

# Monash Pharmacy Education Symposium 2015

**Venue: Monash University Prato Centre, Via Pugliesi, 26, 59100 Prato, Italy**

## Education research oral presentations

**ERO1. What is the impact of introducing a blended e-learning resource 'The virtual dispensary' in to the MPharm degree?**

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**Presenting author:** James Desborough

**Keywords:** Blended Learning, e-Learning, Pharmacy practice

**Background:** With the rise in availability and use of technology in education, it is necessary to continually evaluate its impact and use to maximise its potential.

**Aim:** The aim of this project was to investigate the effectiveness of a blended e-learning tool developed using Prezi®, known as 'the Virtual Dispensary', on year 3 pharmacy students in a professional practice module.

**Methods:** A student cohort who had access to the Virtual Dispensary was compared to a comparison cohort from the previous academic year without this additional resource. Student demographics, academic performance and use of the Virtual Dispensary was explored and regression analysis was performed to identify predictors of performance in the professional practice module.

**Results:** The demographics between the virtual dispensary cohort (n=105) and the comparison group (n=114) were comparable. The virtual dispensary was predominantly used just prior to assessments and there was no significant difference in use between home and international students. Three significant predictors of module performance were identified as: the age of the student, their entry tariff score into higher education and the amount of times the Virtual Dispensary was accessed during weekends.

**Conclusions:** Students used the Virtual Dispensary at times which corresponded to assessments which suggest that it was primary used for short term revision purposes. While virtual dispensary use appears to positively affect student grades, further research is required to explore the impact of its use on deep learning.

**ERO2. [www.thelearningpharmacy.com](http://www.thelearningpharmacy.com) - Virtual scenarios to support learning for practice for the whole pharmacy team**

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**Presenting author:** Ellen Schafheutle

**Keywords:** Online Learning, Pharmacy Team, Practice

**Background:** Novel technologies are effective at supporting learning and may be particularly valuable for practitioners, where time can limit event attendance.

**Aim:** To investigate use, satisfaction and impact of thelearningpharmacy, a free virtual platform developed by CPPE, providing bite-sized learning aimed at the whole pharmacy team.

**Methods:** A questionnaire was designed, piloted and distributed electronically (two reminder) to 328 registered users of thelearningpharmacy; an on-access survey was also available between November-January 2015. Responses were combined and analysed using SPSS®v20.

**Results:** Fifty responded to the e-mailed questionnaire, 20 completed the on-access survey. Fifty-one respondents (71.8%) were pharmacists, 15.5% pharmacy technicians. The majority (74.6%) worked in community pharmacy, 11.3% in hospital, 7.0% in academia. Most (57.7%) had heard about thelearningpharmacy through the CPPE website. Respondents used laptops (63.4%), desktops (31.0%), i-pads/tablets (28.2%) and smartphones (15.5%) for access. Satisfaction levels with ease of access, navigation, learning activities and clinical topics were high (70.4%-80.3%). Almost all (93.0%) worked through the challenges on thelearningpharmacy on their own; some (18.3%) used it to train others, only one (1.4%) used it to learn together with their colleagues. Table I shows the perceived impact of thelearningpharmacy on respondents' practice.

**Conclusion:** The learningpharmacy provides a novel approach to online learning within the pharmacy. Satisfaction levels were high and respondents reported positive impacts on their learning and practice. Many were only aware of this platform through CPPE which caters for pharmacists and pharmacy technicians. Whilst aimed at the whole team, only some used it to train others/ learn with colleagues.

**Table I: Impact of the learning pharmacy**

the learning pharmacy has... (%)	Strongly agree	Agree	Neutral	Dis-agree	Strongly disagree
enhanced my professional development	25.4	49.3	22.5	1.4	1.4
assisted me in providing patient self-care and public health advice	14.1	57.7	23.9	4.2	0
helped me deal with patient queries regarding their long term conditions and medicines more effectively	14.1	54.9	26.8	4.2	0
improved my clinical knowledge regarding drug interactions and adverse drug reactions	14.1	52.1	33.8	0	0
kept me up-to-date with policies and guidelines relating to disease management	16.9	46.9	31.0	4.2	0
supported me in improving quality and effectiveness of pharmacy services delivery	7.0	56.3	33.8	2.8	0
supported me in dealing with OTC requests more effectively	5.6	57.7	32.4	4.2	0
supported me to help patients in managing their newly prescribed medicines	11.3	49.3	32.4	5.6	1.4
encouraged interactive learning within the pharmacy team	9.9	42.3	39.4	7.0	1.4
supported me in my mentoring role in pharmacy	9.9	39.4	40.8	8.5	1.4
increased my confidence in communication with the GP or other healthcare professionals	8.5	36.6	46.5	7.0	1.4
helped me engage with patients outside the pharmacy setting	5.6	35.2	45.1	14.1	0
helped me to run a successful health promotion campaign	4.2	29.6	54.9	9.9	1.4

### ERO3. Can targeted public health e-learning packages make a difference to a pharmacy professional's self-efficacy within the public health agenda?

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**Keywords:** Self-Efficacy, e-Learning, Public Health Interventions

**Background:** Pharmacy is increasingly being asked to proactively engage in the public health agenda by advising patients on lifestyle and public health issues. Wales Centre for Pharmacy Professional Education (WCPPE) in collaboration with Public Health Wales have created focussed e-learning packages on a variety of infectious diseases that have resulted in outbreaks throughout Wales, in order to upskill the workforce.

**Aims:** To explore pharmacy professionals' perceptions of any changes in their knowledge, confidence and behaviours to provide public health related messages to patients following completion of targeted concise public health e-learning packages.

**Methods:** A short structured questionnaire using the Likert scale was developed following several semi-structured telephone interviews and sent to all pharmacy professionals who had completed at least one of the e-learning packages in the previous year.

**Results:** Completed questionnaires were received from 129 people (18% response rate). Learning from the modules resulted in respondents feeling more confident (98%) in answering queries or offering advice, with over half the respondents (54%) reporting that they had used the knowledge to make an intervention. Awareness of the public health agenda amongst the respondents had also increased (79%). The majority of the respondents (96%) found the method of delivery acceptable and 99% stated they would access this type of e-learning package again.

**Conclusion:** The results demonstrated that pharmacy professionals' self-efficacy in public health increased following completion of these e-learning modules and that the format of delivery was acceptable.

### ERO4. Exploring student perceptions of the virtual dispensary in the MPharm degree at UEA

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**Presenting author:** James Desborough

**Keywords:** Online Resources, Pharmacy, Education, Focus Groups

**Background:** At the University of East Anglia, an online learning resource was created using Prezi®, called the 'Virtual Dispensary'. This resource is used by pharmacy students as part of a blended learning strategy to help consolidate content delivered by traditional methods.

**Aim:** To explore student's perceptions of the 'Virtual Dispensary' and evaluate its role in the education of undergraduate pharmacy students at UEA.

**Methods:** Focus groups were used to examine the views of undergraduate students in years 2,3 and 4 of the MPharm course on the 'Virtual Dispensary'. From a generic e-mail sent to all students, willing participants were required to complete an online survey collecting basic demographic information. Purposive sampling was undertaken to achieve maximum variation in the sample according to gender, year of study, age, country of origin

and time using the 'virtual dispensary'. Final year pharmacy students then independently coded and thematically analysed the data.

**Results:** Twenty-three students participated in three focus groups. The major themes identified were: complementary resource for staff and students, increased productivity, student preferences of online learning support, and comprehensiveness. Students conveyed strong beliefs that online learning will have a more prominent role in the future of education.

**Conclusions:** Participants expressed great support for having a complementary online resource to consolidate content delivered in traditional teaching sessions. Recommendations were made to create more resources like the 'Virtual Dispensary' in other pharmacy modules. However, further research is required to identify the appropriate level of content needed to promote deep and independent learning.

#### **ERO5. Learning patterns and study success of bachelor of pharmacy students**

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**Keywords:** Study Success, Learning Pattern, Bachelor of Pharmacy, Inventory of Learning Styles

**Background:** The newly developed Bachelor of Pharmacy curriculum in our University (problem- and project-based courses) was designed to stimulate students to use self-regulating and deep learning approaches. However, it is unclear whether these approaches are in fact needed to be a successful student.

**Aims:** This study aims to relate study success in year-1 to learning approaches of students. The Inventory of Learning Styles (ILS) was used to distinguish between meaning-directed, application-directed, reproduction-directed and undirected learning patterns.

**Methods:** Study results and learning approaches of 490 first-year students were obtained from the registrar and the 120-item ILS-questionnaire, respectively. The relationship between course success (pass or fail) and scores on the ILS-scales (independent variables) was investigated by logistic regression. Cluster analysis was used to see whether subpopulations of students could be distinguished, based on these learning patterns.

**Results:** Statistically significant Odds Ratio's (OR) > 1.5 were found for the scales 'relating and structuring' in the majority of first-year courses. On the other hand, OR's < 0.6 were found for 'use of knowledge', 'external regulation' and 'ambivalent study orientation'. Cluster analysis distinguishes between five different student subpopulations, characterised as having meaning-directed (15%), application-directed (28%), reproduction-directed

(27%), application-undirected (13%) and reproduction-undirected (17%) learning patterns. Students in the latter two categories are less successful in all first-year courses, compared to the other three categories.

**Conclusion:** First-year courses of the Pharmacy curriculum positively select for student who demonstrate desirable approaches to learning, while students using less desirable approaches have decreased chances of passing these courses.

#### **ERO6. A decade of research into pharmacy student motivation: What have we learned and how can it inform our education practice?**

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**Presenting author:** Lorraine Smith

**Keywords:** Achievement Motivation, Academic Performance, Pharmacy Education

**Background:** Of >1000 publications reporting the application of achievement goal theory in educational settings, <10 focus on pharmacy education. This is the first comprehensive, longitudinal study into pharmacy student motivational patterns and academic performance.

**Aims:** To review the findings of ten years' research into pharmacy students' achievement motivation and academic performance conducted at Sydney University.

**Methods:** Students across the University of Sydney four year BPharm program were sampled (2005 – 2014), testing hypotheses regarding the relationships between undergraduate pharmacy students' approaches to learning, achievement goals, and academic performance. Some studies were repeated following the introduction of a new curriculum in 2008.

**Results:** Results from five studies are presented, (participants per study 201-486, average response rate 80%). Early findings indicated students were strongly vocationally oriented towards their studies with a preference for external regulation strategies. A subsequent study showed that students oriented towards performance goals were more likely to achieve high marks ( $p < 0.05$ ), and culture/ethnicity influenced achievement goal orientation and academic performance ( $p < 0.05$ ). Following introduction of the new curriculum, studies indicated a shift in goal orientation towards mastery and a positive relationship with assessments measuring understanding and depth of knowledge ( $p < 0.05$ ). The final analysis of the impact of the new curriculum on achievement goals and performance is underway and will be reported at the conference.

**Conclusion:** Understanding students' goal orientation and harnessing students' preferences for vocational orientation to their studies can encourage self-regulation and mastery. Recommendations for improved models of pharmacy education will be made.

### **ERO7. The role of pedagogy in intercultural capability development in pharmacy undergraduates**

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**Keywords:** Capabilities, Internationalised Higher Education, Intercultural Learning, Intercultural Competence

**Background:** Internationalised higher education literature draws attention to the tensions between economic returns of recruiting international students and the personal, social and cultural possibilities offered. Promotion of a more cosmopolitan, interculturally capable self is something to be explored within developing values as future pharmacy professionals.

**Aims:** To evaluate the potential role of pedagogy in the development of intercultural values in undergraduates, by analysing student interview data through the lens of 'capabilities', drawing on the 'capability approach' of Amartya Sen and Martha Nussbaum.

**Methods:** Forty-four semi-structured interviews were conducted with home and international pharmacy students, to explore course experiences, friendships and social lives and, specifically, intercultural interactions. An intercultural 'capability set' was constructed for evaluating the way in which students were, or could be helped to become, more intercultural, through social and academic arrangements within the School of Pharmacy. The data was analysed with respect to the capability set.

**Results:** Group work notably emerged from the research as having the potential to impact positively on students' sense of self, through its effects in promoting agency, mutual learning and sharing and the development of intercultural capabilities. Conversely it proved inhibitory when it resulted in dissatisfaction, separation and inequity.

**Conclusion:** There were strong indications that pedagogy can have a powerful influence over capability development. The capability set proved to be a good descriptor of the capabilities required for a more cosmopolitan outlook, with the capability approach providing a sound basis for operationalising and evaluating pedagogy which helps to develop students with intercultural values.

### **Capability set for being intercultural**

Capability	Functionings
Social relations and participation	Able to form social and working relationships with others. Able / willing to interact outside of comfort zone. Desire to interact outside of comfort zone. Able / willing to use intercultural communication to promote dialogue.
Respect, dignity and recognition	Having and showing respect for others; being treated with respect. Recognising, accepting and respecting difference. Recognising a responsibility to others. Allowing and valuing inclusion and contributions of others; being included and having one's contributions valued. Having a voice and allowing others their voice
Mind and imagination	Seeking to understand others, their worlds and situations. Able to imagine and appreciate one's local and wider connectivities. Open-mindedness Willing to engage in moral and ethical debate; to explore disagreement; to accept disagreement
Enquiry and reflection	Seeking to learn from others, about others, their worlds and situations. Valuing and enjoying difference Able to think about one's own situation, values, beliefs, received knowledge, practices and behaviours in the light of those of others.

### **ERO8. Documenting patient care encounters to assess the breadth and depth of students' clinical experiences**

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**Keywords:** Experiential, Assessment, Documentation, Intervention, Pharmacotherapy

**Background:** Providing patient-centred care during clinical experiences is an important aspect of learning. Documenting such encounters allows the individual student to appreciate the constellation of his/her own experiences and provides programmatic assessment of the quantity and variety of direct patient care in the experiential curriculum.

**Aims:** To establish a process for students to document patient care encounters and to assess the breadth and depth of patient care provided during the experiential education curriculum.

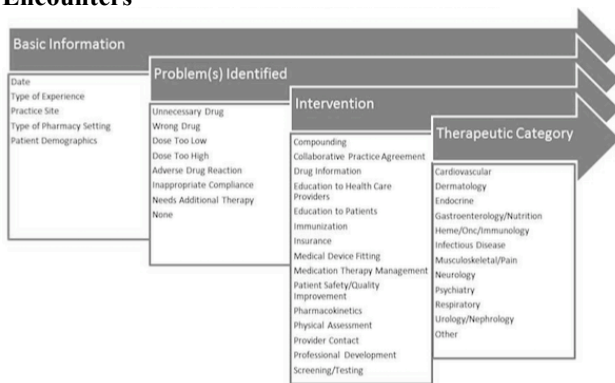
**Methods:** Students in their final year of the Doctor of Pharmacy program documented selected patient care encounters through an online system. For each encounter,

each student documented basic information, problem(s) identified, intervention(s) performed and therapeutic category (Figure 1). Each student was required to document at least 70 patient encounters and at least three encounters in each therapeutic category.

**Results:** From May 2011 to May 2014, 330 students participated in the clinical intervention documentation program and over 30,000 individual patient encounters were documented (mean = 101 encounters per student). For those patients, students documented over 40,000 clinical interventions (mean = 129 per student). The most common interventions were ‘education to patient on new prescription’ and ‘medication reconciliation.’ The most commonly reported therapeutic categories were cardiovascular and infectious disease.

**Conclusion:** All students were able to document a variety of patients during the experiential curriculum. The mechanism and expectation was reasonable for every student to achieve. Documentation of a student’s breadth of clinical patient exposure remains an important aspect of curricular completeness.

**Figure 1: Method for Documenting Patient Care Encounters**



**ERO9. How is the term ‘competence’ defined by the pharmacy educator?**

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**Keywords:** Assessment, Competence, Knowledge

**Background:** With an increasing emphasis on competence-based outputs within the Master of Pharmacy degree programme in the United Kingdom it is important to determine the perspective of different faculty members on the use of the term ‘competence’. An awareness of how competence is defined can impact on future development of competence-based teaching, assessment and future practice.

**Aims:** This study aimed to explore the perspectives of the pharmacy educator representing three different types of

School of Pharmacy (SOP) (research intensive SOP, established SOP and new SOP).

**Methods:** Semi-structured, interviews with 12 academic members of staff from three different SOP. The respondents were selected from volunteers to represent both pharmaceutical sciences and pharmacy practice. Interviews were audio recorded, transcribed and analysed using a reflexive, framework analysis.

**Results:** Two major themes to emerge from an analysis of the transcripts included: 1. There are context specific influences on how competence is defined by science-based and practice-based academics; 2. Pharmacy practitioners use less confident language about competence-based assessment compared to the pharmaceutical scientist.

**Conclusion:** Overall, the research findings align with the view expressed by Wolf (1989) that an emphasis on observed consistency of outputs has resulted in the confused notion that competence is about very specific practical activities. The blurred interface between knowledge, understanding and competence requires further evaluation within pharmacy education.

**Reference**

Wolf, A. (1989). Can competence and knowledge mix? In *Competency based education and training* (ed. J. Burke), Falmer Press, Sussex, (pp. 39-53).

**ERO10. Prepared to prescribe? What do undergraduate pharmacists think?**

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**Presenting author:** Roisin O’Hare

**Keywords:** Undergraduate, Pharmacy, Prescribing, Preparedness

**Background:** Prescribing is a multifaceted activity which requires clinical knowledge as well as knowledge of medicines, sound judgement and skill. A Prescribing module was introduced in 2006 to support the existing MPharm curriculum.

**Aims:** To determine the students’ perceived levels of preparedness in relation to their own ability to prescribe medication.

**Methods:** All final year undergraduate pharmacy students (n=134) were invited, via email, to complete a pre-piloted, ethically approved, questionnaire of 49 questions and statements examining student perceptions on their preparedness for prescribing.

**Results:** Fifty questionnaires were completed (37%). Most students (90%) believed themselves capable of

writing a safe and legally valid prescription. Students were least confident prescribing high risk medications (digoxin, warfarin) and most confident with anti-emetics and laxatives. There were significant gender differences; male students displayed more confidence in their ability to identify adverse medication reactions (100% vs. 72%;  $p < 0.05$ ) and in their ability to calculate doses for high risk patients (73.7% vs 34.3%;  $p < 0.05$ ).

**Conclusion:** An increased emphasis on the prescribing of high risk medications from a pharmacist perspective in the MPharm is required. Respondents believed they understood their role in the prescribing process and that they had received comprehensive training in therapeutics which contrasts with medical students perceptions that the lack of a distinct course in pharmacology hindered their prescribing.

### Reference

Heaton, A., Webb, D. & Maxwell, S. (2008). Primary undergraduate preparation for prescribing: The views of 2413 UK medical students and recent graduates. *British Journal of Clinical Pharmacology*, 66(1), 128-134.

**Table 1. Therapeutic classes and percentage of students who were not confident prescribing in these classes**

Therapeutic class	Percentage of students (%)
Digoxin	41.7
Anti-psychotics	41.7
Anti-convulsants	31.7
Warfarin	30
Anti-Parkinson's drugs	30
Insulin and oral hypoglycaemics	30
Aminophylline	25
Thrombolysis	21.7
Antidepressants	15
Thyroxine	15
Steroids	11.7
Vitamins and Minerals	11.7
Inhalers for asthma / COPD	10
Nitrates	8.3
Sleeping tablets	8.3
Loop diuretics	6.7
Opiate Analgesics	6.7
Antacids and Ulcer healing drugs	5
Anti-hypertensives	5
Statins	3.3
Anti-histamines	3.3
Non-opiate Analgesics	3.3
Antibiotics	3.3
Anti-platelets	1.7
Laxatives	0
Anti-emetics	0

### ERO11. Interprofessional therapeutics and prescribing education for pharmacy and medical students: Facilitator perspectives on utility of sessions and areas for improvement

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**Presenting author:** Dai N. John

**Keywords:** Therapeutics, Prescribing, Interprofessional Education, Undergraduate Pharmacy, Undergraduate Medicine

**Background:** Case-based therapeutics and prescribing interprofessional education (IPE) between medicine and pharmacy has taken place for three years.

**Aim:** To formally obtain staff views on IPE case-based sessions after running them for three years.

**Methods:** Following ethical approval, nine audio-recorded semi-structured interviews were transcribed and analysed using thematic content analysis.

**Results:** Staff identified the main session benefit as students learning with, from and about each other's programmes and professional roles. Faculty observed students helping and teaching each other with students learning from and valuing alternative approaches, for example, to drug history taking. Staff reported the cases as appropriate for both professions. The contribution of faculty from both schools, e.g. during facilitation and feedback, was recognised as a positive feature of the sessions that provided discipline specific perspectives and contexts. One suggestion for change was to conduct the sessions with smaller numbers of students to make the pairing up of interprofessional peers more efficient and session facilitation to be more manageable. However, pragmatic challenges to this approach were also voiced e.g. an increased number of sessions would require more timetabled sessions in which staff, students and rooms were available. Interviewees recommended more IPE sessions across all years, although the challenges in scheduling and facilitating sessions were acknowledged.

**Conclusion:** The feedback from faculty aligned with views of pharmacy and medical students and increased IPE, with smaller groups now having been initiated. Further research is underway to obtain views of participants as to how, if at all, the IPE has affected their practice.

### ERO12. Stakeholder perspectives on the preparedness of Jordan's pharmacy graduates for practice

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**Presenting author:** Lina Bader

**Keywords:** Pharmacy Education, Jordan, Development, Competency, Needs-Based

**Background:** In recent years, global efforts calling for the consolidation of a needs-based approach to developing pharmacy education have been underway. While challenges in better preparing graduates and meeting stakeholder requirements continue to face pharmacy educators worldwide, it is particularly difficult for developing countries lacking leadership and planning resources.

**Aims:** As part of a larger research project which aims to provide guidance for the development of pharmacy education in Jordan on a national level, this study aims to evaluate the preparedness of the country's pharmacy graduates by identifying their performance gaps against local needs and stakeholder requirements.

**Methods:** Semi-structured interviews were conducted with 53 cross-sector pharmacy professionals and stakeholders in Jordan. Participants were asked about the graduates' preparedness for practice in terms of the skills and competencies they lacked. Transcripts were thematically analysed on NVivo 10 and the Global Competency Framework (GbCF) Version 1 was used as a coding framework.

**Results:** The findings highlight the general unpreparedness of graduates for practice, irrespective of the field. Gaps were reported across all of GbCF's competency domains with particular deficits in the Professional/Personal Competencies domain.

**Conclusion:** This study's findings will not only inform local policy on pharmacy education reform but also the international research community on needs-based methodological approaches to developing an existing pharmacy education system. It also provides an example of the practical application of GbCF as a mapping tool.

## Education research poster presentations

### ERP1. The development of the professional practice of pharmacy interns working in the community pharmacy setting

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**Presenting author:** Judith Burrows

**Keywords:** Pharmacy Practice, Undergraduate Pharmacy Education, Pharmacy Curriculum, Professional Development

**Background:** While it cannot be expected that students will be fully transformed into pharmacists by graduation, universities and intern training providers have a responsibility to effectively prepare the pharmacists of the future.

**Aims:** The aim of this study is to explore how pharmacy graduates working in community pharmacy develop their professional practice through their internship. The influences on this development and views about the future are also explored.

**Methods:** This study uses the principles of hermeneutic phenomenology to explicate the meaning and interpret the lived experience of pharmacy interns at work. Seven pharmacy interns working in community pharmacy consented to participate in the research. Each participant was observed in their workplace for two-four hours, followed by an interview relating to their experiences of pharmacy practice on two occasions about six months apart. Data analysis focussed on their lived experience of pharmacy practice.

**Results:** There were commonalities and differences in how pharmacy interns enacted and developed their practice. How interns understood the role of the pharmacist at the commencement of their internship was central to how practice was enacted and developed, along with experiences in and expectations of the workplace. There was variation in how interns viewed their future as registered pharmacists.

**Conclusion:** Pharmacy educators and intern training providers must consider and address the variation in how interns understand and develop professional practice. This is necessary to ensure that pharmacy practice aligns with the vision for the profession to optimise patient care and retention in the profession.

### ERP2. Factors influencing Monash University (Australia) pharmacy students' internship site selection

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**Presenting author:** Anne Leversha

**Keywords:** Placements, Internship, Experiential, Site Selection

**Background:** Experiential placements are an essential component of undergraduate pharmacy education in

Australia. Anecdotally, these placements have an influence on students' choice of intern site, the nature of which warranted further investigation.

**Aim:** To identify factors from undergraduate experiential placements that influence Monash pharmacy students' choice of site for their intern training.

**Methods:** Two questionnaires relating to the professional experience placements (PEPs) were completed by students during their final year of undergraduate study. The first questionnaire was conducted prior to selection for hospital pharmacy internships, and the second was conducted after that selection process.

**Results:** Almost two-thirds of respondents stated that the expectation of a good internship experience was their reason for choosing their site. Having previous or ongoing employment at the chosen site was also influential. About three-quarters listed being close to home or university (the site of the training seminars) as a reason for choosing the location of their site. Most respondents identified that PEPs had influenced their choice of placement site and the majority of these felt that they had been a major or moderate influence. Of those who nominated the most influential site, more than two-thirds (at both survey points) nominated metropolitan hospitals. When asked what type of information or experience gained from the PEPs influenced their choice, both cohorts cited clinical experience, information about the intern training program offered by the site, and pharmacy team perspectives as the most influential factors.

**Conclusion:** PEPs have a strong influence on pharmacy students' intern site preferences.

### **ERP3. The flipped classroom: How students experience learning**

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**Presenting author:** Julia Khanova

**Keywords:** Flipped Classroom, Case-Based Learning, Active Learning, Assessment; Course Design

**Background:** The flipped classroom is characterised by student mastery of foundational content prior to class and student engagement in active learning during class. At the UNC Eshelman School of Pharmacy, faculty have implemented numerous variations of the flipped classroom. While these implementations have been assessed independently through single course evaluations, a more comprehensive approach to assessing how students experience these pedagogical strategies is needed

to identify which elements of the flipped classroom are most conducive to learning.

**Aims:** The aim of this study was to conduct a systematic analysis of student feedback from all recently flipped courses at the School and identify themes that can inform course and curriculum design.

**Methods:** Qualitative content analysis of more than 6,000 open ended comments from mid-course and end-of-course evaluations were analysed for the ten flipped courses identified in the doctor of pharmacy degree program. Through iterative thematic coding and sorting by a team of researchers, we identified threads recurring across multiple courses.

**Results:** Students expressed preferences for: (1) emphasis on understanding and application; (2) case-based learning; (3) instructor-led review and discussion; (4) regular quizzes/knowledge checks. Students expressed concerns about: (1) increased workload; (2) disconnects between pre-class and in-class learning; (4) inconsistency of learning experiences; (5) assessments geared towards rote memorisation.

**Conclusion:** This study identified key elements, in the view of the learner, that strengthen the flipped classroom model and highlighted specific areas warranting improvement. This work can guide design considerations for schools implementing this model across multiple courses within a single curriculum.

### **ERP4. Use of focus groups as a method to validate university training programs**

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**Presenting author:** Mary-Jessimine Bushell

**Keywords:** Injections Training, Training Program Validation, Focus Groups, Vaccination Training

**Background:** In response to the broadening scope of pharmacy practice, many university pharmacy courses are integrating injection skills and vaccination training into undergraduate curricula. An Australian injection skills and vaccination training program (VTP) has been newly developed as spiral curricula for inclusion into the undergraduate pharmacy degree.

**Aims:** The aim of this study was to validate the newly developed injection skills and VTP and determine if the educational material delivered in spiral curriculum and the modes of delivery and integration into the current curriculum are sufficient for student learning and understanding of concepts and allow for demonstration of competency.



**Methods:** Four focus groups were constituted and consulted, two in Australia, one in America and one in Sri Lanka. Focus groups participants included established vaccinators (doctors, nurses and American pharmacists) and Australian community and clinical pharmacists.

**Results:** Focus groups provided professional, useful and informative insight without political pressure and validated the training program based on knowledge rather than professional boundaries. Consistent themes among all four focus groups were identified and included, the need to expand the program content to include epidemiology on all vaccine preventable diseases, the importance of the anaphylaxis module and the need for repeated assessment throughout the curricula.

**Conclusion:** Use of focus groups for validation is means of validating a training program. Analysis of data across all four focus groups allowed for the identification of themes and highlighted strengths and weaknesses in the training program. The method was judged as appropriate.

#### ERP5. Motivational profiles of pharmacists in continuous education

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**Presenting author:** Mary-Jessimine Bushell

**Keywords:** Motivation, Continuous Education, Self-Determination Theory, Academic Motivation Scale, Lifelong Learning

**Background:** Successful participation in continuous education (CE) requires pharmacists to have autonomous motivation to maintain and develop their knowledge and competencies. Research in higher education has shown that the quality of motivation (in contrast to quantity of motivation per se) may be an important determinant of desirable learning results.

**Aims:** This study aims to characterise the quality and quantity of motivation of Dutch hospital and community pharmacists, who participate in CE.

**Methods:** Based on the Self-determination Theory, the quality and quantity of motivation was characterised by measuring both autonomous and controlled motivation using the Academic Motivation Scale. The results of 430 pharmacists were subjected to K-means cluster analysis in order to create motivational profiles.

**Results:** Four motivational profiles were found. In addition to high quantity (HQT) and low quantity (LQT) clusters, a good quality (GQL; high autonomous motivation) and a poor quality (PQL; high controlled motivation) cluster could be distinguished. Female pharmacists and hospital pharmacists were highly represented in the GQL cluster, while community pharmacists were mostly represented in the HQT and PQL clusters. Pharmacists having a working experience of more than ten years tend to be overrepresented in the GQL cluster.

**Conclusion:** Two dimensions of motivation to participate in CE (quality and quantity) can be distinguished and it is shown that working environment, working experience and gender influences the motivational profile of pharmacists. Based on these results, we suggest that motivational profiles may be used to develop CE activities, which are tailor-made for different target groups.

#### ERP6. From successful interprofessional communication to collaborative practice

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**Presenting author:** Karen Luetsch

**Keywords:** Clinical Pharmacy, Interprofessional Communication, Qualitative Research, Interprofessional Education

**Background:** Pharmacists are involved in team-based healthcare and advancing their scope of practice with increasing collaboration with other health professionals.

**Aims:** Extend clinical pharmacists' capabilities and confidence to collaborate with other health professions by learning and applying high level interprofessional communication skills.

**Methods:** Pharmacists enrolled in a postgraduate program were introduced to a framework for successful interprofessional communication which they applied during an educational encounter with a health professional in their workplace. Modelled on educational outreach visits discussions aimed at the establishment of trusted interprofessional relationships, while focusing on contemporary clinical content.

**Results:** Qualitative, thematic evaluation of written reflections pharmacists (55) submitted after their encounter identified a number of themes relating to interprofessional collaboration and education. After initial apprehension pharmacists were able to engage clinicians in an interactive exchange of information, learning about,

Pharmacists were starting to move from a transactional approach to improving medication use for individual patients to a role of educator and change agent. They perceived relationships with clinicians increased in social capital and their professional standing.

**Conclusion:** Increasing pharmacists' capabilities to build interprofessional collaboration through skilled, pro-active communication creates the potential to demonstrate the value of pharmacists as members of health care teams and the prospects of the profession in addressing the demands of increasingly complex health care needs and reforms.

### **ERP7. Education and certification of unregulated drug vendors is critical to malaria management in rural Uganda**

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**Keywords:** Social Media, Internet Questionnaire, Good Practice, Global; Guidelines

**Background:** The World Health Organisation recommends a ratio of 1: 2,000 people. In Uganda this ratio is approximately 1:50,000, with most pharmacists located in urban centres. In the rural setting where this study was conducted there were no community-based pharmacists present, creating a dependency on unregulated drug vendors to fill the gap. With approximately 43,000 children < five years of age dying annually from malaria, educators and policy makers need to explore models to improve dispensing practices across all providers.

**Aim:** This field study evaluated unregulated drug vendors' practices, training and knowledge in Butaleja District to determine their alignment with Uganda's national malaria treatment guidelines.

**Methods:** Interviews were conducted with 75 purposively recruited vendors.

**Results:** A majority (93.3%) of vendors worked in standalone shops, with fewer than 7% distributed across general shops, mobile outlets, and market stalls. Less than half (48%) reported receiving formal post-secondary training in health care. While 26.7% of vendors reported stocking the first-line antimalarial ACT and a similar percent believe this to be the best antimalarial, fewer than 10% stated they always recommended ACT, and a majority (80.8%) indicated selling what the consumer requested.

**Conclusions:** The inadequacy of the private sector in Butaleja District is an important finding, given the supply of ACT at the public sector is unreliable and few regulated vendors exist in rural settings. These results imply appropriate policy, education, and certification of

unregulated providers to be critical to successful management of malaria where the unregulated sector is an important source of care.

### **ERP8. Implementing good practice about the use of social media in health professional education**

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**Presenting author:** Claire Anderson

**Keywords:** Social Media, Internet Questionnaire, Good Practice, Global; Guidelines

**Background:** While social media has the potential to support and enhance health professional education and is increasingly used, there is little data on how it is used in practice or on implementation of policy regarding its use.

**Aim:** To explore global practices in the use of social media by educators and students in a range of health professional educational contexts.

**Methods:** An International, Interprofessional research team made up of educators and students from eight Universities across the Universitas 21 consortium collaborated on the design and implementation of this 2013 study. Following ethics approval from the participating universities, an online survey hosted on fluid survey was opened in April 2014 to health professional students and educators from the eight universities. Pharmacy, physiotherapy, dentistry, medicine, public health and nursing were included.

**Results:** One thousand, five hundred and thirty-seven people completed the survey, 15% educators and 85% students. While a third of respondents did not use social media in education, the major use was for collaborative activities. Responses indicate that when people are aware of the policy/guidelines created by their institution/profession/future profession they recognise their importance and tend to adhere to them. Respondents thought there should be examples of scenarios that may happen if the policy/guidelines are breached and that these examples should underline the consequences for both the person breaching the policy/guidelines and also patients involved.

**Conclusion:** Universities must recognise the importance of social media use by its students. Constant updating is required and the inclusion of scenarios/case studies will assist students in adhering to guidelines.

**ERP9. An evaluation of the perceived value of inter-professional learning in health care professional undergraduates**

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**Presenting author:** Samantha Weston

**Keywords:** Health, Inter-Professional Learning, Pharmacy, Medicine, Nursing

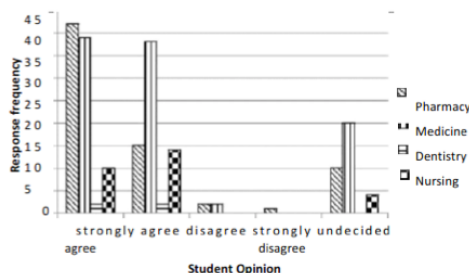
**Background:** Inter-professional learning (IPL) is the involvement of two or more healthcare professionals (HCPs) from different professional groups ‘learning with, from and about one another’ to assist collaboration in practice in the future. IPL recognised to play a vital role in patient care and the United Kingdom (UK) government has given it priority for undergraduate education. IPL provides HCP undergraduates the opportunity to develop knowledge and understanding of clinical and non-clinical skills whilst working with other undergraduates, to cultivate professional attitudes and approaches that will lead to team-oriented provision of high quality patient care.

**Aim:** To survey undergraduates from HCP programmes across the UK about the value they place upon IPL opportunities within their course.

**Methods:** A questionnaire based on RIPLS questionnaire was created, piloted and amended prior to dissemination to 13 HCP programmes, to collect data on student perceived-value of IPL. Data collected from 246 undergraduates across all years of study on programmes was analysed for statistical significance using Chi squared test.

**Results:** Summary of undergraduate responses to a single question from the ‘Perceived value of IPL’ questionnaire:

Graph to illustrate attitudes of undergraduate HCPs about the statement "An inter-professional team will improve overall quality of patient care"



This chart demonstrates a similar profile of responses from all HCP undergraduate groups. However, statistical analysis of the responses to this statement demonstrated a significant difference in the opinions of pharmacy and medical undergraduates, with medics placing less value upon the role of the inter-professional team in the delivery of high-quality patient care.

**Conclusion:** The study demonstrated undergraduate HCP groups have a positive perception of IPL, identifying dental students most likely to be unaware of the benefits of IPL. Other HCP undergraduate groups have shown good knowledge and understanding, although some groups showed stereotypical views about other HCP groups. Students perceived IPL to be effective within courses where it has been successfully implemented, however strategies need to be developed to ensure full benefit is gained from this experience.

**ERP10. Analysing the disconnect between education theory and practice using the Community of Practice Framework (CoPF) on Qatar University’s (QU) PharmD**

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**Presenting author:** Banan Mukhalalati

**Keywords:** Constructivist Theory, Communities Of Practice Framework(Copf), Qatar University (QU), Pharmd Programme, Thematic Analysis

**Background:** Duncan-Hewitt and Austin (2005) argue that in the last two centuries, pharmacist education was shifted from apprenticeship into universities. This shift created a gap between education theory and education practice Therefore, there is a need to understand the role education theory plays in educational practice. Using the lens of constructivist educational theory, a CoPF has been constructed to examine this gap.

**Aim:** To use the developed CoPF in analysing the QU PharmD programme from the designer’s perspective.

**Methods:** This study consists of two stages: Stage 1: Development of CoPF through a rigorous method of literature review, analysis of relevant sources, and peer review with pharmacy education scholars. Stage 2: Conduct of interviews with programme designers. These interviews were transcribed and analysed using thematic analysis.

**Results:** A theoretically informed CoPF comprising six sections: enablers, curriculum, instruction, assessment, outputs and challenges, has been constructed. In my presentation, the emerging themes from the analysed interviews with the programme designers will be aligned with the specific corresponding elements of CoPF, in order to explore the disconnect between theory and practice.

**Conclusion:** I hope to demonstrate CoPF’s utility in analysing the QU PharmD programme, foregrounding the role of education theories in improving programme consistency, and better aligning theory and practice, in

order to produce competent students with a stronger professional identity.

#### Reference

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#### ERP11. Do reflective thinking skills improve when reflective activities are integrated into an undergraduate pharmacy curriculum? A cross-over, repeated measures design.

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**Keywords:** Reflective Thinking Questionnaire, Cross-Over Design, Pharmacy Education; Pharmacy Curriculum, Reflective Ability Clinical Assessment (RACA)

**Background:** Evidence posits reflective skills enhance better informed decisions (Mamede *et al.*, 2008), thereby assisting with the complexities of clinical practice (Tsingos, 2013; Tsingos *et al.*, 2014).

**Aims:** To measure the impact of a suite of reflective tasks on the reflective thinking ability of an undergraduate cohort of pharmacy students.

**Methods:** Using a cross-over, repeated measures design, newly developed reflective modules were integrated into an undergraduate pharmacy curriculum. Outcomes were evaluated with a novel strategy, Reflective Ability Clinical Assessment (RACA) and modified Reflective Thinking Questionnaire (Kember *et al.*, 2000) to identify depth and changes in reflective thinking capacity.

**Results:** Significant improvements in three indicators of reflective capacity (reflection  $p < 0.01$ ; critical reflection  $p < 0.01$ ; reflection plus critical reflection  $p < 0.01$ ) were observed.

**Conclusion:** Integration of reflective activities into a pharmacy curriculum improved reflective thinking. Enhancing students' reflective skills stands to influence their future clinical decision making capabilities.

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#### ERP12. Pharmacy student opinion of peer feedback on formative objective structured clinical examination (OSCE) performance

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**Presenting author:** Roisin O'Hare

**Keywords:** Teaching, Undergraduate, Peer Feedback, Pharmacy, OSCE

**Background:** Learners acquire knowledge and develop skills more rapidly and more effectively when they have a clear understanding of what is required in order to achieve the expected standard. Peer feedback supports the learning process by providing immediate comment on student performance alongside suggestions for improvement.

**Aim:** To explore the opinions of fourth year pharmacy undergraduates on the process of delivering and receiving peer feedback on performance in formative OSCE.

**Methods:** Two pre-piloted, ethically approved questionnaires; 31 and 39 item respectively, evaluated the perceptions of undergraduate pharmacy students on peer feedback on OSCE performance. The questionnaires were administered pre and post a workshop on peer feedback which incorporated formative OSCEs. Analysis was via Fischer's exact test with free text analysis using thematic analysis.

**Results:** Ninety percent (121/134) and 81% (109/134) students responded to the pre and post OSCE surveys respectively. Student belief in their professionalism towards each other was not significantly altered pre and post workshop (93.4% vs. 98.1%). However, student opinion regarding the value of peer feedback altered

significantly; in the pre-questionnaire 49.6% agreed or strongly agreed that feedback was only worthwhile if it came from a reliable source such as lecturers comments decreasing to 29% ( $p = 0.002$ ) post workshop.

**Conclusions:** In the pre-questionnaire, students underestimated the value of peer feedback in relation to improving their performance, however with appropriate training and support during the workshop, most appreciated the value of developing peer feedback skills. The increased appreciation of peer feedback did not impact on the desire for tutor feedback.

### ERP13. What do fourth year MPharm students think of clinical pharmacist teaching during experiential placements?

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**Keywords:** Clinical Teaching, Experiential Learning, Undergraduate, Pharmacists

**Background:** Hospital pharmacy experiential placements within the MPharm illuminate complex subjects via the management of real patient cases and to help to student integration of knowledge into practise.

**Aim:** To establish Level four pharmacy students' opinions on the quality of clinical teaching provided by pharmacist tutors during their fourth year hospital placement.

**Methods:** All final year undergraduate pharmacy students ( $n=134$ ) were invited to complete a pre-piloted, ethically approved 21 item questionnaire via email. Data was analysed using SPSS. Descriptive statistics were used and chi square where appropriate with a significance level of  $p < 0.05$ . Free-text comments were analysed via thematic analysis.

**Results:** Ninety-two questionnaires were completed (68.7%). Over 67% of the sample reported that their confidence in drug knowledge and proficiency in clinical skills had improved by the end of the hospital placement. Over 84% of the students rated each of the tutor characteristics as 'good' or 'very good'. Respondents who rated quality of clinical teaching highly were more likely to indicate that they had received sufficient feedback from their pharmacist tutor ( $p = 0.002$ ), that it was timely ( $p = 0.001$ ), and that it helped improve OSCE performance ( $p = 0.001$ ). Key themes of professional socialisation and contextualisation of knowledge were identified from free-text comments.

**Conclusion:** The results of this study suggest that students valued the support provided by the pharmacist tutor in hospital specifically in relation to the improvement in their confidence in drug knowledge, proficiency in skills post placement, as well as professional socialisation.

### ERP14. Horses for courses - enhancing feedback provision

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**Presenting author:** Louise Hughes

**Keywords:** Student Perceptions, Feedback

**Background:** Feedback is essential for students' development, however feedback is one of the areas whereby United Kingdom (UK) university students are least satisfied with their course (HEFCE, 2014).

**Aims:** To investigate the views of undergraduate pharmacy students at a UK school of pharmacy in relation to feedback usage and preferences.

**Methods:** Following Ethics approval and piloting, an anonymous questionnaire was provided to all 3rd year pharmacy undergraduate students for self-completion. Data was analysed using SPSS.

**Results:** Of 109 students, 75 responded (69%); almost all of these (97%) always read the feedback they receive. Written feedback was the most preferred format (49%), followed by verbal feedback (31%); seven students had no preference. Only four students preferred video / audio file feedback, although 34% would like to see wider use of technology for feedback. Students preferred individual feedback (85%) to generalised (4%) and most preferred a mixture of positive and negative comments (85%). Preferred settings were a 'drop in clinic' (29%), one-to-one appointment (20%) or feedback that could be taken away to be reviewed at their preferred time and location (20%). Feedback relating to the task (44%) and process (31%) were preferred over encouraging self-evaluation (1%) or relating to the individual (6%).

**Conclusion:** The findings reveal that although feedback was desired by the students, different students had different feedback preferences. In order to enhance the benefits of the feedback provided to students, therefore, educators should strive to use a variety of formats and approaches.

### Reference

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**ERP15. Identifying factors that motivate final year pharmacy undergraduates with regard to academic study. An exploratory study at one UK university**

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**Presenting author:** Dai N. John

**Keywords:** Motivation, Undergraduate, Pharmacy Education, Self-Determination Theory, Interviews

**Background:** Academic motivation plays an important role in student learning and various factors influence the motivation of undergraduate students. To date, no research has been published specifically in relation to United Kingdom (UK) final year pharmacy undergraduates.

**Aim:** To explore factors that motivate final year Cardiff MPharm students in relation to their degree.

**Methods:** One-to-one semi-structured interviews were used following research ethics committee approval. A combination of purposive and convenience sampling was employed. Interviews were audio-recorded, transcribed ad verbatim and analysed thematically. A deductive approach using self-determination theory and a data driven inductive approach were used.

**Results:** Twenty-four interviews were conducted. Students were motivated by internal and external stimuli. Interest in a subject, relevance to pharmacy, novelty and significant contribution to grades motivated students positively. On the other hand a lack of enjoyment, interest and/or perceived relevance affected motivation negatively. Curricular issues such as a full teaching timetable and bunching of coursework submission/assessment dates sometimes decreased motivation. Peers and family members also affected motivation, often positively. Faculty could positively or negatively affect an individual's motivation to attend lectures, with different students sometimes reporting the same lecturer resulted in increased or decreased motivation to attend.

**Conclusion:** Self-determination theory can be used to explain final year MPharm student motivation. Motivation of students was complex and multifactorial involving both heightening and negative intrinsic and extrinsic elements. Findings have been passed to the School's Learning, Teaching and Assessment Committee together with suggestions for how academic motivation may be increased, acknowledging intra- as well as inter-student differences.

**ERP16. Numeracy skills improve for most but not all pharmacy students: Patient safety implications in practice**

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**Presenting author:** : Dai N. John

**Keywords:** Education, Numeracy, Pharmacy, Assessment, Calculations

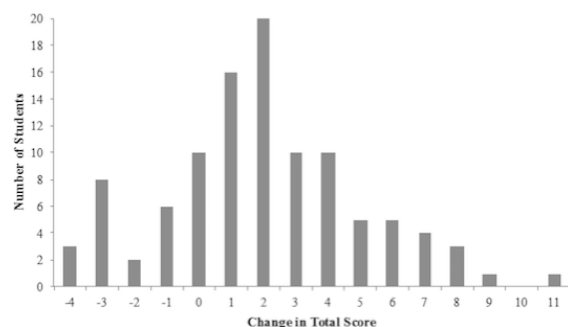
**Background:** The importance of numeracy, especially in healthcare, is irrefutable. Little is known about changes in the numeracy skills of pharmacy students as they progress through the MPharm programme.

**Aim:** The aim of the study was to characterise the inherent numeracy skills of a cohort of students between entry to and in the final year of the MPharm.

**Methods:** Ethics approval was obtained from a university ethics committee. A contextualised diagnostic numeracy test was administered to a cohort of MPharm students in the first week of MPharm One (Y1) and at the end of MPharm Four (Y4), without prior notification. The test contained 25 medicines-based calculations within 45 minutes without a calculator, plus identifying their confidence in each answer being correct. The data were analysed using Wilcoxon signed-ranks SPSS v.20.

**Results:** In total 104 students sat the test in each year. Students performed significantly better ( $p < 0.001$ ) in Y4 (mean 22.1/25) than in Y1 (mean 20.1). Students' mean confidence increased from 20.5 in Y1 to 23.8 in Y4 ( $p < 0.001$ ). Seventy-five students (72%) improved, 19 students (18%) decreased while 10 student scores remained the same (Figure 1). Forty-four students (42%) had incorrectly gauged their numeracy skills to have improved, worsened or remained the same. Students were least competent in unit conversion despite being highly confident in both years.

**Conclusion:** Errors in calculation including unit conversion and inaccurate perceptions of their ability could potentially lead to patient harm post-graduation. These results indicate that strategies are needed for some individuals to review and/or assess numeracy skills in practice.



**ERP17. Pharmacy faculty as stakeholders in curriculum development. An underutilised but informed and useful resource**

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**Presenting author:** Bethan Copp

**Keywords:** Curriculum Development, Stakeholders, Preparation For Practice

**Background:** Undergraduate pharmacy curricula are continually reviewed and developed to better prepare graduates in practice. Views of external stakeholders are routinely sought but capturing in-depth views of faculty are not frequently obtained in a formal manner.

**Aims:** This study aimed to explore the opinions of pharmacy faculty on the ways in which graduates may be even better prepared for practice early in their careers.

**Methods:** In line with a constructivist paradigm fourteen one-to-one semi structured interviews (one - two hours) were conducted with faculty and teacher-practitioners from a range of backgrounds, including pharmacist, non-pharmacist, discipline area, career pathway, experience and seniority. With ethics approval, interviews were audio-recorded, transcribed verbatim and input into NVivo 10 software prior to inductive thematic analysis.

**Results:** Many acknowledged that although student attitudes were generally good, some participants highlighted that a small minority of students lacked confidence, skills such as decision-making and dealing with uncertainty. Increasing exposure to practice, patients and other healthcare professions was suggested as one way to further improve confidence more broadly. Assessment at admission and development of attitudes, values and skills throughout the MPharm were also suggested. Participants welcomed a move from assessment of knowledge within the degree towards integrated problem-solving to better prepare them for practice.

**Conclusion:** The use of faculty, an under-utilised resource, to formally identify areas of good practice and suggestions for improvement has been useful. The opinions of recent graduates and pre-registration employers are being sought to identify to what extent the views of educators align with other stakeholders.

**ERP18. 'Stepping into the patient's shoes': Pharmacy students' views on medication adherence**

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**Keywords:** Patient Perspective, Medication Adherence, Empathy, Active Learning

**Background:** Thirty - fifty percent of medication for long term conditions is not used as prescribed; patient perspective plays a vital role on medication adherence.

**Aim:** The aim of this study was to evaluate a novel teaching session, designed to provide students with an insight on barriers to medicine-taking.

**Methods:** A week long medication simulation activity took place with MPharm I students. A standardised form was used to monitor students' medication adherence to one of five dosing regimens.

Quantitative data were analysed using SPSS v.20. Adherence percentage was calculated and Mann-Whitney U and Kruskal Wallis tests were used to assess differences in adherence with regards to gender and dosing regimen. Student comments were thematically analysed. School research ethics approval was obtained.

**Results:** Of the 115 students, 76 (66%) returned the form. 75% reported 80% adherence or more. There were no statistical differences in adherence rates based on gender or number of doses of medicines. Emerging themes related to the challenges of adhering to medication (*i.e.* timing, taste, convenience, tiredness, dosing, day of week, routine, swallowing, importance and availability). Use of resources (*e.g.* setting alarms) was mentioned, as was the value gained from empathising with patients. The activity was more challenging than students first thought, regardless of the complexity of the dosing regimen, but perceived as beneficial.

**Conclusion:** Although only two-thirds of students returned the adherence monitoring form, this mock medicine activity was successful in teaching students about patient perspectives on medicine-taking. Further research is needed to allow opportunities for enhancing the teaching of empathy in undergraduate pharmacy education.

**ERP19. Measuring students' perceptions of the educational environment of a new pharmacy school using the DREEM questionnaire**

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**Presenting author:** Louise Hughes

**Keywords:** Student Perceptions; Educational Environment

**Background:** In 2010 Taylor's University (TU), Malaysia, started a new pharmacy programme.

**Aim:** To determine students' experiences of the educational environment at Taylor's.

**Methods:** DREEM (Dundee Ready Education Environment) has been used to produce readings and diagnostic analyses of undergraduate educational environments in international health professional degrees (Roff, 2005). A version of DREEM was administered on paper at the start of the academic year to all TU 2<sup>nd</sup> (n=44) and 3<sup>rd</sup> (n=20) year pharmacy students in a timetabled teaching session. They were asked about their views relating to the previous academic year. Data were analysed using SPSS.

**Results:** The response rate was 100%. Overall, year three students (Y3) reported a better educational environment in their second year than year two student (Y2) views relating to their first year (135/200 vs. 125/200). In subdomain analyses, Y3 viewed the following aspects of their second year more favorably than Y2 did relating to their first year experience: significantly higher scores for Y3 for learning (means 33.9 vs. 31.7;  $p = 0.037$ ), teacher (30.8 vs. 25.9;  $p < 0.001$ ) and atmosphere (31.8 vs. 28.4;  $p=0.014$ ). There was no difference for academic self-perceptions.

**Conclusion:** This study has shown that both cohorts perceived the learning environment positively. Nevertheless, the study revealed some areas of enhancement. These have already been addressed. Future qualitative research could explore the reasons for views.

#### Reference

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#### ERP20. Re-designing the student research experience: a sustainable research skills module

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**Presenting author:** Sarah Wilson

**Keywords:** Pharmacy, Research Project, Curriculum Design, Research Methods

**Background:** There is an increasing need to build practice research capacity and provide evidence of pharmacy's contribution to improving patient care. United Kingdom (UK) and Australasian undergraduate research projects do not necessarily provide the skills and competencies necessary to apply research to practice and generate reliable data (Stupariu, 2011). To provide a more fit-for-purpose research training we have designed an innovative programme which replaces the research project with a taught research skills module, within which students design and develop their own research proposal.

**Methods:** The module aims to develop an understanding of how research processes underpin evidence-based medicine, through exploring research processes and methodologies. This includes taught sessions and interactive workshops on research design, qualitative & quantitative methods and data analysis. Assessments, evaluating all aspects of learning, involve the completion of a reflective workshop diary; a literature review task, and an evidence-based research proposal.

**Results:** Following the final assessment the evaluation will: compare achievement against previous years; survey student and staff satisfaction; explore the perceptions of staff and students through qualitative interviews.

**Conclusions:** The workshop diaries indicate that the majority of students have engaged with the workshops and applied their learning to their own projects, demonstrating the learning of a broader range of skills than in the traditional model.

#### Reference

Stupariu, I., Bagbrough, I.S., Millar, J.I., Rogers, P.J., & Sutton, J.W. (2011). Research in pharmacy and the role of the undergraduate programme: Course Directors' perspectives. *International Journal of Pharmacy Practice*, 19 (Suppl. 2) 10-11.

#### ERP21. Peer-assisted learning: lessons from a pilot study

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**Presenting author:** Sarah Wilson

**Keywords:** Peer-Assisted Learning, Student Engagement, Pharmacy, Dispensing Competency, Prescription Checking

**Background:** Peer assisted learning (PAL) engages students in the learning process and has been found to be beneficial in a range of academic disciplines. To support student engagement with dispensary skills, 2<sup>nd</sup> - 4<sup>th</sup> years



were invited to assist in 1st year workshops to assess the acceptability both to students and staff, and pilot a method for evaluating academic gains.

**Methods:** Thirteen students ('seniors') supported three 1<sup>st</sup> year workshops; undertook a prescription-checking exercise and completed a dispensing competency workbook to establish their knowledge baseline. As part of the assessment seven repeated the checking exercise and ten attended face-to-face interviews. All 130 1<sup>st</sup> years took part in group feedback sessions.

**Results:** The majority of staff and students gave very positive feedback and all seniors would both recommend and repeat the experience. Taught students found the seniors approachable, supportive and emphasised the benefits of shared experiences and tips. A minority of taught students felt that some of the seniors lacked knowledge. Seniors felt that they had grown in confidence, particularly in skills and those who completed a re-assessment showed improvement, especially in the critical legal and clinical areas. Seniors would like to be more involved in the design of the teaching sessions.

**Conclusion:** The results showed that PAL is beneficial in terms of role modelling and cross-year socialisation. Involvement of seniors in the session design may assist in overcoming any lack of knowledge. Developing a robust assessment may require a more discriminating testing of knowledge and necessitate a control group for comparison.

### ERP22. Implementation of a standardised template for student curriculum vitae assignments

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**Keywords:** Educational Assessment, Curriculum, Career Counselling

**Background:** For US pharmacists, the curriculum vitae (CV) is the traditional format for comprehensively documenting skills, experience, and accomplishments relevant to clinical and academic positions and is required for many job applications. Students are required to submit CVs annually at the University of Arizona (UA). Recent review of student CVs revealed that important content relevant to future job applications was frequently omitted.

**Aim:** To improve the quality and rate of inclusion of pertinent information on student CVs.

**Methods:** A CV template specifically tailored to reflect opportunities available to UA students was created in conjunction with the Assessment Committee. It included all traditional fields, specific required components of the curriculum such as the student research project, and prompts for optional co-curricular activities such as

student group membership. The template was provided to students but was not required. All CVs will be graded using a standardised rubric that assesses completeness, professionalism, and mechanics. The CVs submitted the year before the template introduction will be graded using the same rubric and used as a control for comparison. Qualitative data specific to perceived value of the template, ease of use, and quality of the result will be collected from faculty interviews and student focus groups.

**Results:** The template design and implementation took approximately eight hours of faculty time. Initial results for this work-in-progress study suggest a positive result but additional data must be collected for a complete analysis.

### ERP23. Pharmacy students' anticipated levels of job satisfaction and workplace challenges: Implications for pharmacy education

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**Presenting author:** Judith Burrows

**Keywords:** Undergraduate Pharmacy Curriculum, Pharmacy Education, Pharmacy Practice, Job Satisfaction

**Background:** Pharmacy education must ensure that graduates are prepared for the challenges of internship and beyond.

**Aims:** This study aims to investigate the anticipated levels of job satisfaction and perceived difficulties of pharmacy practice for students approaching graduation. The implications for pharmacy education are also explored.

**Methods:** A cohort of pharmacy students approaching graduation was invited to complete an online survey containing questions relating to anticipated levels of job satisfaction and difficult work situations once registered. Ratings of job satisfaction were analysed using descriptive statistics. Perceived difficulties of work were analysed and categorised.

**Results:** While 47% (118/252) of the cohort attempted the survey, not all questions were answered. Six of 116 (5%) students rated their anticipated level of job satisfaction as a pharmacist as 'poor', 7% as 'suboptimal', 36% as 'acceptable', 45% as 'high' and 7% as 'exceptional'. Perceived difficulties of work most commonly related to dealing with difficult customers in 58 of 102 (58%) of responses. Other difficulties included time constraints due to heavy dispensing loads (13%), multitasking (8%), being underappreciated (7%) and the monotony of work (3%).

**Conclusion:** While over half of the participants rated their level of job satisfaction as 'high' or 'exceptional', it is unclear whether these anticipated levels of job satisfaction become a reality. Pharmacy educators should be made aware of the rationale for these ratings and perceived difficulties of work following graduation to ensure that graduates are optimally prepared to meet the challenges of professional practice.

**ERP24. Can a blended learning programme influence pharmacy professionals willingness to raise concerns?**

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**Keywords:** Professionalism, Raising Concerns, Change To Practice, Blended Learning

**Background:** Following media coverage and the Andrews Report (Andrews & Butler, 2014) of inadequate patient care within the managed sector in Wales, WCPPE developed a training programme to address professionalism and an individual's responsibility for raising concerns when observing unprofessional behaviour.

**Aims:** To evaluate the perceived impact on practice that a blended learning programme on professionalism and raising concerns had on pharmacy professionals within the managed sector in Wales.

**Methods:** Pharmacy professionals were asked to complete an e-learning module on professionalism followed by a case-based discussion workshop. All participants were asked to complete a questionnaire to ascertain any perceived change in knowledge or confidence to raise concerns, as well as any intention to change practice after completion of the training.

**Results:** One thousand, one hundred and fifty-one pharmacy staff completed the learning programme with 1062 people completing a questionnaire (92%). A reported change in knowledge of professionalism was reported by 94% of the respondents and a change in confidence in their ability to raise concerns by 54%. Following completion of the training 96% of the respondents stated that they had learnt something new and 44% intended to do something differently, of which 10% stated they would now be more proactive to raise concerns.

**Conclusion:** The blended learning approach was effective at increasing the pharmacy team's knowledge of professionalism and had a positive influence on their willingness and confidence to raise concerns.

**Reference**

Andrews, J. & Butler, M. (2014). *Trusted to Care An Independent Review of Princess of Wales and Neath Port Talbot Hospitals.*

**ERP25. Pharmacy students' preparedness for the provision of cardiovascular disease risk assessment**

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**Presenting author:** Judith Burrows

**Keywords:** Cardiovascular, Health Assessment, Experiential Education, Preparedness; Barriers

**Background:** Considering that cardiovascular disease (CVD) is the leading cause of death worldwide, it is important to prepare future pharmacists for the provision of services known to reduce CVD and contributing risk factors.

**Aims:** To explore pharmacy students' perceptions of their learning and confidence in their abilities to provide CVD risk assessments, as well as to explore their perceived barriers for the provision of this service upon graduation.

**Methods:** A quantitative cross-sectional survey of third-year, fourth-year, and PharmD students at the College of Pharmacy, Qatar University using an online questionnaire. Data collection was performed using SurveyMonkey®, data was then extrapolated into SPSS® to perform descriptive and comparative statistical analysis.

**Results:** A response rate of 81% was obtained. From this list of health assessments, the majority of students correctly identified (in descending order) age, current smoking status, blood pressure, gender, total cholesterol level, and HDL-cholesterol level, as risk factors necessary for estimating an individual's CVD risk. Students assigned high average ratings on the Likert scale for their perceived knowledge and skills in CVD risk assessment. The barrier for the provision of CVD risk assessment services upon graduation to which the students assigned the highest rating on the Likert scale was the lack of support by other health care providers.

**Conclusion:** Although pharmacy students' perceive their undergraduate education in CVD risk assessment as strong, they also perceive that the provision of CVD risk assessment services in the current pharmacy practice environment in Qatar faces many barriers that will need to be addressed.

**ERP26. Survey of hospital pharmacists' perceptions of the PharmD programme to prepare the PharmD graduates to work in hospital settings**

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**Presenting author:** Teeraporn Chanakit

**Keywords:** Hospital Pharmacists, Perceptions, PharmD Programme, Pharmacy Education, Thailand

**Background:** The Doctor of Pharmacy programme (PharmD) aims to produce pharmaceutical care experts who work in close cooperation with the health care teams. However, there is a lack of evidence about preparing PharmD graduates for employment in hospital settings.

**Aim:** To explore hospital pharmacists' perceptions towards the PharmD programme in preparing the PharmD graduates to work in hospital settings in Thailand.

**Methods:** A cross-sectional survey questionnaire was distributed to 180 hospital pharmacists at the 2013 Hospital Pharmacy Association conference. Descriptive statistics were used to present the participants' demographics and perceptions. An inductive thematic analysis was used to analyse the open-ended written responses.

**Results:** Ninety-eight valid responses were included in the data analysis. Seventy five respondents (76.5%) perceived that the PharmD programme produced graduates who had knowledge and skills in pharmaceutical care, were well coordinated with healthcare team and were ready to work as clinical pharmacists. The PharmD curriculum focused on preparing graduates in specialised areas (e.g. ward round, special clinic services) and services which mainly provided in large hospitals. Respondents suggested that the PharmD curriculum should include more public health subjects (e.g. health promotion & prevention and consumer protection) to prepare students to work in primary care hospitals, as well as providing them with clinical knowledge and skills. However, few faculties planned to produce PharmD graduates to serve in primary care settings.

**Conclusion:** Hospital pharmacists perceived that the PharmD programme produced PharmD graduates who meet hospitals' needs and are ready to work as clinical pharmacists.

**ERP27. Survey of community pharmacists' perceptions of the PharmD programme to prepare the PharmD graduates to work in community pharmacy settings**

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**Presenting author:** Teeraporn Chanakit

**Keywords:** PharmD Graduates, Community Pharmacists, Perceptions, PharmD Programme, Thailand

**Background:** Community pharmacists in Thailand have extended their roles to provide pharmaceutical care services. PharmD graduates working as community pharmacists were expected to contribute to this service. However, there is a lack of evidence about preparing PharmD graduates for employment in this setting.

**Aim:** To explore community pharmacists' perceptions towards the PharmD programme in preparing PharmD graduates for employment in community pharmacies.

**Methods:** A cross-sectional survey questionnaire was distributed to 200 community pharmacists at the 2013 Community Pharmacy Association conference. Descriptive statistics were used to present the participants' demographics and perceptions. An inductive thematic analysis was used to analyse the open-ended written answers.

**Results:** Forty valid responses were included in the data analysis. Twenty six respondents (65%) agreed that PharmD graduates were suitable to work as community pharmacists as they have knowledge and skills in pharmaceutical care. However, nine respondents perceived that PharmD graduates required more preparation to work in community pharmacies. They

thought that the PharmD curriculum provided fewer experiences in community pharmacies as compared to clerkships in hospital settings. The PharmD curriculum should increase applied knowledge (e.g. disease screening, home health care services and marketing). About half (47.5%) of respondents felt that there was no difference in competency between PharmD graduates and BPharm graduates with regards to their work performance in community pharmacies.

**Conclusion:** Community pharmacists perceived that PharmD graduates had adequate knowledge of pharmaceutical care. However, more or different preparations were required before the PharmD graduates were deemed suitable for employment in community pharmacy settings.

### **ERP28. Health care providers' perceptions of pharmaceutical care provided by the Doctor of Pharmacy (PharmD) graduates in hospital settings in Thailand**

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**Keywords:** Health Care Providers, PharmD Graduates, Hospital Pharmacists, Perceptions, Thailand

**Background:** The PharmD programme is designed to produce a competent pharmacist who provides pharmaceutical care to patients and works closely within a health care team.

**Aim:** To explore the perceptions of physicians and nurses regarding hospital pharmacy services provided by PharmD graduates.

**Methods:** Semi-structured interviews were conducted with six physicians and five nurses at two hospitals in Thailand where PharmD graduates were employed. The data were audio recorded, transcribed verbatim and analysed using an inductive thematic analysis.

**Results:** Physicians and nurses had positive views about pharmacy services provided by the PharmD graduates and thought that they were effective members of the healthcare team. They requested PharmD graduates' participation during ward rounds (e.g. neonatal care unit, intensive care unit and cardiac care unit) and patient counselling in the specialised ambulatory care clinics (e.g. warfarin, oncology clinic) while nurses needed the PharmD graduates to provide input for their medication consultation especially with medicines which need close monitoring, adverse drug reaction monitoring and IV admixtures. The majority of the health care providers had good working relationships with the PharmD graduates. Physicians suggested the PharmD graduates need to develop positive consultation techniques and communication skills. Unfortunately, none of the hospitals surveyed could allocate PharmD graduates in all units as requested by the health care team, due to the fact that the pharmacy department had a high dispensing workload and a shortage of pharmacy staff.

**Conclusion:** Health care providers reported high satisfaction with the pharmacy services provided by the PharmD graduates working in the two hospitals in Thailand.

### **Teaching innovation oral presentations**

#### **TIO1. The Medicines Optimisation Tool - A new way of assessing the development of clinical learning from practice**

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**Presenting author:** Andrea Taylor

**Keywords:** Assessment, Practice-Based Learning, Medicines Optimisation

**Objective:** Providing pharmaceutical care is a well-established role for pharmacists in England. To prepare pharmacists for this task, many postgraduate pharmacy degree programmes use pharmaceutical care plans (PhCPs) as a tool both to facilitate learning and as an assessment method. PhCPs can lack focus on medicines optimisation and the holistic patient experience, hence a new tool, the Medicines Optimisation Tool (MOT), has been created. In this paper we evaluate the design, development and introduction of the new tool.

**Design:** A literature review on assessing learning from practice was used to inform peer review events where aims, objectives and structure of a new tool were agreed. Key areas of novelty in the tool include a clearer patient

focus; emphasis on clinical decision making and better synthesis of evidence in Clinical Discussion Points. After preliminary design and testing, the tool was piloted on existing mentors (preceptors) supporting students on a UK-based Postgraduate Diploma in Clinical Pharmacy Practice.

**Assessment:** Two cohorts of students completed surveys to capture their experiences of using the MOT tool as part of the assessment on the Clinical Diploma. Data were collected at three points during the academic year 2013/4 (September, October and May).

**Conclusion:** Responses from students indicated a preference for the new tool in terms of focus, structure and the development of appropriate knowledge for practice. Action points for refinement to the tool included enhanced guidance for completion. The tool has now been widely adopted across the programme.

### **TIO2. Walk in clinics - a novel way to teach students about health literacy, patient interactions and citizenship**

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**Presenting author:** Rhiannon Braund

**Keywords:** Health Literacy, Experiential Learning

**Objective:** A series of 'brown bag' clinics (where patients bring in medications that they have questions about) were proposed as an innovative approach to increase the student experience with patients and to increase health literacy in the community.

**Design:** The clinics were free, 'walk in' and held at community venues. Patients could ask any questions about their medicines. Local community pharmacists were invited to take part. These clinics were designed around a 'health literacy' consultation. A three step health literacy approach was employed which allowed students to better appreciate patient's health and medicines literacy. The clinics are offered as an additional resource for patients, complementary to services offered by community pharmacists and general practitioners. Patients were asked to sign consent forms and provide details of their community pharmacy and general practitioner, to allow for referral if the need was identified.

**Assessment:** Students undertook a reflective review of their experience. The students found benefits to this type of approach, in particular 'having to think on their feet' and communicating in plain language. Challenges include uptake from the community, limitations with student numbers, timetabling and staff resourcing.

**Conclusion:** The potential value of these clinics for the students and the community are likely to outweigh the challenges.

### **TIO3. Evaluation of practice portfolios for the credential of 'Advanced Practice Pharmacist' in Australia- pilot program**

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**Presenting author:** Andrew Matthews

**Keywords:** Pharmacy, Advanced Practice, Practice Portfolio, Evaluation, Credential

**Objective:** To test the evaluation of practice portfolios and associated standards, policies and procedures in a pilot program to credential advanced practice pharmacists in Australia.

**Design:** An Advanced Pharmacy Practice Framework (APPF) for Australia was developed in 2012 and provides the basis for recognition of pharmacist advanced practice. In December 2013, the Australian Pharmacy Council (APC) was endorsed by the organisations representing the pharmacy profession, as the independent entity responsible and accountable for credentialing advanced practitioners. The Steering Committee (that developed the APPF) agreed that a practice portfolio could be used for collecting evidence of a pharmacist's development and would serve as the basis for evaluating pharmacists for credentialing. In November 2014, pharmacists were invited to submit an expression of interest (EOI) to participate in the pilot. The pilot encouraged applications from all pharmacy backgrounds, areas of expert professional practice and along various points of the advanced practice continuum. Applicants were selected in December 2014 and in February 2015 were provided an Evidence Guide on how to prepare a portfolio for evaluation.

**Assessment:** Fifty participants were selected from 138 EOIs. They reflected a broad range of practice environments including community pharmacy, hospital

pharmacy, independent medicines management, research, education, policy and advocacy, industry and regulatory affairs.

**Conclusion:** The breadth of practice environments and areas of expert professional practice reflected in the participants bodes well for testing the applicability of the APPF and evaluation of the portfolios against APC's standards/policies/procedures. Portfolios must be submitted by end-April 2015 for evaluation in May-June 2015.

#### **TIO4. Getting ready for the real world: Evaluation of a post-rotational P4 seminar**

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**Presenting author:** Rolee Das

**Keywords:** Capstone, Professional Development, Advanced Practice Experience, Career Preparation

**Objective:** To assess and describe the impact of a career transitioning program for fourth professional year (P4) students.

**Design:** A post-rotational seminar was developed for P4 students prior to their final cycle of Advance Pharmacy Practice Experiences. The program consisted of lecture-style pharmacotherapy reviews, small-group sessions focused on various skills/competencies, and guest speakers. Small group sessions included physical assessment, games for drug therapy review, handling difficult situations, and an ethics debate. Guest speakers reviewed legal issues for practicing pharmacists, medication therapy management, and pathways to career success. Results of an anonymous ten question survey were collected at the conclusion of the program. Areas evaluated included guest speakers, small section activities, and the perceived benefit for pharmacy practice.

**Assessment:** The response rate was 89% (192/215). The usefulness of small group content was rated as: knowledge reinforcement through game shows 87%, review of difficult situations 62%, ethics debate 60%, and patient interviewing/physical assessment 62%. A large majority (85%) of students found the guest speaker presentation regarding legal issues for practicing pharmacists relevant. Topics regarding pathways to success, medication therapy management, and pharmacy organisations were also considered helpful, with 74%,

68% and 66% agreeing/strongly agreeing to their benefit, respectively. Fewer students agreed to the benefit of discussions regarding immunisation practices (33%) and managed care services (50%).

**Conclusion:** Student feedback demonstrated value in preparation for career transitioning. Annual review of content by students will help to ensure quality of future post-rotational seminars.

#### **TIO5. Increasing awareness of challenges associated with lifestyle modification via the use of mobile application technologies**

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**Presenting author:** Rupal Mansukhani

**Keywords:** Mobile Technology, Application, Hands On Activity

**Objective:** To encourage empathy and increase awareness of the difficulties patients may encounter when attempting to lose weight by incorporating an interactive mobile technology activity.

**Design:** Students were instructed to track calories for two days prior to an 80-minute class on self-care strategies for weight loss. Students were then instructed to download the 'My Fitness Pal' application or go online to track their calorie intake for three days. Students were encouraged to track everything they consumed. Results were collected at baseline, pre-lecture, and post tracking on my fitness pal. The survey evaluates whether the activity encouraged empathy and increased awareness on the challenges patients face. Student perceptions regarding the activity's value and impact of mobile technology were assessed.

**Assessment:** One hundred and fifty students completed the survey. The majority of students felt after tracking their calories, they can empathise with patients trying to lose weight. After five days of tracking calories, students felt nutritional counselling is important for pharmacists to incorporate into counselling sessions. Majority of students said they would recommend mobile technology to a patient to lose weight and found it to be valuable for pharmacists.

**Conclusions:** Many students do not understand the difficulty associated with tracking calories to lose weight. This project was designed to help students understand the importance of empathy when counselling a patient on lifestyle modifications, to expose them to novel technologies available to help support patients in their weight loss attempts, and to give them first-hand experience in tracking calories.

**TIO6. Is there any value in pre-registration pharmacists learning from nurses?**

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**Keywords:** Nurses, Intern, Pharmacist, Communication

**Objective:** Traditionally intern pharmacists within Brisbane Hospitals have only been exposed to small amounts of group learning with intern doctors or with other allied health disciplines, but not with nursing. We decided to allocate intern pharmacists time to shadow clinical nurses in three large teaching hospitals in Brisbane Australia. The objective of this process was to explore key learning outcomes expected and achieved by the intern pharmacists, the clinical nurses and the clinical nursing and pharmacy educators.

**Design:** Clear learning objectives were not set before shadowing. This was intentional so as to allow exploration of all potential learning opportunities. Each intern pharmacist was interviewed (on camera) before shadowing nurses. They were asked whether they thought that they would learn anything relevant to their role as a pharmacist and if so what. They were also interviewed after shadowing nurses and asked similar questions. The clinical nurses and the clinical educators were also interviewed.

**Assessment:** The perceived learning goals varied widely between all of the stakeholders. In particular the intern pharmacists did not have clear picture of the value of shadowing nurses before shadowing.

After the shadowing the intern pharmacists reported that this process had been valuable. Intern pharmacists reported learning a lot from nurses about communicating with patients, especially difficult ones.

**Conclusion:** Nurse shadowing is a valuable component to intern training for hospital pharmacists. Key learning objectives for this should include improving communication skills.

**TIO7. Primary school visits assist pharmacy students to become effective communicators**

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**Keywords:** Communication, Health Literacy, Experiential Learning, Self Reflection, Medication Adherence

**Objective:** About 60% of Australia adults have poor health literacy skills and thus have difficulty understanding the health information that is communicated by clinicians and in pharmacies. The objective of organising pharmacy students to deliver health presentations at primary schools was to teach them to deliver health messages in plain language, adjusted to the health literacy of their audience. Communicating key messages appropriately is a skill needed by all pharmacy students if they are to be effective clinicians and assist patients with medication adherence.

**Design:** Pharmacy students, supervised by a pharmacist academic, developed, and delivered a presentation on the role of a pharmacist and a health topic e.g. asthma, diabetes, to six - twelve yr. old primary school students. The pharmacy students were encouraged to use interactive techniques and graphics to engage their audience in their key messages. If communication was inappropriate, or poorly targeted, classroom chaos resulted.

**Assessment:** The pharmacy students completed an evaluation form and reflection sheet after their school visits. They reflected on the difficulty of effectively conveying meaningful, memorable, focussed messages. The students scored how effective they were at explaining health concepts, repeating main messages, clarifying understanding, and using audience-friendly educational materials. They rated themselves as average communicators. They indicated that the school visits would assist them to reflect on and improve their communication skills.

**Conclusion:** Through practicing the delivery of health messages to children, pharmacy students may improve their general communication skills and thus better assist patients with medication adherence and health goals.

**TIO8. Development and integration of the Reflective Ability Clinical Assessment (RACA) into an undergraduate pharmacy curriculum to enhance reflective capacity**

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**Keywords:** Reflective Thinking, Pharmacy Education, Reflective Ability Clinical Assessment (RACA), Videos, Reflective Statement

**Objective:** To enhance communication, reflective capacity and provide an opportunity for counselling practice prior to oral examinations. Pharmacists make better clinical decisions through reflective practices (Tsingos, 2013, Tsingos *et al.*, 2014). Once informed decisions have been made, pharmacists are required to effectively counsel patients to ensure understanding and reasoning for their decisions.

**Design:** The novel Reflective Ability Clinical Assessment (RACA) was trialed in the second year pharmacy curriculum. It involved three main components: (i) scenario writing; (ii) videos; (iii) reflective statement.

**Assessment:** Reflective processes were assessed through a conceptual rubric based on levels (Boud *et al.*, 1985) and categories of reflection (Mezirow, 1991).

**Conclusion:** The RACA enables students the opportunity to enhance (i) reflective thinking capacity, (ii) engage in paired/ group project work; (iii) counselling through self and peer reflection from videos; (iv) peer and self-reflection on the task itself. It is with self and peer reflection that further improvements in future practice can occur. Furthermore, this assessment strategy could potentially enhance students' performance in their end of semester oral examinations.

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#### TIO9. A 'flipped' pharmacy student-led pharmacology course for physiotherapy students: Trading medicines information for flexibility

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**Presenting author:** Tina Brock

**Keywords:** Interprofessional, Flipped Classroom, Technology Enhanced Learning, Peer-To-Peer Instruction

**Objective:** To evaluate the outcomes of a 'flipped' pharmacy student-led pharmacology course for physiotherapy students on attitudes towards and experiences with interprofessional collaboration.

**Design:** Five senior pharmacy student teaching assistants coordinated a required pharmacology course for physiotherapists using a 'flipped' classroom model (*i.e.* pre-class videos/quizzes to provide foundational instruction followed by interactive in-class group cases to emphasise complex concepts). Surveys were administered at baseline, at the conclusion of the course and following at least one clinical placement (2014 cohort: n = 48; 2013 cohort, n = 41).

**Assessment:** Student evaluation of the technologies, methods and peer learning process was uniformly high. The percentage of students who were aware of the relationships between physiotherapy treatments and medicines increased significantly from the pre- to post-surveys. Physiotherapy students believe interacting with pharmacy students made them more likely to seek help from a pharmacist on their team. Pharmacy student teaching assistants also claimed positive benefits.

**Conclusion:** The 'flipped' classroom peer-to-peer teaching model was well received. Overall, the course improved attitudes towards interprofessional collaboration while also educating students about medication-related issues that can affect physiotherapy treatments. Post clinical placement, physiotherapy students reported sharing their information and collaborative attitudes with their preceptors with positive response. In this case, education is beginning to transform practice.

#### TIO10. Collaborative deployment of a virtual dispensing simulator to better prepare learners for experiential placements

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**Presenting author:** Marcus Ferrone

**Keywords:** Assessment And Testing, Simulation, Computers And Technology, Mydispense

**Objective:** Pharmacy students in the US complete introductory and advanced experiential placements as part of their instruction. But 'readiness' for these placement activities can be difficult to establish and traditional classroom activities can fall short of the goal. With this in mind, faculty at UCSF and UConn sought to deploy an interactive web-based tool (My Dispense) that had been



developed by Monash University to teach/reinforce dispensing skills.

**Design:** Because the tool was originally developed to support Australian dispensing, it had to be adapted extensively for US practice. This was achieved through a series of collaborative concept mapping sessions where process, product and legal standards were reconciled followed by programming changes. Implementation pilots were held in spring 2014 (UCSF - P1 students), Autumn 2014 (UCSF - P1 students, UConn - P3 students). Following the sessions, learners and preceptors completed surveys about their experiences.

**Assessment:** Overall, learners suggested that the software was easy to use, that it enhanced their knowledge and skills of dispensing, and that it should be used early and often in the curriculum. Preceptors suggested that the tool raised the preparedness of students completing introductory placements. Additional analysis is on going.

**Conclusion:** Interactive web-based tools such as MyDispense can be an effective and efficient way to teach practice skills in an enjoyable manner. Collaborating on this project (Monash, UCSF, UConn) was also effective, efficient, and enjoyable. Expansion of the program to other US schools is on going.

#### **TIO11. Active learning in the undergraduate laboratory: The IDEA experiments**

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**Keywords:** Chemistry, Inquiry, Design, Active-Learning

**Objective:** Undergraduate chemistry laboratories are traditionally recipe-based practicals, which are known to work well, and within a tight time-frame. This project sought to create a template which would enable first year chemistry cohorts to perform inquiry-oriented and potentially open-ended experiments, without a recipe. We call these the IDEA Experiments, based on the acronym for Inquire-Design-Explore-Answer.

**Design:** We have designed a six-step approach for inquiry-oriented practicals, which aims to i) adequately prepare students with the aim and background of the experiment; ii) test their preparation; iii) enable students to work collaboratively to generate ideas; iv) design their experiment, and finally; v) perform and; vi) report their results. We use Moodle to deliver multimedia introductions to each experiment, and quiz the students, before they commence the practical. Students are then given the opportunity to design their experiment, and share their ideas with other students, before embarking on the project.

**Assessment:** Students use 'proformas' for completing their report. These have been very useful in keeping students focused on the task, and within the tight timeframe of our undergraduate classes (three or six hours). The proformas assist students in designing methods which are practical and realistic, and guide students in how to appropriately report on the chemistry. Time-markers are included so that students do not lose track of time.

**Conclusion:** Student perceptions of the IDEA Experiments suggest they find this format improves critical thinking, independence in the lab, and reflects a more authentic practical compared to the recipe format.

#### **TIO12. Variations in implementation of the flipped classroom model**

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**Presenting author:** Julia Khanova

**Keywords:** Flipped Classroom, Case-Based Learning, Active Learning, Assessment, Course Design

**Objective:** The flipped classroom provides students with foundational content for mastery prior to class so that class time can be used to develop critical thinking and problem solving skills through active and applied learning. The purpose of this presentation is to describe ten different implementations of flipped courses at the UNC Eshelman School of Pharmacy from 2011-2014 and highlight the key elements across the courses.

**Design:** The flipped classroom model has been implemented within various courses of our four-year professional degree program (Table I). The format of pre-class foundational content varied across courses and included video lecture, online modules, and electronic textbooks. Approaches to in-class activities also varied, commonly including case-based learning, audience response questions, micro-lectures, and peer-to-peer learning. Exams were the primary learning assessment in all courses; however, many faculty implemented additional approaches to evaluating student learning and experiences.

**Assessment:** The effectiveness of the course design was generally assessed through a combination of student learning outcomes, student feedback on course evaluations, consultations with instructional designers, and faculty learning community workshops. The latter was fostered through a combination of faculty retreats, peer workshops, and training sessions on pedagogical and theoretical approaches to learning.

**Conclusions:** An analysis of ten variations of the flipped classroom at our School suggests that our faculty have used a wide range of modalities for foundational content delivery, in class active learning, and assessment. These teaching innovations provide insight into the wide range of approaches available for creative course redesign that fosters student learning and engagement.

**Table I: Variations of the Flipped Classroom at the UNC Eshelman School of Pharmacy from 2011-2014**

Course	Curriculum Year/ Course type	Pre-Class Learning Format	In-Class Learning Strategies <sup>1</sup>	Graded Assessments
1	Year 1 Science	Textbook; online summary notes	Instructor-led case-based learning	In-class quiz at start of each topic; exams
2	Year 1 Science	Video lecture	Peer discussion; micro-lectures; structured problem solving	Quiz at the end of some classes; exams
3	Year 1 Science	Video lecture; readings	ARS; micro-lectures; case-based learning	Quiz at the end of each class; exams
4	Year 1 Science	Video lecture; scholarly articles	ARS; micro-lectures; peer discussion	Quiz at the end of each class; exams
5	Year 1 Science	Video lecture	ARS; micro-lectures; peer discussion	Quiz at the end of each class; research paper; exams
6	Year 1 Science	Video lecture	ARS; micro-lectures	Online pre-class quiz; research paper; exams
7	Year 2 Science	Online interactive module; electronic textbook	Instructor-led case-based learning; micro-lectures	In-class quiz at start of each topic; exams
8	Year 2 Pharmacotherapy	Textbook-based homework	ARS; micro-lectures; instructor-led case-based learning	In-class quiz for each topic; exams
9	Year 2 Pharmacotherapy	Online interactive module	ARS; instructor-led case-based learning; micro-lectures	Exams
10	Year 2 Pharmacotherapy	Textbook-based homework	ARS; case-based learning; micro-lectures	In-class quizzes biweekly; exams

<sup>1</sup>Audience Response System (ARS), commonly referred to as clickers

## Teaching innovation poster presentations

### TIP1. Spiralling research skills within the MPharm: a tornado or a light breeze?

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**Presenting author:** Sarah Willis

**Keywords:** Integrated Learning, Spiral Curriculum, Students As Partners, Pharmacy Education, Research Skills

**Objective:** A spiral curriculum is one where learners revisit topics or concepts with increasing complexity (Harden, 1999). As the extent to which this facilitates learning is not well established we are investigating spiral learning between a third year course, the Integrated Research Skills (IRS) course, and the final year research project using action research with students as partners.

**Design:** IRS includes lectures about research design, methods, analysis, and ethics (see Figure 1). Students also work in small groups to formulate a research question, identify the methodologically appropriate design to address their question and present their design, which is assessed. They take part in a 'journal club' where they critically evaluate research papers and assess the clinical significance of them, again in small groups. At the end of a journal club, students produce either a tweet or a lonely hearts advert about a paper to practise summarising key findings in preparation for a longer written assignment - a 500 word précis of a research paper.

**Assessment:** The course ran for the first time in 2013-14 and student feedback was positive. We are now in the process of examining the extent to which spiral learning is taking place, using students as co-producers to design and administer a large-scale survey investigating spiralled learning of IRS into the 4th year research project.

**Conclusion:** Using students as partners offers an opportunity for partnership learning to evaluate learning outcomes of curriculum interventions.

### Reference

Harden, R.M. (1999). What is a spiral curriculum? *Medical Teacher*, **21**(2), 141-143.

### TIP2. Rx for change: Development and dissemination of an interprofessional, shared tobacco cessation curriculum

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**Presenting author:** Karen Hudmon

**Keywords:** Tobacco, Smoking Cessation, Dissemination, Interprofessional, Curriculum

**Objective:** To develop and disseminate a shared tobacco cessation curriculum for health professional students and licensed clinicians.

**Design:** In 1999, Rx for Change, an evidence-based tobacco cessation curriculum, was developed in response to a documented need for enhanced cessation training among health professionals of all disciplines. Over the past 15 years, the Rx for Change program has been disseminated using a variety of training approaches.

**Assessment:** Dissemination, which is grounded in Rogers' Diffusion of Innovations Theory, is tracked via a project website (<http://rxforchange.ucsf.edu>) that assesses characteristics of users and intended use of the curricular content. Since March 2004, a total of 9,487 users representing all 50 United States and 79 countries have registered on the site, and a total of 189,895 curriculum files have been downloaded. Students and clinicians from a broad range of disciplines are represented among user groups (Table I), including pharmacy (39%), nursing (17%), health educator/peer counsellor (14%), medicine (7%), respiratory care (3%), dentistry (2%), and social work (1%). Most non-student registered users indicated that they planned to use the Rx for Change materials to enhance their own knowledge and skills (78%) and to teach licensed health professionals (41%) and health professional students (32%). Most users heard about the program through faculty member/colleagues (52%). Other dissemination methods included internet searches/e-mail listserv (20%), conferences, meetings, and workshops (13%), and newsletters or publications (5%).

**Conclusion:** The shared Rx for Change curriculum has achieved broad, interprofessional reach for teaching tobacco cessation to health professional students and licensed clinicians.

**Table I: Rx for Change: Characteristics of end users**

Discipline	Student or Resident (n=3,878)	Clinician or Other (n=5,268)	Total (n=9,146)
Dentistry	60 (1.6)	141 (2.7)	201 (2.2)
Health Educator/Peer Counsellor	125 (3.2)	1,123 (21.3)	1,248 (13.7)
Nursing	628 (16.2)	911 (17.3)	1,539 (16.8)
Medicine – Physician / Physician Assistant	142 (3.7)	468 (8.9)	610 (6.7)
Pharmacy	2,586 (66.7)	970 (18.4)	3,556 (38.9)
Respiratory Care	39 (1.0)	205 (3.9)	244 (2.7)
Social Work	20 (0.5)	100 (1.9)	120 (1.3)
Other	278 (7.2)	1,350 (25.6)	1,628 (17.8)

**TIP3. Developing prescribing skills together: interprofessional simulation for pharmacy and medical students**

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**Presenting author:** Mathew Smith

**Keywords:** Interprofessional Education, Prescribing, Clinical Skills, Simulation

**Objective:** Evidence in the literature indicates an error rate of 8.4% in prescribing by Foundation Year 1 doctors with such errors generally identified by a pharmacist (Dornan, 2009). Both the General Medical Council and General Pharmaceutical Council place multidisciplinary teamwork and prescribing skills as a priority for attention. In Cardiff, the Schools of Pharmacy and Medicine have utilised high-fidelity simulation as an effective vehicle for students to develop collaborative prescribing practice.

**Design:** In a teaching session designed for final year Medical and Pharmacy students, two scenarios were explored focussing on dangerous prescribing errors; an overdose of insulin for the treatment of hyperkalaemia and an interaction between warfarin and metronidazole. The session commenced with a video demonstrating effective multi-disciplinary team working before students completed the scenarios. Faculty members played the roles of a nurse and relative and the patient was represented by a high-fidelity SimMan. The medical student played the role of prescriber whilst the student pharmacist reviewed the prescription chart. On identifying prescribing errors the students worked collaboratively to resolve the issue.

**Assessment:** Whilst the session was not formally assessed, each scenario was concluded by a debrief facilitated by a senior clinician and pharmacist, an activity that mirrors professional practice.

**Conclusion:** Effective multi-disciplinary collaboration is essential for patient safety during prescribing tasks. Unfortunately, prescribing skills are often taught in a uniprofessional manner. The reported teaching session effectively allows students to take part in a simulated multidisciplinary environment to develop prescribing skills.

**Reference**

Dornan, T. *et al.* (2009). EQUIP study GMC, London.

**TIP4. Cross sector postgraduate training: a step towards integrated primary and secondary pharmaceutical care for patients**

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**Presenting author:** Lindsay Morgan

**Keywords:** Community, Hospital, Diploma, Postgraduate, Intergrated

**Objective:** To investigate the feasibility of and identify the benefits associated with a combined learning set of community and hospital pharmacists at PGDip level.

**Design:** Following the successful pilot of a community-pharmacist specific diploma, common clinical and operational themes and assessments were identified that would be appropriate to both cohorts and that were thought to specifically support integrated care for patients and enhance service delivery. These study themes were then taught to a mixed cohort, with a particular focus on shared care and improved outcomes for patients.

**Assessment:** Study day feedback was collected throughout and a focus group was convened with the students at the end of the pilot to determine the perceived benefits to their practice, highlight areas of particular utility and determine where improvements to the program could be made.

**Conclusion:** Joint learning with community and hospital pharmacists is a cost effective alternative to separate cohorts, with considerable overlap in learning needs. Students reported an early lack of understanding of their colleagues in other sectors and consequently the value of their interventions in care. This presented a considerable barrier to professional communication and joint working which has been overcome through the PGDip. Community pharmacists reported an increase in clinical confidence after working closely and regularly with their hospital colleagues, and hospital pharmacists were more likely to refer patients for follow up services in the community.

#### **TIP5. Wikipedia: Pharmacy students improving medicines information worldwide**

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**Presenting author:** Tina Brock

**Keywords:** Medicines Information, Wikis

**Objective:** Wikipedia is one of the most frequently consulted sources for many health topics by the lay public as well as health professions trainees. Prior reports have confirmed that medical entries on Wikipedia can lack reliable sources and have gaps in content. Because of its popularity, we recognise the impact Wikipedia can have to educate patients and health care providers across the globe; but we want users to receive the most accurate publicly available medical information possible. UCSF partnered with WikiProject Medicine to address this need.

**Design:** One hundred and sixteen third-year pharmacy students who had completed previous training in medicines information techniques and subsequent online training in Wikipedia editing were assigned to complete a substantial edit to a medicines-related Wikipedia entry as part of a required Health Policy course. Cohort-based peer review of the edit was required prior to public posting. All posted entries were reviewed subsequently by senior students, faculty and the wider community of Wikipedians.

**Assessment:** Of the 116 edits made by UCSF pharmacy students, all were identified as important contributions and 105 persisted for at least 4 weeks following original posting.

**Conclusion:** Like the lay public, many pharmacy students use Wikipedia. By contributing to Wikipedia, however, they can increase their understanding of the limitations of such information while also improving the quality. This project is scalable to other schools worldwide.

#### **References**

Phillips, J., Lam, C. & Palmisano, L. (2014). Analysis of the accuracy and readability of herbal supplement information on Wikipedia. *Journal of American Pharmacists Association*, **54**(4), 406-14.

#### **TIP6. Outback Intern Pharmacist Training Program - a future in Rural and Remote Practice**

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**Presenting author:** Lindy Swain

**Keywords:** Rural, Remote, Intern, Multidisciplinary, Interprofessional

**Objective:** The Mount Isa Centre for Rural and Remote Health (MICRRH) has designed and implemented an innovative response to the pharmacist maldistribution issue by developing the first rural and remote Intern Pharmacist program in Australia. Building a pharmacy workforce in the bush necessitates addressing the impact of the high cost of living, education and support and the perceived lack of professional opportunities.

**Design:** The MICRRH program provides interns with a multidisciplinary approach that supplements the mandatory prescribed intern training program that all pharmacy interns are required to undertake. The program consists of three major areas; subsidised accommodation, focused education and preparation for intern examinations and integration in multidisciplinary teams.

**Assessment:** Five intern pharmacists have successfully completed the program over two years. Feedback indicates the program fills a gap in undergraduate training resulting in an enhanced understanding of the roles, function and capacity of allied health professionals and the importance of multidisciplinary approaches for optimal patient care. Further, they develop the skills and confidence as a pharmacist to integrate into multidisciplinary teams to improve patient outcomes in a rural and remote context. Of the five pharmacists who completed the program, all five have been retained as practicing pharmacists in outback Queensland, in an area equally or more remote than Mount Isa.

**Conclusion:** The MICRRH intern program better equips pharmacists to work in outback multidisciplinary healthcare teams as a 'rural generalist pharmacist' and provides an important component of the pharmacy workforce pipeline.

**TIP7. The application of educational theory and online response system in the development of clinical placement induction sessions for pharmacy undergraduates**

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**Keywords:** Clinical, Placement, Pharmacy, Undergraduate, Response System

**Objective:** This report showcases the experience of combining educational theory and innovative online response system to prepare 77 pharmacy undergraduates for their clinical placements in an acute NHS Trust.

**Design:** The sessions were designed around the principles of experiential learning cycle (Kolb, 1984), taxonomy of educational goals (Bloom, 1956) and constructive alignment (Biggs, 1999). The university-based session helped students reflect and introduced them to placement objectives. Over 75% of this session was dedicated to small-group activities aligning with Master's level requirements of application, analysis, synthesis and evaluation. Hospital-induction workshops for third-year and fourth-year students differed significantly in their content of 'synthesis' and 'evaluation' activities due to the level of students involved.

**Assessment:** Polleverywhere online response system was used to facilitate the training needs analysis, interactive quizzes and students' evaluations. Quantitative and qualitative evaluations were obtained from students at the end of each session.

**Conclusion:** The positive impact of regular evaluations was particularly noticeable in 4th-year sessions, which

observed an inception of the 'handover' workshop and an improvement in the use of the Polleverywhere system during the experiential cycle. Learning outcomes and aligned activities were adjusted accordingly demonstrating a successful application of classical theory and novel methods of teaching.

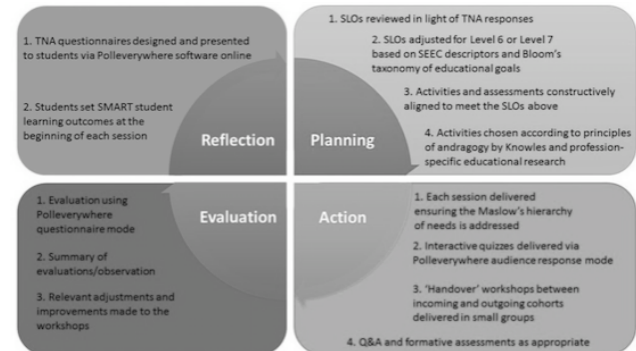


Figure 1. A summary of the principles used in the planning, implementation and evaluation of the clinical placement induction sessions described. Abbreviations: TNA – training needs analysis; SMART – specific, measurable, attainable, relevant, time-based; SLOs – student learning outcomes; SEEC – South East England Consortium for Credit Accumulation & Transfer; Q&A – question and answer

**References**

Biggs, J. (1999). *Teaching for Quality Learning at University*. London: Society for Research into higher Education and Open University.

Bloom, B.S. (1956). *Taxonomy of educational objectives; the classification of educational goals*. New York: Longmans, Green.

Kolb, D. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice Hall.

**TIP8 TI. Using a game format with students to foster early understanding of BPharm curriculum design and relevance**

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**Presenting author:** Jenny McDowell

**Keywords:** Curriculum Mapping, Career Awareness, Interactive Work, Curriculum

**Objective:** The exercise aimed to help first year Bachelor of Pharmacy students at Monash University understand the structure of the curriculum, in particular the need for the Enabling Sciences, and to strengthen their early identification as pharmacy professionals.

**Design:** Students are required to design their own model pharmacy curriculum that gives them the skills and knowledge required to be a pharmacist, based on a representative set of subjects. The exercise is presented to

students shortly after commencing the course. Students are initially presented with a morphine prescription and, in large-group format, discuss what knowledge and skills are needed to safely dispense the prescription. Then in small groups, they are required to build a curriculum on a large board using 36 defined topics classified into the four BPharm disciplines (Enabling Sciences, Pharmacy Practice, Pharmaceutics and Integrated Therapeutics). The arrangements of subjects and disciplines are then discussed as a large group, linking them to the actual curriculum and the skill sets previously identified.

**Assessment:** At exercise end, students completed a survey rating their understanding of curriculum topics and their sequencing in the BPharm. The survey combined Likert-scale questions and qualitative comments. Basic demographic information was also collected.

**Conclusion:** Following the activity, 80% of students agreed they had a better understanding of curriculum-subject needs. International students, in particular, valued the activity as it gave them a broad course overview and defined likely career opportunities. The exercise, now run annually, was deemed successful from both student and staff perspectives.

#### **TIP9. Personality profiling of pharmacy students studying at Wolverhampton School of Pharmacy**

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**Keywords:** Personality, Student

**Objective:** To determine the personality profile of year 1 Pharmacy students (cohort 2013/14).

**Design:** All year one students completed the mini-IPIP (Donnellan), a 20-item short form of the 50-item International Personality Item Pool-Five-Factor Model measure. The Mini-IPIP has four items per Big Five trait. The Big Five traits being: intellect/imagination; conscientiousness; extraversion; agreeableness; and neuroticism.

**Assessment:** The means on all five personality variables and the Lie scale are presented in Table I. These means are compared to the norm means from an undergraduate sample from the United States (Donnellan). Pharmacy students' mean scores did not deviate greatly from the comparison sample on most variables. However the Wolverhampton sample are significantly more conscientious ( $t = -6.21$ ;  $df = 2928$ ;  $p < .001$ ) and also more neurotic ( $t = -6.29$ ;  $df = 2929$ ;  $p < .001$ ).

**Table I: Means from the IPIP-20 and the Lie scale**

Sample	Extraver.	Agreeab.	Conscient.	Neurot.	Intell./Ima	Lie scale
Wlv.	3.24	4.03	3.73	2.86	3.68	11.25
Norm	3.28	4.01	3.42	2.54	3.70	11.92

Further analysis showed sex differences. Females scored significantly higher than males on agreeableness ( $t = -3.32$ ;  $df = 252$ ;  $p = .001$ ) and on neuroticism ( $t = -4.74$ ;  $df = 246$ ;  $p < .001$ ). Males scored significantly higher than females on intellect/imagination ( $t = -2.10$ ;  $df = 251$ ;  $p = .037$ ).

**Conclusion:** Understanding more about our cohort(s) in terms of their personality characteristics is allowing us to approach our teaching differently.

#### **References**

Donnellan, M.B., Oswald, F.L., Baird, B.M., & Lucas, R.E. (2006). The mini-IPIP scales: tiny-yet-effective measures of the Big Five factors of personality. *Psychological Assessment*, *18*(2), 192.

#### **TIP10. Using augmented reality (AR) to enhance simulation based teaching in a UK School of Pharmacy**

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**Presenting author:** Lyn Hanning

**Keywords:** Simulation Based Teaching, Clinical Scenarios, Clinical Practice

**Objective:** Academic staff at the University of Bath have used a high fidelity manikin to teach clinical skills to pharmacy and prescribing students (Haddington *et al.*, 2013). Despite the level of fidelity achieved with this style of teaching, some elements of clinical practice remain challenging to recreate. This project used an Augmented Reality (AR) technique to try to increase the authenticity.

**Design:** Prescribing students in small groups undertook real time clinical scenarios using SimMan 3G at each course workshop. The teaching team added two AR pilots using iPads to the existing simulation structures. The first delivered laboratory and radiology results and the second delivered a clinical handover from a member of medical staff. A short learner evaluation was applied to explore the perceived benefits of this intervention and to explore future applications.

**Assessment:** The students agreed that the AR pilots were both useful and authentic parts of the simulation and that this made the scenario more realistic. Responses were more positive in the clinical handover pilot although the students would have liked more information. Students

suggested reproducing electronic resources that would be seen in practice.

**Conclusion:** This project was well evaluated and suggests that fidelity of simulations could be enhanced by the addition of augmented reality techniques that are reflective of clinical practice.

#### References

Haddington, N., Hanning, L., Weiss, M. & Taylor, D.A., (2013). The use of a high-fidelity simulation manikin in teaching clinical skills to fourth year undergraduate pharmacy students. *Pharmacy Education*, **13**(1), 54-60.

#### TIP11. Evidence-based teaching approaches as the foundation of a new self-care therapeutics course

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**Presenting author:** Shanna O'Connor

**Keywords:** Problem-Based Learning, Active Learning, Self-Care, Flipped Classroom, Teaching Methods

**Objective:** Apply evidence-based teaching theory and active learning approaches to the design of a self-care therapeutics course. The course goal is to produce a student pharmacist capable of confidently addressing complex self-care consults in the community pharmacy setting.

**Design:** A reverse design approach was used for this course, which incorporates intentional repetition and evidence from biological studies of how memory is used in learning. The large lecture course is designed in three modules that gradually increase in cognitive load across a 12-week semester. All modules are mapped to course objectives, which are in turn mapped to degree (PharmD) outcomes. All activities within the module are designed to give students practice with performing an objective and assessments build upon each other to reinforce learned concepts. The first module focuses on knowledge acquisition and storage, the second on application of knowledge and using it in a patient care process, and the third on problem-solving and incorporation of new knowledge into patient care processes. All three modules have extensive active learning activities throughout with less than 20% lecture.

**Assessment:** Students will be evaluated using a combination of self-reflection, rubric-based peer-evaluation, rubric-based self-evaluation, task performance and traditional multiple-choice and short-answer exams. The two-part final assessment will consist of a standardised mock patient consult and application-based exam. Extended assessments will examine student long-term retention of knowledge and skills.

**Conclusion:** Utilising data-driven teaching theory to support the design of a large-lecture pharmacy course is feasible.

#### TIP12. Developing best practices in future international clinical faculty through a structured longitudinal

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**Keywords:** Metacognition, Non-Medical Residency, Instructional Design, Pharmacy Faculty

**Objective:** To produce a graduate with advanced knowledge and experience with instructional design, scholarship of teaching and learning, and the scholastic measurement of faculty-based clinic activities.

**Design:** This structured longitudinal rotation uses intentional benchmarking to assess progression. Weekly meetings are used to advance collaborative projects and are paired with outside readings, activities, and assignments designed to promote self-reflection and development of best practices. The objectives are adapted from accreditation standards for Community Pharmacy, Ambulatory Care, and Community/Academia residency programs. Modifications were made to tailor the experience to prepare the resident for their next position as a junior clinical faculty member. Required projects in curricular design and clinical practice development supplement ongoing development of skills in classroom management, qualitative and quantitative student assessment methods, and personal teaching philosophy.

**Assessment:** Quarterly formal written evaluations are a summation of bi-weekly self-assessments and weekly feedback on progress and project contributions. A faculty member not associated with the residency will complete a rubric-based comparison of resident-developed teaching materials from months two, six and twelve to provide quantitative assessment of skill development.

**Conclusion:** Although the ultimate success of this rotation will be seen after the resident begins work as a clinical faculty member, the initial progress made towards the end goals are promising. The delivery of the rotation experience has been valuable to the preceptor in the development of metacognitive skills and advancing approaches to teaching and learning projects.

#### TIP13. STD – Speed Triad Dating: A case study using speed dating in pharmacology teaching

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**Keywords:** Speed Dating, Pharmacology, Drug Review, Deep Learning

**Objective:** The aim of this research is to investigate whether the inclusion of the Speed Triad Dating learning method within the Pharmacology modules in the Bachelor of Pharmacy Course at Curtin University enhances deep learning in subjects traditionally reliant on memorisation. In this project a modification of speed dating, Speed Triad Dating (STD) is used in tutorial workshop in Pharmacology.

**Design:** Instead of the one-on-one dating, to foster collaborative learning and peer coaching, each 'dating' session will involve three students or a triad. Information was relayed from students to students. Before class students undertook a test to assess their prior drug knowledge. At the end of the STD session students undertook another test to assess their improved drug knowledge. For each dating the students were instructed to address different issues pertinent to their individual task with increasing level of thinking progressing from describing the task to critically evaluating and integrating information learned during the process.

**Assessment:** There was an increasing spiral of information with increasing rounds of STD with students teaching as well as learning the increasing number drugs. Most importantly students were actively engaging in integration and communication of knowledge learned. Qualitative data gathered from evaluation data of students' feedback on their perception of resources and teaching activities available in the Pharmacology Module indicated that students have valued the STD method.

**Conclusion:** Students commented that STD is engaging, fun and improves their ability to understand more complex content of pharmacology and foster internalisation of knowledge allowing long term memory to occur more effortlessly.

#### TIP14. Using technology and simulation to teach motivational interviewing and engagement with rural patients

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**Presenting author:** Lindy Swain

**Keywords:** Technology, Simulation, Rural, Motivational Interviewing, Medication Adherence

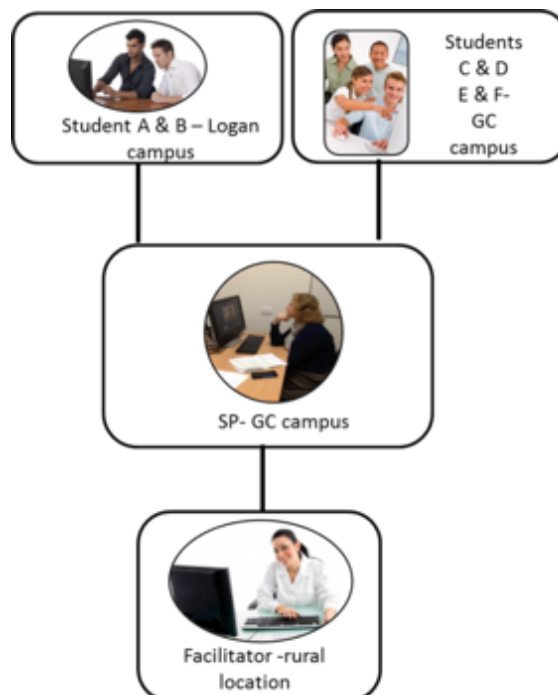
**Objective:** To enhance the motivational interviewing skills of Master of Pharmacy students and transform rural

practice by incorporating a pilot Telepharmacy simulation into the teaching pedagogy.

**Design:** Students practised motivational interviewing techniques using simulated patients in a course which included scaffolded learning and assessment of this skill. A rural scenario (male living 50km from nearest pharmacy) was piloted with geographically dispersed students, simulated patients and trainers using Webex videoconferencing (Figure 1). This was part of the Simulated Telemedicine Environment Project for Students. Students received a scenario overview then used motivational interviewing to identify and address poor adherence, and accommodate geographic isolation and lack of health services. A rural pharmacist developed the scenario and facilitated to maintain authenticity and guide students through rural challenges.

**Assessment:** Fifty-one students participated in simulated learning activities and 24 in the rural scenario. Student motivation and confidence were measured on validated scales alongside pharmacy specific skills. Open-ended questions explored student perceptions of the learning experience and online technology.

**Conclusion:** Simulated learning improved student confidence and promoted development of motivational interviewing skills. The rural scenario taught students to empathise and effectively communicate. Facilitator feedback addressed initial difficulties with communicating via internet communication technology. This experience encouraged students to use technology to improve medication adherence through advanced pharmacy services.





**TIP15. Supporting practitioners as teachers in their pharmacies: Implementing the HeLP program in Australian community pharmacies**

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**Presenting author:** Lindy Swain

**Keywords:** Health Literacy, Train The Trainer, Practice Development

**Objective:** To develop an educational package on Health Literacy for community pharmacists and pharmacy assistants.

**Design:** A ‘train-the-trainer’ model was applied, drawing on a systematic review of current literature and other resources, and underpinned by educational theories. Electronic and face-to-face training packages were designed and implemented to train a key staff member(s) per pharmacy, who would then deliver training to remaining staff at their pharmacy. Program evaluation examined structure, process and outcome measures, including numbers attending training, numbers implementing training in the pharmacy, and number of modules completed. Detailed feedback was also obtained on the training experience, training content and dissemination, and recommendations for enhancement.

**Assessment:** Overall, the train-the-trainer model was well received, with participants indicating preference for face-to-face over electronic training. Implementation varied widely across the pharmacies in terms of the modules delivered and the logistical implementation of the training. The percentage of staff participating varied across pharmacies (15-100%). Those delivering the training within the pharmacies, and those they trained, reported positive practice and educational experiences. Suggestions for improvement included modifications to modules to make them more flexible to be broken into smaller chunks, enhanced focus in some key areas of skill development and provision of more support resources for delivering training.

**Conclusion:** We recommend the train-the-trainer approach for effective dissemination of educational content in future intervention studies, with the in-pharmacy trainers initially receiving face-to-face training. The main challenge for researchers is allowing flexibility in the rate of dissemination in participating pharmacies to account for differing needs among practices.

**TIP16. Pharmacy students interacting with healthtalk.org to develop patient-centred practice**

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**Presenting author:** James Townshend

**Keywords:** Pharmacy Student, Patient-Centred, Patient Experiences, Online Resource, Chronic Illness

A critical step in the journey to patient-centred care is the development of health professionals with an ‘awareness-of-patient’. Healthtalk.org is a resource of patient experiences created by Oxford University’s Health Experiences Research Group (HERG).

**Objective:** To develop patient-centred pharmacy students by using healthtalk.org resources in structured learning and assessment.

**Design:** Students enrolled in an experiential pharmacy course interacted with volunteer patients to explore their views on chronic illness and experiences related to the management of their illness. Students were introduced to healthtalk.org and its ‘scrapbooking’ function during a facilitated workshop. They subsequently created a scrapbook and associated written report as a group formative task. The written report included the rationale for the scrapbook topic and the intended aims and audience, as well as an overview of videos chosen and underlying rationale for these. Generalised and individual feedback was provided to all groups. In the final, summative, task student groups created a healthtalk.org scrapbook while on clinical placement. Each student submitted an individual report on the scrapbook.

**Assessment:** Sixty seven students enrolled in the course completed the summative task as 12 groups. Both the publicly available scrapbooks created by groups, and de-identified individual reports, were thematically analysed and students were surveyed on their experience with the use of healthtalk.org. Scrapbooks were created on varied topics and students appreciated the ‘fantastic opportunity to put into practice the theory we are learning.’

**Conclusion:** This activity allowed students to creatively interact with healthtalk.org whilst increasing ‘awareness-of-patient’ and preparing them for patient-centred practice.

**TIP17. How certain are you? A novel approach to evaluation of online teaching and learning through certainty rating in pre-and post-tests**

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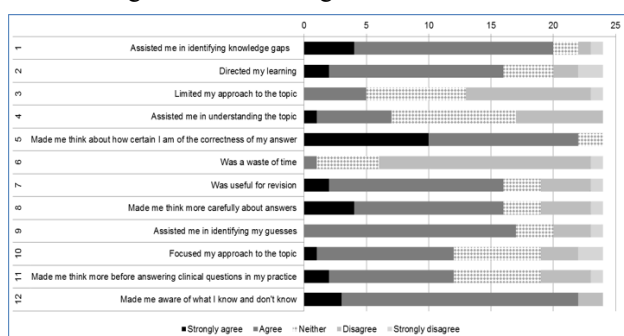
**Keywords:** Online Learning, Certainty Rating, Evaluation, Pre-And Post-Test

**Objective:** Multiple choice questions (MCQs) were employed in assessing the knowledge of students before and after completion of study. Rating the degree of certainty of correctness of their MCQ answers was hypothesised to assist students in identifying gaps in their knowledge, guide their learning and give course designers insight into the optimal delivery of study content.

**Design:** MCQs testing knowledge on pharmacotherapeutic topics in a postgraduate clinical pharmacy program were designed for online study modules. Students were asked to complete the same set of questions before and after completing a module and rate how certain they were that their given answer is correct.

**Assessment:** Analysis of MCQ answers demonstrated that from pre- to post- tests students increased the certainty of their correctness in addition to an increase of correct answers, regardless of whether they chose a correct or wrong answer in the pre-test. By analysis of how answers and certainty changed course designers identified topic delivery within study modules and MCQ questions needing review. Certainty ratings added additional insight into whether MCQs were relevant and formulated at an appropriate degree of difficulty compared to analysing correctness alone. A student survey showed that adding certainty ratings to MCQ tests raised awareness of what they know or don't know and focused but not limited their study.

**Conclusion:** Students rating the certainty of the correctness of their answers to MCQs in pre-and post-study formative tests guides their learning and revision and gives course designers insight into the success or shortcomings of their teaching.



### TIP18. 'My turn for fitness to practise?'- exploring professionalism via a board game

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**Keywords:** Professionalism, Learner-Centred Teaching, Educational Board-Game, Inclusive Teaching

**Objective:** Embedding professionalism in the undergraduate pharmacy curriculum in a learner-centred approach, moving away from the traditional didactic teaching and engaging students in social learning.

**Design:** A board game and accompanying set of rules were designed and piloted before employing them in a workshop. Two decks of cards were created: a 'blue' set of questions with short answers around the standards of conduct, ethics and performance for pharmacy professionals, and a 'green' set of cards presenting scenarios where conflict arose between the principles of the standards. Students were called to reflect on these scenarios, and some pointers were provided to facilitate discussions. Wrong answers for the 'blue' questions, and answers outside of the context for the 'green' questions led the player back to the 'fitness to practise' space.

**Assessment:** The session was evaluated via short questionnaires including both closed and open questions. 108/110 students completed the forms (98% response rate). More than 93% of respondents agreed that the game has facilitated reflections on their own understanding of the teaching material and that of their peers. 7% stated that this way of conducting a workshop did not suit their learning style. Students included numerous recommendations for improving the game, mainly around timing.

**Conclusion:** Overall, a board game was a successful way for students to participate in communities of practice and reflect on how their peers have understood the teaching material compared to them. Availability of supporting material is crucial, to ensure inclusive teaching and account for different learning styles.

**Table I: Percentage of participants who agreed/strongly agreed with a set of statements related to the 'professionalism game'**

Engaging with the 'professionalism game' in the workshop has....	Strongly Agree/Agree
.... facilitated my reflections on the teaching material	93
.... been an enjoyable experience	81
.... allowed me to learn from my peers	92
....allowed me to self-assess my understanding of the teaching material	96
...been a useful way of formative assessment	80
...not added anything to my understanding of the teaching material	7
...not suited my learning style, I would have preferred lectures instead	7
...been a waste of my time	1

### **TIP19. 'Time to go to a soft play?' – Embedding role-emerging placements in UK MPharm**

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**Keywords:** Role-Emerging Placements, Public Perspective, Children's Pharmaceutical Care, Action Research

**Objective:** Embedding opportunities for undergraduate pharmacy students to get a holistic view related to patient care early on in the curriculum is essential to transform their perception of challenges. Exposure to non-workplace environments in the form of role-emerging placements (REPs) maximises students' exposure to public perspective on their care and can be invaluable in the students' professional development. This is an ongoing action research project; this cycle focusses on exposing students to challenges surrounding care of young children.

**Design:** Barriers and facilitators identified in an earlier pilot of REPs in the Cardiff School of Pharmacy were considered when designing and implementing placements with target cohort of parents and/or carers of young children. Group placements have been organised for entry level undergraduates in venues where mother and toddler groups are running, between January and April 2015. All students participated in a pre-placement workshop where they explored a flexible list of questions to facilitate their interactions. Placements will be supervised by members of staff, who will support students during a group debrief at the end of each session.

**Assessment:** Students will submit a copy of their reflections following their placement and debrief session. All entries will be analysed via content analysis to provide an overview, and students will be called to reflect further during a post-placement workshop with the rest of their colleagues. Results will inform structure and content of future REPs.

**Conclusion:** It is anticipated that these sessions will raise awareness of issues when providing pharmaceutical care to children.

### **TIP20. Exploring sexual health in a role-emerging placement with young people**

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**Presenting author:** Hanna Gwyn

**Keywords:** Role-Emerging Placement, Young People, Interactive Teaching, Engaging Community

**Objective:** Disseminating knowledge of a sensitive topic in a fun interactive way, to engage a younger audience and break down barriers between them and healthcare professionals in a deprived socioeconomic area.

**Design:** A quiz and accompanying set of answers were designed and implemented during a non-traditional placement of pharmacy undergraduate students with young people aged 11-25 in Torfaen Youth Centre. There was a range of questions, all designed to be exhaustive and thought provoking on the theme of sexual health. The different formats helped break the quiz up to keep the young people engaged. A reward system was used to positively reinforce engagement and participation. A Q&A session followed, giving participants an opportunity to ask any pertinent questions that were not explored. During this time discussion amongst the young people was aroused by interjections of relevant information to further the discussion and to correct any misconceptions.

**Assessment:** One-hundred percent of the young people present engaged in the quiz. Over 90% provided positive verbal feedback at the end, and expressed the desire to repeat similar sessions; an invitation was formally placed by the scheme organisers.

**Conclusion:** Overall, the session was a successful way for the young people to actively learn and participate in discussions on this sensitive, but crucial topic. The quiz helped break down barriers between future healthcare professionals and young people, improved their confidence to speak in public and actively participate. Furthermore, the discussion signposted them to other health services that can further help and guide them.

### **TIP21. Evaluation of a simulated medication adherence activity including pharmacist counseling**

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**Presenting author:** Lucio Volino

**Keywords:** Adherence, Simulation, Counselling, Students, Communication

**Objective:** To evaluate the impact of counselling in a simulated medication adherence activity.

**Design:** Pharmacy students in a Pharmacy Communications course were given a prescription vial containing a fictitious medication and associated patient medication monograph. Students were randomised into two groups. The first group, designated patient

medication monograph only (PMMO), received medication and monograph only. The second group, designated patient medication monograph with counselling (PMMC), received medication, monograph, and brief, individual counselling regarding a food-drug interaction. Students documented doses and food/beverage consumption over a five-day period. A multiple choice, paper-based survey evaluating a food-drug interaction and number of missed doses was then completed. Student perceptions regarding the activity's value and impact on understanding medication adherence challenges were assessed. The study received exempt IRB approval.

**Assessment:** Ninety-two students participated (PMMC  $n = 45$  and PMMO  $n = 47$ ). Overall, a significantly higher incidence of simulated food-drug interactions occurred in PMMO (30%) versus PMMC (22%) ( $p = 0.02$ ). Doses taken without simulated food-drug interactions were comparable: 46.2% (PMMC) versus 41.9% (PMMO) ( $p = 0.19$ ). The average number of missed doses were 3.18 (PMMC) versus 2.81 (PMMO) ( $p = 0.55$ ). Approximately, 70% found the activity to be valuable and 89% believed it helped them better understand adherence challenges.

**Conclusion:** This activity demonstrated the challenges and role of counselling in medication adherence and will continue to be utilised for students' understanding of medication adherence challenges in the Pharmacy Communications course.

#### **TIP22. 'A' is for aspirin: An example of built themes in a new pharmacy curriculum in Namibia**

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**Presenting author:** Timothy Rennie

**Keywords:** Theme, Pharmacy, Education, Undergraduate

**Objective:** The introduction of a new needs-based pharmacy degree in Namibia, from 2011, allowed a fresh approach to implementing a novel curriculum. In order to improve the relevance and to better communicate the connection between pure science and pharmacy practice, a number of themes orientated around medicines examples were used throughout the student learning journey.

**Design:** As an example, aspirin was used in a number of different taught modules to illustrate principles of medicinal chemistry, pharmaceutical analysis, pharmaceuticals, pharmacology and pharmacy practice. For example, aspirin and derivatives were synthesised in laboratory sessions and aqueous degradation measured (organic chemistry, physical chemistry: first year), history

of aspirin was described and analysis performed on synthesised products (introduction to pharmacy practice, pharmaceutical analysis: second year), aspirin as a pro-drug, its formulations, and as a danger to infants were explored (pharmacology, pharmaceuticals, pharmacy practice one: 3third year), and the research applications of drug delivery methods through chemistry (medicinal chemistry: fourth year) were taught.

**Assessment:** The approach to this theme-based learning is currently being assessed both through student feedback and curriculum review by engagement with stakeholders. This is focussed firstly on the rationale of the method and secondly on whether the concept translated into meaningful learning.

**Conclusion:** Theme-based approaches in pharmacy education may be a useful tool for helping students get a better grasp of the bigger picture of the pharmacy profession and the essential science underpinning it, and how learning in the different disciplines in pharmacy connects.

#### **TIP23. Developing pharmacy practitioners' research skills**

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**Keywords:** Research, Teaching, Pharmacists

**Objective:** With the introduction of the Advanced Pharmacy Framework in 2013, the University identified there was a need for a specific CPD module on research methods. As a ten credit level seven research methods module was developed when the Diploma in Clinical Pharmacy was revised in 2007, it was decided to offer this module to non-Diploma practitioners.

**Design:** Each student enrolled on the module must identify an area of research before attending the first of three taught study days. The study days consist of research governance, research methods, sampling, funding, writing a research report and dissemination of research results. E-learning modules, directed and self-directed reading are also used. The module's assessment is the production of a research protocol, along with justification of the methods chosen.

**Assessment:** Twelve practitioners and seven Diploma pharmacists have enrolled on the module. It has been extremely well received, with all participants recommending it to others. Students particularly commented on the style of teaching, the support provided and their feeling they could undertake research in the future. For the non-Diploma practitioners, up to 2014, 50% have completed their proposed research protocol and more than 80% of them have subsequently presented research work at national conferences. Two of the

Diploma pharmacists' protocols have been completed by MPharm four students the following academic year.

**Conclusion:** The introduction of the research methods module for practitioners has been well received and has positively impacted on pharmacy practice.

**TIP24. A CPD course on education, training and development for pharmacists and pharmacy technicians**

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**Presenting author:** Karen Hodson

**Keywords:** Education, CPD

**Objective:** With the introduction of Consultant Pharmacists and the Advanced Pharmacy Framework, Cardiff School of Pharmacy and Pharmaceutical Sciences identified there was a need for a specific CPD module on education and training for both pharmacists and pharmacy technicians.

**Design:** A Task and Finish group was established, with representatives from the School, Welsh Centre for Pharmacy Professional Education and Health Boards. A blended learning course was developed whereby all participants complete an e-learning programme before attending two study days which incorporate a wide diversity of teaching methods. The study days included the differences between coach/tutor/mentor, teaching and learning styles, methods of teaching and assessment in the workplace, writing lesson plans, how to provide feedback and how to deal with 'students in difficulty'. A portfolio of activities, which required the participants to relate each of the taught sessions to their individual roles was developed. Pharmacists can, by completing an assignment related to their workplace education and training role, obtain a ten credit level seven University module.

**Assessment:** Since 2010, 67 pharmacists and 20 pharmacy technicians have completed the programme; 15 pharmacists have successfully obtained the ten credit module. The first cohort of the module was evaluated (n = 9) and all participants provided examples of how their practice had changed as a direct result of the programme.

**Conclusion:** The introduction of the education, training and development programme has been well received and has positively impacted on pharmacy practice. Since 2013 NHS Wales has recommended that all new pre-registration tutors attend this training course.

**TIP25. Innovative online team-based learning interprofessional education and development course for pharmacy and other health-professions students at the University of Colorado (CU)**

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**Presenting author:** Shaun Gleason

**Keywords:** Interprofessional, Online, Team-Based Learning; Global, Distance-Based

**Objective:** To gain experience delivering an online team-based learning (TBL) interprofessional education and development (IPED) course to globally-based pharmacy and other health-professions students, and to improve the IPED experience through analysis of student learning and reaction-to-learning data of globally-based pharmacy students directly and compared to other online student groups.

**Design:** In 2014, the CU implemented an online section of its IPED course for nursing and MD/PhD students. The course, modelled after the same on-campus course for students from six health professions programs, added distance- and globally-based pharmacy students in spring 2015 to enhance interprofessional understanding and development of geographically-diverse practicing pharmacists seeking Doctor of Pharmacy degrees. Students were assigned to groups of 8-9, with each profession represented. Each group participated online in TBL of three interprofessional content and skill domains, teamwork/collaboration, value/ethics and safety/quality.

**Assessment:** Student feedback and faculty experience guide online TBL course delivery. Data will be collected from this online course January-May 2015. Student learning will be assessed through individual and team readiness assurance tests (iRATs). Student reaction-to-learning will be assessed through session perspectives (pre-work, iRATs, application exercises, learning objectives, session engagement, and team cohesiveness) and a semester-end course evaluation. Results from pharmacy students will be assessed directly and compared to online nursing and MD/PhD student groups.

**Conclusion:** Online delivery of CU's IPED TBL course is an innovative method of providing interprofessional education and development to geographically-dispersed pharmacy students. Data gathered during the spring 2015 semester on delivery methods, delivery lessons learned, student learning and reaction-to-learning will be presented.

**TIP26. The progression of electronic health record implementation into a pharmacy curriculum**

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**Presenting author:** Benjamin Chavez

**Keywords:** Electronic Health Record, Pharmacy Curriculum, Technology

**Objective:** To describe attempts at incorporating realistic and useful health records into a pharmacy curriculum, including a recent implementation of an electronic health record (EHR) system.

**Design:** Students entering experiential rotations and the workforce are expected to use EHR systems. However, pharmacy programs may struggle with effectively incorporating them into coursework. Our program incorporated health records by first using mock paper charts, but these proved impractical and not representative of current clinical practice. Online course management systems and PowerPoint were then used as mock EHRs, but also did not represent current practice. We now use two actual EHR products, Epic and NeehrPerfect.

**Assessment:** A survey assessed students' skills and comfort level pre- and post-implementation of NeehrPerfect. A total of 90/93 students responded, with 67% stating minimal to no prior experience using EHRs. Initial results showed 46% were uncomfortable using EHRs, which decreased to 8% after one semester ( $p < 0.001$ ). All students initially agreed that using an EHR in coursework was important for their education, but this decreased to 95% in the follow-up survey ( $p = 0.06$ ). Specific skills that improved included screening, identifying, and prioritizing problems using an EHR ( $p < 0.001$ ). Feedback from students and faculty was obtained regarding challenges and successes.

**Conclusion:** The use of EHRs in coursework seems to increase students' skills and comfort level. Technical limitations, cost, and faculty time are barriers to incorporating EHRs into coursework. Continuing education for faculty on the appropriate use of EHRs in the classroom is essential for ongoing success.

**TIP27. An innovative method to increase practice faculty guidance of students during the experiential year**

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**Presenting author:** Benjamin Chavez

**Keywords:** Experiential Education, APPE, Preceptor

**Objective:** To describe the evolution of strategies to increase practice faculty guidance during the Advanced Pharmacy Practice Education (APPE) year, culminating with a Faculty Facilitator Program.

**Design:** When students leave campus for experiential education, structured contact with faculty dramatically decreases. Faculty serve as preceptors for some rotations, but this only allows faculty guidance for few students. As an institution not associated with an academic medical centre, and with a smaller cohort of faculty, increasing student/faculty contact is even more challenging. The role of faculty facilitators is to interact with and guide all students (includes: check-ins, advising, and ensuring objectives are met), while identifying and tracking students at risk due to knowledge, behaviour, or life. This helps students to achieve stated objectives, and increases faculty connections with students. Student development is communicated to students, preceptors, and the experiential team, who provide remediation as needed.

**Assessment:** APPE students with faculty guidance increased with the facilitator program (from 9% total the previous year to 45% at block three and 64% at block five). Faculty involvement increased from nine individuals the previous year to fourteen at block three and sixteen at block five. Student issue referrals were compared, suggesting the program had earlier referrals. Feedback from students, faculty, and preceptors was obtained regarding successes and challenges observed.

**Conclusion:** The use of Faculty Facilitators during the APPE year increases student interactions with faculty and allows for early and consistent detection of issues, while providing an additional layer of guidance for both the student and preceptor.

**TIP28. Clinical Pharmacy Fellowship: where education and research meet advancing practice**

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**Presenting author:** Daniel Guidone

**Keywords:** Clinical Training; Fellowship, Specialty Practice, Advanced Practice, Postgraduate Study

**Objective:** The Alfred Health Clinical Pharmacy Fellowship is a structured two-year program providing practitioners an opportunity to advance their practice. The program addresses a gap in structured clinical training between early post-registration training and more advanced practice and links a model of career progression with the Australian Advanced Practice framework.

**Design:** Candidates are appointed as full-time clinical pharmacists at Alfred Health for two years and undertake the Master of Clinical Pharmacy (MClinPharm) at Monash University supported by a hospital scholarship. Fellowships are currently offered in seven specialties. Each candidate is appointed a mentor in the chosen specialty and practices primarily in that area. Fellowship candidates contribute to the department's clinical services, coordinate a continuing education calendar and complete a formal research project in their specialty area. The fellowships are open to internal and external applicants. Fellows are typically practitioners with 2-5 years post-graduate clinical experience. Four candidates are appointed annually and join a team of 100 clinical pharmacists. Successful completion of the Fellowship involves multimodal assessment including peer review, clinical examinations, case-based discussion, portfolio presentation and completion of all MClinPharm requirements. The Fellowship was first offered in 2013; the first Fellows will graduate in 2015.

**Assessment:** Assessment of the program involves surveys, interviews and descriptive analysis.

**Conclusion:** The Clinical Pharmacy Fellowship is a novel model of clinical training, incorporating postgraduate study, research and practice in a specialty area. It contributes to the development of more advanced practitioners and fills a gap between early postgraduate training and advanced practice.

### **TIP29. Purposeful alignment and integration of curricular content, skills development and experiential activities to better prepare graduates for practice**

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**Presenting author:** Kari L. Franson

**Keywords:** Practice-Ready; Experiential; Alignment; Introductory

**This poster was transitioned to a workshop**

### **TIP30. Use of an interactive home product display activity to facilitate active learning in a nonprescription medicines course**

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**Keywords:** Self-Care, Education, Home Care

**Objective:** To describe the implementation and impact on student learning of an interactive over-the-counter product and diagnostic device display in a nonprescription medicines course.

**Design:** Self Care and Home Care (four credits) is a required course offered in the third professional year of the pharmacy curriculum. The course is structured according to disease state modules that include didactic lecture supplemented by case-based review sessions. Students are additionally required to participate in a one-hour home product display activity session as a culmination of the semester's course work. During this activity, students rotate through product stations and complete a worksheet that requires the evaluation of product labelling to determine appropriate patient counselling. This interactive session is intended to better prepare students for providing patient counselling on the use of these products. A survey was developed and distributed for the Spring 2011 semester to assess the utility and impact of this activity on student learning.

**Assessment:** On the post-activity survey, all categories of product-specific knowledge evaluated showed improvement from the pre-activity evaluation. Over 90% of students indicated that participation in this activity reinforced information covered in class, enhanced confidence in explaining the use of self-care products, and rated this activity as enjoyable and valuable. Fewer students (79.2%) reported participation in this activity provided new information.

**Conclusions:** An interactive, hands-on product display with readily available over-the-counter diagnostic devices and medications enhanced student learning and product knowledge. This activity can be easily implemented in other programs seeking to expand the promotion of self-care education.

### **TIP31. Practice settings for successful student engagement in direct patient care**

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**Presenting author:** Ralph Altiere

**Keywords:** Practice, Students, Experiential, Multidisciplinary

**Objective:** To demonstrate in various practice settings the value of students at the University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS) in learning and contributing to direct patient care through experiential activities.

**Design:** Pharmacists and student pharmacists commonly serve in direct patient care roles on health care teams. SSPPS student pharmacists have multiple opportunities throughout their four-year curriculum to provide direct patient care activities as part of experiential training. These opportunities include student immunisation programs, non-pharmacist provider introductory pharmacy practice experiences, participating on multidisciplinary teams during advanced pharmacy practice experiences, and promoting public health during health fairs and at community based clinics. During these patient care activities, students are providing a wide variety of patient care interventions including initiating medications, medication counselling, point of care screening, medication dose adjustments, discontinuation of medications, and identification and resolution of serious adverse drug reactions.

**Assessment:** Prior to graduation, the SSPPS class of 2015 will have engaged in seven full-time integrated rotations and five longitudinal practice experiences. The types of practice settings, public outreach activities, and point of care testing utilised to train the class of 2015 will be described, including the elective public outreach experiences selected by students. Student reported direct patient care activities and patient outcomes documented during patient care rotations will also be described.

**Conclusion:** Student pharmacists provide consistent direct patient care at a variety of practice settings. These direct patient care activities develop 'practice-ready' graduates who have the abilities to expand upon pharmacy services throughout careers.

### **TIP32. Environmentally-aware pharmacists via the concept of changing the mindset of pharmacy students**

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**Keywords:** Pharmaceutical Education, Pharmacy Teaching

Faculty of Pharmacy, University of Helsinki, educates both BSc and MSc-level pharmacists. Both curricula have been under continuous evaluation and change according to the needs of the developing working life. The last reform of the BSc curriculum took place a year ago and the first BSc students started in autumn 2014 and will graduate in 2017. The reform will continue with MSc-students. Part of the renewal process has also been the sustainability and environmental discussion going on in the society.

**Objective:** Our goal is to educate future pharmacists towards environment-conscious continuum of drug research–patient treatment–comprehensive waste management, thus creating an environmentally-aware generation of our students.

**Design:** The new concept warrants for changes in our curriculum and teacher attitudes, thus facilitating the change in mindset of the students.

**Assessment:** The project has just started and the first steps have been to enrol teachers and get them progressively involved in this new initiative, e.g. by facilitating the introduction of environmental issues into their courses or by developing entirely green approaches. As an indication of the implementation of this concept, the teachers are encouraged to use a Generation Green logo created (Figure 1).

**Conclusion:** This concept gives the new pharmacists a way of mindset that does not separate environmental management from other disciplines, but live it out as an integral part of all their actions. The concept can easily be adopted by all health and life sciences-based curricula and directly utilised in pharmacies, hospital pharmacies and (drug) industry via our graduates.

**Figure 1**

