

Concept Paper

Designing Dialogic E-Learning in Pharmacy Professionalism Using Calibrated Feedback Loops (CFLs)

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Abstract: The feedback analytics of online software including Articulate and Bristol Online Surveys can be used to facilitate dialogic learning in a community of practice such as Pharmacy and, thereby, promote reflective learning by the creation of formative calibrated feedback loops. Based on work with medical, dental, nursing, osteopathic, and social work students, trainees, and registrants, the paper shows how an online learning community can be created along the continuum from undergraduate to registrant to develop authentic dialogic e-learning around standards of Professionalism. The Dundee PolyProfessionalism inventories and Situational Judgement Scenarios (SJSs) can be customised for Pharmacy Professionalism learning to support evidence-based curriculum design along benchmarked learning curves and to profile Professionalism learning in individuals and cohorts.

Keywords: IT applications in pharmacy practice; pharmacy education-assessment; curriculum design; innovations in teaching and learning; interprofessional learning; professional development—including continuous professional development; revalidation; roles of the employer and employee; quality assurance of education and training; work-based learning and assessment

1. Introduction

The blue ribbon *White Paper on Pharmacy Student Professionalism* [1] published in 2000 by the American Pharmaceutical Association Academy of Students of Pharmacy-American Association of Colleges of Pharmacy Council of Deans Task Force on Professionalism noted that “professional

socialization occurs within both education and practice” (p. 97) but that in the American experience at least there can be “inconsistent socialization” in the two sectors. They commented that “Pharmacy educators bear equal responsibility for the disillusionment or disenchantment of students who enter the work force unprepared for the prevailing culture” (p. 98) and suggested that “Academia has difficulty in understanding how to deal with this conflict and often does not appreciate what professional socialization entails—a spectrum of activities that benefits the student’s professional perspective. Pharmacy school curricula must reflect the fact that professionalization is a continuous process and cannot occur as a result of infrequent, “catch-as-catch-can” approaches to professional development” (p. 98).

In response to this challenge, over the following decade there were several attempts to develop and validate inventories to *measure* students’ perceptions and self-reports of their own Professionalism e.g., [2–5]. However, even as these researchers were trying to measure Professionalism among pharmacy students and trainees, many of their colleagues were still trying to define what constituted Professionalism in American pharmacy. Brown and Ferrill [6] noted that “Student Professionalism continues to be an elusive goal within colleges and schools of pharmacy. Several reports have described the nature of Professionalism and enumerated the characteristic traits of a professional, but educational strategies for inculcating pharmacy students with attitudes of Professionalism have not been reliably effective. Some authors have suggested the need for a standard definition. If the goal can be more clearly conceptualized by both faculty members and students, and the moral construct of the fiduciary relationship between pharmacists and patient better understood, the development of professional values and behaviours should be easier to achieve”.

The reconfiguration of both the practice of pharmacy in the UK with expanded roles for “high street” practitioners and its regulation with the formation of the Royal Pharmaceutical Society has led to some work on the nature of pharmaceutical Professionalism in this country [7]. Schafheutle *et al.* [8] have looked into how pharmacy students learn Professionalism in undergraduate programs. Rapport *et al.* [9] have identified eleven “themes of patient-centred Professionalism in community pharmacy”. How could this work be taken forward to prepare novice pharmacists for the real challenges of practice and the work place?

2. A Way Forward

Pharmacy is a community of practice that should also constitute a learning community. Designing e-learning where the learning opportunity consists of *reflecting on formative calibrated feedback and then applying it* utilising the interactive/reflexive properties of software, such as Articulate and Bristol Online Surveys, will facilitate dialogic learning in the community of practice of UK Pharmacy in an authentic and cost-effective way that can be used as a learning tool and a “field mapping” resource by programme managers and the regulator, the Royal Pharmaceutical Council.

Dialogic e-learning for Pharmacy Professionalism in the UK can be delivered by combining the principles of *formative calibrated feedback* based on the recommendations of Sargeant *et al.* [10] and Mann [11] with design strategies from the field of *progress testing* e.g., [12] for the purpose of *learning* rather than *assessment*. If a learning curve is identified and benchmarked from analytics and data analysis of responses from the relevant stakeholders—students, trainees, their teachers, and the public who rely on their services—the tools can then also be used as a progress test in the standard sense of “assessment of learning” at the individual or cohort level. This can be a continuously iterative process that maps

both the constants and the fluid elements in the essentially social construct of Professionalism within a given country such as the UK.

3. What is Dialogic Learning?

As a social construct that is often in flux, Professionalism is particularly suitable for dialogic learning, which is defined [13] as having the following characteristics:

- (1) *Egalitarian Dialogue: Everyone is part of the learning community and can make a useful contribution* (e.g., the “emerging field” of social media Professionalism is still very fluid and likely to continue to be so as new technologies become readily available).
- (2) *Cultural intelligence: The community has respect for each person’s experience in the dialogue* (e.g., the “cultural intelligence” of pharmacists as they move from novice to practitioner, and understanding of the changing realities as one moves from the classroom to the commercial or hospital dispensary needs to be part of the professional standards of the field).
- (3) *Transformation: True learning is respectful of “other” and is transformational in nature* (e.g., as the UK becomes increasingly diverse in ethnicity and acknowledged sexual orientations, professionals such as pharmacists need to learn new elements of Professionalism in practice, not least in customer relations).
- (4) *Instrumental: Knowledge is negotiated and collaborative and questions established structures* (e.g., the emerging Professionalism of social media use, but also in identifying areas of poor compliance and/or congruence in areas where for instance complacency can lead to poor Professionalism, such as hand hygiene).
- (5) *Meaning creation: Learning is a part of building personal and social identity. It gives people the possibility to decide, create and transform their lives* (We analyse the data to detect if there is a learning curve in a particular community of practice such as pharmacy Professionalism and how it should be benchmarked if it exists).
- (6) *Solidarity: All opinions are considered and are valid in knowledge-building* (This is not the same thing as considering all opinions to be equally reliable and/or valid or authoritative but we take information from all parts of the profession from novice to expert to identify appropriate norms and standards for Professionalism in real-time practice).
- (7) *Equality of differences: Differences in point of view are a source of richness* (We examine these closely to generate the consensus view of pharmacy Professionalism and identify areas, which might be viewed as poor Professionalism).

4. What is Formative Calibrated Feedback for Learning?

Sargeant *et al.* [10] added a 4th step to the conventional process of formative assessment:

- (1) Assessment of performance;
- (2) Provision of assessment feedback;
- (3) *Reflection and decision making*;
- (4) Use of feedback for learning and change.

Mann [11] explained that this third step of *Reflection and Decision Making* involves helping the recipient of the feedback not to reject the feedback outright—because it is dissonant with their own perceptions, or hurtful to their *amour propre*, or because they do not respect the giver/s of the feedback—but to be willing to *reflect* on the substance of the feedback. One important way to reflect is to be able to *compare* oneself with peers in order to help to *calibrate* the *quality* of the feedback. When this process of calibration is worked through, it is more likely that the recipient will *filter* the feedback appropriately and, thus, *assimilate* it in order come to a decision about the need for change in one's knowledge or behaviour “having measured oneself against others”.

Sargeant and Mann and their colleagues are focussing on work-based assessment feedback in domains such as clinical competence, patient and team communication, Professionalism, and practice management [10] for both primary training and Continuing Professional Development in investigating “the link between receiving and using assessment feedback”. But the same principles can be applied to dialogic e-learning, where survey items and situational judgement scenarios (*not* tests) call for self-reporting responses from learners as individuals and as a cohort. The responses are fed back to the respondents and they are then encouraged to re-consider their “position”—much as in a Delphi process—after reflecting on their original response in relation to the cohort or that of a panel of experts, e.g., faculty.

The software analytics in effect enable the provision of the “feedback loop” referred to in the *Code of practice for the assurance of academic quality and standards in higher education* issued by the Quality Assurance Agency for Higher Education in 2006 [14] which recommended (p. 10) “designing a ‘feedback loop’ into assessment tasks so that students can apply formative feedback (from staff or peers) to improve their performance in the next assessment” in order to design “assessment that supports student learning”. However, instead of the goal being to improve performance in assessment exercises *per se*, the goal here is to design an effective learning opportunity in a domain such as Professionalism that is particularly value-laden, and therefore socially constructed. Thus, “formative assessment” truly becomes “learning opportunity”.

5. Elements of Dialogic Learning

JISC [15] has provided a useful table (Table 1) of Perspectives on learning and approaches to assessment and feedback in its 2010 publication *Effective Assessment in a Digital Age* a guide to technology-enhanced assessment and feedback against which we map our approach in designing dialogic e-learning for Professionalism in the health care professions:

Table 1. JISC Perspectives on learning and approaches to assessment and feedback with examples added in italics.

Perspective on Learning	Assumption	Assessment	Feedback
Associative	<p>Learning as acquiring competence</p> <p>Learners acquire knowledge by building associations between different concepts.</p> <p>Learners gain skills by building progressively complex actions from component skills.</p> <p><i>e.g., learning the extent of their responsibilities to maintain confidentiality from obvious scenarios relating to “loose talk” to more complex questions of how much information can be released to insurance companies without explicit consent of the patient.</i></p>	<p>Concepts and competencies frequently assessed at micro level and in combination through macro level tasks.</p>	<p>Expert feedback focusing on weaknesses in skills and conceptual understanding.</p> <p>Interactive environments for knowledge and skills acquisition.</p>
Constructivist	<p>Learning as achieving understanding</p> <p>Learners actively construct ideas by building and testing hypotheses.</p>	<p>Assessment by means of experimentation, discovery and inquiry-based tasks.</p>	<p>Self-generated feedback arising from reflection and self-assessment.</p> <p>Interactive discovery environments with opportunities for self-testing.</p> <p><i>e.g., Software such as Articulate and Bristol Online Surveys can quickly “locate” learner responses within cohort profiles, allowing the “calibration” step for feedback acceptance.</i></p>
Social constructivist	<p>Learning as achieving understanding</p> <p>Learners actively construct new ideas through collaborative activities and dialogue.</p>	<p>Collaborative and cooperative tasks involving shared expression of ideas.</p> <p>Participation by learners in the design of assessment tasks.</p>	<p>Peer feedback arising from collaborative activities and dialogue.</p> <p>Interactive environments that support sharing and peer feedback.</p>

Table 1. Cont.

Perspective on Learning	Assumption	Assessment	Feedback
Social constructivist			<i>The software facilitates the quick and efficient creation of a “learning community” of peers and role models in which to develop personal learning and development of professional persona through dialogue.</i>
Situative	Learning as social practice. Learners develop their identities through participation in specific communities of practice.	Holistic assessment in authentic or simulated professional contexts. Participation in social practices of inquiry and assessment.	Socially produced feedback from multiple sources. Feedback derived from authentic, real-life tasks. Interactive environments that simulate professional practice. <i>Professionalism is profoundly “situative” and the software permits the delineation of acceptable standards and areas of fluidity for both respondents and regulators to reflect and act on.</i>

6. Using Survey Tools to Generate Calibrated Feedback Loops (CFLs) for E-Learning

The analytics of the Bristol Online Survey tool have been used to develop the Dundee PolyProfessionalism Surveys I (Academic Integrity) and II (Proto-Clinical). The item generation and validation process have been reported [16,17] as well as initial results from one UK medical school student and faculty cohort for Academic Integrity I [18] and recommended responses from a reference group of UK-wide faculty for Proto-Clinical Professionalism [19].

Several UK medical schools are now piloting the instruments in order to both survey undergraduate views on nearly 80 elements of Professionalism that they must be aware of before they take any clinical responsibility and then to use the results as calibrated feedback as a formative learning opportunity that enables the individual respondents to “locate” themselves within the “learning community” of peers and faculty in order to self-assess (learn) their personal need to modify attitudes and behaviours.

Respondents were asked to recommend appropriate sanctions for a first time lapse in Professionalism with no mitigating circumstances from a ten-option scale as shown in Figure 1.

Figure 1. Recommended sanction options (based on Teplitsky 2002 [20] and GMC [21]).

1 = None	Ignoring
2 = Reprimand (verbal warning)	
3 = Reprimand (written warning)	
4 = Reprimand, plus mandatory counselling	Warning
5 = Reprimand, counselling, extra work assignment	
6 = Failure of specific class/remedial work to gain credit	
7 = Failure of specific year (repetition allowed)	Repeating
8 = Expulsion from college (readmission after one year possible)	
9 = Expulsion from college (no chance for readmission)	
10 = Report to professional regulatory body	Expulsion

The graph in Figure 2 plots responses to Dundee PolyProfessionalism Academic Integrity I instrument from 690 health sciences students at one UK university and indicates that the responses to and between individual items are discriminating and suggests a consensus on different types of Professionalism throughout the cohort.

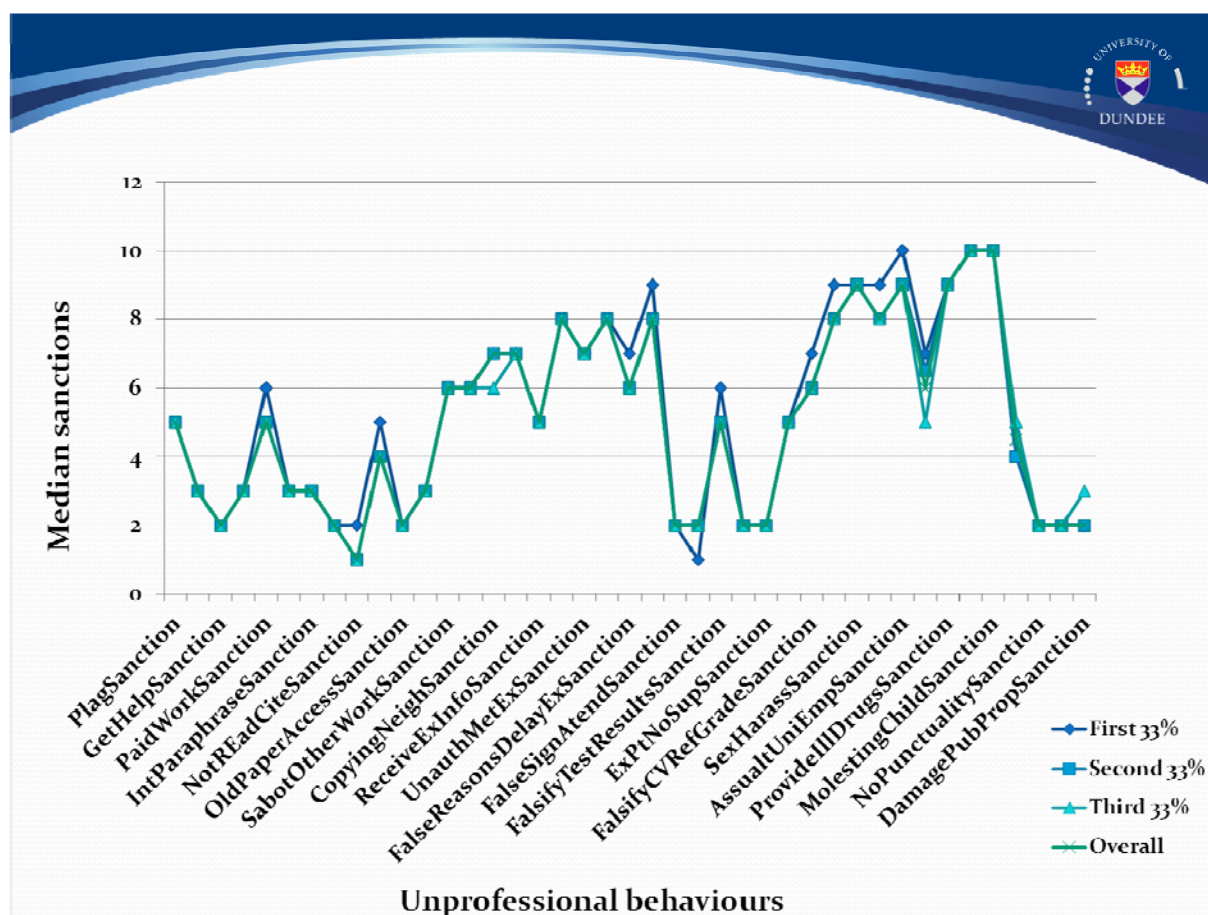
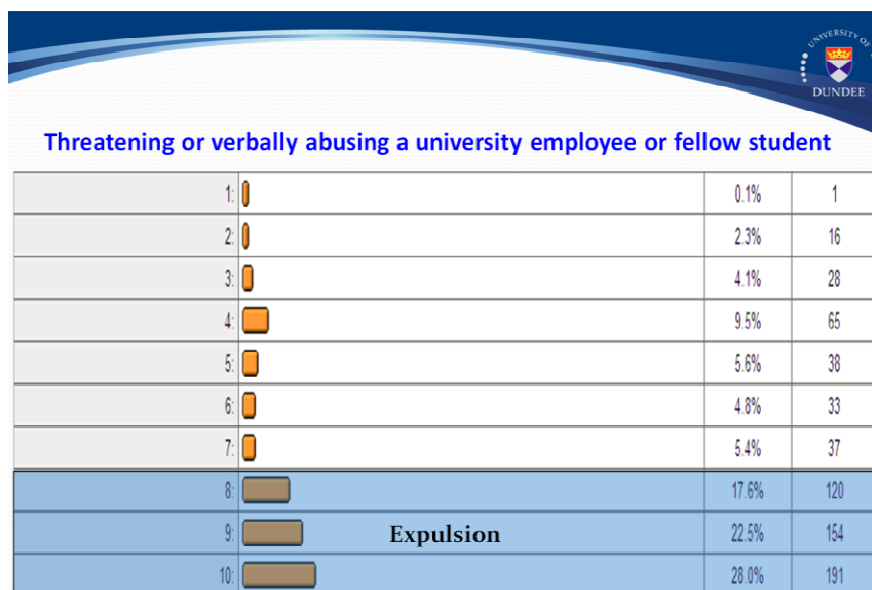
Figure 2. Responses to items in Dundee polyprofessionalism (Academic Integrity) I.

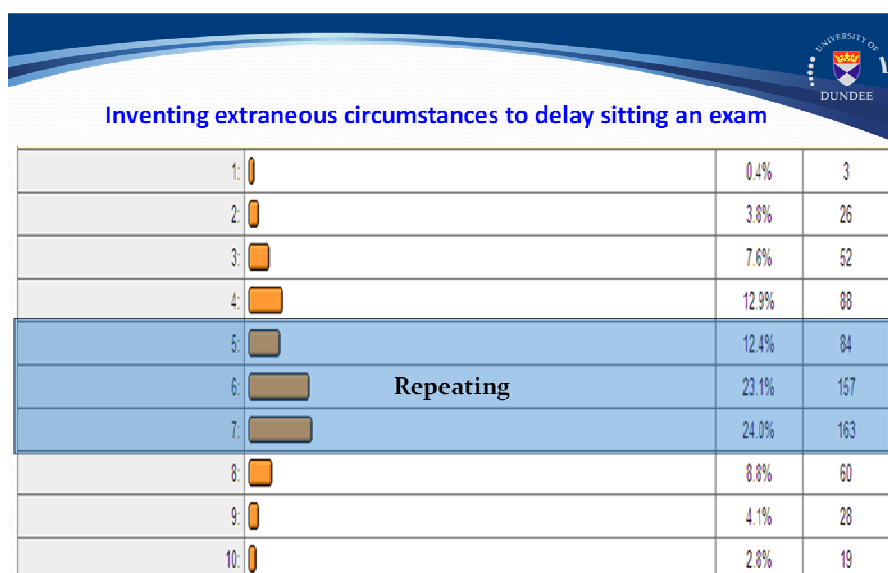
Figure 3 shows that while there is a consensus between two-thirds of the following respondents from one UK cohort to this lapse in Professionalism, one-third of respondents may need to reconsider their position.

Figure 3 Recommended sanctions for lapse in professionalism: threatening or verbally abusing a university employee or fellow student.



The data in Figure 4 results indicate that a quarter of the respondents may view this lapse of Professionalism too leniently.

Figure 4 Recommended sanctions for lapse in professionalism: inventing extraneous circumstances to delay sitting an exam.



These Dundee PolyProfessionalism instruments can be used with minor terminological changes for all the health care professions, and the Academic Integrity instrument has been tested for use outside the health professions. As well as in UK medical schools, they are being field tested in the UK with Osteopathy, Nursing and Social Work students and for medical students in Saudi Arabia, Egypt, Australia, Ireland, and Pakistan. There are early indications of different attitudes to core elements of health care Professionalism in different medical schools around the world, which may prove informative to the General Medical Council in its work to prepare International Medical Graduates for work in the

National Health Service. The results are also giving clear signals to UK programme administrators about where remediation and supplementary teaching are required in some medical schools.

Oxford Brookes University is using the PolyProfessionalism Instruments to enhance its Undergraduate Fitness to Practise Governance for students of Adult Nursing and Social Work [22] with a view to making them a compulsory component as students prepare for clinical placements and then practice.

The General Osteopathic Council of the UK is field testing customised versions of the instruments for use in the 11 osteopathy programs it regulates [6].

The instruments can be found at Bristol Online Surveys. Login PROFDEVG_C4M, Password 276392ft. Enquiries about their use should be directed to s.l.roff@dundee.ac.uk. Dundee PolyProfessionalism Academic Integrity I in particular would require only minor terminological changes to be useable in Pharmacy programmes.

7. Using Situational Judgement Scenarios (SJSs) to Generate Calibrated Feedback Loops (CFLs) for E-Learning

Dye *et al.* [23] are using Articulate software to present Situational Judgement Scenarios (SJSs) of varying lengths in varying media including video simulations, not to test/assess the respondent, but to promote *learning through formative calibrated feedback*.

Situational Judgement Scenarios are not used as *tests* but as *learning opportunities*. Patterson *et al.* [24] note in their review evaluating Situational Judgement Tests (SJTs) to assess non-academic attributes in selection that “It is important to note that SJTs are not measures of ethical values *per se*, but, rather, measures of trainees’ *awareness* about what is effective behaviour in work-relevant contexts in important interpersonal domains” (emphasis added). It is this “awareness” and sensitisation in relation to the regulatory standards and guidance that we are seeking to promote in our learning tools.

The scenarios and indicative responses have been scripted by a consensus group drawn from General Osteopathic Council of the UK officers with responsibility for Regulation and Professional Standards, and an external education consultant with more than a decade’s experience of professional Fitness to Practice procedures.

Initially the learner is required to gauge the extent to which they think the situation/behaviour/attitudes outline in the scenario are unprofessional, using a Likert scale of 1–5.

The learner is then required to relate the issues in the scenario to various elements of the Standards and Guidance published by the GOsC.

The respondent is then asked again to rate the levels of poor Professionalism they discern in the scenarios.

Feedback is provided in a four-step process, as recommended by Sargeant *et al.* [10], in order to promote learning through reflection. If an incorrect Standard or Guidance is chosen, the learner is invited to reconsider his or her answer. After successful mastery of the learning, a certificate of completion is issued online which can be submitted as part of the learner’s Continuing Professional Development.

In order to enhance dialogic learning in the Osteopathy learning community the data from the Likert scales in the pre/post exercises that require learners to make judgements about the severity and nature of lapses in Professionalism that are depicted in the scenarios are analysed. As well as indicating any changes in the learners’ assessments of the levels of poor Professionalism as individuals and as a cohort, these data will be reviewed against similar data to be collected from experts and role models in Osteopathic Professionalism to identify areas of congruence and dissonance between the learners and

the experts/role models. This will guide the General Osteopathic Council and the eleven Osteopathic Educational Institutions in the UK in providing relevant learning opportunities in the future.

8. Designing Dialogic E-Elearning Using Calibrated Feedback Loops for UK Pharmacy Professionalism

In July 2012, the UK General Pharmaceutical Council published [25] its Standards of conduct, ethics and performance citing seven central principles:

As a pharmacy professional, you must:

- (1) Make patients your first concern;*
- (2) Use your professional judgement in the interests of patients and the public;*
- (3) Show respect for others;*
- (4) Encourage patients and the public to participate in decisions about their care;*
- (5) Develop your professional knowledge and competence;*
- (6) Be honest and trustworthy;*
- (7) Take responsibility for your working practices.*

Rapport *et al.* [9] have suggested eleven “themes of patient-centered Professionalism” in UK community pharmacy settings:

- Safety;
- Professional characteristics;
- Relationships with patients;
- Confidentiality and privacy;
- Accessibility;
- Training;
- Professional pressures;
- Services;
- Environment;
- Changing professional roles;
- Patient characteristics.

These would provide the scaffolding for an initial item generation from a carefully constructed, stratified group of stakeholders. Participating Pharmacy colleges could utilise them to customise the Dundee PolyProfessionalism inventories for Pharmacy and field test them, as is being done in UK medical, osteopathy, nursing, and social work programmes. Situational Judgement Scenarios for Pharmacy practice could be constructed by a similar representative stakeholder group.

Within a year the profession could develop a very useful resource for the 26 universities throughout the United Kingdom that offer the fully-accredited four-year Master of Pharmacy (MPharm) course and their professional regulator.

Conclusions

E-learning can be used to improve knowledge of standards and professional norms, in order to target learning resources and reduce professional isolation.

Online software analytics can be used to facilitate dialogic e-learning in a community of practice such as Pharmacy by providing formative calibrated feedback and reflective learning functions. Regulatory organisations can use dialogic e-learning to foster learning in practice around the standards expected of practitioners in their communities of practice and learning.

Conflicts of Interest

The author declares no conflict of interest.

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