

# **Contextualising undergraduate pharmacy training in service-learning at the University of the Western Cape**

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## ***Abstract***

*The pharmacy profession necessitates continual revision of undergraduate training to meet both changing and challenging health needs. Service-learning is a teaching methodology that assists health professions and academic training institutions in facilitating curriculum changes to improve the competence of pharmacy graduates. This method addresses the core requirements as stipulated by the South African Pharmacy Council for entry-level pharmacists. The aim of service-learning was to introduce an educational intervention for students that would enable them to rotate between the classroom and the workplace with the goal to provide them with the opportunity to accumulate learning experiences in both contexts. This article presents the development of the pharmacotherapy service-learning module as a case study which can be used as an exemplar for other service-learning modules. Fourth year students participating in the service-learning module were the focus of this study. Data was collected in various ways through focus groups, written reports, on-site assessments and feedback sessions and this provided the primary data for this research. Data was analysed by identifying common themes in the primary data. Students indicated that they were able to obtain an overview of the primary health care system, gain confidence in counselling and dispensing, and apply pharmacological concepts.*

**Key words:** service-learning, pharmacology, engagement

## **Introduction**

The dynamic nature of the pharmacy profession necessitates continual revision of undergraduate training to meet both changing and challenging health needs. If there is evidence that the gap between pharmacy practice activities and educational courses is widening, then undergraduate training and the health service programmes need to be jointly revisited (Smith, Coons & Quinn,

1990). One approach that could identify and address community, service and academic needs is through implementation of a collaborative service-learning programme.

In 2002 the University of the Western Cape's (UWC) School of Pharmacy engaged in the development of a service-learning module in pharmacotherapy. This teaching methodology was employed to pioneer and foster a sense of civic responsibility in future graduates through the development of professional ethics in a community setting. Learning occurs generally through experiencing the activities and cultural norms of the discipline. It was therefore imperative that students become exposed to the real situation in community pharmacies and emphasises the theory of situated learning within social contexts. This article describes the development and implementation of UWC's School of Pharmacy pharmacotherapy service-learning module that can represent an exemplar of service-learning in Pharmacy. Exemplars of service-learning are important if institutionalisation of service-learning is a priority. These exemplars provide other schools, departments and faculties with the basics to ensure that service-learning modules can develop optimally.

## **Background**

South Africa places emphasis on primary health care that underpins rational drug use and preventive and promotive strategies. Undergraduate training must therefore contribute actively towards service provision to identify health needs and develop competencies required for entry-level pharmacists and equip them for their professional practice (Table 1, Unit standards 1-7; SA Pharmacy Council, 1997). The School of Pharmacy at UWC seeks to combine academic preparation with experiential learning and professional training in an attempt to increase the relevance of classroom education to the real world and also increase the employment and marketability of its graduates.

“As quality and excellence in education are important to all aspects of society, focus has been placed upon curricula and assessment strategies to assure that programmes are accomplishing their missions” (Abate, Stamatakis & Haggett, 2003, p. 1). While some SA undergraduate pharmacy training schools conduct an integrated clinical pharmacy programme in the final year (Boschmans & Perkin, 1994), a pharmacy-based service-learning initiative has yet to be implemented. The School of Pharmacy University of the Western Cape spearheads the service-learning pharmacotherapy skills development module, a unique initiative in SA pharmacy undergraduate training. Service-learning and student engagement within a community of practice will allow students to become involved with their hearts and minds (Loeb, 2001). This innovative training approach clearly marks the start of a collaborative journey between the community, pharmaceutical services and the School to improve health care through appropriate patient medicine use and to realise the goals of the School of Pharmacy and the vision of the SAPC.

## **Service-learning context**

Service-learning is a teaching methodology that assists health professions, schools and faculty progress through curriculum changes. “Applying the core elements essential to service-learning namely, the partnership between faculty and service site, a responsiveness to the community and attention to critical thinking and reflection, improves the educational experience for the student and strengthen the community academic partnerships that are increasingly important to the

clinical training experiences of future health care providers.” (Cauley, Canfield, Clasen, Dobbins, Hemphill, Jaballas & Walbroehl, 2001, p. 181)

Bringle and Hatcher (1995, p. 112) define service learning as “a credit-bearing educational experience in which students participate in an organised service activity that meets identified community needs and reflect on the service activity in such a way as to gain further understanding of the course content, a broader appreciation of the discipline, and an enhanced sense of civic responsibility.” Furco (1996, p. 11) asserts that service-learning is the engagement of students in activities that focus on the service being provided as well as the benefits the service activities have on the recipients. This teaching methodology therefore emphasises increased partnership with clinical training sites, extensive orientation to patient populations and community resources, structured reflection and instilling the ethic of service in future health care providers. (Cauley et al, 2001, p. 173).

We also agree that “learning occurs through a cycle of action and reflection, not simply through being able to recount what has been learnt through reading and lecture” (Eyler & Giles, 1999, pp. 7-8). In our view practical exposure in primary health care hospital pharmacies would therefore enable students to focus on the development of professional and social skills that are necessary in real life situations. In practice settings, social accountability permeates knowledge production leading to transfer of mode 2 (indigenous) knowledge enabling students to develop problem-solving skills and to foster civic responsibility (Muller, 1996).

### **Description of the service-learning experience: background to this study**

The aim of this study was to present and assess the effectiveness of the service-learning intervention implemented by the UWC School of Pharmacy in facilitating the attainment of the required outcomes. The aim was also to find out how students could to improve their professional competencies.

The introduction of a service-learning module could potentially provide much-needed services to public sector pharmacies that are characterised by increasing patient load and severe staff shortages. We hoped that entry-level pharmacists would understand the primary care concept with respect to prescriber adherence to standard treatment guidelines for common conditions and monitoring of therapy, an understanding of the essential drug programme and the provision of cost-effective care. In addition, students would gain competencies in standard operating procedures in dispensing, compounding, out-patient care, referral and follow-up, access to specialist/restricted items (including anti-retroviral agents), drug supply management, cold-chain and quality assurance. Such exposure would facilitate transition of future graduates from the academic environment into the health services (Parish, Morton, Francisco & McCombs, 1993).

The transition from problem-based teaching methods to a service-learning pharmacotherapy module implemented by the School of Pharmacy entailed modifying learning objectives to include an understanding of practice-based experiences. This was achieved through the mapping of the existing campus PBL module into service-learning components utilising the logic model (Syce, 2002). In addition to understanding theoretical pharmacotherapeutic principles, the objectives included principles of good dispensing practice and knowledge of the SA primary care system. The undergraduate and postgraduate curriculum for this module was designed to address the needs

of all partners: students, pharmacists, community and the pharmaceutical services. These objectives are in line with the competencies (unit standards) 3-7 required for entry-level pharmacists (SA Pharmacy Council 1997). The outcomes for students with regard to skill acquisition prepare them for the clinical placements during the modules as well as for the community service year after they have graduated. The goal is also for students to continuously seek opportunities to engage in life long learning. A shortcoming during the implementation phase was that the undergraduate training to meet laboratory-based competencies (1-2) in practice settings was not considered. When designing and structuring service-learning modules, incorporating opportunities for community and service participation forms an integral part of the design process. This is highlighted in Miller, Steele & Smith (1995, p. 66) who state that “practitioner-based and community-based knowledge is a necessary compliment to expert knowledge, resulting in better theory and practice”.

**Table 1: Competencies of entry level (EL) pharmacists developed as unit standards 1-7 (SAPC 1997)**

Unit EL 1	Organise and control the manufacturing, compounding and packaging of pharmaceutical products
Unit EL 2	Organise the procurement, storage and distribution of pharmaceutical materials and products
Unit EL 3	Dispense and ensure the optimal use of medicines prescribed to the patient
Unit EL 4	Provide pharmacist initiated care to the patient to ensure the optimal use of medicine
Unit EL 5	Provide education and information on health care and medicines
Unit EL 6	Promote community health and provide related information and advice
Unit EL 7	Participate in research to ensure optimal use of medicine

This service-learning module thus flowed, on the one hand, from the shortcomings and specific needs of our academic programme, and, on the other, from our wanting to be of help to the service agencies who are responsible for pharmaceutical service delivery at primary care hospitals.

Institutions of higher education struggle to portray the qualities of a learning organisation, including the readiness to define priorities, measure progress, create feedback loops, and apply what is learned to improve performance (Abate et al, 2003, p. 3). The UWC School of pharmacy is planning to address this through appropriate evaluation and assessment methods.

## Research Design

A case study approach was employed as it allows the examination of this module as an exemplar of service-learning and provides a detailed description of the impact the service-learning experience has had on the students given the style of assessment and the requirements from students doing the service-learning course. The study was therefore an attempt to document the service-learning teaching methodology for fourth year pharmacy students in the rational pharmacotherapy programme at the School of Pharmacy, UWC. Ten students were purposively selected for the focus groups in the following manner; there were 5 groups and from each group a relatively strong student who performed at the top of the class as well as a below average student was selected. The reason for this was to obtain information from sources that would best assist the researcher to

understand the service-learning course that was offered and its impact on the students (Cresswell, 2003).

A combination of methods was utilised in order to evaluate modular outcomes. Facilitator assessments, the progress test, focus group discussions (facilitators and students) and a needs assessment survey provided the data for the evaluation of the modular outcomes. Facilitators used the competency-based objective structured dispensing examination (OSDE) tool (a modification of the objective structured competency examination) at the pharmacies to evaluate the skills development of students in rational pharmacotherapy and professional dispensing practice. This test evaluated the student's critical competencies in therapy evaluation (drug prescribed based on medical and clinical data) and dispensing. The definition for critical competency used in this service-learning module related to the ability to identify a serious error or mistake or omission that may have a dangerous (or lethal) consequence that was not accounted for during prescription analysis resulting in a zero mark for the entire case being reviewed. Alternatively, if a student identified an error and if he/she was able to communicate this to the doctor resulting in therapy change, then an incentive mark of two was awarded. In addition the student's communication style was also assessed. Students were expected to analyse and dispense three patient folders, and the better of two readings were taken for each of a total of four visits. In addition, structured reflection was a crucial part of the course and entailed a weekly report, which was introduced to assess personal and professional development. Students were therefore assessed according to the development of their critical competence based on synthesis, insight and facilitation of change. The assessment was planned according to the outcomes for students. The results from these contribute to the primary data for this research. Additional primary data for the study was obtained from the weekly written report entailing assessment in service activities relating to good pharmacy practice and rational pharmacotherapy. Students were required to compile written reports on selected topics (drug effects in patients; therapeutic plans; assessment of prescriptions; counselling patients on medicine use; interaction with other health professionals), undertake a community project and engage in a weekly feedback session that involved structured reflection. The structured reflection process required students to "internalise events, analyse the situation and reflect upon how the event could help them understand something about themselves or the group of people they serve" (Barner, 2000, p. 261). Students were asked to specify the learning objectives for the planned visit, describe the activities that were undertaken and to reflect on inter-personal relationships (with patients, care-givers, and pharmacy, nursing and medical staff), operational procedures within the pharmacy (stock control, drug supply management), adherence to statutory requirements and pharmacotherapy. Different sources of information were utilised to examine the evidence from various sources in order to build a coherent justification for themes which enhanced the validity of the study (Cresswell, 2003).

### **The impact on students and the outcomes**

Pharmacy students completed a number of service-related projects ranging from compilation of drug information leaflets and drug formulary, development of insulin labels, investigating the incidence of common chronic conditions, the use of a diabetes educational video for the waiting area, and development of tuberculosis (TB) manual for use by nursing staff.

The TB manual was designed to educate mainly newly diagnosed patients about the symptoms, sputum collection and interpretation of results, drug treatment and preventive care (Amardien,

Messenheimer & Fourie, 2004). To assess the usefulness of the TB manual, the course co-ordinator interviewed a clinic staff nurse with seven years experience in TB management to explore her experiences (Le Roux-Eksteen 2004). The nurse found the manual to be 'very useful' as patients seemed to 'pay attention'. Further, the 'easy-to-understand' language and graphic material 'aided patient understanding'. Further, she rated the manual as being 'equally important with the TB programme's flipchart' and suggested that translation of the manual into 'Xhosa and Afrikaans' would further facilitate patient counselling. Students displayed competence in designing and implementing service-learning interventions that benefited health care professionals and the community.

### **Analysis of the focus group data**

The focus group discussion conducted at the end of 2004 captured the final year student experiences in the pharmacotherapy practicals at the MDHS pharmacies. Topics that were explored included the definition of service learning, highlights of their learning, benefits to patients and the pharmacists and suggestions to improve implementation of the module. This, together with the weekly journal reports, was the most important assessment method as it was in these where the students connect their service to learning (Barner, 2000).

The major findings were identified as a) students were able to obtain an overview of the primary health care system; b) the students became aware that therapeutic approaches are not easily obtained from literature as the real context plays an important part in dispensing; c) students highlighted that there was an improvement in their professional skills and knowledge as they were able to link theory and practice and d) students discovered that communication with patients is important if a value service is to be provided. These findings will be discussed in more detail.

#### **a) Students were able to obtain an overview of the primary health care system**

The students obtained in-depth insight into pharmacotherapeutic management of chronic conditions e.g. asthma, hypertension, diabetes and central nervous system disorders. Their greatest enthusiasm stemmed from interacting with patients and having the opportunity to strengthen their work ethic.

#### **b) Students became aware of therapeutic approaches that may not be easily obtained from the literature.**

At two sites pharmacists facilitated student learning by relating the physiological and pathological concepts to individual therapies. Thus, therapeutic approaches became more meaningful. Their experiences in the 'real' situation, encouraged them to keep their 'eyes and ears open' thereby alerting them to reducing dispensing errors. In addition, students gained exposure to handling of operational procedures such as mislaid folders, out-of-stock items, follow-up care and provision of restricted items. These service-learning placements provide new opportunities for enhancing relevance of knowledge essential for professional training of pharmacists.

*"We saw how the whole system works, the referrals, pharmacy system and we gained familiarity with specific diseases" (Student 4)*

**c) Students agreed that there was an improvement in their professional skills and knowledge.**

Initially, when introduced at the sites, students felt “scared” because of the pace at which people worked was very fast at the pharmacy. However, as they gained more experience, their confidence increased, they felt more at ease. Their experiences in patient counselling enabled them to be cautious in knowledge translation. They gradually developed skills in offering tailored information to patients. For example, they learnt how to provide selective information such as side-effects, contra-indications etc. These experiences of students and their subsequent professional practice based on this learning experience is corroborated by the experience of Sternas, O’Hare, Lehman and Milligan (1999), Long, Larsen, Hussey and Travis (2001) and Sedlack, O’Doheny, Panthofer and Anaya (2003), who argue that service-learning experiences benefit students by enhancing their knowledge and communication skills and strengthening their critical thinking abilities and problem-solving skills in a group. Piper, De Young & Lamsam (2000) found that pharmacy students perceived that their experiential learning was useful in meeting educational objectives and enhanced respect for the individual, awareness of others in need, confidence in interacting with others and provided them with an opportunity to improve communication skills.

As their dispensing and counselling skills improved, students felt that patients took seriously their (the students’) role in giving advice on medication use. In addition, students reported that staff at some pharmacies appreciated their input and entrusted them with greater responsibilities in the pharmacy. Students who participate in service-learning therefore have opportunities to apply classroom knowledge to communities and, in doing so, are able to improve their own professional skills, enhance patient education and advocacy skills and acquire the community competencies needed to practice in a changing health care environment (Sternas et al., 1999). This is indicated in the following quote:

*“We put into practice what we learnt from the last 2 years.” (Student 2)*

**d) Students discovered that communication with patients is important if a value service is to be provided**

Some students perceived that while patients may have felt too intimidated to communicate freely with the resident pharmacist, they felt free to do so with them. They thought that patients at most times wanted to be ‘heard’ and they served to bridge this ‘gap’ that is prevalent in busy public sector health facilities. Thus students believed that they had “added value to the service” because patients were more at ease. Muller and Subotsky (2001:10) assert that service-learning provides an opportunity for knowledge production to be more inclusive as “it presents the academy with an opportunity to break its myopic preoccupation with academic forms of knowledge and to be informed by an asset-based view of non-academic knowledge implying that academics and students must recognise the validity of experiential, indigenous, tacit and pre-theoretical knowledge endemic to the non-academic world.”

**Challenges identified from the service-learning intervention**

Challenges ranged from language barriers, structural barriers, perceived interference with operational duties and lack of pharmacist assistant involvement. Students also expressed concern about the accuracy of drug information that is relayed from the collector to the patient in cases where the patient is unable to collect his/her medication from the pharmacy in person.

### **Language barrier**

Even though attempts were made to ensure that the demographic profile of the student groups were reflective of the SA population, the emergence of language difficulties was inevitable at certain sites.

*“One of the challenges experienced was the language barrier as Xhosa is not my first language.”  
(Student 5)*

*“We had to be sensitive to culture and religion.” (Student 7).*

Another difficulty was the provision of information on medicine use that was unfamiliar to patients. Students reported that some patients became ‘fearful and sceptical’ about the treatment when they were informed of potential side-effects and contra-indications.

### **Structural barriers**

From the *modus operandi* of public sector pharmaceutical services, students perceived that inadequate patient contact and lack of privacy were barriers to optimal care. Students believed that “pharmacy departments operated in isolation”. In comparison to medical and nursing staff, pharmacy staff had minimal contact time with patients, thereby limiting student understanding of clinical history. Students felt that attendance at clinics (clubs) would provide better insight and understanding into clinical decision-making.

In addition, the lack of privacy at the sites during counselling prevented patient confidentiality. The small window, long patient queues and external noise interfered with privacy during counselling. Students observed that when patients had collected medication for ‘stigmatised’ diseases (sexually transmitted infections and HIV) they felt ‘embarrassed’. Students asserted that public sector pharmacies should establish private counselling areas to respect the confidentiality of patients.

*“The tiny window at the health centre is not conducive to communication with the patient.”  
(Student 8)*

*“There was a lack of privacy and therefore confidentiality which created embarrassment, particularly with diseases with a stigma attached.” (Student 2)*

### **Initial interference in operational duty**

Initially students felt that they were perceived to be ‘in the way’ at the pharmacy. Comments from staff such as “Oh! so you’re all here,... again” implied that student presence seemed to interfere with routine service delivery.

*“Initially, I felt guilty because I was interfering with the pharmacist’s job and that I was in the way, however later we became part of the team.” (Student 4)*

### **Initial lack of involvement of pharmacist assistants**

Some students felt that pharmacist assistants appeared to be excluded from the training loop. They believed that assistants had not received personal briefings about student involvement at the site. Students felt that some assistants were initially uncertain whether or not to offer assistance with regard to prescription inquiries. However with time, pharmacist assistants helped some students with the reviewing of the patient’s medical history in order to understand the current clinical



situation. With practice students indicated that they were able to follow patient histories and develop skills to assess therapy.

### **Drug information not relayed to the patient**

Students seemed concerned about collection of medication by care-givers/ collectors. They perceived that salient drug information that was provided at the pharmacy at the time of collection may not be relayed fully to the patient, which could affect patient treatment.

*“If a collector comes for the meds, he may not be able to tell them (the patients) the necessary information”. (Student 6)*

### **Human Resources**

The development of this service-learning module was a decision supported by the faculty. However, this did not necessarily imply that there would be additional human resources available to do the redesign of the curriculum as well as the facilitation of the module. Time was identified as one of the most hindering factors in implementing the programme. The academic involved in the programme was overloaded with other teaching and was also involved in various School activities. Murawski, Murawski and Wilson (1999) indicate that the failure to take cognisance of administrative problems such as providing additional personnel to organise and facilitate the service-learning aspect of the module, often hinders the success of modules. We recommended that institutions making a commitment to service-learning also make a resource commitment. It is also essential that partnerships be developed between the health centres and the institution so that the faculty time at the placement site is minimised by the collaboration between the health services and the higher education institution.

### **Conclusion**

The UWC School of Pharmacy has successfully sustained its service-learning programme and responded to the South African Pharmacy Council's call to incorporate practice experiences into its professional curriculum. These service-learning experiences have enhanced skills, behaviours, attitudes, and values which has lead to an improvement in professional competency of students. Service-learning as a teaching methodology is a viable method to utilise in attempting change and adaptation of curricula in order to invoke a particular work ethic in future graduates. One of the aims of this module is to instil a sense of social responsibility in the future pharmacist to the people whom they serve and thus challenging the role of the pharmacist from a detached one to one that is more empathetic and involved in the health care of the larger patient community.

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