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Course-related extra curricular activities of M. Pharm undergraduate students at the University of Portsmouth

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Abstract

Little is known of the quality or extent of the pharmacy-related experiences of pharmacy students during their vacations. Such information would be valuable in assessing its relevance to the undergraduate curriculum and in future course design. This study surveyed course-related, extracurricular activity (CRECA) of all M. Pharm undergraduates during a single academic year (August 2002–July 2003). The overall response rate to the questionnaire was 64.8%.

The majority of respondents had completed at least one period of CRECA, mainly during the summer vacation, and most were completed in a community or hospital setting. A major motivation for student choice of activity was gaining a specific workplace experience relating to their chosen career pathway (>80%); the rate of pay was of less importance (<36%). Workplace activities became more sophisticated passing from stage 1 to 4 (corresponding with year 1–4 of the course), although range of activity and contact with healthcare professionals and other students were already significant at stage 1. CRECA helped to confirm the student's career choice in approximately 80% of cases, and 90% had a better understanding of the pharmacist's role after completion. More than 75% of respondents at all stages thought that CRECA should be incorporated into the M. Pharm. The advantages and disadvantages of the programme are discussed.

Q1 **Keywords:** *Work-based learning, pharmacy, undergraduate, community pharmacy*

Introduction

The four-year Master of Pharmacy (M. Pharm) degree framework is common to all Schools of Pharmacy in the UK. After graduation and successful completion of a further fifty-two weeks of pre-registration training in an approved environment, such as in a community pharmacy with some hospital placement (typically 2–4 weeks), or in a hospital pharmacy with a corresponding period in community pharmacy, holders of this qualification are eligible to take the registration examination and, if successful, register and practice as a pharmacist.

Each course is periodically re-accredited by the Education Committee of the Royal Pharmaceutical Society of Great Britain (RPSGB), which seeks compliance with the common framework, syllabus and resource level; however, considerable inter-course variation in delivery and emphasis is permitted. Indeed, this is welcomed, as each school then has the opportunity to teach its particular strengths and utilize local resources and opportunities. The RPSGB list of criteria for degree accreditation, last updated in April 2002, does nevertheless contain the statement that the student should gain "first-hand structured experience of practice, including contact with patients and practitioners of other healthcare professions," and that the student "should be made aware of and encouraged to undertake employment or attachment for vacation experience in pharmacy practice" (RPSGB, 2002).

M. Pharm degrees are also subject to external audit by UK Quality Assurance Agency (QAA). The QAA is a Government body responsible for encouraging improvement in standards of higher education by audit and provision of reference points, in the form of

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discipline "benchmark statements", against which provision can be judged. The pharmacy subject benchmark also has input in practice experience at undergraduate level, in that graduates should have demonstrated "the ability to communicate effectively with patients and other members of the healthcare team." The statement also cites reports of external placements, where applicable and appropriate, as being a possible way of assessing student achievement (QAA, 2002).

M. Pharm degrees concentrate on providing education and training in the related disciplines of the pharmaceutical sciences, pharmacology and pharmacy practice and each course attempts to do so in an integrated, balanced way. Alongside their education, the training of UK pharmacy students is almost unique among the health professions in that there is no specific and universal requirement that they should undergo practice-based training before graduating. Of course, many schools, including the University of Portsmouth, recognise the value of this approach and have various schemes embedded in their courses, such as short clinical placements, inter-professional training and work-place visits. Only one course has a sandwich structure that allows an extended period of study between the 3 and 4 years of the academic programme.

In addition to these curricular activities, many pharmacy students hold pharmacy-related jobs during their holidays or weekends. While such experience is potentially valuable and financially rewarding, little is known about the uptake, content and quality of these course-related, extracurricular activities (CRECA)—one of the reasons why the Royal Pharmaceutical Society does not recognise this type of training when accrediting M. Pharm degrees.

Structured CRECA is available to students from a number of sources. The following serve as an example of the type of CRECA available in both primary and secondary care.

During the summer vacation, between June and August, structured holiday experience schemes are provided by pharmacy-related organizations, such as Boots, Lloyds and Moss Pharmacies, and a number of NHS Hospital Trusts. The Boots vacation placement scheme, described here as an example, has the following objectives:

(1) To provide undergraduates with a practical experience of community pharmacy from the company perspective;
(2) To provide the student with an insight into pre- and post-registration training opportunities;
(3) To introduce students to reflective practice and continuing professional development (CPD) (Boots, 2004).

The scheme is competency-based, tutored and split into three stages between three summer placements, each being eight weeks in duration. Stage 1 comprises a Healthcare Assistant course centred on the study of over-the-counter medicines and pharmacy calculations. This is completed by workbook-assisted study of these topics for approximately 3 h a week while working in the pharmacy, with at least 4 weeks working at the counter and 2 weeks in the dispensary. The student receives two reviews from their tutor at four and eight weeks to ensure attainment of six competencies (meeting customers' needs, improving business performance, interpersonal understanding, building relationships, developing confidence in self and development of expertise), and four employee characteristics (flexibility, reliability, enthusiasm and commitment). The student must also pass a written examination before receiving a certificate and being allowed to undertake stage 2. This builds upon the first stage, such as with exercises in responding to symptoms, and also helps the student to develop expertise in the dispensary. The pace of work and the assessments are similar to those of stage 1. The final, eight-week period (stage 3) involves study of a range of pharmaceutical care issues and specialist study resulting in the production of a pharmaceutical care plan; the latter is assessed. Both stages 2 and Three focus on the dispensary. The placements are supported by common induction and presentation days, a diary for recording and reflecting upon activities and logging CPD activities.

Hatfield, Marriott & Harper (2000) identified summer placements as a way of raising awareness of careers in hospital pharmacy, but lamented the fragmented nature of provision at that time. Since then many NHS Hospitals have structured vacation experience schemes based on portfolios designed by NHS Regional Education and Training Teams and funded by Workforce Development Confederations (Joshua and Fleming, 2002, London Specialist Pharmacy Services, 2004). For example, the South East (South Coast) Pharmacy Education and Training summer student scheme aims to provide undergraduates with an insight into hospital pharmacy practice and to enable students to make informed career decisions (Joshua and Fleming, 2002). The placement is normally 4–6 weeks in duration. At the commencement students are provided with a learning resource pack, including a portfolio and reflective diary in which to identify training needs and record evidence of achievement. The portfolio is examined at the end of the scheme to determine if the student has achieved the following five core-learning outcomes of being able to:

(1) Describe the roles and responsibilities of pharmacists, pharmacy technicians and pharmacy assistants;

(2) Describe the roles of other healthcare professionals employed within secondary care;
(3) Describe the functions of departments comprising hospital pharmacy services within the placement Trust;
(4) Give examples of career structures within hospital pharmacy;
(5) Examine education opportunities available to hospital pharmacy staff.

Optional learning outcomes comprise a selection of transferable and subject-specific skills. The student is provided with a programme of work-experience that should enable them to achieve these outcomes and obtain experience of patient services, pharmaceutical care at ward level, stock control and procurement, sterile and non-sterile preparation and quality assurance. There may also be some special project work, an exchange with another hospital or a period of time spent in a Primary Care Trust. Students are supported by a series of regional study days centred on the use of the portfolio and reflective diary, networking with other vacation students, the pre-registration year and hospital pharmacy careers. Successful completion of the scheme is rewarded with a Certificate of Achievement, which will be of use to the student at the interview for pre-registration posts.

In addition to the above, there are many other, less structured forms that CRECA might take. More information about these activities would facilitate the aims of the study, which were to make an assessment of:

(1) The nature and quantity of the CRECA being undertaken;
(2) Its value from the student perspective;
(3) Whether the school of pharmacy is being effective in its dissemination of information on employment opportunities;
(4) Whether employment providers are providing appropriate and relevant experience;
(5) How best to satisfy the perceived experience needs of individual students;
(6) And ultimately, an assessment of the feasibility of incorporating these extra-curricular activities into the undergraduate M. Pharm course.

With the above aims in mind, we conducted a study among the entire pharmacy student population of University of Portsmouth undergraduates; our study had the following objectives:

(1) To design and pilot stage (year)—specific, self-administered student questionnaires;
(2) To administer the final questionnaires to their respective total student cohorts at the University of Portsmouth; thus obtaining a snapshot of what all four stages (years) had done;
(3) To analyse the results and draw stage-specific inferences;
(4) To pool data and draw course-specific inferences where relevant.

Materials and methods

Questionnaire

The survey took the form of a piloted, structured questionnaire (copies available from the authors). Draft questionnaires were formulated during two one-hour brainstorming sessions involving the authors, who were asked to consult the available published literature on the topic in the seven-day intervening period. Piloting was carried out on 10 subjects selected systematically (sampling interval = 10) from alphabetical class lists; minimal amendments were made, largely of an organisational nature, before preparation of the final questionnaire for each year.

Subjects were informed that they should restrict their replies to their activities during the year previous to their present year of study, thus providing a snap shot of CRECA during the year August 2002–July 2003. The questionnaire was divided into four parts: the first sought details of gender and age; the second requested details of sector and periods worked; the third asked for details of the activities undertaken during the employment; the fourth invited respondents to evaluate the experiences gained and their relevance to the course, using five-point Likert scales. Most questions were closed, allowing tick-box entries, but space was provided for personal reflections where appropriate.

Administration

The questionnaires were distributed to each pharmacy undergraduate student at the University of Portsmouth who was at a key point of opportunity, for example, the start of a timetabled lecture, where a brief explanation of the purpose of the study and administration details were given. Questionnaires were distributed approximately halfway through the first semester of the academic year (November 2003). Students were given a maximum of 2 weeks to reflect on the questions and return the completed form to a central point in the School of Pharmacy. Replies were anonymous, but respondents were asked to provide their university student registration number to validate their year of study and facilitate a second round of the first questionnaire. This was distributed to non-respondents, who may have been absent from

Table I. Location of CRECA undertaken by M. Pharm students by stage.

	M. Pharm stage (n = students who did CRECA)*			
Location	1 (44)	2 (53)	3 (41)	4 (91)
Community	34 (77.3%)	48 (90.6%)	38 (92.7%)	82 (90.1%
Hospital	15 (34.1%)	6 (11.3%)	10 (24.4%)	36 (39.6%)
Industry	1 (2.3%)	3 (5.7%)	1 (2.4%)	0 (0%)
Primary care trust	0 (0%)	2 (3.8%)	0 (0%)	2 (2.2%)
Other	1† (2.3%)	0 (0%)	0 (0%)	0 (0%)

* One stage 1 student reported working in a Chinese herbal remedy shop; †Total responses are greater than n because some respondents cited more than one location.

the lecture, 3 weeks after the first attempt and was conducted in a similar fashion. At the close of the survey, all returned questionnaires were entered in a random draw with a modest financial prize to stimulate interest and encourage a good response rate by the deadline.

Analysis

Data from all questionnaires were analysed using Snap4 Professional software (Mercator). Statistical analysis was carried out using Minitab Version 13 (Minitab Inc.), as described in the results section. Personal observations expressed by respondents on their questionnaires that added colour and depth to their tick-box replies were collated and reported after content analysis (Table XIII).

Results

Response rate

The total response rate of usable questionnaires after the second circulation was: stage 1: 44.1% ($n = 71$ of 161); stage 2: 97.3% ($n = 109$ of 112); stage 3: 44.1% ($n = 52$ of 118) and stage 4: 83.3% ($n = 95$ of 114).

Demographics

There were no statistically significant differences between the proportions of males and females in the respondent group, or in the corresponding year group as a whole, which was obtained from the University registration database (Chi-squared test, $p = 0.977$, 0.264, 0.155 and 0.979, for stages 1–4, respectively).

Similarly, there were no statistically significant differences in the banded age distribution of respondents and those of the corresponding year groups (Mann-Whitney, $p = 0.425$, 0.479, 0.191 and 0.470, for stages 1–4, respectively). The proportions of students who reported undertaking some kind of CRECA during the previous year were stage 1: 62% ($n = 44$ of 71); stage 2: 48.6% ($n = 53$ of 109); stage 3: 78.8% ($n = 41$ of 52) and stage 4: 95.8% ($n = 91$ of 95). There were no statistically significant differences between the proportions of males and females in the sample and the proportions undertaking CRECA.

CRECA details

The location of the CRECA undertaken by students is shown in Table I. For stages 1 and 3, there were no statistically significant differences between the proportions of male and female students working in the major areas of hospital and community pharmacy. Fewer females than expected worked in hospital at stage 2 ($p = 0.016$), whereas, a greater number of females did so at stage 3 ($p = 0.044$). The time periods when the CRECA was undertaken are shown in Table II. When given a series of options concerning the time actually worked, the modal time periods for all 4 stages were 1–2 weeks at Christmas, 1–2 weeks at Easter and 5–8 weeks during the summer vacation. The number of respondents reporting having worked

Table II. Timing of CRECA undertaken by M. Pharm students by stage.

	M. Pharm stage (n = students who did CRECA)*			
Period	1 (44)	2 (53)	3 (41)	4 (91)
Christmas 2002	17 (38.6%)	13 (24.5%)	5 (12.2%)	18 (19.8%)
Easter 2003	12 (27.3%)	10 (18.9%)	5 (12.2%)	10 (11.0%)
Summer 2003	22 (50.0%)	36 (67.9%)	41 (100.0%)	88 (96.7%)
Term time	21 (47.7%)	15 (28.3%)	2 (4.9%)	9 (9.9%)

* Total responses are greater than n because some respondents cited more than one location.

Table III. CRECA roles undertaken by M. Pharm students by stage.

	M. Pharm stage (n = students who did CRECA)*			
Role	1 (44)	2 (53)	3 (41)	4 (91)
Dispensary assistant	22 (50%)	19 (35.8%)	31 (75.6%)	71 (78.0%)
Healthcare counter assistant	18 (40.9%)	16 (30.2%)	23 (56.1%)	39 (42.9%)
Hospital ward rounds	8 (18.2%)	1 (1.9%)	5 (12.2%)	26 (28.6%)
Medicines information department assistant	3 (6.8%)	0 (0.0%)	5 (12.2%)	24 (26.4%)
Pharmacy stores assistant	1 (2.3%)	1 (1.9%)	4 (9.8%)	20 (22.0%)
Pharmacy manufacturing assistant	2 (4.5%)	1 (1.9%)	6 (14.6%)	15 (16.5%)
Quality assurance laboratory assistant	5 (11.4%)	4 (7.5%)	5 (12.2%)	11 (12.1%)

At stage 1, two students highlighted their existing roles as qualified pharmacy dispensers. One stage 3 student worked with a formulary pharmacist and two students at stage 4 recorded working in a clinical trials department (1) and a radiography department as a nuclear medical assistant (1).

* Total responses may be greater than n because some respondents cited more than one role.

for greater than 8 weeks during the summer were 4, 9, 13 and 35, for stages 1–4, respectively.

Respondents were also asked to indicate whether they were paid for their CRECA; most students undertook paid work: 56.8, 79.2, 100 and 98.9%, for stages 1–4, respectively. The percentages of those undertaking unpaid work were 45.5, 18.9, 7.3 and 8.8%, in stages 1–4, respectively. Unpaid work was invariably in the two main CRECA settings (community or hospital). The totals for unpaid work in each stage were: stage 1—12 (community) and 12 (hospital); stage 2—10:2; stage 3—3:2 and stage 4—8:7. One student at stage 1 and one at stage 2 reported paying for their CRECA; both were located in community pharmacy. One stage 4 student reported paying for half of a four-week period and working for free for the second two weeks, again in community pharmacy.

Respondents undertook a variety of roles, shown in Table III. Table IV shows a broad spread of activities undertaken within these roles. The majority of students indicated that they had the chance to work with other healthcare professionals. The nature of the contacts is shown in Table V. Table VI shows the sources of information students used to obtain their CRECA post. Students were asked to indicate the factors that influenced their choice of their longest period of CRECA, responses for which are shown in Table VII. Students were then asked to comment on their experiences, focussing on their longest period of CRECA of the year (Table VIII).

Those students who had indicated that they had not done any CRECA during the year under study were asked to provide reasons (Table IX).

All respondents were asked if they would prefer to have the University help them find CRECA posts. Approximately, three quarters of stage 2 (75.2%) and stage 3 (78.8%) students said yes (Table X). Lower percentages were found for students at stage 1 (56.3%) and stage 4 (49.5%). A sub-analysis revealed

Table IV. Activities undertaken during CRECA by M. Pharm stage.

	M. Pharm stage (n = students who did vacation work)*			
Activity	1 (44)	2 (53)	3 (41)	4 (91)
Dispensing/labelling/checking	35 (79.5%)	35 (66.0%)	41 (100.0%)	90 (98.1%)
Patient counselling	16 (36.4%)	22 (41.5%)	30 (73.2%)	76 (83.5%)
Stocking shelves	21 (47.7%)	41 (77.4%)	33 (80.5%)	73 (80.2%)
Stock ordering	24 (54.5%)	22 (41.5%)	30 (73.2%)	63 (69.2%)
Handling enquiries	17 (38.6%)	27 (50.9%)	30 (73.2%)	56 (61.5%)
Directed study	9 (20.5%)	4 (7.5%)	27 (65.9%)	50 (54.9%)
Running errands	15 (34.1%)	21 (39.6%)	16 (39.0%)	48 (52.7%)
Dose calculations	10 (22.7%)	10 (18.9%)	12 (29.3%)	32 (35.2%)
Cleaning/polishing	9 (20.5%)	17 (32.1%)	9 (22.0%)	18 (19.8%)
Making tea	8 (18.2%)	14 (26.4%)	8 (19.5%)	16 (17.6%)

Students cited a range of other activities: at stage 1, two students endorsed prescriptions; at stage 2, one student was involved with designing standard operating procedures and one with prescribing data analysis. At stage 3, one student cited till work, one removing outdated stock and one, making entries in the private prescription book. One stage 4 student was involved with extemporaneous manufacture of creams, another with preparing medication trays for nursing homes and another, checking patient drug charts.

* Total responses are greater than n because many respondents cited more than one activity.

Table V. Other professionals and students encountered by M. Pharm stage.

	M. Pharm stage (n = students who worked with others)*			
Others	1 (40)	2 (50)	3 (41)	4 (90)
Pharmacists	36 (90.0%)	50 (100.0%)	41 (100.0%)	90 (100.0%)
Doctors	17 (42.5%)	8 (16.0%)	10 (24.4%)	38 (42.2%)
Nurses	13 (32.5%)	5 (10.0%)	7 (17.1%)	29 (32.2%)
Pre-registration pharmacy students	19 (47.5%)	23 (46.0%)	25 (61.0%)	57 (63.3%)
Pharmacy undergraduates	13 (32.5%)	9 (18.0%)	18 (43.9%)	38 (42.2%)
Students from other healthcare professions	7 (17.5%)	5 (10.0%)	10 (24.4%)	8 (8.9%)

Stage 3 students cited the following additional contacts: a pharmaceutical industry representative (1), a hospital administrator (1), a qualified industrial analytical chemist (1). One stage 4 student recorded working with a dentist.
* Total responses are greater than n because many respondents cited more than one contact.

that a majority of all respondents at all stages would still like University assistance with finding CRECA posts, irrespective of whether they had undertaken CRECA in the previous year or not. The difference was less marked for students who had already obtained work at stages 1 and 4, with just less than half of the students saying they would not require help.

More than 75% of respondents at each stage of the M. Pharm indicated that they thought that CRECA should be an integral part of the M. Pharm degree (Table XI) and between 17 and 28% thought it should be incorporated into each year of the course. Stages 2 and 3 were the most popular years for its inclusion. Attitudes to doing voluntary (unpaid) CRECA were explored in a specific question (Table XII).

Stage 4 students were only asked if they felt that their CRECA had so far facilitated gaining a pre-registration training place. Ninety-four of the 95 respondents said they thought it had, suggesting that the CRECA had value-added in terms of subsequent career progression.

Discussion

While the percentage response rates for each stage varied considerably between the various M. Pharm stages, the demographics of those responding in terms of age and gender do appear to reflect those of the year cohorts as a whole, allowing limited generalisations from the sample to the student cohort. It should be emphasised that the second objective was to obtain a snapshot of CRECA during a one-year period within each stage. While intuitively it is extremely unlikely that a student could progress through the whole of the M. Pharm without doing any CRECA, this study cannot show that this is the case. In this study, almost all stage 4 respondents (96%) had done CRECA for a variety of reasons (Table VII), but also possibly to finance student debt or to gain useful experience for pre-registration interviews, which take place early in stage 4.

The current state of affairs in the UK means that students will almost certainly have to work during their vacation to alleviate accumulating student debt. However, that work need not necessarily be related the pharmacy; non-CRECA activities were not investigated in this study. Almost half of the stage 1 students said they had worked during the term, and there were smaller numbers of students at other stages who undertook term-time CRECA as well (Table II); anecdotally, this was mainly during weekends. Many students undertake part-time work during the term for

Table VI. Sources of information on CRECA posts by M. Pharm stage.

	M. Pharm stage (n = students who did CRECA)*			
Source	1 (44)	2 (53)	3 (41)	4 (91)
University staff	1 (2.3%)	9 (17.0%)	18 (43.9%)	36 (39.6%)
Notice boards/posters	2 (4.6%)	4 (7.5%)	12 (29.3%)	29 (31.9%)
Company road shows	0 (0%)	0 (0%)	0 (0%)	17 (18.7%)
Friends and relatives	27 (61.4%)	28 (52.8%)	22 (53.7%)	28 (30.8%)
Internet	1 (2.3%)	7 (13.2%)	2 (4.9%)	9 (9.9%)
Worked at location previously	4 (9.1%)	3 (5.7%)	1 (2.4%)	4 (4.4%)
Answered in-store advertisement	0 (0%)	1 (1.9%)	3 (7.3%)	1 (1.1%)
Job centre	0 (0%)	0 (0%)	1 (2.4)	1 (1.1%)
Made proactive contact with pharmacy	0 (0%)	1 (1.9%)	4 (9.8%)	18 (19.8%)

Five stage 1 students cited their college teachers/careers advisors as the source of information.
* Total responses are greater than n because many respondents cited more than one source.

Table VII. Factors influencing choice of CRECA by M. Pharm stage.

	M. Pharm stage (n = students who did CRECA)*							
	1 (44)		2 (53)		3 (41)		4 (91)	
Influence	Important (%)	Unimportant (%)	Important (%)	Unimportant (%)	Important (%)	Unimportant (%)	Important (%)	Unimportant (%)
Rate of pay	27.2	40.9	22.6	30.2	31.7	34.1	35.2	36.3
Establishment's reputation	50.0	18.2	34.0	24.5	78.0	7.3	63.7	7.7
Specific experience desired by student	86.4	4.5	81.1	7.5	95.1	4.9	93.4	5.5
Had previously worked at that site	27.3	47.7	11.3	28.3	36.6	36.6	44.0	28.6
Geographical location	50.0	27.3	56.6	15.1	65.9	17.1	73.6	9.9

Percentages represent merged data for very important/important and not very important/unimportant on a 5-point Likert scale; null point percentages (neither important nor unimportant) are not shown.

Table VIII. Students' opinions of their longest period of CRECA by M. Pharm stage.

	M. Pharm stage (n = students who did CRECA)*							
	1 (44)		2 (47)		3 (41)		4 (91)	
Opinion	Agree (%)	Disagree (%)	Agree (%)	Disagree (%)	Agree (%)	Disagree (%)	Agree (%)	Disagree (%)
Good quality of training	72.7	4.5	68.1	14.9	92.7	2.4	86.8	0
Valuable opportunity to work with other healthcare professionals	81.8	6.8	72.3	4.3	90.2	4.9	82.4	6.6
CRECA helped me to better understand the pharmacist'srole	90.9	6.8	91.5	0	97.6	0	92.3	2.2
CRECA helped me to develop pharmacy-related skills	79.5	4.5	76.6	2.1	100.0	0	94.5	0
There was sufficient opportunity for private study	31.8	22.7	17.0	36.2	41.5	34.1	49.5	22.0
CRECA was beneficial to my future M. Pharm studies	75.0	6.8	87.2	0	87.8	0	85.7	4.4
I felt a valuable member of the team	72.7	4.5	46.9	12.8	82.9	4.9	86.8	4.4
CRECA reinforced my career choice	81.8	11.4	78.7	8.5	82.9	0	82.4	4.4
I enjoyed the CRECA	81.8	4.5	78.7	8.5	92.7	0	87.9	3.3

Percentages represent merged data for strongly agree/agree and diasgree/strongly disagree on a 5-point Likert scale; null point percentages (neither agree nor disagree) are not shown.

Table IX. Reasons given for not undertaking CRECA by M. Pharm stage.

	M. Pharm stage (n = students not undertaking CRECA)*			
Reason	1 (27)	2 (56)	3 (11)	4 (4)
Application rejected	11 (40.7%)	26 (46.4%)	7 (63.6%)	0 (0%)
Did not know where to look	6 (22.2%)	15 (26.8%)	1 (9.1%)	1 (25%)
Did not perceive value of CRECA at this stage	1 (3.7%)	5 (8.9%)	1 (9.1%)	1 (25%)
Not aware of opportunities available	2 (7.4%)	9 (13.8%)	0 (0%)	0 (0%)
Pay unappealing	0 (0%)	2 (3.6%)	1 (9.1%)	0 (0%)
Laziness	1 (3.7%)	4 (7.1%)	1 (9.1%)	2 (50%)
Had job unrelated to pharmacy	2 (7.4%)	1 (1.8%)	0 (0%)	0 (0%)
Travelling	2 (7.4%)	4 (7.1%)	3 (27.3%)	0 (0%)
Had re-sit examinations	2 (7.4%)	1 (1.8%)	1 (9.1%)	0 (0%)
No reason given	2 (7.4%)	1 (1.8%)	0 (0%)	0 (0%)

* Total responses are greater than n because many respondents cited more than one reason.

financial reasons, but little is known about the potential for them to do this work as CRECA. It may well be that the job is accepted to maximise financial return rather than work simply for the experience. This might be an area worth further investigation.

Relating to the first aim, the typical periods of CRECA reported in this study were as expected. The majority of students did CRECA in the summer vacation, which at approximately 15 weeks is the longest of the three holiday periods. It is also the time when major community pharmacy multiple chains and many NHS Hospital Trusts offer structured training placements.

It is noteworthy that an increasing number of students worked for more than eight of their 15-week break, with 37% of respondents undertaking extended CRECA at stage 4. Most CRECA were paid; though unpaid CRECA featured strongly at stage 1, but fell off rapidly in subsequent stages. Thus, stage 1 students demonstrated a commendable level of interest in obtaining pharmacy experience in the year prior to starting the course. Attitudes toward doing voluntary (unpaid) CRECA indicate that voluntary work was an acceptable proposition for approximately 70% of students at any stage, demonstrating general enthusiasm for experience (Table XII). It might have been expected that such enthusiasm would have been tempered by the financial insecurity that many students currently feel, but the willingness to obtain unpaid CRECA was highest for the longest serving students (stage 4).

Paid or unpaid, this study enabled us to gain a useful impression of the work undertaken by stage 1 students before they come to university in terms of location (Table I), roles (Table III) and activities (Table IV), all of which relates to the first aim of the study. For example, a greater proportion of stage 1 students (34%, Table I) had done some CRECA in a hospital, compared to stages 2 or 3, where the number declines appreciably. Even at this early stage, the variety of activities and work colleagues to which students were exposed is impressive (Table V). The relatively low uptake of CRECA reported by stage 2 students reflecting on their stage 1 experiences may be because they are at the earlier stage of the course, are still solvent and have other priorities for their vacation time.

Although by no means paramount, the rate of pay that students were likely to get for their CRECA was an increasingly important influence in their choice progressing through the stages of the course (Table VII). The reputation of the establishment was constantly an important factor. The anticipated nature and quality of the experience gained was always important to a large degree—more than 80% in all cases. After evaluating answers to supplementary questions included on the stage 4 questionnaire, it was

Table X. Respondents' opinions on whether they would like help from the University in finding CRECA posts, by M. Pharm stage.

	M. Pharm stage (n = respondent number)			
	1 (71)	2 (109)	3 (52)	4 (95)
Yes	40 (56.3%)	82 (75.2%)	41 (78.8%)	47 (49.5%)
No	13 (18.3%)	7 (6.4%)	2 (3.8%)	27 (28.4%)
No opinion	16 (22.5%)	13 (11.9%)	8 (15.3%)	21 (22.1%)
No reply	2 (2.8%)	7 (6.4%)	1 (1.9%)	0 (0%)

Table XI. Respondents' opinions on whether CRECA should be part of the M. Pharm degree and at which stage(s).

	M. Pharm stage (n = respondents)			
	1 (71)	2 (109)	3 (52)	4 (95)
Yes	61 (85.9%)	85 (78.0%)	41 (78.8%)	79 (83.2%)
No	4 (5.6%)	8 (7.3%)	5 (9.6%)	6 (6.3%)
No opinion	6 (8.5%)	9 (8.3%)	6 (11.5%)	10 (10.5%)
No reply	0 (0%)	6 (5.5%)	0 (0%)	0 (0%)
If yes, which stage?*				
1	17 (23.9%)	15 (13.8%)	5 (9.6%)	12 (12.6%)
2	19 (26.8%)	37 (33.9%)	21 (40.4%)	42 (44.2%)
3	20 (28.2%)	28 (25.7%)	22 (42.3%)	36 (37.9%)
4	10 (14.1%)	5 (4.6%)	6 (11.5%)	10 (10.5%)
All	20 (28.2%)	19 (17.4%)	13 (25.0%)	23 (24.2)

* Respondents were allowed to make more then one reply.

clear that the vast majority of respondents had done the previous year's CRECA in the branch of pharmacy that they had chosen for their pre-registration training (86%) and that they were planning to build their career in pharmacy upon (74%). With the exception of stage 4, previous work experience at a particular establishment did not appear to be a major influence on a new choice.

Location was viewed as important in at least 50% of cases, possibly due to the branch of pharmacy sought or proximity to the student's home address; these factors were not investigated. Reviewing the data gives one the impression of a greater variety and richness of the CRECA experience at stage 4, which is possibly a reflection of the quality and variety of formal vacation schemes offered in both community and hospital settings between the third and fourth year of the M. Pharm, as described in the introduction. Activities such as patient counselling and enquiry answering were more prevalent at stages 3 and 4 (Table IV). Very few students at any stage had done any CRECA in the pharmaceutical industry, reflecting the general paucity of suitable places on offer.

Relating to aims Two and Four, those students who had done some CRECA had clearly gained considerable personal and professional benefit (Table VIII). At least, 79% of students in all years had enjoyed the experience, and with the exception of stage 2, at least 73% had been made to feel valued as part of a team. In nearly 80% of all cases, the CRECA had served to confirm the career choice the student had made. Although not investigated specifically in this study, there is independent evidence suggesting that previous work experience is a powerful influence on subsequent career decisions (Silverthorne, Price, Hanning, Scanlan & Cantrill, 2003).

Although there was some variation between stages, there was a perception among at least 68% of each stage that the CRECA was of good quality. A minimum of 72% of students said the CRECA provided opportunities to work with other healthcare professionals besides pharmacists, and more than 90% of respondents at each stage reported that their CRECA had provided them with a greater understanding of the pharmacist's role. More than 75% of each stage said that the CRECA had aided in the development of pharmacy-related skills; examples of these were provided on the questionnaire and included communication, team working, decision-making and problem solving. Similar results were obtained by Rees, Collett, Crowther & Mylrea (1998) who found that students completing summer placements in community pharmacy felt they had developed team work, communication and decision-making skills, motivation and confidence. In a previous study, students' performances in knowledge-based assessments and knowledge-based transferable skills appeared to be enhanced by a placement

Table XII. Respondents' willingness to do voluntary (unpaid) CRECA by M. Pharm stage.

	M. Pharm stage (n = respondents)			
	1 (71)	2 (109)	3 (52)	4 (95)
Yes	51 (71.8%)	75 (68.8%)	38 (73.1%)	78 (82.1%)
No	10 (14.1%)	11 (10.1%)	6 (11.5%)	12 (12.6%)
No opinion	9 (12.7%)	13 (11.9%)	6 (11.5%)	4 (4.2%)
No reply	1 (1.4%)	0 (0%)	2 (3.8%)	1 (1.1%)

that was structured, compared to one that was not (Rees, Collett, Mylrea & Crowther, 1996).

There was a less enthusiastic response to the availability of private study, with less than 50% of each stage agreeing that there was sufficient opportunity for this to take place. Perhaps, this is asking too much of an employer for a student at undergraduate level, and private study should be strictly that—study outside of work during the student's own time. As mentioned above, many of the more structured schemes do provide private study time. More than three quarters of each stage agreed that the CRECA was beneficial to university studies on the subsequent stage of the M. Pharm. A comparison of the curricular academic performances of students who had done CRECA, compared with those who had not, would be of interest to many.

The data presented in Table VIII do raise a question about the overall quality of the stage 2 experience. This was not investigated further, but scores for students' assessments of most dimensions were lower than in other M. Pharm stages, noticeably so when it came to the provision of private study time and being valued as a team member. Perhaps, stage 2 students could not engage as fully as stage 3 or 4 students due to their relative lack of pharmacy experience from university. Almost 80% of those who participated still managed to enjoy the experience, however.

Approximately, three quarters of stage 2 and 3 students said that they would like the University to help them find CRECA posts (Table X); but less stage 1 and 4 students wanted help. This is probably because at these two extremes of the course, stage 1 students are happier to seek their own CRECA after guidance from parents, friends or schools, while at stage 4 CRECA opportunities are familiar to them and they can make arrangements more easily themselves, often working in the same establishment. With current arrangements, advantages for students are obvious: having a central pool of information on available CRECA posts maximises access through notice boards, teacher practitioners and presentations from scheme managers. Staff members also provide assistance by completing application forms and providing references, but usually from stage 3 onwards.

Table IX indicates that at stages 2 and 3 (i.e. students reflecting on their experiences at stage 1 and 2) the main reason cited for not undertaking CRECA was that the student's application had been rejected, although the reasons for rejection are unknown. The remaining students said that they would like help obtaining CRECA from the University, which is particularly important as success currently lies in the quality of application because there is no interview. Currently, formal assistance with job applications is provided only at stages 3 and 4. Perhaps, the School should consider providing such assistance at earlier stages of the course.

Those organisations with formal CRECA schemes prefer to promote them directly to Schools of Pharmacy during stage 3 of the course; in the UK there is no centralised scheme for advertising CRECA opportunities. However, it is interesting to see that stage 4 students were more likely to make proactive contact with pharmacies in their search for a job (Table VI); many who did so reported circulating their CVs to a number of sites. Students used a range of sources of information to find out about CRECA. Less than 20% of stage 4 students said they had found out about their CRECA from a company road show, and as many found out about CRECA from friends and relatives as from University notice boards (Table VI). Friends and relatives were even more important at stages 2 and 3, which represents an area where better publicity is required. University teaching staff appear to play an important role at stages Three and Four; in this respect, the School is living up to its accreditation obligation (as related to aim 3). Interestingly, students are starting to access company or hospital Web sites directly to investigate CRECA opportunities.

In the United States and Canada, structured work experience has been incorporated into undergraduate pharmacy programmes for some years at both the introductory and advanced stages of the course to encourage the student to integrate knowledge of diseases with pharmacotherapeutics and pharmacy practice skills (ACPE, 1997). The student often undergoes a series of "clerkships" or "preceptorships" in a range of settings (Shaw, 2000, COUTH, 2001, 2002). Each position allows the student to experience integration of theory with practice. Overall outcomes include increased professional awareness, the ability to apply pharmaceutical care and a commitment to lifelong learning (Beck, Thomas & Janer, 1996). Limited evidence suggests that if the programme is carefully structured, clinical relevance and academic rigour can be achieved while at the same time ensuring that students receive a highly satisfactory learning experience (Grabe, Bailie, Manley & Yeaw, 1998, Elwell, Manley & Bailie, 2003).

In the UK, at least one School of Pharmacy that has studied the impact of incorporating work placements into its undergraduate programme has described generally favourable outcomes (Shah, 2004). There are educationally sound reasons why this should be so. When structured appropriately, such experiences can bridge the divide between theory and practice, allowing theoretical knowledge acquired at college to

Table XIII. Advantages and disadvantages of placement schemes as a way of teaching M. Pharm students.

Perspective	Advantages	Disadvantages
The student	Develops key transferable skills, e.g. teamwork, communication, management of learning	Unstructured or wrongly pitched placements may lead to confusion, disappointment and de-motivation
	Increases practical and cutting edge specialist pharmaceutical knowledge	Remuneration may not be as good as non-pharmacy vacation jobs
	Fosters a commitment to CPD	Lack of sufficient placements or placement choice may de-motivate
	Student gains first-hand experience of the workplace, generating realistic job expectations and adjustment to organisational life.	Conflict with other vacation activities such as holidays or revision
	Transition to the pre-registration year is eased	Need to find placement accommodation may be a drain on finances and an emotional deterrent
	Practice related to theory, thus increasing academic learning.	If placement is part of the M. Pharm, other interesting/important course material may be displaced
	Students learn "best" through experiential learning	
	Opportunity to supplement notes with workplace learning literature	
	Opportunity to learn from and network with "role model" practitioners from own and other disciplines	
	Early exposure to the profession, allows confirmation and refinement of career goals	
	Assists the search for appropriate pre-registration appointments	
	Reduces financial burden of education if work is paid	
	Student gains experience of job application and the responsibilities of an employee	
The placement provider	Successful students are a potential source of recruits	Students need tutoring, which could require staff in-fill and training
	Student provides useful work and staff relief	Financial commitment (investment) in placement training
	Student awareness and image of sector increased	Placement training does not guarantee student loyalty
	Student contributes new and exciting ideas to the workplace	A poor student experience could be damaging to recruitment prospects
	Successful students are good ambassadors back at the University in terms of future recruitment for placements or pre-registration posts	Organisational and teaching skills required
	Employment and job satisfaction for staff who enjoy teaching and learning	
	Continuing education opportunities for existing staff	

TABLE XIII – *continued*

Perspective	Advantages	Disadvantages
	A more qualified applicant pool from which to recruit pre-registration students and beyond	
	Better qualified new staff require less training in-house	
	Exploitation and justification of teacher–practitioner posts	
	Collaboration with the academic institution on a range of training and recruitment issues	
School of pharmacy	Students given practical training not available at the institution	Time and financial commitments if placement schemes are managed in-house
	Students bring work-based experience, ideas and know-how back to the University	Financial commitments if the workplace charges for placements
	Increased student motivation and retention	Quality assurance and assessment and timetabling issues if placements are part of the M. Pharm
	Increased connection between academia and the work-place facilitating collaboration on a range of issues	If placement is part of the M. Pharm, other interesting/important course material may be displaced
	Exploitation and justification of teacher-practitioner posts	

Inspiration for this table is drawn from a variety of sources, notably Rees et al. (1998), Couth (2001), Joshua & Fleming (2002), Elwell et al. (2003), Nathan (2004), and the responses of students in the present study.

be married with practical knowledge and skills obtained through practice in the real world.

Work-based learning is experiential learning. There is a general consensus among educators that students learn "best" when they are working directly in the clinical or practice field, and that learning combined with action provides solid enrichment (Burnard, 1999). There is an even stronger case for this if there is adequate opportunity to reflect critically on active learning to integrate past experiences with new ones (Rogers, 1996, Weinstein, 2002).

Glaser (1999) describes expert knowledge as both theoretical and practical. In the clinical pharmacy area, Shulman and Lovejoy (2004) describe experts in clinical pharmacy as having extensive, relevant knowledge of the literature and clinical practice. Thus, the goal of all instructors is to produce graduates who are capable of becoming experts in pharmaceutical care, making practice-based learning essential. A summary of perceived advantages and disadvantages of CRECA as a way of teaching M. Pharm students, drawn from the literature and the comments of students in the present survey, is shown in Table XIII.

Relating to the aim of how to satisfy experience needs, Table XI shows a groundswell of student opinion that supports the formal incorporation of CRECA into the M. Pharm at stages 2 and 3. The opinions of stage 4 students, where 83% said yes and 23% said that CRECA should be incorporated into all four years are perhaps the most valuable in this respect, as they have had the most experience of the M. Pharm (Table XI). This will require considerable input from University staff and raises important issues of resource provision and its quality assurance, consistency and assessment and challenges the course development team. If extended periods of CRECA are included, then what can be jettisoned from an already crowded syllabus to make way? The RPSGB seems happy to accredit courses containing limited placements, outside visits and inter-professional learning, but does not support extended periods of less-focussed but probably more lifelike, not to mention paid, CRECA.

In relation to assessing the feasibility of incorporating CRECA into the course, there appears to be three options. The first is to incorporate shorter, more focussed CRECA sessions into the course as described above. A second option is to make vacation CRECA accredited in some way, possibly by the RPSGB, for example as a pass or fail component of the course at one or more stages. This would not obviate the need for quality assurance, but would not encroach on the taught M. Pharm syllabus. Either of these two options assumes that at least one structured CRECA session, along the lines of the Boots scheme described in the introduction, could be made available to all pharmacy undergraduates. The Boots corporation could only offer approximately 1000 posts nation-wide in 2004, and competition for places was fierce. Nathan (2003) reports an applicant success rate of, at best, one-in-four in community, and that one teaching hospital Trust in London reported 250 applications for just 12 places. Closer collaboration (i.e. if CRECA was integrated into the M. Pharm) might encourage expansion of the number of places available and the UK Schools of Pharmacy might provide input on content, structure and assessment. Tracking students to ensure that they have done CRECA, and encouraging students who have not, would also be made easier. Perhaps a compromise might be to leave CRECA as it is, described by our students as a range of largely worthwhile, but heterogeneous, vacation activities that the student is encouraged to embark upon for his own good, but which remains voluntary yet supplementary to the M. Pharm.

References

ACPE (American Council on Pharmaceutical Education). (1997). *Accreditation standards and guidelines for the professional program in pharmacy leading to the Doctor of Pharmacy Degree*. Chicago: ACPE.

Beck, D. E., Thomas, S. G., & Janer, A. L. (1996). Introductory practice experiences: A conceptual framework. *American Journal of Pharmacy Education*, *60*, 122–131.

Boots. (2004). *Boots pharmacy undergraduate vacational programme*. Nottingham: Boots the Chemist.

Burnard, P. (1999). Acquiring interpersonal skills—A handbook of experiential learning for health professionals. 2nd ed. (pp. 15–22). Cheltenham: Stanley Thomas Ltd.

COUTH (Council of University Teaching Hospitals). (2001). *Strategy paper-collaborative strategies for bridging practice-ready and job-ready*. Vancouver: COUTH.

COUTH (Council of University Teaching Hospitals). (2002). *Strategy paper-health sciences student placements in public and private settings—issues and opportunities*. Vancouver: COUTH.

Elwell, R. J., Manley, H. J., & Bailie, G. R. (2003). Impact of introductory pharmacy experience on student learning, satisfaction and clerkship site productivity: Assessment of the EPOC program. *International Journal of Pharmacy Education*, *1*, 1–9.

Glaser, R. (1999). Expert knowledge and processes of thinking. In R. McCormick, & C. Paechter (Eds.), *Learning and knowledge* (pp. 88–102). London: Chapman.

Grabe, D. W., Bailie, G. R., Manley, H. J., & Yeaw, B. F. (1998). The early patient-oriented care program as an educational tool and service. *American Journal of Pharmacy Education*, *62*, 279–284.

Hatfield, K., Marriott, J., & Harper, A. (2000). Raising awareness of hospital pharmacy among undergraduate pharmacy students. *Hospital Pharmacist*, *7*(7), 199–201.

Joshua, A., & Fleming, G. (2002). A learning opportunity for pharmacy students. *Pharmaceutical Journal*, *269*, 106–108.

London Specialist Pharmacy Services. (2004). Education and training, vacation placement scheme. www.LondonPharmacy.nhs.uk/EducationAndTraining/vacation.html. Date last accessed, July 2004.

Nathan, A. (2003). What an experience! Working in the vacation. *Tomorrow's Pharmacist*, October, 29–30. available online at: www.pharmj.com/students/tp2003/whatanexperience.html. Data last accessed, July 2004.

QAA. (2002). *Benchmark Statement for pharmacy.* www.qaa.ac.uk/cmtwork/benchmark/phase2/pharmacy.html. Date last accessed, June 2004.

Rees, J. A., Collett, J. H., Mylrea, S., & Crowther, I. (1996). Subject-centred learning outcomes of structured work-based learning in a community pharmacy training programme. *International Journal of Pharmacy Practice*, *4*, 171–174.

Rees, J. A., Collett, J. H., Crowther, I., & Mylrea, S. (1998). Personal learning outcomes of structured work-based learning in a summer vacation work placement in community pharmacy. *International Journal of Pharmacy Practice*, *6*, 91–95.

Rogers, A. (1996). *Learning and adult education*, 2nd ed. (p. 107). Buckingham: Open University Press.

RPSGB. (2002). *Accreditation of degree courses*, www.rpsgb.org.uk/pdfs/eddegnewreq.pdf. Date last accessed, June 2004.

Shah, R. (2004). Improving undergraduate communication and clinical skills: Personal reflections of a real world experience. *Pharmacy Education*, *4*(1), 1–6.

Shaw, J. P. (2000). Undergraduate pharmacy education in the United States and New Zealand: Towards a common core curriculum? *Pharmacy Education*, *1*, 5–15.

Shulman, R., & Lovejoy, A. (2004). Assessing clinical pharmacy expertise. *Pharmaceutical Journal*, *273*, 26–28.

Silverthorne, J., Price, G., Hanning, L., Scanlan, J., & Cantrill, J. (2003). Factors that influence the career choices of pharmacy undergraduates. *Pharmacy Education*, *3*, 161–167.

Weinstein, K. (2002). Theory and philosophy of action learning. In *Action learning*, 2nd ed. (pp. 27–54). Buckingham: Gower.

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