

# **The Pharmacy Practice Research Trust**



**Medicines & People**

Turning Knowledge Into Know-How

## **Learning from Innovation in Pharmacy Education**

**August 2007**

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## Foreword

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The education of a future pharmacy workforce and continuing education for registered pharmacists across all sectors is vital if this health care profession is to develop to meet increasingly challenging future requirements. Furthermore, and more importantly, education in pharmacy must underpin the professions ability to meet the needs and expectations of patients and the public in delivering accessible and expert services.

The RPSGB Research Strategy 2001-2006 identified the Society's need to explore the content and delivery of pharmacy education. As part of the review process a Pharmacy Education R&D Reference group was set up in 2002 with the specific remit to identify and prioritise the pharmacy education agenda. In 2004 the group produced a summary report which identified that while several schools of pharmacy had been involved in innovation in education provision, on the whole the learning from these developments was not shared by pharmacy academics. As such there was an identified need to both undertake research on developments in pharmacy education, and to ensure that the research findings were shared among schools of pharmacy and academia more generally.

In response to this need to develop a learning and reflective culture throughout the professions via the medium of pharmacy education, the Pharmacy Practice Research Trust commissioned, on behalf of the Society, a series of small-scale studies designed to encourage pharmacy academics to evaluate and explore innovative aspects of pharmacy education.

The results of this over arching '*Education and Innovation*' programme resulted in 10 projects, the abstracts of which are presented herein. We believe that each of the individual projects addresses different challenges in the learning and assessment environment and contributes towards a growing body of innovative research in education.

As a collective the projects demonstrate the benefits of embracing new technology to support traditional teaching methods. Some also serve to remind us that patient safety and safe working practices remain essential skills for all pharmacists, particularly in the area of dispensing.

The research ranges from projects reviewing undergraduate programmes, notably the role of supportive teaching aids to clinical practice, factors influencing the success of community clinical placements and an evaluation of the influences and barriers to undergraduate research projects.

Of particular interest is the consideration given to the changing face of health policy and an increasing need for enhanced clinical and communication skills. There is also recognition of pharmacy as an integral part of the healthcare team and exploration of interdisciplinary e-learning tools across medicine and pharmacy.

An education project among preregistration pharmacists propounds the use of videos to introduce fitness to practise issues including legal, registration and disciplinary processes as part of the preparatory work for professional practice. In addition, evaluating the role of portfolios during preregistration demonstrates the need to introduce the concept of reflection and self-directed study prior to preregistration in preparation for independent practice.

Finally the continuing education needs of registered pharmacists are not forgotten. The final project investigates the support needed through the process of supplementary prescribing training and explores the use of web-based support accessible to both trainee and medical colleagues (dedicated medical practitioners).

The Trust and the Society hope that the *Education and Innovation* projects will go some way to informing colleagues in education of the broad and innovative areas currently being explored in modern pharmacy education. Many of the projects are ongoing and we would encourage you to contact the researchers directly for full research developments.

Marshall Davies  
Chair,  
Pharmacy Practice Research Trust

Graham Philips  
Chair, Education Committee  
RPSGB

## **Evaluation of the current and future provision of pharmacy undergraduate research projects in UK schools of pharmacy**

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Evidence has suggested that the Schools of Pharmacy in the U.K. have operated and assessed undergraduate research projects in very different ways. The present study looked at current thinking regarding the provision of undergraduate research project modules. The views of the project coordinators and other members of staff were sought, by face-to-face and telephone interviews, using a semi-structured interview guide. Interviews were tape recorded and fully transcribed. Transcripts were analysed using constant comparison and thematic analysis.

Considerable differences were found in the operation of projects between schools particularly with respect to the weighting within the curriculum. Projects re-enforced and added to the profile of generic skills that are a major requirement for the M.Pharm. curriculum. The tendency for students to achieve a mark for their project work that is higher than marks derived from other modules has influenced students' ultimate degree classification. Staff valued the experience of supervising projects. Projects have provided a valuable testing ground for research ideas and a recruitment platform for future postgraduate researchers.

Not all schools provided training in research methodology and that which was provided was variable. Most schools offered projects within specified research groups, based on the research interests of staff within the pharmaceutical sciences and pharmacy practice, with some schools offering computer-based and/or education-based research projects. Recent changes in research governance within the national health service has had a significant impact on the processes for providing practice-based undergraduate projects. This has deterred some schools from offering such projects, Other schools have used the process of seeking ethics approval as an educational exercise.

The increase in the numbers of undergraduates has overstretched staff resources in many schools. Other resources such as laboratory space and equipment have also been stretched. Practice-based projects were normally perceived to be cheaper to run than laboratory-based projects. The use of group projects varies widely, as does the definition of what constitutes a group project. Group projects were not perceived as the panacea for accommodating increasing numbers of students.

Considering the diverse nature of undergraduate projects and the high proportion of credits associated with projects, there was little evidence of robust quality assurance procedures being used to ensure consistency of marking. Projects were perceived as providing a valuable learning environment to re-enforce and extend students' generic skills. Publication of results arising from undergraduate projects was not, generally, considered as a primary objective.

There was general agreement that research projects should continue to be an integral part of the U.K. M.Pharm. degree programmes. Factors that influence undergraduate projects and barriers to their implementation are discussed. Practical ideas that emerged from this study are presented for consideration by schools of pharmacy.

## Using Videoed Teaching OSCEs to Aid Student Assessment

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### **Background**

This study was designed in order to develop an educational resource to support student pharmacist prescribers to learn about communication and clinical skills within a prescribing consultation. The majority of pharmacists have experience in counseling patients over the counter by responding to symptoms, but what is lacking are the skills to undertake a patient focused consultation in order to elicit the patient's agenda (which may be hidden), make a differential diagnosis, undertake an appropriate clinical examination, select a medication with specific treatment outcomes in mind and to then follow-up that individual patient.

These are complex skills and historically have been the remit of the medical profession, where competence is assessed at undergraduate and postgraduate level by Observed Structured Clinical Examination (OSCE). However 90% of the pharmacists on the prescribing programme had never experienced this type of examination so consequently felt very threatened by it and wanted a full-scale mock examination as a teaching aid. This was not possible due to time and resource constraints

### **Project Aims**

The aim of this study was to develop an audiovisual tool, to demonstrate the actual OSCE process as well as examination consultations, which were ideal, grey or complex. This could then be used at a face-to-face event with the marking scheme for the consultations and/or with the Calgary Cambridge Guide (which is used on the programme to teach consultation skills) in order to facilitate students learning. The programme is also supported via a Virtual Learning Environment (VLE) so it means the video clips can also be embedded within the VLE and linked directly to study guide material for student reference. It was also hoped that developing this type of resource would also help new markers to the programme develop consistency within their examining approach.

### **Main Achievements**

Our main achievement is that we now have a robust resource for supporting the training and education of pharmacist prescribers which encompasses the following key areas:

- Learning about good and grey approaches to communication
- Learning how to incorporate a clinical examination within a consultation
- Learning how to undertake a physical examination
- Learning what the OSCE process entails and
- The ability to support markers and educators.

### **The Future**

This audiovisual resource is to be developed to support our undergraduate pharmacy students in learning about consultation and prescribing skills. It would also be a useful educational resource for other providers of non-medical prescribing

## **An investigation into which factors affect the perceived success of the experiential visits in year one of the MPharm programme**

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The process of learning is complex and Honey and Mumford (1992) identified concrete learning styles based on Kolb's model, thereby categorising learners into four types, activist, reflector, theorist and pragmatist.<sup>1</sup> In order to acknowledge different learning styles, 1<sup>st</sup> year MPharm pharmacy students are sent on experiential community pharmacy placements in addition to their theory-driven lectures and practicals. During their visit, the students have to complete certain tasks in a logbook such as taking a drug history from a patient, reviewing prescriptions and observing the pharmacist counselling a patient.

During the routine review of the course, it was found that some students reported their visits were highly successful whilst others reported their visit to be less successful.

The aim of the study was two-fold, firstly, to determine whether students did perceive their experiential visit to be successful academically and an enjoyable experience and secondly, were there certain factors that contributed to that perceived success or failure?

Following ethics approval being sought and granted by the School of Pharmacy Ethics Committee, the methodology involved an initial qualitative phase where a series of interviews and focus groups with 1<sup>st</sup> year and 2<sup>nd</sup> year MPharm students and community pharmacists who participate in the scheme were conducted. The second quantitative phase involved the development of a questionnaire and subsequent administration to 1<sup>st</sup> and 2<sup>nd</sup> year MPharm students.

The results were analysed using the Statistical Package for Social Scientists (SPSS) Version 12.0 for Windows. This included descriptive statistics, cross-tabulation and correlation analysis using Spearman's correlation coefficient.

The internal reliability (Cronbach's alpha) was found to be 0.684 which indicates reliability<sup>2</sup>. The results showed that 71.1% of the students enjoyed their visit and 43.9% learnt about community pharmacy. The correlation analysis showed that no single factor predicts the success of a visit either in terms of "learnt a lot about pharmacy" or "enjoyment of the visit". However, the main item that contributed to a positive outcome for a visit was the pharmacist in charge, as it was shown that the pharmacists perceived helpfulness was positively correlated with both the respondents learning from their visits and enjoying them (0.328\*\*, 0.385\*\* respectively) as was the pharmacist knowing what was expected of the students on their visit in respect to learning and enjoyment (0.318\*\*, 0.311\*\* respectively). The results also revealed that 57.8% of respondents believed they had been taught on the visit, whilst the remainder, 42.4% felt they had been left to observe and there was a weak, negative correlation between being left to observe and learning experience and enjoyment of visit (0.287\*\*, -0.240\*\*). Two further factors that were weakly negatively correlated with the learning experience and less so with enjoyment of the visit, was the busyness of the pharmacy (-0.221\*\*-0.197\* respectively) and whether the tasks in the logbook were finished (-0.253\*\*-0.153\* respectively).

The conclusions from the study are that overall the visits are useful and the students find them an enjoyable experience, however, the tasks in the logbook need revising, pharmacies need to be categorised into either an observational or teaching environment and the teaching staff need to ensure that pharmacists are fully prepared for the visit.

Correlation is significant at the \*0.05 level (2-tailed) and \*\* 0.01 level (2-tailed)

1. Honey P, Mumford A, 1992, Manual of learning styles, Maidenhead: Peter Honey
2. Svensson, E. 2000, Guidelines to statistical evaluation of data from rating scales and questionnaires. J. Med. Rehab., 33, 47-48.

## **A study to develop and test a new method of assessment of communication skills of pharmacy undergraduate students: the patient as the assessor**

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### **Introduction**

The ability to communicate well with patients is a fundamental clinical skill. Several validated patient rating scales have been developed to assess the interpersonal skills of doctors, medical students and dentists.<sup>1</sup> There is a distinct lack of validated patient rating scales to assess the communication skills of pharmacy students. The aim of this study was to identify criteria by which patients can assess the communication skills of pharmacy students.

### **Method**

A list of 17 potential assessment criteria was generated from two sources: a literature review of tools to assess communication skills in health professional education, and a focus group discussion with seven members of academic pharmacy practice staff. A modified two round Delphi survey was conducted with 35 academic and teaching staff involved in undergraduate pharmacy education at three UK universities. Participants were asked to rate the extent to which the items were: (i) an important measure of communication skills for pharmacy undergraduates, and (ii) could be reliably assessed by patients. Ratings were made on a 9-point rating scale, ranging from "Definitely not" (1) to "Definitely" (9), based on the RAND appropriateness method.<sup>2</sup> No items were discarded between Delphi rounds, but a further 7 items were added based on comments received in the first round. Data was analysed using STATA v9.0 on the ratings from the second round of the Delphi survey. Items with an overall median rating of 7, 8 or 9 for measures of importance and reliability without disagreement were included in the final assessment criteria; items rated with an overall median of 1-3 and 4-6 were rated as invalid and equivocal, and subsequently excluded. Disagreement was defined as 30% or more scores in the bottom (1-3) and top (6-9) tertile.<sup>3</sup> The criteria were developed into an assessment tool to be completed by patients following an interview with pharmacy students.

### **Results**

Completed second round questionnaires were received from 32 respondents (response rate = 91%). Of the 24 items included in the second round Delphi survey, consensus ratings identified 7 items (shown below) as important measures of the communication skills of pharmacy students that could be reliably assessed by patients.

<b>1.</b>	<b>Did the student introduce himself or herself?</b>
<b>2.</b>	<b>Did you understand the purpose of the consultation?</b>
<b>3.</b>	<b>Did the student speak clearly?</b>
<b>4.</b>	<b>Did the student use words that you could understand?</b>
<b>5.</b>	<b>Did the student check whether you understood what you had been told?</b>
<b>6.</b>	<b>Did the student give you the opportunity to talk?</b>
<b>7.</b>	<b>Did the student treat you with courtesy and respect?</b>

The assessment tool was evaluated in 59 in-patients and demonstrated acceptable levels of reliability based on Cronbach's alpha scores.

### **Discussion**

This has identified 7 criteria which a group of 35 academic and teaching staff in pharmacy education at three UK universities consider are both a valid measure of communication skills in pharmacy students and can also be reliably assessed by patients. The patient assessment tool derived was assessed on 59 in-patients and was found to have an acceptable level of reliability.

<sup>1</sup> Greco M, Cavanagh M, Brownlea A, et al. Validation studies of the Doctors' Interpersonal Skills Questionnaire. *Education for General Practice* 1999;10:256-64.

<sup>2</sup> Brook RH. *The RAND/UCLA appropriateness method*. Santa Monica: RAND, 1995.

<sup>3</sup> Brook RH, Chassin MR, Fink A, Solomon DH, Kosekoff J, Pak RE. A method for the detailed assessment of the appropriateness of medical technologies. *Int J Tec Ass Health Care* 1986;2:53-63

## **E-learning for sharing across medical and pharmacy undergraduate students: Development, evaluation, assessment and dissemination of an e-learning interprofessional module**

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### **Introduction**

Interprofessional education (IPE) between health care professions has been shown to develop an appreciation of the importance of teamwork and communication.(1) In the first two years of the undergraduate health and social care courses in Aberdeen all students are involved in face-to-face interactive interprofessional group discussions. However, such large scale sessions become difficult to accommodate at later stages of the courses as many students are involved in off-site placements. To overcome these difficulties a novel approach to interprofessional teaching and learning is needed, involving a method which will allow the students to work together in a more flexible manner.(2) Such delivery methods can overcome many logistical issues associated with IPE as well as being more cost effective. The aim of this project was to develop and assess a web-based virtual learning environment (VLE) module for use by medical and pharmacy students in two universities.

### **Method**

A module was developed and delivered to medical and pharmacy students using the VLE of one of the universities. The topic was introduced to students with a face to face induction meeting. Eighteen students from Phase III of an MBChB course and nine students from the Year 3 of an MPharm course took part. All the medical students were on their endocrine elective module and the pharmacy students were volunteers. Phase 1 was design, development and delivery of the module and phase 2 was the evaluation and analysis of the module as an IPE tool. Qualitative and quantitative methods were used to evaluate the use and success of the module. Profession specific focus groups were conducted to assess student experiences. A cross sectional quantitative survey of all students was conducted to assess their attitudes to, and experiences of, the module. Self-reported activity was validated against routine online reporting statistics of number of hits, number of postings available from the administration tracking tools of the VLE.

### **Results**

A curriculum mapping approach was taken and the two curricula were analysed for common clinical areas and time frames. The topic for study, diabetes mellitus, was identified by the multidisciplinary research team, supported by information on common learning objectives. Over the five weeks of collaborative study the twenty seven students involved accessed the material 217 times but only nine students posted and fully engaged with the module. However the other students accessed and read the postings and 'lurked' online. In phase 2 there was consensus from the respondents of the questionnaire that they had received adequate technical support to allow them to complete the module (66.7%). Despite a majority indicating that face-to-face interaction was preferable (77.8%), a number (33.3%) agreed that the course was likely to increase their future interprofessional communication with doctors or pharmacists (as appropriate). A slightly higher number agreed that the course had increased their understanding of the importance of interprofessional working for an efficient health service (44.4%).

### **Discussion**

This project has successfully developed, delivered and evaluated a common shared learning online module which has now been embedded in the medical and pharmacy curricula. The project has demonstrated the feasibility of using a virtual learning environment as a tool for facilitating interprofessional communication and collaboration and provides a useful template for further online interprofessional learning initiatives. However, students would have preferred more face to face interaction if their curricula had allowed it. It also became apparent that there would be more uptake and use of the materials if there had been explicit assessment of the module.



## Learning to teach the final check

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### Introduction

The final dispensing check is an important safety net in the drug use process, but it is up to individuals to define their own routine. Little is known about how pharmacists develop these personal checking routines, or their relative effectiveness. At undergraduate level, there is increasing emphasis on patient safety but decreasing emphasis on physical dispensing and students have limited opportunity to develop their basic practical skills. At the School of Pharmacy (SOP) one in five 2nd years are still not carrying out an effective final check of their own work. This suggests that undergraduates need specific “final check” teaching to prepare them for practice.

### Aim

1) To observe and classify pharmacists' individual checking practices and compare their effectiveness 2) To determine when and how pharmacists recall learning how to check and gather views on this learning process.

### Method

20 pharmacists from 10 UK schools of pharmacy, recruited via email and advertisement, gave written informed consent for the study. Two (1 M registered 1965; 1 F registered 1970) provided interview data only. Data collection was done using a video recorder at SOP, or at the subject's home (1) or place of work (2). After a short interview to explore undergraduate and pre-registration experiences, subjects were given a 3-item test basket (FP10 script) containing product, strength, and labelling errors. They were told that all clinical issues had been resolved and asked to carry out a final check, speaking their thoughts out loud. The same test was administered to the 1st year MPharm 2006 cohort (n= 176) to provide baseline data for future intervention. Students were not videotaped.

### Results

Eighteen pharmacists (5 male; 13 female; registered 1963 to 2005; completed the checking test. Only three had never worked in community practice. All had recent dispensary experience in community and/or hospital. Four different checking routines were identified: product first (4); label first (5) element by element (1) and “product triangle” (8) There was no relationship between the type of routine and years since qualifying, the type of pre-registration placement, or current sphere of practice.

All product-related errors were detected. Eight pharmacists missed “look alike” patient name error; two of these also missed out of date stock. Two failed to check the expiry date only. Routines with a weak patient focus were more likely to miss “look alike” patient name errors. However 4 people who did read the name out loud still did not spot it was wrong on the label suggesting that eyesight and type size could be contributory factors. In three subjects, identification of an error, or concern about missed clinical points, acted as distractors, making the routine less effective.

Students showed no evidence of structured checking routines. Over half (54%) missed an incorrect patient name,; 47% missed expired stock; 20% missed incorrect label instructions ; 17% missed an incorrect product and 11% an incorrect strength.

Most pharmacists remembered being told they had made errors in undergraduate dispensing classes but only two (from different schools) recalled teaching on accuracy checking. All remembered being checked as pre-registration students but only three recalled being taught a procedure. In general, subjects agreed that specific final check training for undergraduates would help students, but there was a need to make the checking experience “real”.

### Discussion

According to human error theory , accuracy checking is a skill: a well-practised routine requiring little conscious thought. People who work in the dispensary infrequently may need more conscious effort to maintain this routine. Five of the eight people (63%) who spotted all errors worked regularly and often in a dispensing role. Only three of the 10 people (30%) who missed an error worked regularly and often; all were locums, two were retired and one was newly qualified. This suggests that experience and regular practice are both important in skill maintenance

With our small sample, we were unable to detect a statistically significant difference in efficacy between checking methods, but keeping a patient focus did seem to be important. Pharmacists who detected all errors had well-established routines which were not compromised by distractions. Our student cohort had no discernable routines and missed many errors. It therefore seems sensible to teach a specific check method and to give future pharmacists as much practise as possible.

## Current and Future Methods for Teaching and Assessment RPSGB Fitness to Practise

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Discussions with pre-registration graduates who attend Statutory Committee Inquiries as observers and pharmacist colleagues in academia and other branches of practice indicate that schools of pharmacy place differing emphases on professional discipline/fitness to practice issues. A video commissioned by APPLLET (Advancing the Provision of Pharmacy Law and Ethics Teaching) on clinical governance procedures was found to have been a useful resource by the schools of pharmacy<sup>1</sup> but its purpose was not to address the issue of a formal public disciplinary inquiry. Therefore, the objectives of this study are (a) to establish whether a video/DVD format of a fictitious RPSGB disciplinary committee would be a useful teaching resource for schools of pharmacy and (b) if there is such a need, to identify what issues should be included in the transcript.

The study was granted ethics approval by a university ethics committee. An individual at each of the 21 schools of pharmacy which had at least two cohorts of MPharm students was identified from the schools' websites. They were initially contacted by e-mail and were provided with further information prior to interview. If they were an appropriate person to speak to about the teaching of RPSGB fitness to practise procedures, they were invited to participate. If there was a more appropriate colleague within their school, that person was approached and invited to participate. A semi-structured, audio-recorded telephone interview was undertaken asking about teaching methods for pharmacy law and ethics, particularly fitness to practise, potential use of a video/DVD and suggestions for its content. The resultant verbatim transcripts were analysed by coding and indexing the data.

Thirteen interviews were conducted with representatives from 12 schools of pharmacy. (Two individuals from one School commented separately on OSPAP and MPharm programmes). Individuals at other schools were too busy to participate or did not respond to the request for information. Each individual described that such a video/DVD would be useful as a teaching resource for the MPharm degree and for use on OSPAP (Overseas Pharmacists Assessment Programmes) programmes, if offered. A number of suggestions were put forward indicating that the video/DVD should include elements of misconduct allegations and criminal convictions and that interviewees thought that this format would assist in students learning how a disciplinary inquiry operates. For example, dispensing errors where pharmacists have handled the situation well and badly, criminal convictions unrelated to pharmacy and failing to co-operate with an investigation were some issues. Also, in light of the current Department of Health consultation,<sup>2</sup> description of how poorly performing pharmacists are dealt with and those inquiries with a health element. Further, there would be a need for the final video/DVD to be of high-quality, not to be too scripted and not too focused on just negative issues.

Although it was disappointing that some schools of pharmacy did not participate it was clear from those who did that they welcomed the production of a video/DVD of an invented inquiry as a teaching resource and suggested a number of elements that they thought would be useful.

<sup>1</sup> Wingfield, J., Wilson, K., Hall, S. What the APPLLET project has done to progress law and ethics teaching. Pharm J 2005;275:549-50.

<sup>2</sup> Department of Health. Consultation on core principles for everyone providing care to NHS patients. [http://www.dh.gov.uk/en/Consultations/Liveconsultations/DH\\_064732](http://www.dh.gov.uk/en/Consultations/Liveconsultations/DH_064732)

## **Portfolio-Based Learning and Assessment in Pharmacy Undergraduate and Pre-registration Training: A Retrospective Case Study**

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### **Introduction**

Within pharmacy in the UK portfolio based learning and assessment is being used within some undergraduate institutions and within the national pre-registration syllabus to engender a continuing professional development culture and to enable students to demonstrate development of competency.

This project was designed to establish theoretical quality indicators' for portfolio-based learning and assessment, from the literature and compare with current practice within the Eastern region at both undergraduate and pre-registration level.

### **Method**

Ethical approval for the project was obtained before starting the study. A literature search of education databases enabled development of a checklist of good portfolio assessment and learning which was used to compare practice within the undergraduate MPharm course at UEA and the East Anglian Hospitals' pre-registration program. Themes identified via the comparison were explored in semi-structured interviews with scheme co-ordinators and a small number of self-selecting tutors and students: interviews were recorded, transcribed, validated and analysed manually for key themes.

### **Results**

Requirements for good portfolio assessment and learning included adequate tutor and student preparation, freedom to select the types of evidence and regular reflection not just on individual pieces of evidence (toast rack approach) but on overall personal development in light of the evidence submitted (spinal column approach). University documentation showed full compliance with 54% of the checklist and partial compliance with 12.5%, this compared with pre-registration documentation which complied fully 37.5% and partially 12.5%.

The pre-registration process failed to encourage reflection on the portfolio as a whole. Undergraduate students thought their learning was university led and consequently did not perceive the portfolio as a self-directed learning tool. Furthermore, whilst the detailed assessment checklist used within the school standardised portfolio content and improved assessment reliability, it was in contrast with the literature which suggests that portfolios should be a highly individual product. A lack of tutor training in portfolio development and assessment was identified as a major omission at both levels.

### **Conclusion**

With appropriate planning, spanning undergraduate and pre-registration programmes, there could be a progression from a 'toast rack' approach to portfolio assessment and learning at undergraduate level to a 'spinal column' approach at pre-registration training level. This would then prepare students for independent practice and continuing professional development. Pre-registration students should be required not only to reflect on individual pieces of evidence of competency but write an overarching reflective commentary on their development, possibly in preparation for each quarterly appraisal. Better preparation of tutors is required at both levels as the portfolio is being used for high stakes summative assessment.

## How do pharmacy students learn?

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This investigation examined the learning strategies adopted by pharmacy students to address the question: *How do undergraduate students learn the requisite skills, knowledge and competencies for professional practice in the 21<sup>st</sup> century?* Currently, the MPharm course is largely science-based and as such has historically favoured a deductive approach to learning in which principles are given, consequences are deduced, and students progress their understanding sequentially, in a logical progression of small incremental steps. This study was instigated to explore with undergraduate students their experiences of the pharmacy curriculum *per se*, with particular emphasis on pharmaceutical science and social pharmacy (i.e. the broader social context in which pharmacy is practiced) to understand how and why they adopt learning strategies, and how these strategies relate to their perception of their future professional role.

### Aims

The overall purpose of this study was to develop a robust understanding of the models of learning adopted by undergraduates. Additionally, we explored the manner in which the MPharm promotes professional socialisation and the extent to which students feel socialised into their chosen profession. This research provides data on students' beliefs and expectations of the effectiveness of their undergraduate training in equipping them for professional practice.

### Method

Group interviews were conducted with first and third-year pharmacy undergraduates at four schools of pharmacy. The purpose of these interviews was to explore, with the aid of a suitably developed topic guide, perceptions of the learning experience for the various elements of the curriculum and the associated strategies used to facilitate their learning. The interview 'topic guide' was developed in part from free text comments appended to completed questionnaires received from two previous surveys we undertook on the teaching of extemporaneous preparation and social pharmacy in UK pharmacy schools. This guide was modified slightly in the light of piloting with students at the School of Pharmacy, University of London and responses to the initial interviews. The data were managed in the first instance by mapping key concepts derived from the transcripts ('charting') and extracting emergent themes from the transcripts. Transcripts were analysed iteratively and emergent themes and concepts revisited and refined. The emergent themes together with recorded observational data formed the basis of analytical interpretation.

### Findings

Analysis of the transcripts yielded five themes:

- i) Student motivation for choosing pharmacy as a career.
- ii) Developing a distinct professional identity.
- iii) Socialisation for a professional identity.
- iv) Strategies for learning for a professional identity.
- v) Social pharmacy's contribution to a professional identity.

Students' initial induction into their chosen profession comprised absorbing a substantial body of scientific knowledge. Text book/rote learning was cited by many as the principal learning strategy to cope with this, though informal, collaborative group learning was also seen as a coping strategy. Students recognised that "accumulating" the core scientific knowledge alone, was in itself inadequate preparation for their professional role whilst articulating that deep learning required them to know and understand topic areas. Students underwent a process of maturation of learning styles: from role/passive/parrot learning in the early years to a deeper active understanding and application of this knowledge in the latter years. Although some students had difficulty recognising the term "social pharmacy", it was perceived as a legitimate topic within the pharmacy curriculum, though it was not regarded as a core element in establishing a professional identity.

## **Developing and Evaluating an E-network of Pharmacists and Designated Medical Practitioners to Enhance the Period in Practice of Supplementary Prescribing Training**

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The period of learning in practice (PLP) is a key element of pharmacist supplementary prescribing training. During this period, a designated medical practitioner (DMP) provides the pharmacist with supervision, support and opportunities to develop competence in prescribing practice focusing on one or more therapeutic areas. We were keen to ensure that the pharmacists studying the supplementary prescribing course at The Robert Gordon University (RGU) were fully supported during the PLP by the university, their DMPs and their peers. We particularly wanted to explore good practice during the PLP and whether or not e-learning and e-support would be welcomed and valued by pharmacists and DMPs.

The aims were: to determine the views and experiences of pharmacist supplementary prescribers and their linked designated medical practitioners in relation to the period of learning in practice; and to develop and evaluate an e-network of pharmacists undertaking supplementary prescribing training and their linked DMPs, which is supported by academia, aiming to enhance the period of learning in practice.

This involved two focus group discussions with pharmacist supplementary prescribers (n=5 and n=7) in two central locations in Scotland and semi-structured one to one telephone interviews with 13 DMPs. Results indicated that planning the PLP in consultation with the DMP is crucial for a good learning experience. The PLP should focus on achieving the core competencies for prescribers. A forum for discussing experiences during the PLP and gathering information might be valuable to pharmacists. If web support for the PLP is to be effective then it should be accessible to pharmacists and DMPs, describe their respective roles and responsibilities and facilitate discussion and support.

These results informed the development of a dedicated website for the PLP which was hosted on the RGU Virtual Campus website to support the pharmacists and DMPs during the PLP of the course.

Surveys of pharmacists (n=242) and doctors (n=232) who had not used the website and also a group of pharmacists (n=27) and doctors (n=27) who had used the website were undertaken to determine experiences of the PLP and the website. Evaluative data are just beginning to emerge from the first cohort of pharmacists and DMPs given access to the website. It would appear that the website may have increased ease of contact between pharmacists, peers, DMPs and the university. Further evaluative research on the website is required.

RPSGB has recently published the conversion course for supplementary pharmacist prescribers to become independent prescribers. Pharmacists will be required to undertake a further period of university training and a PLP of two days. It will be important to support pharmacists during these two days and we intend using web based support.