenarios and claimed that theory relating to these scenarios would never be forgotten because they had seen how it was applied to real patients in real case examples.

I don't think I was prepared even though I am final year, but I think that is part of learning - sometimes you are thrown in the deep end and you just have to learn to swim.

SLIP prepares you for the real world of working in a pharmacy in a way that textbooks and notes and lectures never can.

5.8.3. Pharmacy benefits

Students seemed surprised at the amount of work they could do. Even though students worked hard at other service-learning sites, their work was not tallied. As a result some students did not realize the amount of work they were doing or their ability to make a

significant contribution to lessening the workload at the service-learning site. Pharmacists who thanked the students for their help and pointed out further ways in which students could benefit the site, further added to students' awareness of their positive impact at the site.

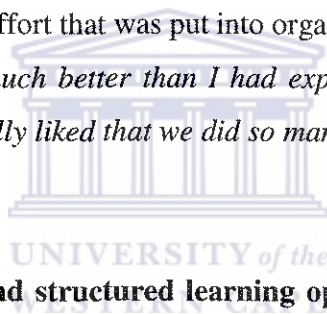
They (pharmacists) were appreciative when we helped in their departments. Some of them thanked us and told us that we were making a difference.

****** said that the stock we made would last her a month whereas usually she would have to make a batch every week.*

5.8.4 Surpassed expectations

Students who had based their expectations of SLIP on previous experiences noted that the Tygerberg SLIP model had surpassed these expectations. Furthermore students expressed an appreciation of the effort that was put into organizing the SLIP model.

It was phenomenal...so much better than I had expected and than all the bad things we heard. I especially liked that we did so many different things and there was a lesson in each one.



5.8.5 Views about the varied and structured learning opportunities at Tygerberg hospital

Students reported that they thought the structure of a model to be beneficial to them as it presented more learning opportunities and further suggested that SLIP at other sites should also be conducted according to a model. Students commented on sites where they worked hard in the absence of a model but the work was repetitive and did not allow for much learning to occur.

I think every component was necessary and gave us a chance to learn something different.

And at other sites we worked so hard at some of the CHCs but we did not learn as much because we were doing the same picking and packing of the same kind of scripts all the time.

Students appreciated the model as an indication that the service partner is willing to have students at the site for SLIP. They valued the prearranged structure and saw it as a mark that their role at the site would not be laborious and that they would not be ignored.

It gives the students a sense that the facility is willing to have us there and that things are organized, not that we're just there to slave away or to be ignored.

Students appreciated the 'before and after' assessments in the Tygerberg SLIP model as an indication of their learning during the SLIP block.

*I enjoyed doing the before and after SLIP tests because as **** said we did not even know what we did not know until we were tested on it.*

It worked well that you talked us through the activity before we went so that we were prepared, and afterward so we could learn from it.

5.8.6 Integration with subjects

Students made clear linkages between the three pharmacy disciplines: Pharmaceutics, Pharmacology and Pharmacy Practice in relation to the activities undertaken in the Tygerberg SLIP model. In addition, they saw the integration of their course disciplines in the workplace as a 'bringing together' of everything they studied. Students also reported that the links with the subjects would make studying easier.

We could see the link with pharmaceutics when we did manufacturing, and pharmacology with the drugs obviously, and pharmacy practice with the nurses and the doctors and then obviously counselling the patients.

Yes, all the subjects. It was like our notes in action. SLIP should actually start earlier because it would make our studying much easier.

5.8.7 Facilitation

Students noted the value of a facilitator who is employed at the SLIP site as opposed to the UWC contracted facilitators who are unfamiliar with the site and therefore not in a good position to guide student learning at the site. Students reported that UWC facilitators needed to ask for permission to do anything with the students on-site and that this was a barrier to their SLIP experience. Some students also noted that it is

advantageous to have a facilitator who is recently qualified and as a result understands the needs of the students and the learning objectives and outcomes.

... The fact that you work here is a big plus because you have inside info- so you know where to take us and when.

I think because you finished campus recently you know what it is like to be a student and that helps because you know what helps us and what suits the pharmacists. That is why SLIP worked so well.

Ja, because the post-graduate facilitators don't always know the goings-on in the pharmacy and don't help us actually.

5.8.8 Pharmacist interaction

Students reported that they had limited interaction with other pharmacists on-site as a result of my sole, designated supervision throughout the service-learning session. This could be seen as a negative aspect of the Tygerberg SLIP model because it restricts skill acquisition and collegial interaction. One student saw this lack of interaction with pharmacists as a gap in the Pharmacy Practice aspect of SLIP. Other students preferred to interact with only the pharmacist facilitator because they felt it spared them embarrassment in the event that they would make an error. Students initially felt that pharmacists were uneasy around them but seemed friendlier once they had become used to the students. One student reported that a pharmacist did not take their presence at the site seriously. Other students reported that pharmacists were pleasant and helpful and that the chief pharmacist extended an invitation to them to undertake some voluntary service hours during their vacation.

The pharmacists were not rude to us in any way but you could see that they were a bit uncomfortable and tense around us especially the first few days.

That one pharmacist kept calling us the SLIPpies. I don't think he took us very seriously...

I must say they were quite nice-very professional and they would always answer if we had a question or show us where to find something if we were looking for it.

The chief pharmacist told us we must please come back again in vacation. That was nice of her.

5.8.9 Awareness to patient needs

Students displayed sensitivity to and concern about the circumstances in which they observed patients during their SLIP block. As a result, students expressed their readiness and willingness to help these patients and noted that activities in the SLIP block rendered them more understanding of patient circumstances. This indicated that students displayed a sense of patient-centeredness that is characteristic of the evolving role of a pharmacist. It also pointed to a sense of social responsibility and eagerness for civic engagement, both of which are key elements in service-learning endeavours.

The clinic was a bit gross but it was really eye-opening to see the procedure that is so painful and what the patients must go through before they come for their meds. It makes you more understanding toward them if they are grumpy or impatient in the waiting room.

People sit and wait so long for their meds. I would not want that to be somebody in my family. You feel overwhelmed and desperate to do something for the patients

However, students reported that they experienced limited interaction with patients due to the *modus operandi* in hospital pharmacies and all the other activities in which they participated. This is seen as a negative aspect of the SLIP model because service-learning encourages social responsibility and civic engagement.

We did not have a lot of contact with patients...

There are so many patients that you cannot spend a lot of time with each patient because there are too few pharmacists. It's a pity because we learn a lot about counselling and empathy but we do not really get the chance to apply it at any of the sites...

Students seemed disillusioned by the differences between the ideologies arising from pharmacy training in the academic environment, and actual practice circumstances

which are characterized by high prescription loads and rushed patient counselling. Students seemed to dislike the fact that pharmacists seem apathetic to patient circumstances. It seems evident that their intensive workload and current infrastructural barriers do not allow pharmacists to have meaningful interactions with patients.

You feel overwhelmed and desperate to do something for the patients. It is sad though that the pharmacists seem to be numbed to that.

In pharmacy you don't really spend much time counselling patients. It's just so quick...Pharmacists have a big role to play in people's health but your main work is behind counters in the pharmacy and not with patients.

Students noted the difficulty they encountered in understanding patient's language and conversely the inability of patients to understand what students were saying. This barrier to effective patient counselling and interaction with patients requires intervention from academic institutions to prepare students who are socially responsive and culturally competent.

... the patients who do not understand English...that is quite a challenge.

5.8.10 Long hours

Some students thought the SLIP block to be too long and tiring. While this may be due to the fact that students are not used to the long working days, it may also serve as good preparation for their forthcoming internships. Although they complained about the days being long and tiring, they did not report it as being time badly spent or that it was taking up time from their curriculum or other academic activities. Some students saw the time spent as "worth it".

Yes I also get very tired. I think that it is worth it because we will miss out if we only come in the morning.

Part 2: Student Quantitative Inquiry

Quantitative data of student competency was obtained by observing student actions in the components of the SLIP model. This observation was recorded on predesigned checklists.

5.9 Clinic/ ward pharmacy

Table 5.9 below represents the proportion of students who scored in the various parameters on the clinic/ward checklist (Appendix X).

Table 5.9: Results of post-intervention clinic/ward practices (n=16)

	Score allocated for each parameter (n=16)	Percent age (%)
1. Students who checked for clinic/ward SOPs	0	0
2. Students who checked for patient name, age, birth date	14	88
3. Students who checked for patient history, weight	15	94
4. Students who checked for allergies	11	69
5. Students who checked for completeness of prescriber information	12	75
6. Students who checked for validity of the script: date and signature of prescriber	14	88
7. Students who checked for medicine related information	13	81
8. Students who checked for generic or propriety name of medicine	16	100
9. Students who checked for strength of medication	15	94
10. Students who checked for dosage and dose frequency	16	100
11. Students who checked for duration of treatment	11	69
12. Students who checked for diagnosis	12	75
13. Students who checked for dose complications	11	69
14. Students who checked for adherence to EDL/other formulary guidelines	10	63
15. Students who checked for drug-drug or drug-disease interactions	14	88

5.9.1 Results

No students checked for SOPs relating to clinic/ward pharmacy. Fourteen students (88%) of students checked patient name, age and date of birth while fifteen (94%)

students checked patient weight and patient history. Less than three quarter of the students (11; 69%) checked for allergies and three quarter (12; 75%) checked completeness of prescriber information. Fourteen students (88%) checked for validity of the prescription and thirteen students (81%) checked for medicine related information. All students checked for generic or proprietary name of medicine and fifteen (94%) students checked for strength of medication. All students checked for dosage and dose frequency of medicines. Eleven students (69%) checked for duration of treatment and twelve students (75%) checked for diagnosis. Eleven (69%) students checked for dose complications. Ten students (63%) checked for adherence to formulary guidelines and fourteen (88%) considered drug-drug and drug-disease interactions.

Figure 5.9 below provides a graphical comparison of the number of students (n=16) who completed competency actions on the clinical pharmacy checklist before and after the implementation of the SLIP model. Except for checklist point eight which was the same, the number of students who completed each check point increased. This indicated an increase in student competency and skill in Clinical Pharmacy practices.

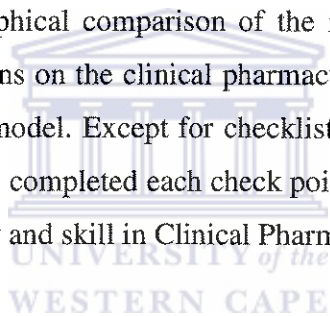
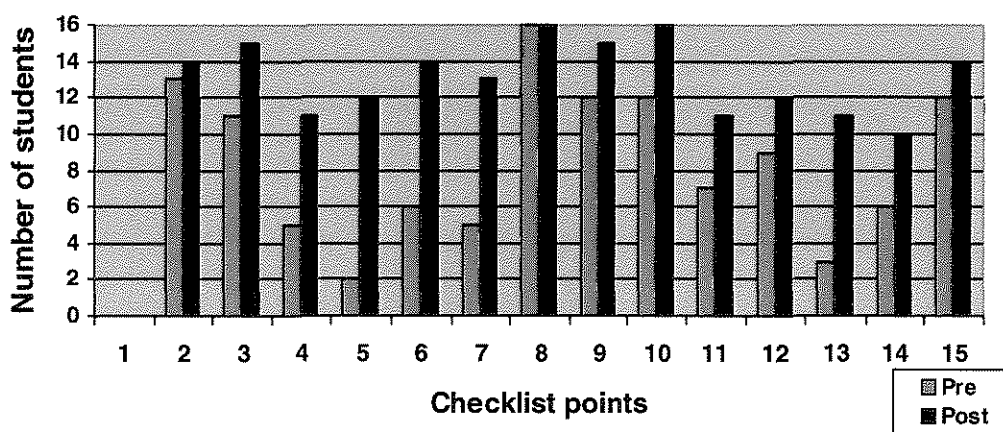


Figure 5.9: Pre- and Post-intervention Clinical Pharmacy Checklist

Student Responses to Clinical Pharmacy Checklist



5.10 Dispensing:

Table 5.10 represents the proportion of students who scored in the various parameters on the OSDE Checklist (Appendix XI).

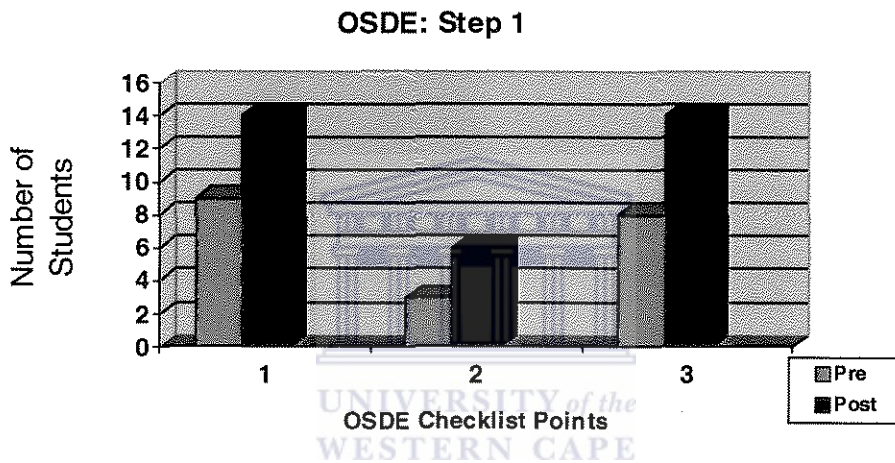
Table 5.10: Results of post-intervention dispensing practices (n=16)

Dispensing Activity	Score allocated for each parameter (n= 16)	Percentage (%)
STEP 1: Evaluation of patient therapy		
1. Defines the clinical condition (s)	14	88
2. Identifies inappropriate therapy	6	38
3. Labels medicines correctly	14	88
STEP 2: Dispensing the prescription		
4. Specifically states treatment objectives	14	88
5. Advises on lifestyle and health promotion	12	75
6. Gives advice on correct medicine use	15	94
7. Mentions drug and product names	16	100
8. Mentions how drug works	11	69
9. Mentions instructions for administration	16	100
10. Give advice on ADR, contraindications	10	63
11. Assesses patient knowledge and recall	12	75
STEP 3: Evaluate student's communication style		
12. Greets patient, establishes language	13	81
13. Verifies folder number, patient name	15	94
14. Display empathy	10	63
15. Clear (audibility, pronunciation)	16	100
16. Understandable	16	100
17. Structures conversation (logical)	13	81
18. Invites patient feedback	12	75

5.10.1 Results and Discussion

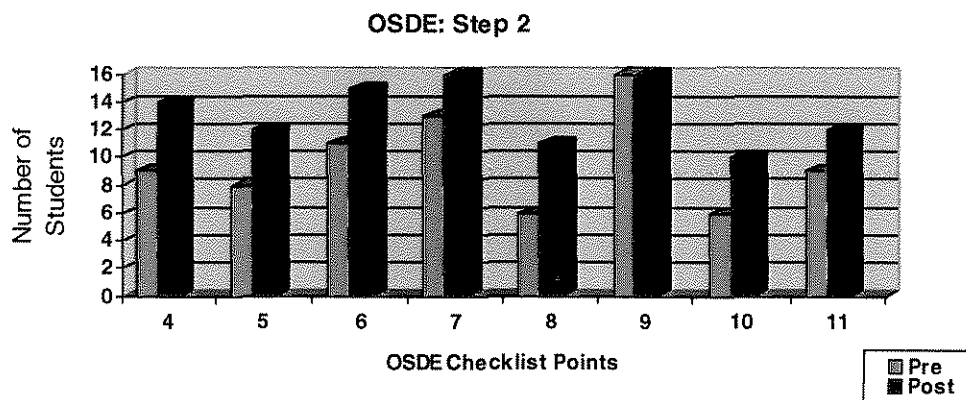
In Step 1 of the OSDE Checklist (Evaluating Patient Therapy), the number of students who completed all actions on the checklist increased after participation in the SLIP model. Post-intervention, fourteen (88%) students defined the clinical condition, six students (38%) identified inappropriate therapy or errors, and fourteen (88%) students labelled medicines correctly. Figure 5.10.1 illustrates the comparison between checklist actions (Step 1) for the pre- and post OSDE observation.

Figure 5.10.1: Pre- and post-intervention OSDE- Step 1



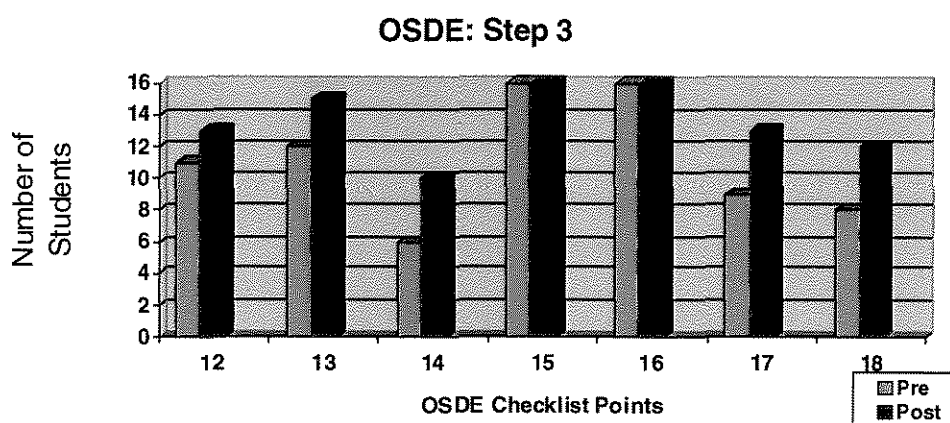
In Step 2 of the OSDE checklist (the Dispensing Process) all students completed checkpoint nine before and after implementation of the SLIP model while there was an increase in the number of students who completed all the other checkpoints. Fourteen (88%) students stated treatment objectives and three quarter of students encouraged lifestyle change and health promotion. Fifteen (94%) students provided advice on correct medicine use and all students mentioned drug and product names. Eleven (69%) students mentioned how the drugs work and all (100%) of students mentioned instructions for administration. Ten (63%) students gave advice on adverse drug reactions (ADR), special precautions and possible contraindications and twelve (75%) students assessed patient knowledge and recall.

Figure 5.10.2: Pre- and post-intervention OSDE- Step 2



In Step 3 (Communicating with patients) all students completed checkpoints fifteen and sixteen before and after implementation of the SLIP model while there was an increase in the number of students who completed all the other checkpoints. Thirteen (81%) students greeted the patient and established the appropriate language to use. Fifteen (94%) students verified folder number, and patient name and ten (63%) students displayed empathy in interacting with the patient. All (100%) of students were clear (in audibility and pronunciation) and were understandable in patient counselling. Students (81%) structured conversation logically and 12 (75%) invited feedback from patients.

Figure 5.10.3: Pre- and post-intervention OSDE- Step 3



Overall, the pre- and post- intervention scores indicate that students achieved competency in dispensing.

5.11 Compounding:

Table 5.11 represents the proportion of students who scored in the various parameters on the compounding checklist (Appendix XII).

Table 5.11: Results of post-intervention compounding practices (n=16)

	Score allocated for each parameter (n= 16)	Percentage (%)
1. Students who checked for SOPs	6	38
2. Students who checked the conditions of the compounding area (e.g. light, temperature)	7	44
3. Students who checked that all ingredients were on hand before beginning	13	81
4. Students who checked that all the necessary equipment was available	7	44
5. Students who signed off the necessary documentation	15	94
6. Students who cleaned the working area	14	88
7. Students who weighed ingredients and had it confirmed by second person	14	88
8. Students who used clean equipment and utensils	15	94
9. Students who applied pharmaceutical principles	12	75
10. Students who packaged the products appropriately	16	100
11. Students who cleaned the working area afterwards	14	88
12. Students who packaged and labelled the product correctly, with a expiry date and batch number	13	81
13. Students who did the necessary calculations accurately	11	69

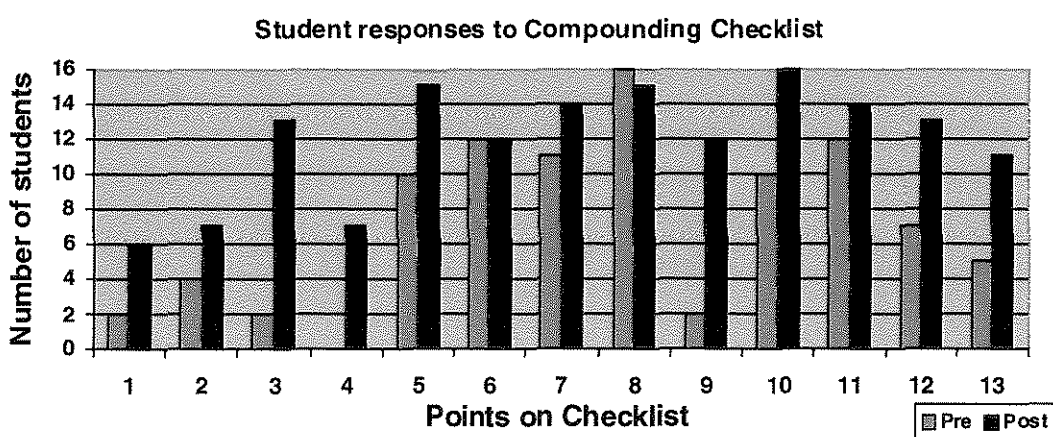
5.11.1 Results and Discussion

More than a quarter (6; 38%) of students checked for SOPs relating to clinical pharmacy, and less than half of students (7; 44%) checked environmental parameters

such as temperature and light in the compounding area. Thirteen students (81%) ensured that all ingredients were on hand before beginning the compounding process and seven (44%) students checked that all the equipment that they would need was available. Most (94%) of students signed necessary documentation and more than three quarters (88%) cleaned the working area before beginning. Fourteen students (88%) had their weighed ingredients confirmed and checked by a second person. Fifteen (94%) students used clean equipment and utensils and twelve (75%) students applied pharmaceutical principles in the mixing process. All students packaged compounded products properly and cleaned the work area after compounding. More than three quarters (13; 81%) of students labelled products properly with a batch number and expiry date and eleven students (69%) did all calculations correctly.

Figure 5.11 below provides a graphical comparison of the number of students who completed competency points on the Compounding Checklist (Appendix XII) before and after the implementation of the SLIP model. Except for checklist point six which was the same and checkpoint eight which decreased after the intervention, the number of students who completed each check point increased. This indicated an increase in student competency and skill in compounding practices.

Figure 5.11: Pre- and post-intervention compounding checklist



5.12 Written Assessment: Compounding

Table 5.12 below reflects students' marks of the post-intervention written assessment as a percentage.

Table 5.12: Compounding post-implementation assessment marks

Student	Test mark (%)
1	68
2	70
3	64
4	76
5	62
6	50
7	64
8	66
9	68
10	76
11	96
12	100
13	64
14	72
15	68
16	80
Average	71.5

For the compounding assessments, the Wilcoxon Signed Ranks test demonstrated a mean score of 61.1 for the pre-intervention test and 71.5 for the post intervention test. The scores between the two are statistically significant (z -value=-3.41, p -value= 0.001), reflecting an improvement in the assessment scores after the implementation of the SLIP model.

5.13 Physical tally of Student contribution in Out-patients, Compounding and Clinic/ Ward Pharmacy

A physical tally of services rendered by the student provides an objective assessment of their contribution in real-world pharmaceutical service delivery. It would also give insight to both healthcare planners and the academic institution regarding the service contribution that could be accomplished through an undergraduate service-learning initiative.

5.13.1 Tally of student contribution in out-patient dispensing

Tygerberg hospital pharmacy makes use of the JAC Pharmacy Software system for dispensing. Daily dispensing statistics for random dates in March, May and August were obtained from the JAC system. The number of prescription items which were picked, prepared or dispensed daily was obtained from the JAC system. The average number of items processed per day was calculated and used as a reference against which student contribution per day was compared.

Table 5.13.1: JAC Report- Outpatient dispensing statistics for Tygerberg hospital main pharmacy

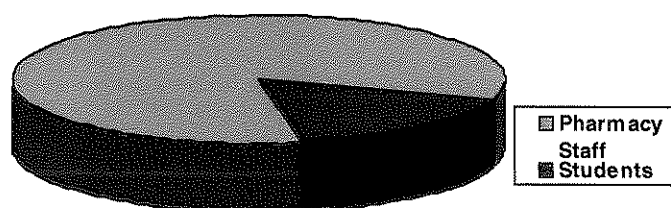
Date	Number of items dispensed
12/03/2008	2115
15/05/2008	1628
19/08/2008	2338
Average number of items per day	2027

Table 5.13.2: Total number of prescription items processed per student group per day

Group number	Number of students per group (n)	Total number of prescription items per day
1	4	265
2	2	174
3	3	494
4	3	519
5	4	638
TOTAL	16	2090

The average number of items processed daily at Tygerberg hospital pharmacy was found to be 2027. On average a student group processed 418 items per day, depending on the number of students in the group. This equates to 21% of total items processed at the pharmacy. It can also be seen from Table 5.13.2 that it seems that student contribution tends to increase with the number of SLIP blocks they have attended. This indicates that students are increasing in competency at SLIP sites other than Tygerberg hospital pharmacy.

Figure 5.13.2: Average daily student contribution to dispensing workload



5.13.2 Tally of student contribution in compounding

The number of items compounded by students was counted and recorded (Table 5.13.3). I was unable to obtain an accurate compounding statistic on the JAC system which may have served as a reference to which student contribution could be compared. While the JAC system does have such a facility, for it to accurately reflect the number of items compounded daily, the manufacturing pharmacist would need to enter details

of what was made for each day on a daily basis. This however often does not happen in practice. Instead the manufacturing pharmacist enters this information weekly or twice per week, depending on when he/she has the time to do so. This would register on JAC as being manufactured the day it was entered, thus it does not reflect an accurate statistic. Nevertheless students made a substantial contribution in the compounding area. This is confirmed in other areas of this study where the pharmacists report on student contribution in compounding (post-intervention questionnaire and post-intervention observation of pharmacists). Table 5.13.3 below reflects items that were compounded mostly in batches, but also includes the compounding of extemporaneous preparations to a lesser extent.

Table 5.13.3: Total number of items compounded per student group per day

Group number	Number of students per group (n)	Total number of items compounded per day
1	4	156
2	2	60
3	3	332
4	3	125
5	4	134
TOTAL	16	807

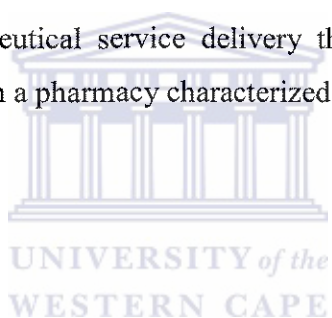
5.13.3. Tally of student contribution in clinic/ward pharmacy

Clinical assessment of patient therapy in clinics and wards is a qualitative function of a pharmacist in which he/she assesses the appropriateness of patient therapy. Clinical assessments do not register on JAC at Tygerberg hospital pharmacy. As a result there is no reference to which student contribution in clinical assessment can be compared. Nevertheless clinical assessments are an important area of practice in hospital pharmacy as it forms part of routine healthcare delivery by hospital pharmacists. The involvement of pharmacists in the distribution and control of medicines also forms a key area of practice in hospital pharmacies. Table 15.3.4 reflects bed-chart assessments and ward stock services complete per student group per day.

Table 5.13.4: Total number of clinic/ward services (Bed-chart Assessments or Ward-stock services) completed per student group per day

GROUP NUMBER	NUMBER OF STUDENTS (n=)	TOTAL NUMBER OF SERVICES PER WEEK
1	4	4
2	2	3
3	3	8
4	3	9
5	4	13
TOTAL	16	37

Student contribution to pharmaceutical service delivery through the SLIP activities helped to alleviate the workload in a pharmacy characterized by staff shortages and high prescription loads.



CHAPTER 6

DISCUSSION

The aim of this study was to design, implement and evaluate a service-learning model for final year pharmacy students at a tertiary hospital pharmacy as the basis of a tripartite relationship between the university (students), the service partner (pharmacy services) and the community (patients).

Service-learning is a pedagogical method which integrates community service with classroom instruction to address the needs of the community, while students learn through the practical experience of providing the service and reflecting on it. This study was based on the hypothesis that a structured service-learning model could result in reciprocal gain for all partners involved in SLIP. Students gain through learning opportunities presented in practical exposure to pharmacy practice, pharmacy services gain through the contribution to service delivery through the work done by the students and patients benefit through lessened waiting times as a result of students' contribution to service delivery.

In the first section of this chapter I discuss the features of the SLIP model and the impact on the three domains of the study. The second section focuses on the choice of research methods used and the combining of qualitative and quantitative methods. The third section deals with the characteristics of the SLIP model; its relation to service-learning philosophies and professionalization in pharmacy practice.

6.1 The SLIP Model

The Tygerberg SLIP model which included three components: compounding, dispensing and clinic/ward pharmacy, was designed in consultation with the UWC SLIP co-ordinator and pharmacy departmental managers, and was also based on my own experiences as a pharmacy student and pharmacist employed at the Tygerberg hospital

pharmacy. The components of the model were selected on the hypothesis that student productivity in these components would contribute to service delivery and that participation in the component would render students more proficient in areas of hospital pharmacy practice. Other factors which were taken into consideration were the space constraints in departments in the pharmacy, and time limitations set by the SLIP course, for example students were set to leave early on Tuesdays and Wednesdays. The impact of the Tygerberg SLIP model is discussed from the perspective of the students, the pharmacists and the patients.

6.1.1 Impact on student competency

One of the objectives of this study was to determine whether exposure to the SLIP model results in improved competency of students. Competency in each of the components of the SLIP model was assessed by means of unobtrusively observing the current practice patterns in each component. Checklists were used as instruments to record the number of students who completed a checkpoint on the observation and a frequency for each checkpoint was obtained. A post-intervention increase in the proportion of students who completed a checkpoint was seen as a positive finding, indicative of increased competency for the component. A post-intervention increase in the proportion of students who completed checkpoints on the OSDE checklist (Dispensing component) was seen for all the checkpoints, with the exception of checkpoints 9, 15 and 16 all of which displayed equal frequencies (100%) pre- and post-intervention. It can thus be concluded that student competency in Dispensing increased as a result of their participation in the SLIP model.

In the Clinic/ward pharmacy component, an increased frequency was seen for the majority of the checkpoints. The most substantial increase was seen in checkpoint 5 (students who checked for prescriber details). The exceptions were checkpoint 1 (students who checked for SOPs) for which a frequency of zero was obtained pre-and post-intervention and checkpoint 8 (students who checked for generic/proprietary name of medicine) for which a 100% frequency was obtained pre- and post-intervention. The

reason for the 0% frequency for checkpoint 1 may have been due to the fact that the clinical component was done in clinics and wards and it is realistic to suggest that students would not enquire about an SOP, which is traditionally filed in the pharmacy, when they were analyzing a patient's bed-chart in a ward.

For the compounding component, an increase in frequency was seen for all checkpoints on the checklist except for checkpoint 6 (students who cleaned the working area) which showed equal frequencies pre-and post-intervention and checkpoint 8 (students who used clean equipment) which showed a lesser proportion by one student. This may have been due to the fact that the student had simply forgotten to clean one of the utensils that he/she was using. The most substantial increase in frequencies was seen for checkpoint 3 (students who checked that all ingredients were on hand before beginning) and checkpoint 5 (students who applied pharmaceutical principles while mixing). For the compounding written assessments, the Wilcoxon Signed Ranks test demonstrated a mean score of 61.1 for the pre-intervention test and 71.5 for the post intervention test. The scores between the two are statistically significant (z -value=-3.41, p -value= 0.001), reflecting an improvement in the assessment scores after the implementation of the SLIP model.

Pre-intervention, student performance for the dispensing component was better than that which was observed for the compounding and clinic/ward components. This resulted in a smaller pre- and post-intervention difference in the proportion of students who completed the OSDE checkpoints, as compared to the other components. This may be because students were given a copy of the OSDE checklist and as a result knew which parameters were being assessed. The checklists for clinical pharmacy and compounding were designed for the purpose of this study and were not supplied to students. From the pre- and post-intervention proportions obtained for the competency in each of the three components, it can be seen that student competency increased across all components. This is in line with the notion of academic benefit of experiential learning which is cornerstone to service-learning initiatives.

6.1.2 Impact on student professional development and identity

Focus groups held with students before their participation in SLIP reflected a degree of apathy toward SLIP, much of which was based on their own SLIP experiences prior to the Tygerberg SLIP block, and what they had heard about the SLIP visits from the previous year's (2006) final year pharmacy students. Students had a limited understanding of service-learning philosophies and did not make any distinction between service-learning and SLIP, which further indicates that students were unfamiliar with service-learning practices. Students displayed a lack of confidence, were apprehensive about what was expected of them from them at the facility and worried that they would make dispensing errors. In addition, students expressed unhappiness at the long hours they would spend at SLIP and expected tedious and repetitive tasks. When told that they would accompany a pharmacist on ward rounds, in compounding and to view invasive procedures at a clinic, they showed a sudden keener interest in the SLIP block.

After having completed the week-long module, the post-intervention focus group discussions offered mainly positive feedback from the students. They had experienced a sense of professionalism and enthusiasm for pharmacy which they had not before, but mostly it was the realization of the sphere of hospital pharmacy and its varied activities that fuelled their keenness.

I am enthusiastic about pharmacy and what pharmacists do. I see now how important our jobs really are.

-Student comment

Majority of the students reported that SLIP allowed them to connect with their theoretical knowledge in a practical environment. They also reported that their participation in aspects of the SLIP model created an intrinsic interest in what were previously mainly text-book concepts, and that they understood and would remember the concepts that they learnt in their future practice. Many students expressed the view that pharmacy became more 'real' to them as compared to the abstract body of

knowledge that it had been before. Involving students in tasks awakened their curiosity, increased their willingness to participate in SLIP and increased their productivity.

*“Tell me, and I will forget. Show me, and I may remember.
Involve me, and I will understand.”* (Confucius, 450BC)

The clinical pharmacy aspect experienced during ward rounds and clinic duties excited the students. Students expressed the view that the SLIP programme should offer longer, more in-depth clinical training and some students still felt that the hours they spent on the SLIP blocks were too long. In addition, students reported that SLIP encouraged them to pursue internships and future careers in state sector hospital pharmacy practice. Table 6.1.2 below presents pre- and post-intervention quotes (unmatched) from focus group discussions held with students.

Table 6.1.2: Pre-and post-intervention student comments (Focus Groups)

Pre-intervention	Post-intervention
“Err...I think it is about going to learn in the pharmacy.”	“SLIP prepares you for the real world of working in a pharmacy in a way that textbooks and notes and lectures never can.”
“I think in theory its good but it is unrealistic in practice.”	“It gave me a sense of purpose to know that I was making a difference, especially for the over-worked pharmacists in out-patients.”
“A hospital pharmacy is probably very big...but honestly I don’t know much about it.”	“My view of hospital pharmacy was very different to what it is now. I had no idea that it involved ward rounds and clinics and so many other things.”
“I think perhaps it is not very clean in the waiting room, and that the waiting room is overcrowded with lots of sick people waiting for medicine...”	“I have changed so much this week at Tygerberg and I can’t wait to start my internship hopefully in a government hospital.”
“...the class of last year complained ...they had to do silly things like pack shelves all the time and that was all they were allowed to do.”	“It’s the total opposite of what I had expected and what last years fourth years used to say.”

6.1.3 Impact on pharmacist receptivity

Prior to the first SLIP session, pharmacists expressed apprehension and opposition to the prospect of student presence in their working environment for SLIP activities. Pharmacists had several concerns including space constraints in their work area; possible medicine-related errors made by students and anticipated time demands made on pharmacists by the SLIP model. The concerns of the pharmacists may have stemmed from experience with students in previous years, as well as apprehension about the introduction of a SLIP model.

It's as if we don't have enough work to do as it is. This is unfair. We are already overburdened and working late. We are not getting paid extra to train students.

- Pharmacist comment

What if one of these students makes a mistake with medicine? Who is going to take responsibility then? It's good for them to gain experience, but I don't know...

- Pharmacist comment

After the first SLIP session these attitudes changed to being somewhat more receptive, even keen on the idea. After student contribution became visible during the Tygerberg SLIP blocks, pharmacists gradually realized the role that students can play in lessening their workload and the impact of their contribution at Tygerberg Hospital. Majority of the pharmacists started to receive students positively and accepted students as part of the workforce. Some pharmacists enquired when students were due to come again and it seemed that pharmacists looked forward to having students at the site. It was realized that with constant supervision, the students can contribute to service delivery at Tygerberg Hospital.

SLIP is obviously very good for the pharmacy and students do help us a lot...

- Pharmacist comment

*When are your students coming again? They haven't been here in a long time.
You must phone them, they can come help us.*

- Pharmacist comment

These findings were supported by questionnaire responses, which showed a positive outlook toward SLIP at Tygerberg hospital pharmacy. Many pharmacists (75 %) felt that students helped to ease workload in the pharmacy. The majority (75%) of pharmacists felt that the Tygerberg SLIP model should be conducted at other tertiary hospitals in the Western Cape and that the model should continue in years to come. Pre- and post-intervention S-D Scale data, processed by the Wilcoxon Signed Ranks Test also demonstrated significant post-intervention improvements in pharmacists' perception of how students affect their work in a personal capacity (z-value= -2.39; p-value= 0.017) and in pharmacist' perception of how student presence would affect the work of the pharmacy (z-value= -2.52; p-value= 0.012).

6.1.4 Impact on patients

The study design illustrated that student contribution would be measured by a physical tally of student contribution at the site, and assumes that if students were contributing to service delivery, this would result in a positive impact on patients. While this may be true to an extent, this approach to assessment is flawed. Firstly, one cannot conclusively report that patients were helped faster as a result of student contribution in out-patients. For example if a student picked up a prescription in order to process it, he/she may have taken longer than a pharmacist who may have taken the same prescription, because the student would read up on the medicines and may not know immediately where to find them. Secondly, this means of assessment does not directly evaluate, neither qualitatively or quantitatively, the impact of the SLIP model on patients. Students reported that their contact with patients was limited; this finding is supported by pharmacists' questionnaire responses in which many pharmacists disagree that students interacted frequently with patients.

Service-learning initiatives across South African public sector pharmacies can only have a meaningful contribution at patient-level if infrastructural barriers can be removed. Designated private counselling areas are imperative if patient-centred care is cornerstone to the healthcare.

6.1.5 Structure of the SLIP model

Students responded positively to the model which allowed for different components to be done on separate days, according to a predetermined schedule. One student reported that the structured approach showed that students were welcome at the site and that the pharmacy was organized and prepared for their presence. Other students indicated that it stimulated their learning and motivated them to be productive. Most pharmacists (75%) felt that it was essential that SLIP be conducted according to a structured model. While a SLIP model conducted in a structured manner shows substantial benefits, having a structure that is too rigid could possibly hamper the success of the SLIP model. Both the hospital and the pharmacy environment can be unpredictable. For example, if it had been scheduled that students were to go to the gastroenterology clinic, on our arrival it may have happened that no patients arrived for their gastroscopy procedures on that day. Similarly, students may have been planned to compound a certain batch of pharmaceutical products and a company may not have delivered the ingredient needed. For this reason, the structured SLIP model had to allow for alternate arrangements such as switching activities to different days. It was also found that the UWC transport did not always arrive punctually, which caused a delay and necessitated a shift in the activities that were planned for the day.

6.1.6 Facilitation

It is reasonable to suggest that the success of the SLIP model is greatly affected by the facilitation of the model. All students agreed that facilitation of the SLIP model was done in a manner that aided experiential learning, while majority of pharmacists (75%) felt that the SLIP model was facilitated in a manner that served the needs of both the students and the pharmacists. Students who were at other SLIP sites prior to the

Tygerberg SLIP block compared facilitation at the sites with the facilitation at the Tygerberg SLIP block. Students based their comparison on the fact that I, the Tygerberg facilitator was employed at the SLIP site whereas other facilitators were post-graduate students who were contracted to UWC, and unfamiliar with operational procedures at the sites. In addition, some students reported that facilitation of the Tygerberg SLIP model worked well because I had recently (2006) graduated and understood the learning outcomes that were required from final year students.

My familiarity with operational procedures and rapport with pharmacy staff members was of immense value in the facilitation of the SLIP model. This familiarity eased the effort that is required in logistical arrangements and contributed to the smooth progression of the rotation schedule despite spur of the moment changes that were necessitated due to infrastructural issues. The personal supervision of and accountability for three students simultaneously is a mammoth and arduous task as it requires constant instruction and personalized mentorship of students. My capability as a facilitator to fulfil this task was appreciably augmented by my relationship with and understanding of the site. SLIP facilitators who are specially selected based on pre-determined criteria such as familiarity with the service-learning site can greatly enhance the SLIP experience for students and service partners. Another aspect that is noteworthy for facilitator selection is the prospective facilitator's propensity toward and fervour for both public sector pharmacy practice and service-learning philosophies. The presence and availability of such selected facilitators at a SLIP site could be listed along with other criteria for accreditation of SLIP sites.

6.1.7 Limitations of the SLIP Model

6.1.7.1 Facilitation

Students correlated the strength of the Tygerberg SLIP model to the fact that (i) the facilitator was employed at the site and as a result understood the needs and operational procedures of the pharmacy and (ii) the facilitator was a recent graduate and therefore also understood the needs of the students. It could therefore be suggested that if the

SLIP model were to continue at Tygerberg hospital and be implemented at other hospitals, a person who is employed at the hospital would be an ideal facilitator. Buy-in from the service partners would need to be attained for the sites to agree that a member of their staff be responsible for model facilitation during the SLIP blocks. If service partners do not agree to such buy-in, an essential element of the SLIP model would be lacking. This in turn could negatively affect the sustainability of the SLIP model. The existing (2007) UWC SLIP practice was to use post-graduate facilitators at the service sites. Students reported that the performance of these facilitators was suboptimal due to the fact that they were unfamiliar with operational procedures at the site and would need to seek permission from the resident staff at the site to conduct any activity for the purpose of student learning. It could therefore be presumed that the UWC-contracted SLIP facilitators would not be ideal facilitators for the SLIP model, and that for the SLIP model to continue, the existing UWC SLIP practice of using post-graduate facilitators would need to change.

6.1.7.2 Patient interaction The motivation for this study was partly based on the premise that the training of pharmacists in South Africa does not prepare them optimally for the evolving role of pharmacists to being patient-centred practitioners. However, many students reported that patient interaction in the SLIP model was not enough. Some students recognized that the reason for this lack of intense and frequent patient interaction was the nature of pharmacy practice in healthcare settings. The implementation of pharmaceutical care is often precluded in public sector pharmacy practice as a result of the somewhat isolated position and function of pharmacies. This may explain why pharmacists are peripheral in the healthcare team.

In a developing country like South Africa, preventive care is cornerstone to healthcare provision, and can only be achieved through direct patient engagement. It is reasonable to suggest that such care can only be offered if pharmacy students are trained in a practice environment which actually emulates patient-centred care. Lack of direct contact with patients at public sector pharmacies unveils a gap between academic

ideologies and actual practice patterns. Inadequate patient contact at service-learning sites precludes the provision of patient-centred care. Negotiation between UWC and pharmacy services is cornerstone to addressing barriers in the delivery of pharmaceutical care. It is hoped that intern pharmacists too become integral in the healthcare team to promote preventive care.

6.1.8 Ethical considerations of the SLIP model

In the running of a SLIP model, cognisance must be taken of ethical matters such as patient confidentiality and legal, regulatory or conduct issues such as liability and academic codes of conduct. Students need to be aware of the sensitivity of the information with which they are dealing and need to be reminded to respect patient confidentiality. Another area worthy of consideration is liability for student activities. Pharmacists expressed concern about the possibility of student errors in medicine related matters and raised questions regarding who would be accountable for student errors. For the purpose of this study, I, in the roles of the researcher and model facilitator, agreed to accept liability in the event of student errors. Formalized agreements between the university and the model facilitators at the site could address issues such as liability and patient confidentiality.

6.2 Research Methods

6.2.1 Combining qualitative and quantitative methods

The integration of qualitative and quantitative methods provided useful insight into pharmacists' views of and attitude toward SLIP initiatives, as well as students' attitude and knowledge of service-learning. The use of mixed methods offered a comprehensive account of pharmacists' acceptability to the SLIP model and student receptivity to and benefit of the SLIP model. The use of qualitative methods (focus groups) further provided an opportunity to establish rapport with the students by adopting a conversational unstructured style in asking questions. Due to the small sample size (pharmacists: n=9; students n=16) findings from this study cannot be generalized.

Nevertheless, the utility value of this research lies in the prospective implementation of the SLIP model, applied with discretionary modifications, at tertiary hospital SLIP sites. Findings provide a reflective description of the design, implementation and evaluation of the Tygerberg SLIP model.

6.2.2 Qualitative evaluation

Qualitative methods were used to evaluate the acceptability and receptivity of the SLIP model among students and pharmacists in the target group. Focus group discussions held with students and unobtrusive participant observation of pharmacists produced detailed, expressively rich and naturalistic reflections of target members' views and responses to the SLIP model. Qualitative research was conducted covertly and the use of noticeable data collection such as rigorous note-taking was avoided, so as not to jeopardise naturalistic enquiry. In doing so, I purposefully reduced self-consciousness in order to capture natural responses to various facets of the SLIP model. While covert research is a widely acceptable means of obtaining data, the ethical implication of not obtaining full informed consent of study subjects whose conduct is being observed remains a controversial issue (Doyal, 1998).

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6.3 Professionalism in SLIP

Professionalism has been defined as “setting and maintaining standards of competence and integrity, and providing expert advice to society on matters of health” (Medical Professionalism Project, 2002). With the evolving focus of the pharmacy profession, distinctions are being drawn between technical competency and cultural competency of pharmacy practitioners. Technical competencies of pharmacists include the use of clinical reasoning and technical skills employed in executing pharmacy functions such as dispensing and compounding. The post-intervention observations of student competency in the areas of compounding, dispensing and clinical pharmacy reflect an increase in competency in these areas of hospital pharmacy practice. This indicates that the SLIP model strengthens technical competency of final year pharmacy students. While technical skill forms an essential element of pharmacy practice, it alone can not

do justice to the role of the modern day pharmacist; neither does it adequately address the needs of the society that pharmacy practitioners endeavour to serve. As Donald Brodie (1981) observed, pharmacists' inclination toward technical competency presents a periphery which places limits on professional practice of pharmacists:

"...we must remember that our profession lends itself exceptionally well to the practice of technique. Some would say that we are victims of our own technique. Consumers often see only a bottle of pills. Many of our practitioners see the boundaries of their professional responsibility circumscribed by the practice of technique – the dispensing of medicine."

In spite of the global shift of pharmacy to the tenets of pharmaceutical care and patient-centeredness, Williams (2006) argues that pharmacy practice in the South African context remains technically orientated and product-centered. Williams (2006) challenges this product-based approach, proposing that the profession be underpinned with a 'values-based', patient-centered philosophy, characterised by 'covenantal relationships' which result in positive therapeutic outcomes. For pharmacy to succeed as a patient-centred profession, and for pharmacy practitioners to find meaning in their vocation, pharmacists must extend their practice beyond the technical competency aspect to which they have become accustomed.

"The most truthful thing I can say about pharmacy practice is this: it is an occupation physically bound to the act of providing medication to patients, but which knows it must find new reason for being."

(Zellmar, 1996)

Cultural competency describes the relationship of health professionals to diverse members of their community and, in relation to healthcare has been defined as "the

ability...to provide care to patients with diverse values, beliefs, and behaviours, including tailoring delivery to meet patients social, cultural and linguistic needs” (American Pharmacist’s Association, 2007, p.8). Cultural competency echoes the philosophy of pharmaceutical care as both are aimed at increasing the quality of service to result in improved health outcomes. As seen in pre-intervention student focus group discussions, students displayed eagerness toward civic engagement and addressing patient needs. After the implementation of the SLIP model, students expressed disappointment at the lack of significant patient interaction and meaningful civic engagement. This implies that the SLIP model did not address the cultural competency aspect of professionalism and showed limited application of pharmaceutical care.

6.4 Service versus Labour

The UWC SLIP course places equal emphasis on the service and learning elements of service-learning and encourages students to do justice to both elements. The service element refers to pharmaceutical service delivery both to patients and to the service institution. Service is meaningful and imparts value to both the giver and receiver of service (Remen, 2000). Students as givers of service benefit through real-world experience and are able to develop a sense of purpose and social responsibility and civic awareness typical of service-learning endeavours. The findings of this study reflect that the service element was being confused with labour. Some pharmacists viewed students as being a means to lighten the workload, with limited consideration as to whether students were benefiting from the labour that was being done. This finding is supported in the literature (Nemire, 2004), which reports that pharmacists tend to see students as volunteers or a source of ‘free help’. On the other hand students perceived the work they did as service and found value in their ability to make a difference and attributed this to the structure of the SLIP model which was designed to address the need of students and pharmacists. A SLIP model which considers the needs of both students and the service partner encourages service rather than labour.

6.5 Implications of the Study for Pharmacy Services (Western Cape)

Preliminary findings of this study were disseminated to senior management of pharmaceutical services (Western Cape) and representatives from the Department of Health (Western Cape) as a colloquium type presentation (17-09-2007). Also presented at this forum were the findings of an independent review of the SLIP program (2008), conducted by a visiting academic and Fulbright scholar. While the research presented in this dissertation was conducted independently from the 2008 SLIP Review (Pollack, 2008), distinct parallels including “deepening core academic knowledge, delivering service and facilitating students’ career preparedness” (Pollack, 2008a), between the two evaluations were evident. Pharmacy management displayed enthusiasm and fervour for study findings as depicted in the following observation by Pollack, (2008b):

- Senior Pharmacy Manager from Tygerberg hospital pharmacy displayed considerable support for the SLIP programme as a result of overseeing the initiation of the SLIP model, and witnessing its impact on the service institution. She further called for formalization of the pharmacists’ role in SLIP as part of the workload.
- Realization and recognition of the advantages of a resident pharmacist facilitator as compared to a UWC contracted post-graduate facilitator, and emphasis on the importance of institutionalizing this role.
- Acknowledgement from Red Cross Children’s Hospital pharmacy that there was inadequate time spent with the SLIP students. The pharmacy manager from Red Cross displayed keenness to better their role in SLIP, but stated that the pharmacy was experiencing staff shortages and could not manage without the UWC facilitator.
- Tygerberg Hospital pharmacy management replied that while they too were experiencing staff shortages, none of the staff objected to the resident community service pharmacist acting as SLIP facilitator.
- Tygerberg Hospital encouraged UWC to conduct more research in the pharmacy. In addition, the pharmacy manager displayed eagerness for the

SLIP program as a means to indirectly empower pharmacists and “engage more in patient care.”

- Representation from a nursing delegate summarised her opinion: “*I think this is magic.*”

The positive attitude of pharmacy services to the SLIP findings exceeded the expectations of the UWC SLIP staff that were present. The SLIP partnership between pharmacy academics and pharmacy practitioners was consolidated and the SLIP co-ordinator described pharmacists’ attitudes as a “total turnaround.” Pharmacists’ emphasis on formalizing the pharmacy personnel’s role in SLIP facilitation indicated that the UWC SLIP practice was considered to be a noteworthy entity.

The 2007 Tygerberg SLIP model was successfully continued by a community service pharmacist in 2008. In 2009, students from the first SLIP block reported that tertiary hospitals were welcoming and enthusiastic about student presence, and that hospitals have developed schedules and programmes for the SLIP blocks. As from March 2009, the UWC SLIP course is no longer facilitated by UWC-contracted facilitators. Instead, pharmacists resident at the sites are responsible for facilitation.

6.6 Recommendations for the SLIP programme

While the small sample size of participants in this study limits the generalizability of the findings in this dissertation, the utility value of these findings lies in its prospective implementation into the overall SLIP programme. The following recommendations for the SLIP programme are based on the findings of this research:

- A pharmacist who is a member of staff at the SLIP site should serve as the facilitator of the SLIP programme.
- Training and capacity building should be offered to SLIP facilitators.
- SLIP should include opportunities for students to engage in meaningful, direct interaction with patients.

- SLIP should broaden its learning opportunities to promote social responsibility and cultural competency of pharmacy students.
- Student contribution at the site should be measured and feedback should be given to students about their contribution.
- Student assessment should be conducted in a non-threatening manner in order to provide a nurturing environment for learning.
- SLIP should create opportunities for structured group reflection, thereby creating a forum for students to contemplate their own experiences and share in the experiences of their peers.
- Students should provide feedback to the site about their SLIP experience. This feedback could be expressed in a letter to the facilitator or site manager.

6.7 Conclusion and Recommendations

The Tygerberg SLIP model was able to address the needs of the partners envisaged in the triad relationship; student learning in components of hospital practice was promoted, pharmacy services at the hospital received much needed assistance, and this translated to patients becoming the recipients of increased service delivery. While the SLIP model evidently addressed technical competency needs of fourth year pharmacy students and resulted in increased pharmaceutical service-delivery, further studies are needed to evaluate whether 'increased' service-delivery was also 'improved' service delivery. The SLIP model should be modified to include significant patient-interaction, thereby incorporating the 'cultural competency' and 'patient-centeredness' which defines the role of the modern day pharmacist.

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APPENDICES



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WESTERN CAPE

APPENDIX I

SCOPE OF PRACTICE: PHARMACIST ASSISTANT: POST-BASIC

A pharmacist's assistant registered in the category pharmacists' assistant post-basic may perform the following acts or services under the direct personal supervision of a pharmacist in a pharmacy:

- a) The sale of Schedule 0, Schedule 1 and Schedule 2 medicines or scheduled substances in accordance with the Medicines Act;
- b) assist with the compounding, manipulation or preparation of a non-sterile or sterile medicine or scheduled substance according to a formula and standard operating procedures approved by the responsible pharmacist;
- c) assist with the manufacturing of a non-sterile or sterile medicine or scheduled substances according to a formula and standard operating procedures approved by the responsible pharmacist;
- d) the re-packaging of medicine;
- e) the distribution and control of stock of Schedule 0 to Schedule 6 medicines or scheduled substances in accordance with the Medicines Act;
- f) the ordering of medicine and scheduled substances up to and including Schedule 6 according to an instruction of a person authorized in terms of the Medicines Act to purchase or obtain such medicine or scheduled substance;
- g) the reading and preparation of a prescription, the selection, manipulation or compounding of the medicine, the labelling and supply of the medicine in an appropriate container following the interpretation and evaluation of the prescription by a pharmacist;
- h) the provision of instructions for the correct use of medicine supplied

Source: The South African Pharmacy Council. (2004). Good Pharmacy Practice in South Africa: Annexure A

APPENDIX II

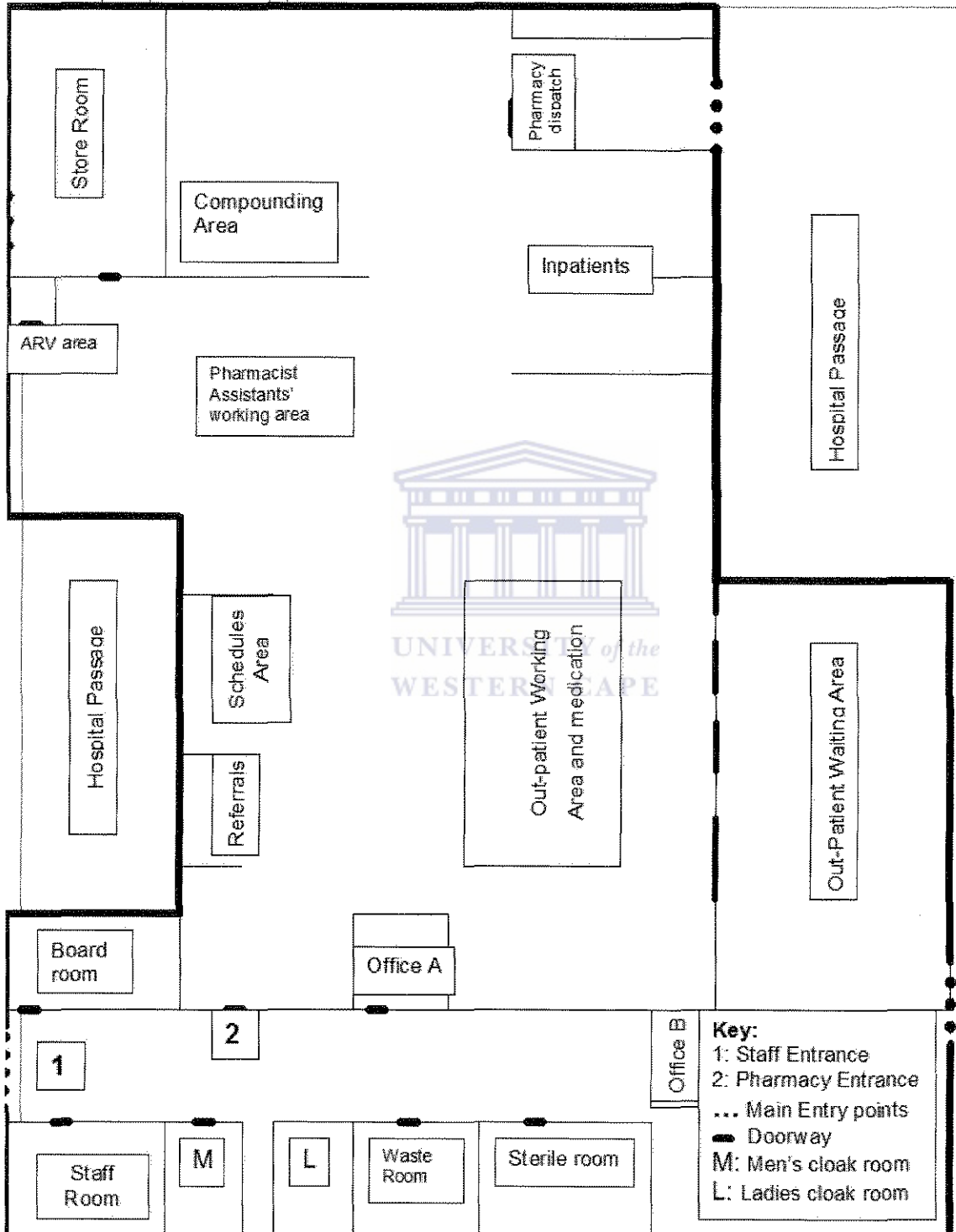
List of SLIP sites for 2007

Site A	Red Cross Hospital
Site B	Groote Schuur Hospital
Site C	Karl Bremer Hospital
Site D	Jooste Hospital
Site E	Tygerberg Hospital
Site F	Vanguard Community Health Centre
Site G	Ravensmead Community Health Centre
Site H	Bishop Lavis Community Health Centre
Site I	UWC community Rehab Project
Site J	Delft Community Health Centre
Site K	Elsies River Community Health Centre

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WESTERN CAPE

APPENDIX III

Figure: Approximate Outline of Floor Plan: Tygerberg Hospital Main Pharmacy



APPENDIX IV



UNIVERSITY OF THE WESTERN CAPE
School of Pharmacy
Private Bag X17
Bellville 7535 CAPE TOWN
Ph: 021-9592977
Fax: 021-9593407

14 March 2007

Dr Carter
Senior Medical Superintendent
Tygerberg Hospital
Tel: 021- 938 4136

Dear Dr Carter

**re: Permission to conduct undergraduate Service Learning in Pharmacy (SLIP)
programme at Tygerberg Hospital**

The SLIP programme is a registered course that fulfils the SA Pharmacy Council's requirement for undergraduate training and underpins the School of Pharmacy's teaching philosophy. It epitomizes UWC's Community Higher Education and Services Partnerships (CHESP) programme that aims to strengthen partnerships between service providers, community and academic institutions. The programme enables students and pharmacy staff to work synergistically towards rational pharmacotherapy, good dispensing and manufacturing practices that aim towards quality medicine use. Final (4th) year pharmacy students undertake service-learning (SL) at various health care facilities in the Cape Peninsula.

The principal pharmacist Ms C Ford and the pharmacy staff have agreed to undertake SL at Tygerberg Hospital. The 2007 SLIP schedule extends across 7 weeks as follows:

Term 1	March	12th-23rd	2 weeks
Term 2	May	7 th – 18 th	2 "
Term 3	August	20 th – 31 st	2 "
Term 4	October	1 st – 5 th	1 week

Student groups will rotate across designated sites in order to obtain varied learning experiences. Students will spend most of the time in the dispensary, and may consult with medical and nursing staff when deemed necessary. Signed indemnity forms from students and facilitators will be forwarded to your department once groups allocated to the sites have been confirmed. Undergraduate research projects are integral to the SLIP programme as they provide students with a deeper understanding of the South African primary care services. Such insight prepares students for their internship and community service. The research projects are supervised by academic staff from UWC, Pharmacy School. Standard ethical procedures are strictly adhered to and patient confidentiality is respected at all times.

We herewith apply for permission to have access to Karl Bremer Hospital to conduct the undergraduate service-learning programme. Your approval for the undergraduate training is greatly appreciated. Thank you for attending to our important health service partnership.

Yours faithfully
Angeni Bheekie

D.Pharm

Mariam Parker *B.Pharm*

APPENDIX V



Provincial Administration: Western Cape
Departement van Gesondheid
Department of Health
iSebe lezeMpilo

INDEMNITY FORM

I, _____ (Full Names), _____
(ID Number or Passport number)

Do hereby declare that:

- a) I am voluntarily offering my services , or
- b) Have requested to observe the activities,

At _____
(Health Facility)

I freely indemnify the PROVINCIAL ADMINISTRATION: WESTERN CAPE: DEPARTMENT OF HEALTH, and management of the _____

(Health Facility)

of any physical or mental harm that may attribute to my presence there.

SIGNED FOR DEPARTMENT OF HEALTH

SIGNATURE OF APPLICANT

DATE

DATE

Dorpstraat 4
Posbus 2080
KAAPSTAD
8000
Faks (021) 483-2655
2655

4 Dorp Street
PO Box 2080
CAPE TOWN
8000
Fax: (021) 483

APPENDIX VI

Pre-intervention questionnaire

Dear Pharmacist:

Service Learning in Pharmacy is an initiative to integrate on- site training combined with service delivery at a said tertiary institution, with intentional benefits to both the students and the health facility. The assessment below is an appraisal of the possible opportunities or difficulties that you face with regard to student presence at your facility. It is an instrument aimed at obtaining pharmacist views about their working environment, student presence in this environment and the service-learning model.

Your co-operation in this regarded is appreciated. Information obtained from this survey is confidential. Your insight is appreciated.

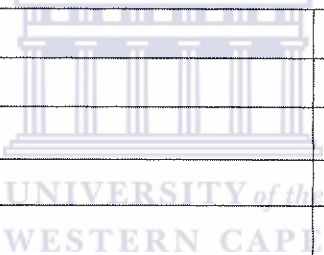
Tick the appropriate box

1.1 Gender

Male	
Female	

1.2 Age

20-29	
30-39	
40-49	
50-59	
60-69	



Pharmacy Services

2.1 What is the average overall number of patients the pharmacy services on a daily basis?

Less than 200	
200-300	
300-400	
500-600	
More than 600	

2.2 What is the average waiting time for patients in the waiting room to receive their medicine?

Less than 2 hours	
2 to 4 hours	
4 to 6 hours	

6 to 8 hours	
--------------	--

2.3 Do you feel that the staff complement in your pharmacy is large enough to cope with the amount of patients?

Yes	
No	

2.4 Rate the quality of service that the average patient receives from the pharmacy.

Excellent	
Very Good	
Good	
Mediocre	
Poor	
Very poor	

2.5 Which departments within the pharmacy are problematic in terms of a high workload and too few staff?

Out-patients	
In-patients (Wards)	
Manufacturing	
Wards	

2.6 Barriers to good hospital pharmacy practice are...

Staff shortage	
Inadequate training of personnel	
Lack of Resources	
Low Job satisfaction	

Question Three: Knowledge of SLIP

3.1 Are you familiar with the concept of Service-learning

Yes	No
-----	----

3.2 Please state your understanding of service-learning by completing the following: "Service-learning is ..."

3.3 Have you come across or read any material on SLIP?

Yes	No
-----	----

3.4 In your opinion, SLIP was devised to benefit

Patients	Yes	No
Students	Yes	No
Pharmacists	Yes	No

Section 4: Pharmacist Opinion about student presence in their working environment

For each statement below choose and tick the box with the correct answer

4.1 Student presence at the hospital can be of benefit because

Students' knowledge is fresh and updated	Yes	No
Students can help with the workload	Yes	No
Students may learn through this experience and be more valuable as interns	Yes	No
Establish a link between pharmacy and university	Yes	No

4.2 Student presence at the hospital can be of detriment because

Students are bound to get in the way	Yes	No
Student errors are likely to occur	Yes	No
Students increase our workload as we are expected to teach them	Yes	No
Student presence may confuse patients	Yes	No

4.3 What is your role as a pharmacist in the Service-learning process?

Teach, lecture	Yes	No
Mentor, advise	Yes	No
Unconcerned	Yes	No

5. Pharmacists' past experience with intern pharmacists

5.1 From your experience, do intern pharmacists show the following competencies as prescribed by the SAPC unit standards?

Manufacturing and compounding pharmaceutical products	Yes	No
Procurement, storage, distribution of pharmaceuticals	Yes	No
Dispensing, ensuring optimal use of medicines	Yes	No

Provision of pharmacist initiated therapy and optimal use of medicines	Yes	No
Provision of education and information on medicine and healthcare	Yes	No
Promoting community health	Yes	No
Participating in research	Yes	No

5.2 For those questions to which you have answered NO above, what is the possible reason?

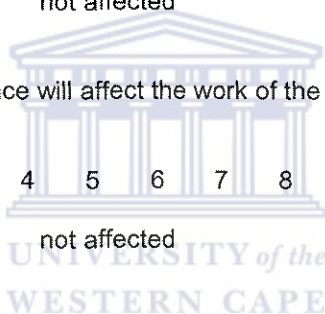
Inadequate training	Yes	No
Not enough experience	Yes	No
Not enough confidence	Yes	No
Poor attitude, work ethic	Yes	No

1. How do you expect student presence affect your work in a personal capacity?

0 1 2 3 4 5 6 7 8 9 10
 hindered not affected benefited

2. How do you expect student presence will affect the work of the pharmacy at large?

0 1 2 3 4 5 6 7 8 9 10
 hindered not affected benefited



Please provide any views, comments or suggestions regarding SLIP

APPENDIX VII

Post-intervention questionnaire

Dear Pharmacist:

Service Learning in Pharmacy is an initiative to integrate on site training combined with service delivery at a said tertiary institution, with intentional benefits to both the students and the health facility. The assessment below is an appraisal of the possible opportunities or difficulties that you face with regard to student presence at your facility. It is an instrument aimed at obtaining pharmacist views about their working environment, student presence in this environment and the service-learning model.

Your co-operation in this regard is appreciated. Information obtained from this survey is confidential. Your insight is appreciated.

Pharmacist information

Please tick the appropriate box

1. Gender

Male	
Female	

2. Age

20-29	
30-39	
40-49	
50-59	
60-69	

Knowledge of SLIP

3.1 Please state your understanding of service-learning by completing the following:
"Service-learning is ..."

3.2 In your opinion, was SLIP devised to benefit

The University (students)	Yes	No
The institution (hospital pharmacists)	Yes	No
The patients	Yes	No

3.3 What is your role as a pharmacist in the Service-learning process?

Teach, lecture	Yes	No
Mentor, advise	Yes	No
Unconcerned	Yes	No

Section 4: Pharmacist opinion about student effect on domain

For each statement below choose and tick the box with the correct answer

4.1 Effect of student presence on the service institution i.e. hospital

4.1.1 Students helped to ease the workload in various departments within the pharmacy.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

4.1.2 Students made valuable recommendations regarding various processes in the pharmacy.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

4.1.3 Students created a positive atmosphere in the pharmacy because they were enthusiastic, professional and willing to learn.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

4.1.4 Students helped to compound and pre-pack stock so that they were more readily available on pharmacy shelves.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

4.1.5 Students were in the way of the pharmacist and thus caused frustration of pharmacists.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

4.1.6 Students communicated well with pharmacist and imparted up to date information

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

4.1.7 Students had to be supervised in executing tasks and thus created additional work for the pharmacist.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

4.1.8 Through mentoring students, pharmacists were exposed to a different facet of practice. This stimulated and contributed toward continuing professional development.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

4.1.9 The program allowed a relationship to be formed between the hospital and the university. This link allows practicing pharmacists to communicate with the university about student issues.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

4.2 Effect of the SLIP program on the students. Please tick the appropriate box.

4.2.1 Students learned from the patient community at the hospital.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

4.2.2 Students learned from the service staff i.e. doctors and nurses.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

4.2.3 Students learned from the pharmacists and pharmacist assistants.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

4.2.4 Service-learning contributed toward the personal development of the students.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

4.2.5 The program increases the competence of students and therefore makes them more valuable to employers in their intern year.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

4.2.6 The program exposes students to practice areas of pharmacy i.e hospital and equips them to make informed decisions regarding which sector of pharmacy they would like to practice in.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

4.2.7 Through exposure in a state hospital the program helps to dispel myths and incorrect beliefs about state hospitals and working for the government.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

4.3 Effect of student presence on the patients

4.3.1 Students interacted frequently and intensely with patients.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

4.3.2 Students were able to provide patients with useful information regarding their health and medication.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

4.3.3 Patients were confused and perturbed by student presence.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

4.3.4 Patient waiting time is decreased through extra work done by students.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

5. Implementation of the model for SLIP

5.1 It is essential that the SLIP program is conducted according to a structured model.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

5.2 The model is well-structured as it informs you of when the students will be in your work area.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

5.3 The model is too structured, students should report to areas where they are most needed.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

5.4 The model is quite didactic-students can be taught the same things in a lecture or classroom setting.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

5.5 The model does not provide enough instruction-students are left to their own devices.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

5.5 The model is conducted in a manner which allows optimal experiential learning-students learn through what they are seeing and doing.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

5.6 The on-site tests through which students are assessed are fair and reasonable.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

5.7 These tests/assessments are a good reflection of the students' competency at the end of their participation in the model.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

5.8 Would you agree to have students in your department as part of this model again in the future?

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

6: Opinion of facilitator

6.1 It is essential that the SLIP model is conducted by a pharmacist employed at the hospital.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

6.2 The facilitator who discussed Service-learning with me and conducted the program was knowledgeable.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

6.3 The facilitator aided and reinforced my understanding of service-learning.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

6.4 The facilitator informed me well in advance of when the students would come, so that I could do the necessary preparation.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

6.5 The facilitator guided student learning in such a manner that served the needs of both the students and the pharmacists.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

7. Opinion of the SLIP Manual

7.1 The manual provided useful information about the SLIP programme.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

7.2 The manual is an essential component of the program and should be given to all pharmacy managers.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

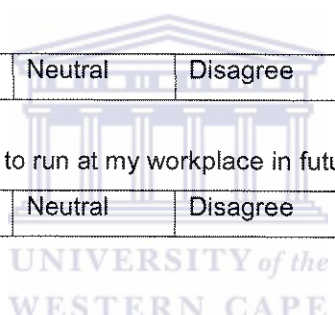
8. Overall view of the SLIP program

8.1 The SLIP model should be introduced and run in all the tertiary hospitals in the Western Cape.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------

8.2 The SLIP model should continue to run at my workplace in future years to come.

Strongly agree	Agree	Neutral	Disagree	Strongly disagree
----------------	-------	---------	----------	-------------------



1. How did student presence affect your work in a personal capacity?

0	1	2	3	4	5	6	7	8	9	10
hindered			not affected				benefited			

2. How did student presence affect the work processes of the pharmacy at large?

0	1	2	3	4	5	6	7	8	9	10
hindered			not affected				benefited			

Please provide any views, comments or suggestions regarding SLIP.

APPENDIX VIII

Pre-intervention focus group guideline for students 2007

A. Theme: Understanding of service-learning

B. Theme: Hospital pharmacy

1. Describe how and when you think patients get their medicines.
2. What are the general conditions like at a hospital pharmacy?

C. Theme: Pharmacy practice in a hospital setting

1. What activities constitute the hospital pharmacists job?
2. What differentiates hospital pharmacy from other practice settings such as retail?
3. What in your opinion is the extent of patient contact in hospital pharmacies?
4. To what extent do pharmacists have a say in drug regimens of patients in hospital?

D. Student view of SLIP

1. Expectations of SLIP
2. Hopes of SLIP
3. Fears of SLIP

E. View of SLIP as the basis of a tripartite relationship

- Students benefit by learning through experience.
- The pharmacy benefits because of the extra hands doing work.
- Patients benefit by having their medicines done faster.

APPENDIX IX

Post-intervention focus group guideline for students 2007

A. Understanding of service-learning

B. Hospital pharmacy

1. Has your view of hospital pharmacy changed? How?
2. Do you think you were adequately prepared to work in a hospital pharmacy?

C. SLIP conducted as a structured model

1. What are your thoughts on the components of the SLIP model?
 - Compounding
 - Clinics and Wards
 - Dispensing
2. What are your views on having SLIP be as structured and formal as it was here?
3. What are your thoughts on the facilitation and supervision of the SLIP model?
4. Do you think the model did justice to integrated learning: Pharmaceutics, Pharmacy Practice and Pharmacology?

D. Patients

1. What in your opinion is the extent of patient contact in hospital pharmacies?
2. Did you learn from the patient community, if yes what did you learn?

E. Pharmacists

1. Describe your contact and interaction with pharmacy staff.
2. Did you learn from the staff, if yes what did you learn?

F. Main Benefits of SLIP

G. Main Drawbacks of SLIP

APPENDIX XI

Objective Structured Dispensing Examination (OSDE)

Student: _____ Student No: _____ Evaluator: _____
 Mark (M): _____ Poor = 0 Average = 1 Good = 2

Folder 1 Folder 2 Folder

3

*** STEP 1 - Evaluation of patient therapy – incorporates critical competency (CC)***

- 1) Correct reading of Rx
 2) Defines the clinical condition (s)
 3) Identifies inappropriate therapy/errors/dose
 Complications/interactions or omissions

	M	CC	M	CC	M	CC
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CRITICAL STAGE mark x 2 = score	_____	_____	_____	_____	_____	_____

*** STEP 2 – Dispensing the prescription -incorporates critical competency (CC)***

- 1) Labels meds. : patient name ; folder # ;
 date ; dose , total units ;
 directions ; warnings

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

2). Issues medication to patient

(A) Specifically states disease treatment objectives/goals

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

(B) Lifestyle and health promotion

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

(C) Gives advice on correct use & purpose of meds

- Mentions drug and product names
- **Mentions how drug works**
- Mentions instructions/time for administration
- Give advice on ADR special precautions
- Contraindications

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

(D) Assesses patient knowledge and recall

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Mark x 2 = score

	_____	_____	_____	_____	_____	_____
--	-------	-------	-------	-------	-------	-------

STEP 3 – Evaluate student's communication style

- Greets pt & establishes language to use
 Verifies folder number , patient name
 Empathy Interaction
 Clear (audibility, pronunciation)
 Understandable
 Structures conversation(logical/ not jumping)
 Patient feedback

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Mark x 1 = score

	_____	_____	_____	_____	_____	_____
--	-------	-------	-------	-------	-------	-------

Incentive mark = 2

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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APPENDIX XIII

Service-learning in Pharmacy (SLIP) student assessment: Compounding

- 1) What environmental standards must you ensure are adhered to before you begin making the preparation?
- 2) What do you need to have on hand before you start compounding the preparation?
- 3) Why is it necessary to add 5 litres of hot water, and what pharmaceutical principle is being applied in doing so? (or pose applicable pharmaceutical principle question) *
- 4) Why is it necessary to add 5 litres of cold water subsequent to adding and mixing of the hot water * (or pose applicable pharmaceutical principle question)
- 5) What is the reasoning behind adding the Chlorocresol? (or applicable preservative)*
- 6) What is the therapeutic indication for Betamethasone Cream, and what class of agents does Betamethasone belong to? *
- 7) What is the possible side-effect profile of this preparation?
- 8) The base of this cream is Cetomacrogol, rather than the more commonly used Aqueous cream. What in your opinion is the rationale for the use of Cetaomacrogol instead of aqueous cream?*
- 9) You have just switched the mixer off as the preparation is now complete. What do you do now?

* Questions which may have changed based on the applicable preparation, but remain based on similar principles.

APPENDIX XIV

PRE-INTERVENTION FOCUS GROUP TRANSCRIPTS

PRE-INTERVENTION FOCUS GROUP: TRANSCRIPT ONE

1. Introduce theme: Understanding of service-learning

It is when you are studying something, at school or at university, and you have to use the knowledge you have to serve people in a setting where you will maybe work when you are qualified.

Oh I never saw it that way. I just heard that it is about going to the pharmacies and seeing what happens there.

I think that we are sent on SLIP to learn about the stuff that the lecturers talk about in class, and also to see how pharmacists communicate with doctors and patients. Remember... they told us that we must link our SLIP to our subjects.

2. Introduce theme: Hospital pharmacy

a. What do you know about hospital pharmacy, How is it practiced in a hospital setting?

Nothing, because I have never been in a hospital pharmacy before.

It is probably just like a retail pharmacy but bigger.

The idea of a hospital pharmacy didn't cross my mind until recently. When we think of studying pharmacy you just think of a normal retail pharmacy.

But then if you think of it... a hospital needs medicine to operate...so a hospital pharmacy is probably very big...but honestly do not know much about it.

What activities constitute the hospital pharmacists job?

I'm not sure. I don't think it differs very much from other pharmacy jobs. It probably also involves dispensing, preparing patients' medicine counselling and that sort of thing.

Yes I think so too.

Doesn't it involve some other stuff; remember in 'ceutics (pharmaceutics) we spoke about IV solutions. I think maybe pharmacists are involved with drips in the wards.

b. What differentiates hospital pharmacy from other settings such as retail?

The hospital pharmacy is probably bigger and busier.

You don't deal with paying customers and money, so I think it is easier. In retail pharmacies customers can be rude and difficult when you won't give them something that they need a prescription for.

c. Extent of patient contact in hospital pharmacies.

It would make sense that a pharmacist would have more patient contact at hospital.

I think it is more patient contact probably.

I also think more patient contact a hospital has more patients than a retail pharmacy.

d. How and when you do you think patients get their medicines?

The people who are sick or their family probably just comes to collect their medicine.

Ja...they wait for their names to be called, like at a day hospital and collect it. Or the doctor in the ward or maybe even the nurse phones the pharmacist and they must bring it.

Prof Butler always says that the pharmacist is the last healthcare person the patient sees before they go home, so I suppose the pharmacy is very busy in the afternoon because that is when all the patients come from the doctors or the wards.

e. Do pharmacists have a say in the drug regimens of patients in a hospital?

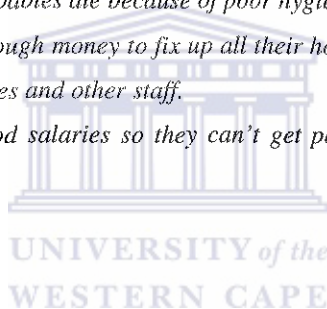
Don't think they have much say, except when maybe there's a drug interaction or other complication.

f. General conditions at a hospital pharmacy

I don't think it is very good...you always hear terrible stories about government facilities, especially hospitals. Like how babies die because of poor hygiene in hospitals.

Also government never has enough money to fix up all their hospitals and clinics. You also hear of there not being enough nurses and other staff.

Government does not pay good salaries so they can't get people to work and maintain their hospitals in good condition.



Student opinion of SLIP

a. Expectations of SLIP

The students from last year said it was very boring and that it was a waste of time. They felt like they could have spent that time better in working on their research projects or studying.

I also heard that, they said they were often doing nothing at the hospitals, just sitting there.

For us it's going to be worse because we have to spend more time on SLIP, it's a whole day.

b. Hopes regarding SLIP

That it will help to prepare us for working next year. Also give us a taste of what we can expect next year.

I hope we can speak to patients about their medicine. I think we can really make a difference in people's lives and that they would appreciate somebody just taking the time to take interest in their health and life.

I would like to see what we study being actually put into practice by pharmacists.

c. Fears or anxieties regarding SLIP

Something which I am scared of is speaking to patients; actually it's more nervous than scared.

I'm not good with that, especially patients who speak different languages that I can't speak.

I'm dreading the long hours that we will be on SLIP. What we will be doing all the time, I would not like to be bored and watch the time waiting for it to pass.

Ja... the time is very long. We're not used to such long days...our legs will be so tired.

4. Introduce Theme: SLIP as the basis of the tripartite relationship.

I don't think we can help to do patients scripts faster. We are still learning and that is a lot to ask.

Maybe we will learn from doing things, I think we will. But we must be given the chance to do things.

Yes last year they (students) were given something to do it was boring like packing things and so forth all the time.

PRE-INTERVENTION FOCUS GROUP: TRANSCRIPT TWO

1. Introduce theme: Understanding of service-learning

From what I know I think it is about seeing what we learn in class actually being applied in the pharmacy, and why what we learn is important. So if we see a HIV positive patient it is about seeing the drugs, reading about the drugs and watching how the pharmacists counsel patients.

Also what they told us in the orientation was that we must be very professional and wear our coats and look neat and professional, so it is maybe also about preparing us for next year when we will be interns.

Err... I think it is about going to learn in the pharmacy

Prompt: What do you think you must learn?

About medicines, and talking to patients and also about prescriptions.

And how do you think you can best learn those sorts of things?

We must watch how experienced pharmacists do it and learn from them.

2. Introduce theme: Hospital pharmacy

a. What do you know about hospital pharmacy, How is it practiced in a hospital setting?

There's different kinds of jobs in a hospital pharmacy. We are sort of taught about it but it is not really put in context properly. Like in a hospital you also manufacture, not only in industry like I first thought. Also you see a lot of sick people; the work is a lot for the staff at the pharmacy to handle.

I've not seen a hospital pharmacy before; this is going to be my first time. I think it is probably very big because hospitals are generally big.

I think people are much more ill than you would see in a retail pharmacy, so you need to be a very clever pharmacist to work here...you must know your work. And the work is very hard...

b. What differentiates hospital pharmacy from other settings such as retail?

Isn't it the same?

No, I think it is quite different. Remember that the patients who you are supplying medicines to are quite ill, that is why they in hospital, so I think their drugs is more complicated and their medicine is more, so the hospital pharmacist's job is probably more work.

Yes that and the dispensing, counselling and stuff that all pharmacists do.

c. Extent of patient contact in hospital pharmacies.

I think pharmacists spend more time with a patient especially if the patients' meds is very complicated.

d. How and when you do you think patients get their medicines?

I don't know how patients get their medicine.

I know. The patient brings his folder then the pharmacist puts a number on. Then they must wait their number is called, then the pharmacist takes it in and does the medicine. This normally takes hours. Then the pharmacist calls the patient and he gets the medicine.

e. Do pharmacists have a say in the drug regimens of patients in a hospital?

I am not sure, maybe they only get involved when they see something wrong on the script (prescription).

Yes like a wrong dose or something like that.

f. General conditions at a hospital pharmacy.

Actually what I saw was that the condition of that waiting room where I did my externship was okay. The only thing was the lines were always very long, like there were not enough pharmacists to help all the people.

That is because the government hospitals are the public sector and people are paid better in the private sector.

Student opinion of SLIP

a. Expectations of SLIP

I think we will learn about the medicines and see how the pharmacists do their work and we will learn in the pharmacy.

I don't know what to expect, in orientation it sounded so interesting but the other students of last year complained....They said they had to do silly things like pack shelves all the time and that was all they were allowed to do.

b. Hopes regarding SLIP

I hope that the pharmacist show an interest in us and take the time to teach us what they know.

I'm shy and I'm nervous about speaking to patients...especially here where it is not my language. I would really like to get confidence.

I would like to see different and interesting things which we could use case studies for our portfolios.

c. Fears or anxieties regarding SLIP

I want to know what happens if we pick the wrong medicine or make some other kind of mistake.

The pharmacists should not expect that we will know everything.

Yes... it will take us time to learn everything.

4. Introduce Theme: SLIP as the basis of the tripartite relationship

I think I will learn a lot through the experience because things become more real when you actually see it.

Mmm and especially if you have not really worked in a pharmacy before.

But pharmacists can't just expect us to come and start working just like that. We need to learn how to do things first otherwise we will make mistakes and instead of the patient getting medicine earlier they could get the wrong thing.

PRE-INTERVENTION FOCUS GROUP: TRANSCRIPT THREE

1. Introduce theme: Understanding of service-learning

SLIP is about going to day hospitals and hospitals and learning about pharmacy and then getting tested there to see if you can apply what you studied.

I think in theory that it is about learning by watching the pharmacist and then doing what the pharmacist did. The facilitator watches you if you can do it correctly.

Yes and we also write open-book class tests on it.

Prompt: *Is that all? You going to spend many hours at the pharmacy*

Yes ...SLIP is where we have to go out to hospitals and clinics as part of our (403) course. Oh and we write tests on it. If we don't go and we don't pass the test we won't pass.

Prompt: *And what will you do at the sites, here for example?*

We will watch the pharmacist working with medicines, for example how they count it and pack it for the patient and label it and dispense it. Also very important is how they counsel it.

*The pharmacist at ***** (name withheld) was very good talking to patients.*

2. Introduce theme: Hospital pharmacy

a. What do you know about hospital pharmacy, how is it practiced in a hospital setting?

It's a very good place to learn, and everything that happens is very like...strict.

I think it is very busy and a lot of hard work. I would not want to work in a hospital pharmacy when I qualify.

I don't know a lot about it, but I don't think it is like a day hospital.

What activities constitute the hospital pharmacist's job?

In our previous visit we saw what and how the pharmacists did their jobs and how they do different kinds of work, and then we did our OSDE exam with the facilitators. So it will probably be the same thing here.

Well hospitals are far bigger than the day hospitals so I think the one thing that is different is that here are probably more patients.

b. What differentiates hospital pharmacy from other practice settings?

There is much more work to do and plus people are very sick because they are coming to a hospital so prescriptions are probably also much longer.

I think the pharmacy is bigger and has much more people working in it. I think it is much more patients than by the CHCs.

c. Extent of patient contact in hospital pharmacies.

There (CHCs) you hardly spend any time with patients. It's just about giving them their medicines quickly so that your work can go on. Its more time here I think.

Doesn't it depend on the person or what work they doing, like if the pharmacist is in HIV then that patients are very serious so maybe he needs to counsel them a lot.

d. How and when you do you think patients get their medicines?

*They probably get their meds the same way as at the CHCs. We were at ***** withheld ((CHC) and there they bring the folder to the pharmacy and wait while the pharmacists and assistants prepare it. Then the pharmacist dispenses it. But they wait very long and it is very busy.*

e. Do pharmacists have a say in the drug regimens of patients in a hospital?

I don't know. They probably don't have a lot of say because there are doctors to prescribe the medicines and the pharmacists just dispense it.

Maybe they only get involved when there is a drug interaction that the doctor did not see.

f. General conditions at a hospital pharmacy

Not good...I don't think patients receive very good care.

Yeah, like it is not very clean in the wards, and outside the pharmacy by the waiting room it is also not clean.

And it is very full sometimes with lots of sick people waiting for medicine.

3. Student opinion of SLIP

a. Expectations of SLIP

We are here to learn and some pharmacists think we are just cheap labour, like we are just there to do there work all day. But we have to work so fast we don't get the time to even read the SAMF about the drug we are counting, because then you are holding up the queue.

b. Hopes regarding SLIP

I hope that we will spend a lot of time with other health professionals, like talking to them about the medicine that a patient is on in the wards.

I've never been in a hospital pharmacy and I would really love to shadow a pharmacist so I can get a good idea of what I am in for next year.

c. Fears or anxieties regarding SLIP

I think speaking to patients, especially when I can't speak their language. I can't understand them and they don't understand me either and that is frustrating. It also makes you more nervous.

Yes and what happens if we give a patient the wrong medicine by mistake?

4. Introduce Theme: SLIP as the basis of the tripartite relationship

I don't think that we will be able to do that. That is very high expectations. Some sites just expect us to do their work and then we miss out on opportunities to learn.

It is not impossible but it will take a lot of work. It is not practical though because we didn't work here before and we don't know where everything is.

I get so nervous when I speak to patients, I don't think I'm ready yet to be in a position where we help them faster. And we have to the OSDE so it actually takes longer.

PRE-INTERVENTION FOCUS GROUP: TRANSCRIPT FOUR

1. Introduce theme: Understanding of service-learning

Service-learning is learning through providing a service. In providing the service you gain experience and that is how you learn. There is a lot to learn in pharmacy because practicing pharmacy has so many different aspects.

Prompt: Such as what?

Such as counselling patients, and learning about a patient's medical history and drug usage; drug interactions, and manufacturing - ointments and syrups.

And here we can go to wards; I would like to go to the emergency wards and other wards on ward rounds.

It's seeing the application of all the information we have studied thus far. Also learning more from this application.

This is a training hospital. The student doctors can go because they are learning and so are we. So we should also be allowed to go into the wards to go and learn as well.

Prompt: What do you think your role is toward the hospital and patients?

I think we can learn and help while we're learning, like looking at a script and picking up errors on the script. We are still studying so we might pick up things that pharmacists could miss.

2. Introduce theme: Hospital pharmacy

a. What do you know about hospital pharmacy, How is it practiced in a hospital setting?

Hospital pharmacists also dispense and advise patients regarding their medicine and health, but also they do other work such as manufacturing and ward rounds and also managing staff I think. Ja...I think manufacturing is far more than at a CHC or retail, because its different types of things being manufactured.

And I don't know...do you guys go to wards often?

b. What differentiates hospital pharmacy from other settings such as retail?

Well the one thing like we said its different types of work.

It's the same as a community pharmacy but some extra things as well. Like supplying medicines to the wards and mixing special mixtures for patients whose lives depend on it. What also makes it different is the type of medicines you deal with. In a retail pharmacy you do not deal as much with vaccines and injections and IV drugs as you do in a hospital. Also sometimes the patients get very sick and there could be an outbreak of some dangerous disease in a ward.

Yes...I think you are more exposed to diseases as a hospital pharmacist.

Hospitals are obviously bigger health facilities than the CHCs. Our first SLIP visit was to CHC and I did not like it there, the work is quite repetitive. But I did learn.

Yes I think at hospitals the service provided is much more clinical. Seeing to patients in the wards and so on, think you really get to apply your drug knowledge. I was never in a hospital pharmacy but I assume it is much more responsibility.

c. Extent of patient contact in hospital pharmacies.

More patient contact definitely, it is after all a hospital. People are in need of medical treatment, not like in a community pharmacy where they just come to get their normal chronic medicines.

But isn't that more contact, because you see the patient every month. (Shrugging)

d. How and when you do you think patients get their medicines?

Patients use the same drop-in-folder-and wait system as at the day hospitals. I'm not sure how patients in the wards get medicines. I think it's fetched and administered by nurses. Or maybe the pharmacists deliver it.

e. Do pharmacists have a say in the drug regimens of patients in a hospital?

If it's like the CHCs then you just follow a doctor's prescription, not like retail where you give the patient something for his illness. So it's little say because you just dispense the prescription.

No I think its more, because if we see a drug interaction or a wrong dose then the pharmacist should contact the doctor to fix it. And if pharmacists go to wards and see what the patients are getting in the wards, they probably get involved there as well.

f. General conditions at a hospital pharmacy.

Well it is a government hospital and reputations of government hospitals are not good. I haven't seen it so I don't know for sure.

3. Student opinion of SLIP

a. Expectations of SLIP

In a hospital I would expect to see the practical and especially clinical aspect of pharmacy. I would also like to see drug effects in patients and how the drug helps or even harms them.

b. Hopes regarding SLIP

If we could do manufacturing and different things that would be good.

I hope that the pharmacists will trust us to work with and beside them, let us feel like we are part of the team instead of like we are visitors.

Yes and I would really like to have the chance to counsel patients about their medicines properly, not just dispensing it. I would also like to go to the wards and clinics. I want to learn as much as possible for next year.

Also it will be nice to experience how pharmacists become part of the healthcare team with nurses and doctors.

c. Fears or anxieties regarding SLIP

I don't fear the SLIP experience I just want to learn what pharmacy is about in hospitals and day hospitals.

Me either, I've worked at a CHC so I'm used to it.

4. Introduce Theme: SLIP as the basis of the tripartite relationship.

I think in theory its good but it is unrealistic in practice. We can't learn if we are not given the chance and if the facilitator just roams about not knowing what to do himself. Or if he just leaves us and goes to read a newspaper then we are left there. The pharmacists get irritated because they must watch us.

We will work hard that is fine but if we slave away doing the same thing all the time we're not going to learn much.

We take longer to do scripts so I really do not know how we are expected to help patients faster. And our work must be checked before we can hand it out. But we will work hard and try to help out in the pharmacy.

PRE-INTERVENTION FOCUS GROUP: TRANSCRIPT FIVE

1. Introduce theme: Understanding of service-learning

It is about going to the pharmacies and seeing what pharmacists do and helping out so that we can learn. I saw at our previous site that we didn't only read our SAMFs but we help with the ward stock and we packed the cream the pharmacist made as well. That was nice because it wasn't so boring.

It is about learning how to be professional and learning how to conduct ourselves when we are working next year.

But the site where we were first, pharmacists just wanted to make us study and test us on pharmacology and drugs. And they made us feel stupid if we didn't know how the drugs work.

Prompt: *So what do you think service-learning means in general?*

I think it is learning from the people who do a service, like in our case pharmacists who give a pharmacy service to patients.

I think we learn through seeing things, like at our last SLIP visit when we dispense a tablet we go and read up on how it works and side-effects and so forth, so it makes it more real than just studying it from our notes. This way we also remember stuff better because we have physically worked with it.

I think it is also about learning about how the healthcare system works, like day hospitals and hospitals, and how about the healthcare team works, like the patient is first seen by the nurse then the doctor or the specialist then the pharmacist.

I agree with everything they have said, I also think that it is learning through experience.

2. Introduce theme: Hospital pharmacy

a. What do you know about hospital pharmacy, How is it practiced in a hospital setting?

*I think that your knowledge from campus is much more applied than in retail pharmacy or day hospital pharmacy. We were at ***** hospital before and the work is different.*

Yeah I didn't think that hospital pharmacy was so different until we were exposed to it this year in SLIP. Its hard work but it is better than other areas of practice such as retail.

Personally I prefer it to retail. From what I have seen in SLIP it is much more interesting and the work is not so factory-like.

Also you deal with much more and different things and you don't deal with people's money and medical aid things. You also communicate much more with doctors and nurses than in other settings.

The workload is much more though, it can be stressful when the waiting room is full of people and it's almost home time.

What activities constitute the hospital pharmacists job?

It involves dispensing, and manufacturing syrups and wards rounds and ward pharmacy. Our group has been in hospital on SLIP already so we've seen a lot of the things that get done in a hospital pharmacy.

b. What differentiates hospital pharmacy from other settings such as retail?

There are so many things, like following SOP's. Also all the other rules you have to learn such as a ward patient only gets few days medicine, and only certain patients can have certain drugs.

c. Extent of patient contact in hospital pharmacies.

Patient contact is not enough. We learn so much about counselling patients but it gets lost once you are in practice because you don't actually do it.

d. How and when do you think patients get their medicines?

Patient brings the folder to the pharmacy and waits for the pharmacist to finish it.

Yeah or sometimes a family member comes to fetch it for them, and if an item is out of stock they get an I.O.U note to fetch it at a later stage.

e. Do pharmacists have a say in the drug regimens of patients in a hospital?

Drug regimens? I don't think they would get involved with that because it is not like in a retail pharmacy where you can dispense things without a prescription. You only dispense what the doctor wants for the patient.

f. General conditions at a hospital pharmacy.

It's not so bad as what I first expected. It's been quite good actually. The only thing that is bad is the long patient waiting times.

3. Student opinion of SLIP

a. Expectations of SLIP

Some pharmacists are unapproachable and stay out of our way. It made us feel like we were in the way. It would be nice if they would interact with us here and show us what they are doing.

Ja and some sites we do not do a lot of things. The time just drags on.

b. Hopes regarding SLIP

I hope that we can get good evidence such as prescriptions and ward charts for our portfolios; also it will be good preparation for us for next year to see what a pharmacist's work is like.

I would like to learn more about medicines and doses and drug interactions. When we study this stuff we forget it quickly if we can't physically picture it or haven't worked with it.

In orientation they told us that we are meeting our future employers. I am looking forward to making a good impression.

c. Fears or anxieties regarding SLIP

When we're working with the prescriptions you get nervous because I keep thinking I am going to make a mistake. That's the worst feeling.

Some patients don't understand that we are students and that is why we go through everything when we dispensing, they get impatient and shout at you.

4. Introduce Theme: SLIP as the basis of the tripartite relationship.

I don't think we will be able to do everything and help everyone- I thought we're just here to learn something.

*Yes seriously none of the sites said that. They should realize that we are still students. We'll see what happens, we can try but I don't know if we can accomplish that much, because like **** said we're still learning.*

We don't know anybody here and we are not used to dealing with patients all the time.

We actually did find that we did quite a lot of work at the other sites so it does work like that to an extent.

Hmm I didn't see it like that, maybe it is like that a bit except for the patients because we take longer to counsel them so I don't know if we're really helping them faster.

That's actually a different way of benefiting patients like you just said. Because we are giving them more information and we're being much more thorough.

They do not always want the information though, they just say "Ja ,ja I know I'm taking it for very long already."

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APPENDIX IX

POST-INTERVENTION FOCUS GROUP TRANSCRIPTS

POST-INTERVENTION FOCUS GROUP: TRANSCRIPT ONE

1. Introduce theme: Understanding of service-learning

I think SLIP has really been amazing. When we started SLIP it was just part of our course for me - something we had to get through. But it has been so meaningful, everything we learnt makes so much sense now.

I think SLIP was very beneficial for us. On one hand it really allowed us to make sense of all the studying and theory in our heads, on the other hand I really felt I could make a difference.

Yes that is true. I did not think we could ever do as much work as we did...I honestly did not think we would be able to help the pharmacists like we did...that was very satisfying. I'm sad that this is our last day here. SLIP made me look at pharmacy with new eyes- we're not just pill counters...it is so much more than that.

And also the importance of teamwork, we must work together to get the job done.

Hospital pharmacy

1. Has your view of hospital pharmacy changed?
2. Do you think you were adequately prepared to work in a hospital pharmacy?

I don't know about you guys (addressing other group members) but my view of hospital pharmacy was very different to what it is now. I had no idea that it involved ward rounds and clinics and so many other things.

Me too, it's not at all what I had expected, especially not the medicines. Most of them I have never seen before, especially the injections.

Before I would never have thought of working in a hospital, but the work here is so fulfilling and much better. It's weird because it's the total opposite of what I had expected and what last years fourth years used to say.

No I don't think I was prepared even though I am final year, but I think that is part of learning- sometimes you are thrown in the deep and you just have to learn to swim.

SLIP conducted as a structured model

1. What are your thoughts on the components of the SLIP model? (Compounding, Clinics/Wards and Dispensing)

*I really enjoyed the compounding. It was a good experience. I also realized I did not know as much about as I thought did. Actually that was the case for the dispensing and clinics as well. I think every component was necessary and gave us a chance to learn something different. The gastro-scope was really interesting and the wards as well. I liked doing the before and after SLIP tests because as ***** said we did not even know what we did not know until we were tested on it.*

Yeah it was not only about doing the activity but also learning from it.

And we learnt from the activities, like I did not know that swollen glands could be a sign of TB.

2. What are your views on having SLIP be as structured as it was here?

It's hard to say because this is our first SLIP visit and we have not been anywhere else (on SLIP) yet, and so we do not know what it is like with no structure. But SLIP worked well structured in this way, because it allowed us to learn different things and gave us the opportunity to help out. It showed incorporation of all the disciplines.

I think the structure was very good because it informed us on Day 1 of where we would go and what we would do for the rest of the week.

I liked these discussions we had because it let us see the bigger picture of what we don't know and how we would learn it.

3. What are your thoughts on the facilitation and supervision of the SLIP model?

That was really brilliant. We felt respected and that we were given a chance to learn and do our best because we became familiar with you very quickly. We learned from what we did wrong and from each others mistakes because it was pointed out to us then we were allowed to fix it.

I think the fact that you u work here is a big plus because you have inside info- so you know where to take us and when.

Ja I agree.

It was sweet that you protected us; you took responsibility for us and checked what we did and picked up our mistakes. And you showed us things that the other students didn't do at the sites where they went.

4. Do you think the model did justice to integrated learning: Pharmaceutics, Pharmacy Practice and Pharmacology?

Yes we did. Though if you think of Pharm prac (pharmacy practice) we did not spend a lot of time counselling patients.

Ja and with patients language is a big thing, they must be able to understand you somehow.

I realized I must improve my knowledge in pharmacology, the drugs and diagnostics, but yes everything was linked to our subjects.

Patients

1. What in your opinion is the extent of patient contact in hospital pharmacies?
2. Did you learn from the patient community, if yes, what did you learn?

We did not have a lot of contact with patients, though I thought we would see more of patients here it being a hospital. The pharmacists do lots of other things which need to be done. There is such a variety of jobs here.

Hmm we were exposed to different pharmacy settings not just patients.

Yeah and there are so many patients that you cannot spend a lot of time with each patient because there are too few pharmacists. It's a pity because we learn so much about counselling and empathy but we do not really get the chance to apply it.

It was heartbreaking to see some of them in the waiting room. You feel sorry for them and want to help but it is hard because we don't have enough time to speak to all of them and help all of them.

Pharmacists

1. Describe your contact and interaction with pharmacy staff.
2. Did you learn from the staff, if yes, what did you learn?

They were okay, I didn't have any problems.

*The pharmacists were not rude to us in any way but you could see that they were a bit uncomfortable and tense around us especially the first few days, I felt like we were intruding in their space, and other pharmacist just ignored us. *****was very nice to us though, she is very sweet.*

We did not have a lot of one-on one- interaction with them because we were with you all the time. But once they became used to us and when we started helping in their departments they were friendly.

Benefits of SLIP

What is really of benefit for us is that we see and experience first hand what hospitals are about- it is quite different from what I thought or what you hear from people and the news.

SLIP prepares you for the real world of working in a pharmacy in a way that textbook and notes and lectures never can. You do not get to see anything like this in class.

For me SLIP has just brought everything I learnt in the B.Pharm course together and I can really see the value of what we learn in class.

I think that I have found a passion for pharmacy which I never had before.

I am enthusiastic about pharmacy and what pharmacists do. I see now how important our jobs really are. Studying will be so much easier especially the pharmacology because now I have seen and worked with the drugs.

Drawbacks of SLIP

I think the only bad thing is that the time with the patients is not enough, like especially in counselling. I don't think we were with the patients enough, but that is all that I can think of. And SLIP should start earlier and be more long-term.

POST-INTERVENTION FOCUS GROUP: TRANSCRIPT TWO

1. Introduce theme: Understanding of service-learning

Service-learning is about learning by doing work in the field that you are studying so that you can become good at your job.

For me, my view of SLIP changed. It was a good experience and we learned things which I did not think I would see or learn.

2. Hospital pharmacy

1. Has your view of hospital pharmacy changed?

2. Do you think you were adequately prepared to work in a hospital pharmacy?

The pharmacy course thus far didn't cover hospital pharmacy so much. We speak about retail pharmacy in class a lot and even about industry in pharmaceuticals but not really hospital. So coming here for SLIP is very useful.

Yeah the work is not at all what I thought it would be. And here you get to apply your knowledge from campus much more than in retail. I think I coped with the work okay.

Err...we were okay...but I did learn a lot here.

3. SLIP conducted as a structured model

1. What are your thoughts on the components of the SLIP model? (Compounding, Clinics/Wards and Dispensing)

The different components took some time to get used to and it was hard work but it was worth it.

I think each component was important because I learned something I did not know in each one.

Yes it was nice to do different things like manufacturing and wards.

2. What are your views on having SLIP be as structured as it was here?

I was not expecting it to be so structured especially with the discussions and tests.

I liked that we can go to different departments and learn in the different departments.

3. What are your thoughts on the facilitation and supervision of the SLIP model?

It was very good. I really appreciated that you were with us and helped us and showed us so many things, plus you helped us to get evidence for our portfolio.

4. Do you think the model did justice to integrated learning: Pharmaceutics, Pharmacy Practice and Pharmacology?

Yes it did. We could see the link with pharmaceutics when we did manufacturing, and pharmacology with the medicines obviously, and pharmacy practice with the nurses and the doctors and then obviously counselling the patients.

Yes... it did. But counselling is very stressful because we're not used to talking to patients yet and we have to concentrate on the drugs.

It did make us understand our subjects better.

4. Patients

1. What in your opinion is the extent of patient contact in hospital pharmacies?

2. Did you learn from the patient community, if yes what did you learn?

I can see that pharmacists don't spend a lot of time counselling patients, counselling forms a very small part of their work everyday.

I think proper counselling is not done because it takes up too much time- then the other work wont get done.

I learned that patients can understand what you say in very differently or they don't understand you at all. Like they listen and nod, but then when you ask them to explain what you have said they can't because they did not understand. Language is really a barrier.

5. Pharmacists

1. Describe your contact and interaction with pharmacy staff.

2. Did you learn from the staff, if yes, what did you learn?

We did not spend a lot of time with the other pharmacists beside you. They were okay; I think they were neither over-friendly nor nasty toward us. And it was nice of them to allow us to do what we needed to with you watching us.

Ja that one locum was not nice though, every mistake she saw she blamed on us even though none of it was our fault because you picked up our mistakes and showed us how to correct it. She didn't even get any of our scripts; it was other people making those errors.

I know who you're speaking about- she didn't come in today. But other pharmacists were nice especially when we were working in their department.

6. Benefits of SLIP

You get to see what pharmacy actually is – not only the ideal or right way that we are taught about in class but also what really happens- the good and the bad.

Something that is really good for me at least is that I am able to make a choice of where I would like to work next year.

7. Drawbacks of SLIP

Eish...it is very long and tiring it takes up a lot of time.

Yes I also get very tired. I think that it is worth it because we will miss out if we only come in the morning.

I think it's unfair that not all of the students get to go to hospitals. Some people in the class are only going to CHCs.

POST-INTERVENTION FOCUS GROUP: TRANSCRIPT THREE

1. Introduce theme: Understanding of service-learning

Service-learning helps us to become better professional pharmacists. It's a course where we work and get to know what pharmacists do everyday because we do it as well.

I felt like SLIP over here was a give and take situation. You gave us guidance and helped us by teaching us about hospital pharmacy and we gave back by helping with the workload. It gave me a sense of purpose to know that I was making a difference, especially for the over-worked pharmacists in out-patients. Everything we did went well and was useful for us.

I'm very grateful for this week we had and wish that other SLIP visits were done in a similar way. I think it was good for you to record everything we did like actually count the amount of scripts we finished and cream we made. It was nice to get acknowledged for what we were doing.

2. Hospital pharmacy

1. Has your view of hospital pharmacy changed?

2. Do you think you were adequately prepared to work in a hospital pharmacy?

It (hospital pharmacy) is much more than I thought it is. The responsibility on the pharmacist is enormous and there so many different parts to the pharmacy- there is just so much to do. Like you guys see to the Platte land and paediatric and older patients first to give them preference. Don't get me wrong it is a good thing, but it's to hard to keep up with the general patients-it's really a juggling act.

Yes...It was phenomenal...so much better than I had expected and than all the bad things we heard. I especially liked that we did so many different things and there was a lesson in each one. Like I never knew pharmacists had to do ward rounds.

Yeah that surprised me also- that the pharmacy has so many different sections like manufacturing and wards and especially ARVs ...

I think we were a bit prepared in terms of our knowledge but not in terms of what to expect at the hospitals.

I knew it was done at hospitals but I did not think that we would be allowed to get involved in doing it.

3. SLIP conducted as a structured model

1. What are your thoughts on the components of the SLIP model? (Compounding, Clinics/Wards and Dispensing)

On Monday when you gave us the test I freaked a bit. To me it was crazy and I was thinking 'there's no way she can expect us to do these tests!' but that was actually good preparation for what was to come...

All the components were a good opportunity and I especially enjoyed the clinics and wards and manufacturing.

Dispensing was also okay but it was so quick and in working environment you don't really get to speak to the patients when you're dispensing- you're just telling them about their medicines and that's it.

I liked that everything was very hands on, were not just stuck in books all day but we were allowed to get our hands dirty so to speak.

I also liked that. The clinic was a bit gross but it was really eye-opening to see the procedure that is so painful and what the patients must go through before they come for their meds. It makes you more understanding toward them if they are grumpy or impatient in the waiting room.

2. What are your views on having SLIP be as structured as it was here?

It's really nice of you guys at the hospital to set it out in such way. It's nice that the hospital takes so much care in our learning and it motivates you to do more.

*At first it was a bit scary, but I prefer it that way because at **** we were mainly just doing the same thing all the time.*

It was nice to do different things and not feel like you are factory workers.

And you could see that the managers really appreciated the work we did in each department through the components.

*Yes because if you think of it the work we did makes their work less. I enjoyed that we compounded a lot of stuff. *****(name withheld) said we were stocking up her shelves for weeks.*

I enjoyed going to the clinics especially HIV and the gastro clinic. Actually seeing how the tube camera was pushed down the patient's throat was terrible but it was important to see the ulcer in the patient's stomach. You said that the patient used a lot of Ibuprofen and that is maybe why the ulcer developed. We as pharmacists dispense Ibuprofen so much I know I will really warn the patients the next time I dispense it.

3. What are your thoughts on the facilitation and supervision of the SLIP model?

I like that you claimed us and showed us where to go and what to do, and that you were so patient and understanding. But you know how things work here ...

It was so different to our previous facilitator. Its not that we want to bad-mouth people but (he/she) was uninterested compared to you. He/she did not know what was going on at the site and was learning just as we were.

Yes and he/she did not supervise us or sign us off, the pharmacist had to. That was not good because it was extra work for the pharmacist and he was not happy with us when we made mistakes

It is important that the facilitator must work at the site because then you know what is going on and you have a fair balanced view of what is good for the pharmacy and what is good for us students.

I think it also helps because you qualified recently and understand where we're coming from campus must get somebody from the hospitals and CHC to facilitate our SLIP because our previous facilitator could not do much- he/she had to ask permission to do anything.

4. Do you think the model did justice to integrated learning: Pharmaceutics, Pharmacy Practice and Pharmacology?

Yes it definitely did. We did see clearly the link between the practice aspects and our subjects.

4. Patients

1. What in your opinion is the extent of patient contact in hospital pharmacies?

2. Did you learn from the patient community, if yes, what did you learn?

In pharmacy you don't really spend much time with patients. It's just so quick. Except now for ARVs. Pharmacists have a big role to play in people's health but your main work is behind counters in the pharmacy and not with patients.

There is just so much work, and not enough pharmacists. And when you do speak to patients it is it is so technical and fast and standard and it is just about their medicine.

You are talking at the patient not to them, but you see all the patients not taking their meds properly and you see how desperate the need is for counselling...

5. Pharmacists

1. Describe your contact and interaction with pharmacy staff.
2. Did you learn from the staff, if yes, what did you learn?

That was the best part of SLIP for me- the people here accepted us as part of their pharmacy team and even joked with us- that motivated us to learn and to help.

And they were very appreciative when we helped in their department. It was nice that some of them thanked us and told us that we were making a difference.

Yeah but we did not spend a lot of time with the pharmacists and didn't speak to them a lot because we were with Mariam all the time. The ARV pharmacist took us upstairs though, that was nice of him.

That one pharmacist just wanted us to count the pre-packs all the time.

And that other pharmacist kept calling us the SLIPPies. I don't think he took us very seriously, but generally they were all okay.

6. Benefits of SLIP

I have learned so much since the first SLIP block, on that first day I knew nothing about working in a pharmacy, now I can do much more, especially after the week here.

What I really liked and benefited from is that we were given the chance to do things and learn from it. SLIP is such a huge part of our pharmacy education because we learn so much stuff we would never have learned if we did not go on SLIP.

I think the activities allowed us to see our weaker points and helped us to overcome it and become stronger as a person...like I learnt I need to think before I just do things quickly.

7. Drawbacks of SLIP

Like overall?

One bad thing is the facilitators. Some of them are not active and with us at all. If they all know what is going on in the pharmacy like you know what is going on here it would be much better.

Yeah have to figure things out for ourselves. They don't even watch what we do even.

POST-INTERVENTION FOCUS GROUP: TRANSCRIPT FOUR

1. Introduce theme: Understanding of service-learning

It's a relationship the university has with the hospital- students provide a service and learn while the hospital gains through the work that we do.

But there is a fine line between SLIP being able to work and failing. It must be done in the correct manner, and the role of everyone must be communicated.

2. Hospital pharmacy

1. Has your view of hospital pharmacy changed?

2. Do you think you were adequately prepared to work in a hospital pharmacy?

Yes SLIP has changed my view and choices. People always advise you not to work for the state because the conditions in hospitals are so bad. Now I know I can see for myself what it is really like.

I am supposed to do a retail internship but I would not mind doing it in hospital.

We are quite good with the theory but personally I was not prepared and sure of how to apply the theory. SLIP here is not paced very fast as at other sites, so you get to learn properly while you are working.

3. SLIP conducted as a structured model

1. What are your thoughts on the components of the SLIP model? (Compounding, Clinics and Wards, Dispensing)

I think that all the components were needed especially the ones we did not cover at other sites such as manufacturing and clinics and wards.

We did not do as much dispensing as at the other site, at the CHC. There we just counted and labelled a lot of the time. I enjoyed doing different kinds of things. But we should have spent more time in the wards I think.

I especially enjoyed manufacturing and seeing manufacturing of different dosage forms. That was really nice. I would love to work in industry.

*That patient in the *** ward...I've never seen that before...that was quite traumatic, but it was good to review the drugs the patient was on.*

2. What are your views on having SLIP be as structured and formal as it was here?

Each site should work according to a structure. It is better because we know what to expect and the pharmacist managers know that we are coming to their department so they have a chance to prepare for, for example to order extra ingredients so that we can manufacture things.

I agree, it should be done at other places. It gives the students a sense that the facility is willing to have us there.

Yes, and that things are organized, not that we're just there to slave away or to be ignored. I like that we get talked through it before hand and that we also talk about it after it is one because then you learn from what you did.

3. What are your thoughts on the facilitation and supervision of the SLIP model?

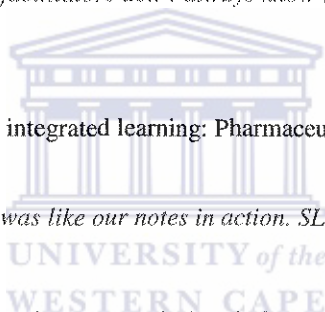
I think it is necessary to be supervised and have one person responsible for us who will guide us through the SLIP week and show us what we did wrong. You never got tired of explaining things to us and you allow us a fair amount of time to finish the activity. And you were understanding that we have exams coming up.

It worked well that you talked us through the activity before we went so that we were prepared, and afterward so we could learn from it. It's better if the pharmacists who work at the site can facilitate SLIP.

Ja, because the post-graduate facilitators don't always know the goings-on in the pharmacy and don't help us actually.

4. Do you think the model did justice to integrated learning: Pharmaceutics, Pharmacy Practice and Pharmacology?

(nodding).. all the subjects. It was like our notes in action. SLIP should start earlier.



4. Patients

1. What in your opinion is the extent of patient contact in hospital pharmacies?

2. Did you learn from the patient community, if yes, what did you learn?

Patient contact was very little, just as at the other sites...I don't think it is enough. Even though we went to the wards, I think we should've had more time in the wards.

I think it would have been nice to spend more time with the patients but I understand that we only have so much time and we need to get through our activities also.

Ja and I learnt how very crucial it is to check that the patient understands what you have told them. We take for granted that everybody knows English but they don't. That one guy was mixing up his diabetic and hypertension meds. It's really important to counsel properly, even if you don't have much time.

5. Pharmacists

1. Describe your contact and interaction with pharmacy staff.

2. Did you learn from the staff, if yes, what did you learn?

I must say they were quite nice-very professional and they would always answer if we had a question or show us where to find something if we were looking for it.

Ja...they were nice.

6. Benefits of SLIP

Well obviously the learning and just that I got to see the way a hospital pharmacy operates. I liked that we did different things other than picking medicines all day.

I think it puts our knowledge in context for us, and gives us an idea of where we could see ourselves working in the future.

The new experiences are what I most enjoy. We manufactured different things, the caffeine and alcohol dilutions and Theophylline solution. It's enriching seeing different things.

7. Drawbacks of SLIP

The hospitals should be more geared for us and allow us to go anywhere, like not just in the pharmacy and selected wards. The intern doctors go everywhere and I think we should also get that chance especially too see effects of medicines and strengthen our pharmacology.

Ja I think that there is not enough time and emphasis on the patient care aspect. And I agree that we should have spent a bit more time in the wards.

The sites should all come to an agreement about what it is the students must do. Some sites you work till you can't any more and then a site like this is set out and we have activities and things. I think it needs to be more similar between each site.

POST-INTERVENTION FOCUS GROUP: TRANSCRIPT FIVE

1. Introduce theme: Understanding of service-learning

It is learning at day hospitals and hospitals while you are working with pharmacists and doing the same work that qualified pharmacists do and that is how you learn to be pharmacist.

Personally I am thankful for this SLIP opportunity and what we have seen and done this week. I was dreading another long SLIP week but time went so quickly and the activities we did really made sense of our theory we learnt thus far.

This week has changed the way I feel about working in hospital pharmacy. It looks really nice to work here. I wouldn't have known if it wasn't for SLIP.

SLIP is done so differently here. Like the activities and these...what's it...group talks...It should also be done at the other hospitals and CHCs also.

2. Hospital pharmacy

1. Has your view of hospital pharmacy changed?

2. Do you think you were adequately prepared to work in a hospital pharmacy?

I think we were prepared a bit because we were at SLIP before and that did help us with the OSDE and prescriptions. But here we did something new everyday and we saw everything that goes on in a hospital pharmacy.

Hospital pharmacy is not as bad as I thought. People like to look down on the state hospitals because they see it as inferior but they forget all the people who need help.

We learnt a lot of 'out-of the box' things, like that situation with that nurse in your ward. It makes you realize that the role of the pharmacist is not only in the pharmacy but everywhere in the pharmacy where there are medicines

I know now that I would like to work in a hospital pharmacy, I wouldn't have thought that if it wasn't for SLIP here.

3. SLIP conducted as a structured model

1. What are your thoughts on the components of the SLIP model? (Compounding, Clinics and Wards, Dispensing)

The components were all nice to do. Everyday was something new, though I really liked the manufacturing. The thing is that there you do a lot of work in a short space of time.

*Yes...it is...we made what?.. four batches of bed sore ointment in one morning. And packed it and put it on the shelf ready for the patients. ***** said that the stock we made would last her a month whereas usually she would have to make a batch every week.*

Yeah it felt good to know that we were also playing our part and it's cool to see your ointment come out smooth and looks good enough for patients to use.

2. What are your views on having SLIP be as structured as it was here?

I did not expect to have it so structured with a schedule and everything, but I think that it should be done like that. The thing is that this hospital and the other SLIP sites are new to us and it is not nice for us to be plunked in a place we don't know and do nothing.

And at other sites we worked so hard at some of the CHCs but we did not learn as much because we were doing the same picking and packing of the same kind of scripts all the time.

Yeah, I think we got more out of SLIP because of the structure and way it was done. I like that we were not just kept in the pharmacy but went out into clinics and wards also.

3. What are your thoughts on the facilitation and supervision of the SLIP model?

SLIP here at Tygerberg was done very nicely. It was done in a way that we gave anything we did only to you and then you showed us where we went wrong and what we did right. It's better than everyone seeing your work because that makes you nervous and then you don't do as much.

I think because you finished campus recently you know what it is like to be a student and that helps because you know what helps us and what suits the pharmacists. That is why SLIP worked so well.

Everything was organized well and done in a way that made it a good experience and valuable for us. Pharmacists usually do not want to supervise us and we often get split up but that was not the case here.

4. Do you think the model did justice to integrated learning: Pharmaceutics, Pharmacy Practice and Pharmacology?

... I think so... (Nodding)

Hmmm (nodding, showing agreement)

4. Patients

1. What in your opinion is the extent of patient contact in hospital pharmacies?

2. Did you learn from the patient community, if yes, what did you learn?

We did not speak to patients except when doing the OSDE. You don't really know the people you are dispensing to, pharmacists just say what they need to. I think with so many patients pharmacists just become numb to it.

Ja we were talking about that on the way. People sit and wait so long for their meds. I would not want that to be somebody in my family. You feel overwhelmed and desperate to do something for the patients. It is sad that the pharmacists seem to be numb to that because they are just too busy.

But you have to be fair as well, I don't think the pharmacist want to be like that its just that they have so much other work to do and they don't have enough time to have long discussions with patients.

Although we did not spend much time with patients even just talking to them gave me confidence because that is the part which I was dreading. It's actually not so bad once you get into the swing of it. Except for the patients who do not understand English...that is quite a challenge.

5. Pharmacists

1. Describe your contact and interaction with pharmacy staff.

2. Did you learn from the staff, if yes what did you learn?

We did not interact with the pharmacist a lot because we were with you all the time, but they were nice, I did not have any problems.

The chief pharmacist told us we must please come back again in the holidays. That was nice of her.

*They were nice to us; they allowed us into their departments and helped us when they could. I really liked *****, she said we can help the pharmacy by making changes and recommendations. It was nice of her to encourage us that way.*

6. Benefits of SLIP

Concepts which were difficult to grasp because we could not imagine them are now much easier- the medicines especially become much more real...they are not just words in the textbook anymore.

For me my confidence is better- especially when talking to patients- I didn't look forward to it, but practicing has really helped me to become better at it. I'm much better now than in the beginning of SLIP.

We really had the chance to experience pharmacy and learn a lot.

I think it a very important educational course. I feel much more prepared for next year now...I would have been lost next year if we did not have SLIP.

7. Drawbacks of SLIP

What I don't like is the reports. You keep writing reports every time- the same thing over and over, and its ...a waste of time.

