

INSTRUCTIONAL DESIGN AND ASSESSMENT

Developing Entrepreneurial Skills in Pharmacy Students

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Objective. To create, implement, and evaluate a workshop that teaches undergraduate pharmacy students about entrepreneurship.

Design. Workshops with 3 hours of contact time and 2 hours of self-study time were developed for final-year students. Faculty members and students evaluated peer assessment, peer development, communication, critical evaluation, creative thinking, problem solving, and numeracy skills, as well as topic understanding. Student evaluation of the workshops was done primarily via a self-administered, 9-item questionnaire.

Assessment. One hundred thirty-four students completed the workshops. The mean score was 50.9 out of 65. Scores ranged from 45.9 to 54.1. The questionnaire had a 100% response rate. Many students agreed that workshops about entrepreneurship were a useful teaching method and that key skills were fostered.

Conclusion. Workshops effectively delivered course content about entrepreneurship and helped develop relevant skills. This work suggests students value instruction on entrepreneurship.

Keywords: communication skills, critical evaluation, entrepreneurship, team-based learning

INTRODUCTION

Entrepreneurship as a scholarly field was defined by Venkataraman as “seeking to understand how opportunities to bring into existence future goods and services are discovered, created, and exploited, by whom, and with what consequences.”¹ In the modern economic climate, entrepreneurship, or possessing entrepreneurial spirit, is critical for driving innovation and creating a prosperous society. Its concepts have been embraced by the wider public in recent years, underlined by the success of the British Broadcasting Corporation's (BBC) television show “Dragon's Den,” and the American equivalent “Shark Tank,” where budding entrepreneurs pitch their business plans to well-known business people in the hope of securing investment.

In the context of pharmacy, entrepreneurship is generally associated with the establishment of community pharmacy and business management. However, entrepreneurship and its associated skills are key to the development of a range of health services in community and hospital sectors.² In the United Kingdom, examples of such enterprises include: repeat dispensing, medication management, pharmacists prescribing medication, and

minor ailment service. In the United States, pharmacies also embrace such services to improve patient adherence to medication. For example, medication therapy management programs allow pharmacists to counsel patients on drugs,³ while interactive voice recognition tools remind patients to order or pick up prescriptions.⁴

Innovation is a key component of the pharmaceutical industry and biomedical research.⁵ Every drug or medicinal product developed and released to the market stems from an intellectual curiosity that requires a proof of concept spanning years. Pharmacists and health care professionals have a responsibility for the health and well-being of the population, the so-called “social capital.”⁶ Therefore, pharmacists may be defined as “social entrepreneurs” rather than the standard “business entrepreneur,” for whom financial profit is key to successful enterprise.

A Viewpoint by Brazeau in the *American Journal of Pharmaceutical Education* outlined the importance of nurturing entrepreneurial spirit in pharmacy undergraduates in order to advance future health care. She asked whether accreditation standards were too specific to promote intellectual curiosity and entrepreneurial spirit.⁷

The General Pharmaceutical Council (GPhC), responsible for the accreditation of the master of pharmacy (MPharm) degree programs in the United Kingdom, states students should be able to demonstrate skills relating to research and development activities to improve health outcomes.⁸ Similar key skills are required in the

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PharmD program in the United States, and schools should possess “a vision for education, research, and other scholarly activities that commits faculty and students to fostering innovation through basic and applied research.”⁹

Domain 4.3 of the Center for the Advancement of Pharmacy Education’s (CAPE) Educational Outcomes outlines that, as part of personal and professional development, students should “engage in innovative activities by using creative thinking to envision better ways of accomplishing professional goals.”¹⁰ Meetings, books, and continuing education courses provide opportunities for qualified pharmacists to learn about business and project management-related topics.¹¹⁻¹³ The growing interest in raising entrepreneurial awareness in pharmacy students is ongoing.¹⁴⁻¹⁶

Innovative community and hospital pharmacy services and pharmaceutical science are covered in detail throughout Queen’s University Belfast (QUB) School of Pharmacy’s MPharm degree via a range of teaching and assessment methods such as lectures, objective structured clinical examinations (OSCEs), role-playing, workshops, poster presentations, a final-year research project, and community and hospital placements. However, until 2013, information relating to business management and intellectual property were essentially only covered in lecture-based teaching (passive learning) within the fourth-year Business, Government and Industry aspect of the course. Moreover, in the strictest sense, entrepreneurship has not been addressed within the degree program at QUB, yet entrepreneurial skills are vital for the development of undergraduate pharmacy students.

The pharmacy degree requires a solid educational foundation to promote critical and lateral thinking, problem solving (including study skills and team-working skills), leadership skills, effective communication, and the analysis and use of numerical data. For the benefit of student learning, a deeper appreciation of what is required to be an effective entrepreneur is needed. As Cope outlined, the best entrepreneurs not only were successful in starting their own business, product, and/or service but were also fully prepared with regard to its forward management.¹⁷ Entrepreneurs have an outward vision in order to recognize fully the opportunity that confronts them and look forward in order to plan its growth and future prospects.

From an education perspective, entrepreneurial skills form a dual, interactive process, where students develop an understanding of the strengths and weaknesses of their ideas, and of themselves, in relation to the wider environment. Thus, because of a deficit in the curriculum, we developed an interactive workshop on the subject, involving fourth-year students. It was scheduled during the last year of the degree pathway because these students

have a greater understanding than earlier-year students of all aspects of pharmacy and, therefore, would presumably find it more meaningful. Furthermore, in addition to nurturing entrepreneurial skills, the GPhC stipulates that pharmacy students must be able to work effectively in a team, to develop other team members through coaching and feedback, and to identify learning needs of team members.⁸ The topic of entrepreneurship, as well as a workshop format, lent themselves to teamwork.

The hypothesis of this study was that entrepreneurship and entrepreneurial skills could be effectively promoted and enhanced through a workshop-based exercise. This workshop would allow the creation and development of a pharmacy-related product or service that would finally be presented as an oral sales pitch. Reports of such sales pitches are limited in the context of pharmacy-based education but are a mainstay of business, marketing, and economic practice. They form part of a series of pedagogical activities including class projects, service projects to enhance learning, role-playing, retention, and application of concepts and principles to the real world.¹⁸ In business education, students experience higher levels of learning and engagement when passive learning, such as lectures, are supplemented with experiential proactive learning techniques, such as the development of products and services and presenting/pitching them to an audience, and they result in stronger connections between education and real world scenarios.¹⁹⁻²⁵

The aims of our project were to design, implement, and evaluate the workshop as a method of teaching undergraduate pharmacy students about the importance of innovation and entrepreneurial issues. The overall learning objective was that, upon completion of the workshop, the pharmacy students would gain an understanding of entrepreneurial issues in the context of community, hospital, and industrial pharmacy. We anticipated that students would also develop a range of entrepreneurial-related skills relating to problem solving, communication, teamwork, lateral thinking, research, and recognizing opportunity.

DESIGN

When deciding how students would achieve the defined learning outcomes of this entrepreneurial workshop (outlined in Table 1), we considered both Bloom’s and Fink’s Taxonomies.^{26,27} We aimed for a higher cognitive learning domain, with focus on evaluation and demonstration of knowledge. In addition to the taxonomies of Fink and Bloom, we used Miller’s triangle, a critical model that describes levels of competence within pharmacy degree courses in the United Kingdom.^{8,28} In this model, “shows how” (demonstrating how something is

Table 1. Learning Outcomes for Teaching Pharmacy Entrepreneurship

By the end of the workshop, students should:

Know how to develop a pharmacy-related entrepreneurial idea (including the significance of the product, website name, and company slogan/statement)

Learn how to market the product (by targeting specific consumers and using advertising)

Appreciate the importance of choosing the correct sales channel and the product price

Understand about appropriate sources of funding

Be able to successfully deliver a team marketing pitch on the idea/product to faculty members and peers

done) is considered the highest level of competence for undergraduates and is a requirement for many elements of the degree program.⁸ We already use various teaching and assessment methods such as OSCEs²⁹ and debates³⁰ to enable students to demonstrate this competence, but we are always seeking other innovative ways to teach and assess students.

The authors decided the learning objectives would be best served by a workshop/tutorial format whereby students would present a developed entrepreneurial product/service idea in the form of a sales pitch. The students would work in groups, as typically, product development in practice is done in teams, and it would not be realistic for more than 130 individual students to present sales pitches. Tutorials and workshops can provide a more interactive teaching experience than lecture-based learning, increasing the interchange between the teacher and the students and promoting the active involvement of undergraduates. According to Heidari et al, an advantage of workshops identified by students was the support they received from lecturers and fellow students. Learning in an environment in which they felt they could vocalize any problems they encountered facilitated learning and promoted self-confidence.³¹ One author delivered the 3 entrepreneurial workshops because of previous experience and qualifications in the area, holding a postgraduate diploma in management practice from University College Dublin.

In addition to the workshop, a lecture was deemed necessary to introduce students to the area of entrepreneurship in pharmacy, provide guidelines as to what was expected in the workshop, and present a fully formulated case study using the same template provided to the students (see Table 2). Students were advised that this level of detail would be required for their sales pitch in the workshop. The lecture was delivered 2 weeks before the first of 3 workshops. One author's experience of producing

Table 2. Template for Formulating an Entrepreneurial Product*

What is your idea and what problem does it solve?

What is the name of your product/service?

What is the name of your website?

What is your company slogan/statement?

Who is/are your main target customer(s) (consider gender/age range/social class)? Target demographic/geographic location?

How will you advertise (eg, Internet, television, journals/magazines/newspapers)?

How will you get your business to the consumer (eg, sales in supermarket/exclusive shops/Internet)?

What is the price of product per unit or service rendered?

Who will you approach for funding (eg banks, business angels)?

*Provided to students with adequate space for them to record answers

veterinary products with a small industrial enterprise was used as an entrepreneurial case study. We considered lecture-based teaching alone but decided it could not fulfill student learning needs because lectures limit opportunities for active involvement of students that task-centered, problem-solving teaching methods provide. Lectures also reduce potential for active "show how" knowledge and limit the ability to provide feedback on student efforts.^{32,33}

The lecture and workshop were supplemented by an entrepreneurial information booklet prepared by the authors, which outlined the following: the definition of entrepreneurship and its context in the MPharm pathway; intended learning outcomes and the format and structure of the workshops (see Table 3); preworkshop preparation required and the resources needed; format of assessment and feedback; definitions of business terminology and guidance for the generation and development of an entrepreneurial idea.

Ethical approval to evaluate the workshop using quantitative research methodology (a questionnaire study) and to provide prizes was granted by the school's ethics committee. Students were informed about the research questionnaire in the lecture and workshop classes. Formal written notice was also provided at the beginning of the evaluation questionnaire, highlighting that the data obtained would be used for publication purposes. Additionally, students were informed that participation in the questionnaire was voluntary. Students were provided with all documentation, workshop booklet, and guidelines weeks before the start of the second semester (7 weeks before the first workshop). These were distributed by e-mail and online via the university eportal (Queen's Online, Queen's University Belfast, Ireland). Students were explicitly told within the workshop booklet, by e-mail, and within the entrepreneurship

Table 3. Timeframe of Relevant Entrepreneurial Workshop Activities

Activity, in Sequential Order	Time Allocated
Prior to workshop: example pitch provided in entrepreneurial lecture	1 hour
Prior to workshop: individual idea generation and completion of entrepreneurial product idea sheet	2 hours
Workshop: introduction and allocation of groups/necessary paperwork	15 minutes
Workshop: completion of group entrepreneurial product idea sheet	1 hour, 10 minutes
Workshop: group marketing pitches; question and answer session	1 hour, 15 minutes
Workshop: provision of faculty members and peer feedback	15 minutes
Workshop: concluding comments and submission of relevant paperwork	5 minutes

lecture that they were required to formulate an innovative product, business, or service related to pharmacy and indicate what the idea was, what problem it solved, and name of product or service before attending the workshop.

At this stage, students were required to work individually, and 2 hours of self-study was designated for this task. Students were encouraged to submit these individual concepts, and a £20 gift voucher was awarded for the best individual idea in each workshop (3 prizes). This increased the likelihood of student commitment to their designs. Cope believed emotional “self-investment” to be an important aspect of entrepreneurial-based learning in that it effectively shaped learning. Self-investment was especially important as academic performance was not awarded to the task and student’s scores did not contribute to their final degree grade, given that it was new to faculty members and students.³⁴ Some of these ideas would be further developed during the workshop.

For the workshops, the fourth-year cohort (n=134) was divided into 3 groups (n=44, n=45, n=45), and each student attended a designated workshop. Attendance was compulsory and monitored. Each session was divided into 5 teams of 9 students, with one team comprising 8 students. The multitude of topics and factors associated with entrepreneurship makes it difficult to replicate as a teaching format, and publications relating to teaching methods are limited.^{35,36} In addition, uncertainty is a requirement in order to replicate the insecurity associated with starting a new business or launching a new product/service.^{37,38} Students were assigned to teams at the start of the workshop to ensure full development of the entrepreneurial idea only within the boundaries and timescales of the workshop. While some promote students working in self-selecting groups to facilitate argument, collaboration, and debate,^{39,40} we believed predetermined groups created a discontinuous environment more akin to the real working world, where entrepreneurs often are required to work with individuals they would not necessarily have chosen.^{21,36,41}

Having prepared an idea and been allocated into teams, students had to decide which idea to work on

further as a team. The chosen idea had to be fully developed within 70 minutes, with the aim of providing time-related pressure. The authors decided this was the best mechanism to create an environment involving discontinuities, crises, and critical events, especially as students did not have to consider financial risk.^{17,21,41} Introducing less control to the group dynamic and unfamiliar tasks is inherent to the development of entrepreneurial learning.^{34,42}

Each student then was assigned a specific part of the pitch to deliver (Table 2 outlines the main questions that had to be addressed by the team during their pitch, and students had to provide relevant information to support their topic), meaning all students had to present. No computerized presentations were allowed, but students were informed they could use the tutorial room’s whiteboard during the presentation if necessary.

Each team, rather than individual student, received an overall score (maximum score 65) based on peer (audience) and faculty members assessments using the 3 main criteria (idea, development of idea, and sales pitch; see Table 4 and Appendix 1 for further information). To ensure the assessment was fair and reliable, the authors prepared a comprehensive assessment checklist grid, outlining how each key aspect should be scored (see Appendix 1 for further information). A maximum score of 5 and minimum score of 1 was assigned for each criterion. The same assessment sheet was used by both faculty members and students. Peer assessment forms were submitted by each student to a designated submission box at the end of the workshop. Faculty member scores contributed 60% of the overall score, with the remaining 40% attributed to peer grading. The overall score was therefore derived from the following equation: (mean peer score x 0.4)+(faculty members score x 0.6)=overall student score.

Peer assessment, as recommended by Heywood,⁴³ was an important contribution to the workshop. Self- and peer assessment provide students with more ownership of the learning they are undertaking. Assessment is not a process performed on them but is a participative process in which they are fully involved.⁴⁴ Self- and peer

Table 4. Entrepreneurial Workshop Key Assessment Criteria^a (with Mean Scores)

Criteria	Mean Faculty Member Score ^b (SD)	Mean Student Score ^b (SD)	Mean Combined Score ^b (SD)
The Idea			
Level of innovation	3.6 (0.15)	4.0 (0.16)	3.8 (0.12)
Relevance to pharmacy	4.2 (0.09)	4.6 (0.41)	4.4 (0.13)
Development of the Idea			
Product/service/business name	3.9 (0.12)	4.3 (0.16)	4.1 (0.11)
Website name	3.7 (0.09)	4.3 (0.19)	3.9 (0.09)
Company slogan/statement	4.1 (0.17)	4.4 (0.52)	4.2 (0.33)
Chosen demographic	3.7 (0.14)	4.3 (0.19)	3.9 (0.17)
Advertising	4.1 (0.15)	4.3 (0.09)	4.1 (0.09)
Distribution to consumer	3.8 (0.17)	4.2 (0.01)	4.0 (0.07)
Cost	3.3 (0.23)	3.9 (0.34)	3.5 (0.3)
Funding	3.8 (0.19)	4.2 (0.28)	4.0 (0.25)
The Sales Pitch			
Delivery	3.4 (0.09)	4.3 (0.01)	3.8 (0.04)
Likelihood of securing an investment	3.6 (0.10)	3.7 (0.43)	3.6 (0.22)
Time keeping	3.1 (0.14)	4.5 (0.19)	3.7 (0.07)
Overall mean score (%)	48.2 (74.2)	55.0 (84.6)	50.9 (78.3)

^aFurther information on the assessment criteria is provided in Appendix 1

^bScores for each criterion ranged from a minimum mark of 1 to a maximum of 5; each criterion carried equal weighting to make up the overall score

assessment “promote lifelong learning, by helping students to evaluate their own and their peer’s achievements realistically, not just encouraging them to rely on (tutor) evaluation from on high.”⁴⁵ Peer assessment is seen as an opportunity for deeper learning, and evaluation is at the highest level with respect to Bloom’s Taxonomy.⁴⁶ It also meets the requirement that students should “contribute to the education and training of other members of the team, including peer review and assessment.”⁸

An opportunity for verbal peer and faculty member questioning was provided at the end of each presentation. The facilitator provided feedback at the end of each workshop, rather than the end of each pitch, so no group would be at an advantage/disadvantage. Students also were asked to submit a vote for their favorite pharmacy-related entrepreneurial idea for each workshop. This vote did not directly affect scores. Two weeks after completion of the final workshop, students were sent an e-mail that included a breakdown of the scores showing faculty member and peer contributions, the workshop, and the year group mean scores. However, these scores did not contribute to any part of their overall grade (degree classification). At the end of the workshop, students were invited to complete an anonymous evaluation form and post it in the allocated post-box.

EVALUATION AND ASSESSMENT

The entrepreneurial workshop was completed by the full cohort of 134 students (100%). The mean overall

score for the students was 50.9 (1.4) out of 65, with a range of scores from 45.9 to 54.1. These were further analyzed based on individual workshop groups, using a one way analysis of variance (ANOVA). Overall mean scores (maximum 65) were as follows: workshop 1: 52.3; workshop 2: 50.8; workshop 3: 49.6. Statistical analysis was performed using GraphPad Prism 6 (GraphPad Software Inc, La Jolla, CA). No significant difference was observed between these results when an a priori level of less than 0.05 ($p < 0.05$) was used to indicate significance. Skill development from the perspective of the faculty member was determined by calculating the mean faculty member score for each criterion (Table 4). The idea and the development of the idea scored the highest, with the sales pitch scoring the lowest. This indicated that problem solving, lateral/creative thinking, and the ability to recognize opportunities and research skills scored the highest, with communication skills scoring the lowest.

At the end of each of the 3 workshops, students were asked to complete the questionnaire. Five of the questions involved quantitative data collected from preformed questions, including the 5-point Likert scale (1 = strongly agree to 5 = strongly disagree). The remaining 4 questions were open-response. Open-response questions were examined via thematic analysis,⁴⁷ with no identifiable data obtained. The questionnaire had a response rate of 100% ($n = 134$). Seventy-five percent of students strongly agreed or agreed that the workshop was a useful teaching method within the MPharm program. Furthermore, 63%

strongly agreed or agreed that the workshop should be used more within the pharmacy degree. Only 29% of students believed that before the workshop they would have strongly agreed or agreed that the development of entrepreneurial skills was important in order to have a successful career in pharmacy. This increased to 64% after completion of the workshop. Students were asked within which area(s) of pharmacy (community, hospital, industry, none or all) was it most important to possess entrepreneurial skills to have a successful career—49% indicated industry only; 26.7% community only; 0.12% hospital only; 22.9% chose all 3 areas, and 1.2% chose none of the areas.

To evaluate skills development, students were requested to check the skills they believed they had acquired, and 48.5% of students indicated they had developed problem-solving skills; 68.7% communication skills; 9.7% research skills; 59% skills relating to lateral thinking; 82.1% teamwork skills, and 49.3% skills relating to recognizing opportunities. Ninety-nine percent of students strongly agreed or agreed the workshop material was made available to them within a reasonable time.

For the open-response section of the questionnaire, students were provided the opportunity to state what they liked and disliked the most about preparing for and participating in the workshop. A number of common topics emerged. Positive aspects included: the opportunity to observe innovative ideas from other students; working in groups; the need for creative thinking; the capacity for peer-marking; and that the workshop was different, enjoyable, and more interactive compared to other forms of learning within the degree.

The most negative theme was that the workshop did not contribute a formal score to the student's final degree (24% of students stated this). Other negative aspects included: the difficulty associated with generating an original idea; the large team size; preorganized groups; and the dates on which the workshops were held. Students stated that the workshops were held at a busy time when they were undertaking their final-year research projects. When asked within what month in the second semester (February to May) they should be held, 77% stated February. Many stated they would be best held in the first semester (October to December) or earlier in the degree pathway. Unfortunately, the workshop has to be offered in semester 2, as this is when the corresponding module is scheduled. When asked to suggest other entrepreneurial issues that could be covered, students suggested the following: more scenarios and case studies in community, hospital, and industrial pharmacy; further development of product ideas—specifically, releasing them to market; and a focus on opening their own community pharmacy.

The entrepreneurial workshop was discussed at the Business, Government, and Industry module review attended by the module coordinator and assistant coordinators. Module review forms submitted anonymously by the students were positive with regard to the workshop, with most stating the assessment score should contribute to the overall module grade. Authors agreed during the module review that the workshop allowed the development of key skills within the module, including those relating to communication, problem solving, teamwork, and leadership. This was demonstrated in the high range of scores obtained (45.9 to 54.1 out of 65). It also promoted the importance of entrepreneurial skills within community, hospital, and industrial pharmacy settings. Thus, based on the positive feedback from faculty members and students, it was agreed that entrepreneurship would continue to be taught within the module in this format. The main change for subsequent years would be that the score obtained for this exercise should also contribute to 5% of the overall module grade, thus acknowledging the feedback provided by students in both the evaluation questionnaire and the module review forms.

DISCUSSION

The use of workshops to teach students is common. However, to the best of our knowledge, this is the first recorded instance within the UK MPharm degree that entrepreneurial skills have been taught and assessed via a developed sales pitch. Based on the reflective evaluation by faculty members and students, discussions within the module review and between faculty members and students, and the assessment scores obtained, the entrepreneurial workshop format was widely accepted as positive by both faculty members and students. The majority of students agreed they had developed skills in relation to communication, lateral thinking, and teamwork. The success of skills development was demonstrated by the high overall mean score.

To successfully implement the workshops, faculty members (authors) met to develop the project, including assessment criteria, weighting of scores, the questionnaire, and the workshop and lecture (10 hours). One faculty member outlined to the students via lecture and via e-mail what the workshop entailed, developed the "Entrepreneurship for Pharmacists" booklet and remained the point of contact (30 hours). One faculty member served as facilitator for all 3 workshops and the associated lecture (10 hours).

The same venue was used for each workshop over 3 subsequent afternoons. The venue did not require computer facilities but had to be large enough to accommodate 50 people, with 5 large tables to hold 5 teams of 9 students.

An area also was required for each team to deliver their pitch collectively facing the audience, with a whiteboard provided for those who chose to use it. One member of faculty scored the workshop, collated peer scores and feedback, and calculated the overall score for each team (10 hours). The scores and feedback comments were compiled in a Word document and forwarded to respective student teams via e-mail (3 hours). Students were provided with a breakdown of their mean overall score, the mean score of their respective workshop, and the mean score of the year group.

The workshop resulted in a change of opinion about the importance of entrepreneurial skills in a pharmacy-based career. A variety of pharmacy-related ideas were proposed and developed. These included a mobile phone application that could serve as a compendium of clinical texts used by pharmacists in practice, with quick and easy access to drug doses and indications; a watch for patients that could be set to vibrate or give an audible alarm to remind them a drug dose was required; a mobile licensed pharmacy that could deliver to rural communities; and a set of scales that could quickly convert patient weight to doses for specific drugs in a hospital pharmacy.

The major limitation was that the entrepreneurial workshop could not be compared directly with a similar entrepreneurial-based study. A similar approach was successfully adopted by Perepelkin to teach pharmacy students the importance of management within a community pharmacy context, with formation of a group-led business plan and presentation.⁴⁸ Faculty members involved with our project believed the hypothesis was correct: entrepreneurship and entrepreneurial skills were effectively promoted and enhanced through the workshop. The authors believed it was important to include all disciplines of pharmacy (community, hospital, and industry) in the workshop. The aims of the current project also were achieved; that is, to design, implement, and evaluate the workshop as a method of teaching undergraduate pharmacy students about the importance of innovation and entrepreneurial issues. The faculty members involved in developing the project had experience in teaching all aspects of the MPharm degree.^{29,30} This allowed evidence-based judgments to be made in the creation of the workshop. One limitation was that the final assessed scores did not contribute anything to the overall degree grades. As the workshop was new, we felt it wouldn't be fair to formally grade it. We assumed students would still benefit from the set of skills and experience that such a workshop would provide. When students were asked in the open-response portion of the evaluation questionnaire what grade the workshop should contribute to the overall module, a majority (n=77) stated 5%.

Because of the success of the initial cohort, we agreed at the module review that in the future, the workshop would contribute 5% of the overall module grade. The module review consisted of faculty members involved in the module (and workshop) completing an evaluation of its content annually and was based largely on feedback provided by the student module evaluation. Four students stated that, because the workshop did not carry a formal grade, it allowed them to think more creatively, as there was less pressure associated with the development and pitching of their idea. This contrasted with the majority who preferred that their contribution be graded. Peer evaluation is a useful and effective tool,⁴³ and training students in this area prior to the workshop may have increased their ability to effectively perform this task. The use of one faculty member to perform all assessments limited the capacity for bias. This faculty member had been fully involved in the development of the comprehensive scoring scheme (Appendix 1). The faculty members had concerns initially that the students would not take the exercise seriously, but this was not demonstrated in practice. Because students were placed in groups, rather than be allowed to choose their colleagues, there could have been a reluctance to show they had not prepared properly. Furthermore, in schools of pharmacy across the United Kingdom, all students are required to abide with a code of conduct that requires them to engage fully with assessment.⁴⁹ There was no significant difference in the mean scores of the workshops, suggesting neither an advantage or a disadvantage in the timing of the workshop relative to the distribution of material or to the entrepreneurial lecture. In the future, a standard operating procedure will be developed to outline the course of action should a student fail to attend the workshop or to provide sufficient contribution to warrant a passing grade. Attendance at the entrepreneurial lecture was high; though, in the future, it also may be made compulsory, with attendance recorded, so all students are aware of the importance of the workshop in relation to module grades. The workshop may have potential to be introduced to other degree programs available at the school of pharmacy or throughout courses available at the university.

SUMMARY

There is an increasing need for entrepreneurial skills in health care to encourage the creation of new and innovative health-related services, technologies, and therapies. A workshop was, therefore, formulated to effectively promote and enhance entrepreneurship and entrepreneurial skills in undergraduate pharmacy students.

Skills including peer assessment, peer development, communication, critical evaluation, creative thinking, problem solving, and numeracy were developed. The workshop was relatively easy to design and apply. Overall, it served as an effective teaching tool for the promotion of entrepreneurship in the pharmacy degree and could be easily adapted to other university programs.

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Appendix 1. Assessment Checklist^a Used to Score Teams

The IDEA					
Score	5	4	3	2	1
Level of Innovation	Highly innovative and realistic: no other product exists. Likely to succeed.	Good innovative idea, does not exist. Likely to succeed if developed properly, but lacks realism.	Innovative but such a product exists. May be able to challenge within the market.	Low level of innovation: idea already exists in a market that is competitive. Product is highly likely to fail.	No innovation: product will fail and has done so in the past. Idea is of no use, unmarketable.
Relevance to Pharmacy	Completely relevant to pharmacy	Mostly relevant to pharmacy	Could be adapted to suit pharmacy	An idea that has only slight relevance to pharmacy	Not relevant to pharmacy in any context

^aThis is an abridged version to exemplify how it helped the grade to score the team for a particular criterion. The full version with all criteria is available on request from the corresponding author