QUB TEACHING AWARDS

APPLICATION FOR EXCELLENCE IN TEACHING BY A TEAM AWARD 2017

Contact details (lead applicant) f.hughes@qub.ac.uk	
Name (including title) Ms. Fiona Hughes, Lecturer (Education)	
School/Department: Pharmacy	
Number of years your most experienced team member has been teaching in higher education: 15	
Contact details of team members	
Name (including title)	**School/Dept**
Mr. Luc Belaid Technician	Pharmacy
Prof. Ryan Donnelly Chair in Pharmaceutical Technology	Pharmacy
Mr. Andrew Gray Technician	Pharmacy
Dr. Paul McCague Lecturer (Education)	Pharmacy
Ms. Helen McPhillips Technician	Pharmacy
Mrs. Anne Overell External contributor	Pharmacy
Dr. Carole Parsons Lecturer in Pharmacy Practice	Pharmacy

1. PREVIOUS TEACHING AWARDS (200 words maximum)

Ryan Donnelly, Carole Parsons, Helen McPhillips, Luc Belaid, Andrew Grey and Anne Overell are first-time applicants and have **not** previously won a Queen's Teaching Award.

Paul McCague was awarded a Rising Star teaching award in 2015/16 for his work on developing a flipped-classroom approach for delivery of the pharmacokinetics curriculum in a Level 3 module (Clinical Therapeutics).

Fiona Hughes was the recipient of a team award in 2013. Fiona won this along with Dr Maurice Hall, Dr Lezley-Anne Hanna, Ms Alison Buchanan and Ms Johanne Barry for her involvement in a Level 3 module (Pharmacy Practice).

This current application focuses on our work in developing a Level 2 practical course which is part of a 40-credit module (Pharmaceutical Technology). It is a laboratory-based class, where scientific concepts that the students have learnt *via* didactic methods of instruction are put into practice. It is therefore distinct from either of the teaching examples which have gained previous recognition. It is taught completely separately, by a different group of academics and technical staff.

(170 words)

2. CONTEXT FOR THE APPLICATION (500 words maximum)

Within the Pharmacy (MPharm) degree, Level 2 students study Extemporaneous Dispensing. Students prepare a medicine (Figure 1) for a patient in accordance with the directions of a fictitious prescriber on a prescription (Figure 2). This necessitates a working knowledge of pharmaceutical science. Students also require clinical skills to ensure the medication is safe for the patient e.g. the dose is appropriate for a particular age. A member of staff assumes the role of the prescriber and students are required to verbally address any clinical issues with them. In this way, students are required to employ their science and clinical knowledge, as well as use communication skills. To combine these very distinct skills, in an 'integrated' fashion within the course is a requisite for accreditation of our pharmacy programme[1].

Figure 1. Example of oral solution prepared in class with labelled medicine bottle

Figure 2. Example of prescription used for teaching purposes

Undergraduates prepare and dispense a range of medicines, including oral liquids (Figure 1), suppositories, ointments, gels and creams. It is a 'practice-based' class - it simulates activities undertaken by pharmacists in real-life and so complements the university's education strategy by contributing to employability[2].

Lectures pertaining to the class are delivered in large group settings (*n*=140) whereas the practical component is delivered in smaller groups (*n*=35). Undergraduates remain in their assigned class for the duration of the semester, benefitting from the familiarity of working alongside the same peers each week and the consistency of the same academic leading the class.

The class delivery team have diverse roles and skill-sets (Figure 3), each bringing a particular strength to the class. The students benefit in particular from the unique expertise of a pharmacist, employed by the Northern Ireland Health Board, who contributes to clinical governance, patient safety and local healthcare priorities. Ryan Donnelly, a world-leader in formulation science at professorial level brings a wealth of experience in the field to the class. Inclusion of practice-based pharmacists, ensures that the content and context are contemporary. The technicians charged with module organisation and delivery have been doing so for many years and assume a 'hands-on', and often pastoral approach. They are renowned for 'going the extra mile' to enhance the student experience.

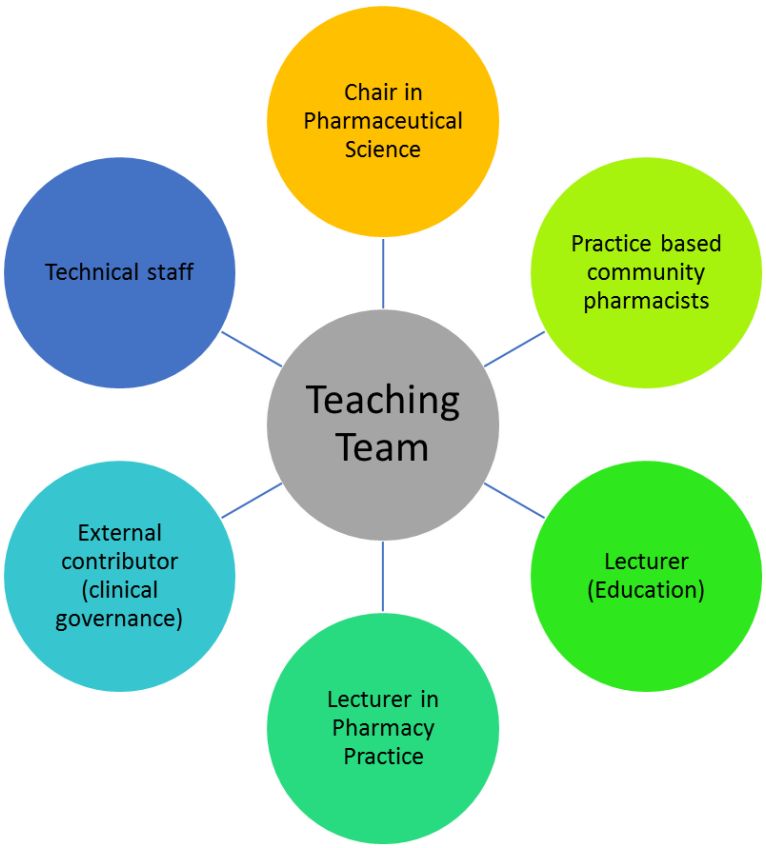

Figure 3. Members of the teaching team

(374 words)

3. DISCUSSION SECTION (See overleaf for guidance notes)

(a) How the team is promoting and enhancing the learners' experience (1000 words maximum)

The role of the pharmacist continues to evolve, with a growing clinical aspect and more patient contact[1]. However, the acquisition of scientific skills must not be offset by the increased clinical content. This challenge is further compounded by reports of disillusionment from UK pharmacy students in the early years of the course, due to a heavily-weighted science-based component[3].

Extemporaneous Dispensing, at an early stage in the MPharm, provides an appropriate platform to marry these disciplines in a bespoke manner. Through preparation of medicines that are pharmaceutically appropriate, and with the use of prescriptions and a patient-centred context, science content is covered whilst a clinical aspect is introduced, increasing the relevance to the profession.

The team adopt a teaching philosophy which draws on aspects from the 'Teaching for Understanding' (TfU) framework[4] and aligns with the QUB Education Strategy[2]. In particular, we strive to achieve '*dynamic and relevant curriculum and assessment*'. The range of teaching, assessment and feedback approaches acknowledges that students learn in different ways as outlined in Gardner's theory of multiple-intelligences[5].

A range of assessment approaches are used including both formative and summative methods. These include five 'unassessed' and five 'assessed' practicals; calculation and theory tests, and an observed structured clinical examination (OSCE). The 'unassessed' practicals are marked and annotated with feedback. These are returned to students before any summative assessments are taken to aid revision. Using this range of methods provides a mechanism to assess student understanding in a variety of ways and allows students to work towards higher levels of Bloom's taxonomy[6]. For example students can formulate products within the class drawing on the core concepts covered in lectures.

A three-pronged approach is used in provision of feedback to students.

1. All formative and summative assessments are returned to students in a timely manner (within 1 week) with a mark and written individual feedback
2. General feedback for the entire cohort is collated and posted on QOL within 1 week of each formative and summative assessment (Figure 4)
3. Staff speak to students one-to-one within the class to clarify any queries on their written feedback and to offer support mechanisms to improve future performance

Feedback: suppositories (assessed week) **2016**

Formulation:

- There is no need to rub down chloral hydrate (remember it is soluble in the suppository base and will therefore dissolve in the molten base) – some students were adding chloral hydrate using the tile method, instead of directly adding to the base. Similarly some students were adding liquid trits using the tile method – this is incorrect. Please consult the manual for further information on this.
- Keep the original drug pot and show it to the staff member when completing the drug check. We cannot sign off an unidentified quantity of drug, without evidence of what it might be.
- A further reminder about the DV value, since there were issues with calculating this again this week. There are examples of these calculations on p 115 of your manual-please use these to aid your understanding and help you to practice.

***** When performing a liquid trituration the DV value of the drug becomes 1*****

- Many students did not use the correct units of weight – the DV value calculates the amount of base displaced by a certain mass of drug in GRAMS. If your drug has been weighed in mg, you need to convert this prior to carrying out the calculation. Some students forgot that 50mg is the MINIMUM MASS that can be weighed accurately.

Figure 4. Excerpt from a general feedback document posted to QOL on a weekly basis

In line with standards set by the professional regulator (GPhC)[1], assessments are devised in accordance with Miller's triangle of clinical competence[7] (Figure 5).

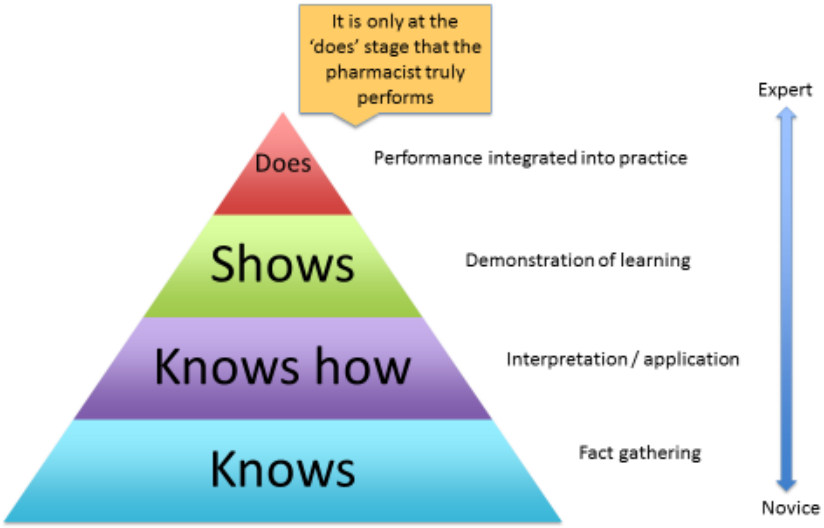

Figure 5. Miller's triangle of clinical competence[7]

To our knowledge, our team was the first to implement an OSCE into a science-based class within the MPharm degree[8]. Implementation of OSCE as an evaluation method is a focus for the school's assessment strategy since the GPhC has described 'shows how' as a situation whereby the student can 'demonstrate that they can perform in a stimulated environment or in real life'[1].

The students are considered to be partners in the development of the class and their opinions form the basis of future class delivery. An example of this has been the development of a series of videos to demonstrate core skills required in the class (Figure 6). These include formulation of specific products as well as general laboratory technique. Previously, these skills were introduced to students in a one-off laboratory demonstration. Anecdotal evidence suggested that some students found it difficult to hear the explanations during the live demonstrations, a particular problem for students whose first language was not English. It was agreed that because students engage well with digital platforms, that online videos may be a good option to deliver this aspect of the material. It also provides students with the opportunity to watch the demonstrations multiple times and at their own pace. The videos were used as an additional teaching method for students for the first time in Semester 1 of 2016/17. This approach demonstrates how we strive to contribute to the QUB Education Strategy[2] through '*innovation and flexible delivery*'.

The team approach in this endeavour was critical. The expertise of the technicians in lab techniques meant that they were entrusted with developing and performing a number of the demonstrations. The expertise of the academic staff ensured that legal and clinical aspects were accurate.

Figure 6. Screenshot from an online video (Preparing an Oral Suspension)

In order to evaluate the various methods of teaching and feedback employed, a pedagogical research project was designed and carried out in spring 2017. This project sought undergraduate views on the teaching and feedback methods employed. A total of 105 students completed the questionnaire (response rate = 96%). Feedback from students suggests the wide range of methods employed is conducive to their learning and progress (Figure 7).

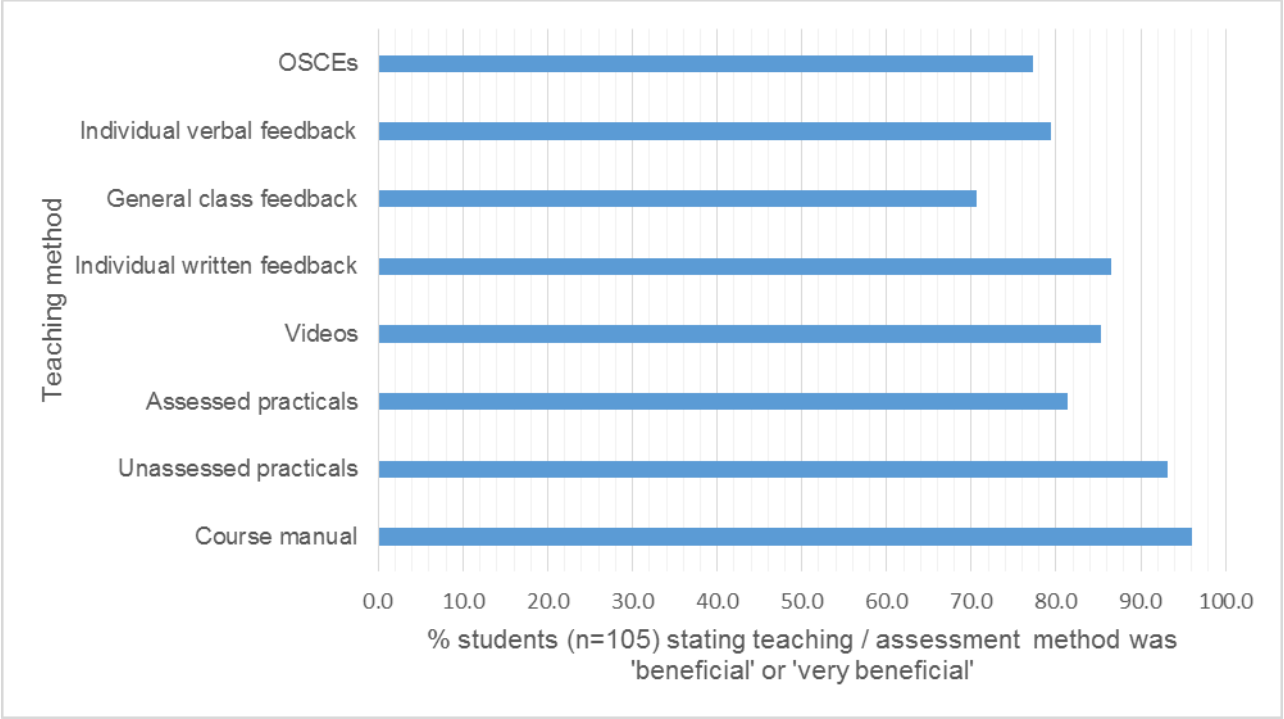

Figure 7. Student views on teaching and feedback methods

Additionally, free text comments further endorse the quality of the teaching (Figure 8) and student satisfaction with the videos (Figure 9 and Table 1). Results will inform future delivery of the class. It is anticipated that this work will be presented at a Pharmacy Education Conference being held in Manchester in June 2018.

"The teaching staff were always happy to answer any questions I had and always helped me through as much as they could."

"Well taught, clear instructions. I think that this is a well delivered…module in the career of pharmacy.'

"Teachers and staff were very helpful and wanted you to get the best mark you possibly could."

Figure 8. Student comments on staff and the quality of the teaching

"I think the videos were a good basis of knowledge going into extemp class because no one has ever made a cream/ suppository before etc. and it can be hard to know what exactly to do from just reading instructions off a page."

"The videos were a huge help, especially when at the very beginning when I didn't understand the teacher's explanation in the first introductory class and I continued to watch them as I am a very strong visual learner."

"I found that the videos enabled me to know what each of the techniques looked like and I found the combination of the video and the manual much more helpful than simply reading the manual alone."

"The videos were extremely useful especially when it came to preparing products for the first time and then revising how to make them for both the practice and actual exam."

Figure 9. Student comments on the videos

Table 1. Student satisfaction with the quality of videos.

Students (*n*=105) rating the quality of the online videos as 'very good' or 'excellent'	
Visual quality	81.0%
Sound quality	76.2%
Overall quality	81.0%

Teaching evaluation questionnaires (TEQs) are a further mechanism by which we constantly review the quality of our teaching. TEQ scores for three recent evaluations for academic team members are presented in Table 2.

Table 2. Student satisfaction of teaching as assessed by TEQs

	Teaching Evaluation Scores (/5)		
Professor Ryan Donnelly	4.8	4.8	4.7
Ms Fiona Hughes	4.9	4.9	4.7
Dr Paul McCague	5.0	5.0	4.9
Dr Carole Parsons	4.9	4.6	4.6

Regular communication and team meetings underpin our collaborative approach and facilitate the innovative and flexible delivery. The team hold four scheduled meetings per academic year. This includes a meeting during the summer break to discuss how the course will be modified for the incoming semester. The team work together to update the course manual on an annual basis to ensure it is contemporary. Throughout the academic year staff liaise primarily *via* an email group to discuss any queries arising from teaching sessions. This formal communication is complemented with *ad hoc* interaction within the laboratory setting.

(993 words)

(b) How team members support colleagues and influence student learning approaches
(350 words maximum)

Members of our team develop and share their expertise with other School colleagues through membership of a variety of committees (e.g. School Board, Staff Student Consultative Committee, Teaching & Learning Committee and Assessment Committee). The approaches taken in Extemporaneous Dispensing have been highlighted *via* these fora as examples of good practice.

The team has contributed to institutional initiatives[2] through the development and roll-out of the 'Pharmacists in Schools' programme[9,10] (Figure 10). This innovative programme raises awareness of the role of the pharmacist. Children participating in this scheme prepare three "medicines" in response to "prescriptions" for fictional patients. They learn how pharmacists use their medical and scientific knowledge to make medicines for patients, enthusing them to consider science-based careers, while promoting our role as healthcare professionals in the community. Level 3 pharmacy students have the opportunity to accompany and support the team on these visits. Technical staff provide training to the students in advance of the visits. This provides students with an important opportunity to use knowledge and communication skills developed during the MPharm, as well as supporting children from often less well-off areas. Undergraduate students are awarded with Degree Plus Certificate for their input to this program.

Figure 10. School of Pharmacy Staff and Students with pupils from a local school[11].

Furthermore, the team contribute to QUB's internationalisation agenda[2] *via* provision of course material, advice and mentorship to colleagues delivering the BSc in Pharmaceutical Science at China Queen's College (CQC). Academic staff have recorded lectures which are available to students studying at the CQC campus. Team members provide advice *via* email to colleagues in China where the course is now in its second year.

The team contributes to the Scholarship of Teaching and Learning, through dissemination of a wide range of pharmacy education initiatives at regional, national and international level. These include textbooks (*n*=1), peer-reviewed papers (*n*=6), conference presentations (*n*=15) and book chapters (*n*=1) [8-10,12-32].

(315 words)

(c) Professional development activities undertaken by the team members and the impact of these activities on student learning (350 words maximum)

Ryan, Fiona, Carole, Paul and Anne are all registered pharmacists with the Pharmaceutical Society of Northern Ireland. Continuing professional development (CPD) is a fundamental and compulsory part of registration. A reflective portfolio is submitted on an annual basis. Undertaking CPD, allows us to update course material in light of any new evidence or professional guidance. Through constantly reflecting on, and refining our practice, we ensure that students receive teaching which is contemporary and reflects clinical practice.

Ryan, Paul and Carole have undertaken Doctorates of Philosophy (PhD) in Pharmacy. Fiona is currently undertaking a Doctorate of Education (EdD) and has completed a Clinical Diploma in Community Pharmacy. The important links between research and teaching are thus acknowledged and embedded in

our teaching practice. Furthermore, we have been able to use the skills acquired to continue pedagogical research[8-10,12-32].

All academic members of the team have undertaken a Postgraduate Certificate in Higher Education Teaching. Paul has also undertaken a Diploma in Teaching and Learning in Higher Education. Furthermore, the team have undertaken a plethora of courses organised by CED, to include: Teaching with Emotional Intelligence, MediaSite®, QuestionMark®, Course Design for Increased Student Satisfaction, Making Student Feedback Work. Through undertaking such training, the team have enhanced the course and student experience. For example, MediaSite training facilitated production of the online videos. The benefit to student learning has been extremely positive (as evidenced above). We plan to further enhance student learning through provision of formative multiple choice questions using QuestionMark®.

Helen, Luc and Andrew have undertaken Laboratory Demonstrating for Technical Staff, Health & Safety and First Aid. Helen has completed BTEC National Certificate in Pharmacy which reflects current developments within pharmacy technician practice such as training and education. Through undertaking these courses, technical staff have been able to explore a range of methods of teaching which they put into practice during class. This type of professional development coupled with the experience gained through membership of the team has helped Luc secure a recent promotion. Luc's new role will be focused on teaching practical aspects of the novel BSc programmes in the School.

(347 words)

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