Manuscript Concise Title:

Development of a template to facilitate reflection among student pharmacists

ABSTRACT (max 300 words)

Background

Reflective practice activities utilizing appropriate tools enhance student learning during and after experiential placements; such reflective tools provide a platform for students to reflect on their experiences and how they may develop their skills to improve future outcomes.

Reflective tools described in the literature, used to support students on traditional placements of a duration of at least two weeks, sit at the unstructured end of a continuum (completely unstructured to just minimal structure). Additionally, non-traditional settings in role-emerging placements are of value as an alternative for experiential education. There were no reflective tools in the literature to provide a means of supporting pharmacy students as novice reflectors, for shorter placements, and in non-traditional settings.

Objectives

To develop one fit-for-purpose tool which students could utilize across their experiences, regardless of type or duration of experiential placement.

Methods

A multi-phased approach was adopted, including a mix of methodologies: interviews, focus groups, informal feedback from stakeholders, and grading reflective accounts utilizing Mezirow's categories of reflection. A range of stakeholders were involved at each stage to ensure the reflective tool was fit-for-purpose. These included students, placement preceptors, and academic staff acting as graders of student reflective accounts.

Results

A total of 24 students participated in focus groups, 13 supervisors/preceptors engaged in interviews and informal feedback, and 853 student reflective accounts were graded in this research, over 3 years.

The final tool that has been developed and evaluated in this research supported students to develop to critical reflectors (6% - Phase 2 increased to 62.9% - Phase 3).

Conclusions

This novel and innovative approach supports novice reflectors, encourages reflection on action and enhances professional development. It is a structured yet flexible tool, for which there was a gap in the published literature. It can be utilized in varied placements in pharmacy curricula internationally.

KEYWORDS (max 6)
Reflection; experiential education; pharmacy education; role-emerging placements; reflective practice

INTRODUCTION

Reflection plays an important role in health professional education to enable students and practitioners to transfer theory learned from the classroom into practice.[1,2] Reflection is a metacognitive strategy that has been utilized to assist students to develop clinical reasoning skills and view situations from different perspectives, thus this skill has the potential to shape better practising healthcare professionals and pharmacists.[3] Given the complexities and ambiguities that are involved in clinical practice, a skill set that requires one to reflect on how an event or situation unfolds and the consequences of actions is considered invaluable to the developing practitioner and for lifelong learning.[4,5]

This process becomes especially important when students are engaged in experiential placement programs as students are forced to deal with the real-world context and adapt their learning to different situations.[1,6,7] In most cases, students are unlikely to deal with the same situations day in and day out and therefore their ability to reflect on a previous experience, knowledge or event, adapt and respond appropriately to the current experience or situation is a valuable skill. While traditional placements such as community, hospital and pharmaceutical industry settings have been at the forefront for experiential education, reflecting on experiences often involves the preceptor and their guidance.[8,9] Preceptor development is becoming increasingly challenging with greater pharmacy student cohort sizes,[10-12] and quality assurance has been highlighted as a common concern facing pharmacy experiential education.[13]

In response to the challenges associated with securing quality placement experiences for growing student cohort sizes, and also the need to shift focus of experiential education to reflect modern healthcare needs,[14-17] pharmacy programs are seeking to supplement traditional placements with alternative experiential opportunities such as those offered as role-emerging placements (REPs).[18-27] The need for self-directed learning and reflection in REPs is even greater, as these placements do not employ a pharmacy preceptor on site. The definition of REPs, applied to the field of pharmacy, refers to the exposure of students to settings which do not traditionally have a pharmacist involved in the day to day duties at the site, therefore a

pharmacy preceptor is not present. These sites may include drug misuse centres, senior citizens weekly meeting groups, and charities. As an example, a REP was discussed in literature,[22] whereby students gain an insight into patient perspective by attending a session in a mother and toddler play group. Students in that setting explored parents' and carers' experiences with children, some of the factors that have an impact on pharmaceutical care of the parents/carers or that of the children, and how or what influences decision-making towards seeking advice from a pharmacist when children are ill.

Unfortunately, reflection is not an inherent skill, however, research has shown it can be taught through prompts and guides,[28] thus allowing future pharmacists to develop the skill. One of the ways in which this skill can be developed is through the use of reflective tools, to enhance student learning during and after experiential placements; such reflective tools provide a platform for students to reflect on their experiences and how they may develop the skills to improve future outcomes.[27+29]

A range of reflective activities related to placements have been suggested in the literature: blogs,[6,7,29-31] reflective statements[29] and reflective essays.[32,33] Portfolios have also been used with healthcare students[34] and in particular with pharmacy students.[35-38] The reflective tools, reported for traditional placements of a duration of at least two weeks, move along one end of a continuum, from completely unstructured to just a minimal structure. A preceptor is present to guide the students in their reflective journey and make sure they benefit from experiencing critical incidents (not necessarily clinical incidents),[1,6,7] or participants are already practitioners, with some inherent reflective skills. The unstructured format of these tools, whilst capturing students' reflections, has not been tested as to whether it provides a means of supporting pharmacy students as novice reflectors, in placements of a shorter duration such as those typically undertaken by pharmacy students in the United Kingdom (UK),[39] and in a range of non-traditional settings such as REPs.

The aim of the study was therefore to develop a fit-for-purpose template to be used as an assessment tool to support students as novice reflectors to reflect on their placement learning across the full range of traditional and role-emerging placement options, regardless of type or duration.

METHODS

This action research evaluation project took a multi-phased approach with results from one iteration feeding forward to inform future developments which were then themselves further evaluated (Figure 1 presents an overview of the complete project). A range of stakeholders were involved at each stage in order to ensure the reflective tool was fit for purpose. These will be outlined in more detail in the relevant sections.

Ethical approval for each stage of the evaluation was obtained from a University School Research Ethics Committee and informed consent from participants was obtained, where appropriate.

Phase 1:

The first iteration of the reflective tool [v1] utilized for the initial roll-out of REPs in year 1 was based on Driscoll's model of reflection[40] and contained only three basic questions: 'what?', 'so what?' and 'now what?' Driscoll's model was chosen as students in year 1 had no experience of reflection and reflective writing. At that point, there was no reflective assessment of students' experiences in traditional pharmacy placements. Associated questions of Driscoll's model of reflection were discussed during an allocated workshop/lab. After placements had taken place each student in Master of Pharmacy (MPharm) 1 submitted their reflective entry which was graded as a pass/fail assignment by academic staff. Academic staff graders were asked to provide feedback comments on the use and appropriateness of the tool in light of their grading experiences. This was done through a formalized discussion process. This discussion highlighted that the tool was not working as intended. It was agreed that the views of the students who used the tool were critical to the development of this element of the course.

As such, all MPharm 1 students were invited to participate in a focus group to share their experiences, which included their views and opinions on the reflective tool. An invitation email was sent, with an information sheet attached. Students who responded were asked to provide written informed consent. Focus groups were conducted at a time and location convenient for the participants. Groups were audio recorded and transcribed ad verbatim. The resulting data were analyzed using deductive thematic analysis[41] and used to develop a new student-led template. This draft version [v2] was then shared with experiential placement providers. Written feedback on the amended tool was obtained from these stakeholders. The updated version [v3] was used in

the following academic year for MPharm years 1-3, for both traditional placements and REPs (Phase 2).

Phase 2:

The research team, recognizing that development of the tool needed to be an iterative process, acknowledged that the amended version [v3] of the tool would itself need to be evaluated post-use. As such, after students had submitted their reflective entries, a single academic grader assessed the submissions, to ensure consistency. A formal process based on literature was adopted[31]; the grader reflected on how well the tool had supported the students with their reflections through a review of the submitted entries from years 1-3. This review focused on the appropriateness of the form to allow students to reflect on their personal experiences, regardless of the type of experiential placement or year of study. The appropriateness of the form was captured by grading into Mezirow's categories of reflection,[42] as outlined in table 1.

This detailed review was also used to identify areas for future improvements of the tool, including identification of specific areas students reflected upon and incorporating these as sub-questions. These led to a fourth iteration of the reflective tool [v4].

Before utilizing this latest iteration in student placements, it was deemed important to obtain the views of key stakeholders, as in Phase 1. This included focus groups with year 1 and year 2 students and engagement with placement providers. Year 2 students were approached as they could provide feedback on the use of both current and earlier iterations of the tool. Year 1 students would be able to provide feedback on the current version, as novice reflectors. Students in both years were approached via email using the same methodology as described in Phase 1, to review versions 3 (version they used in the current year) and 4 (potential changes for the following year), and to explore the usefulness of additional prompt questions through a ranking exercise. Data were captured and analyzed as described in Phase 1.

Key stakeholders also included experiential placement preceptors/supervisors; they were asked for their feedback on v4 of the tool during placement review and planning discussions. Relevant comments were documented and fed into further development of the tool. Version 5 was created based on feedback from these two key stakeholder groups, students and placement preceptors/supervisors, and rolled out during the next academic year in the following tranche of placements for the whole MPharm cohort (Phase 3).

Phase 3:

Following use of the tool [v5] as developed in Phase 2, the same single academic grader assessed the submissions, to ensure consistency longitudinally. A further review of the submissions of entries of all four years was undertaken, again focusing on the extent to which the form was fit–for- purpose across all types of experiences and levels of study. The appropriateness of the form was captured using the same categories as Phase 2 (see table 1).

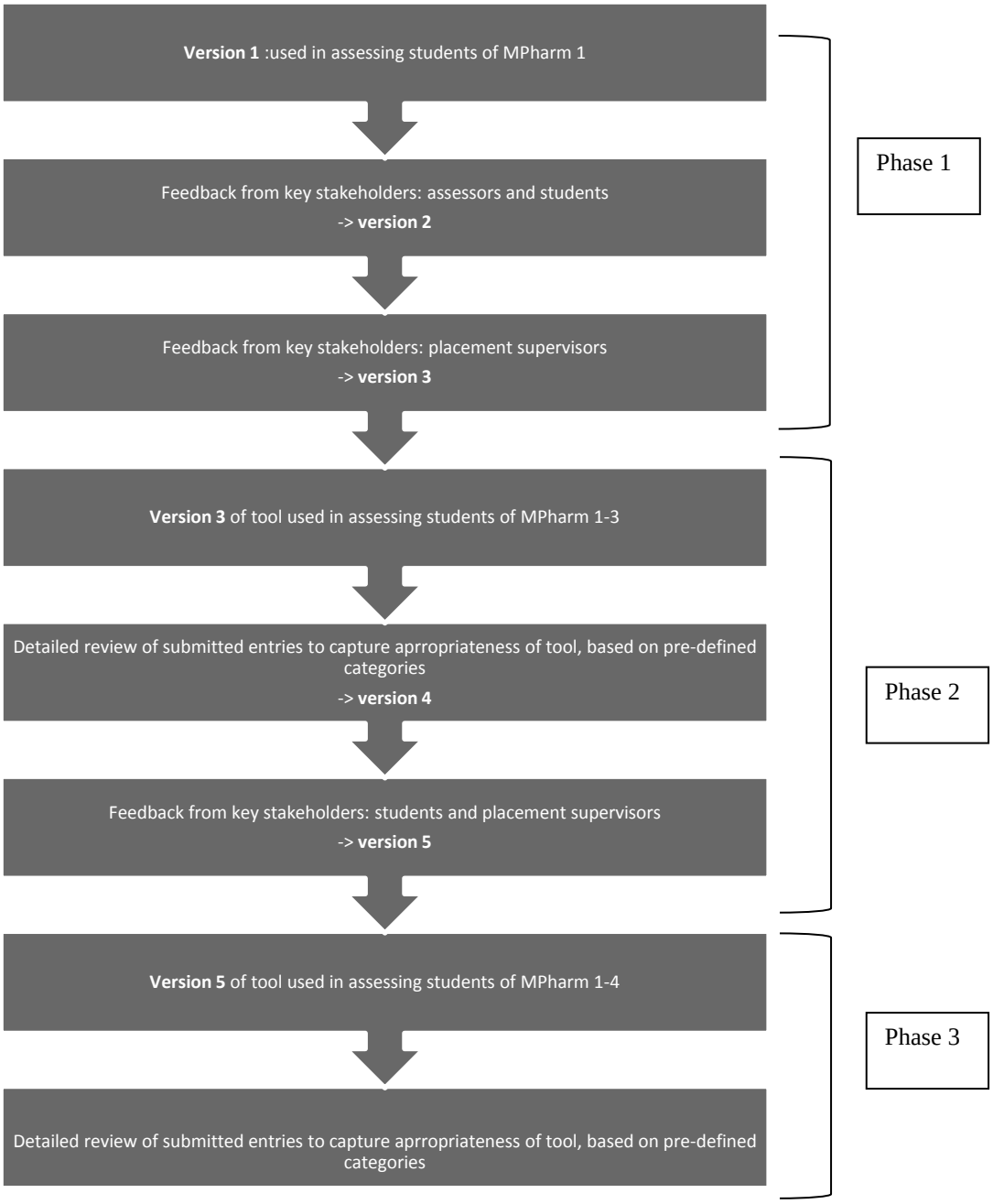

Figure 1. An overview of the multi-phase approach to the development of a tool to assess placement reflections of students in all years of an MPharm course

Table 1. The categories used when assessing entries in the detailed review of the reflective entries in Phases 2 and 3.[42]

Category	Description
Critical reflector	The entry demonstrates clear description of experiences, and how the student has made sense of them by relating new to prior knowledge, beliefs and assumptions. There is evidence of student's development of perspectives and change of behaviour.
Reflector	The student has identified some issues and has tried to reflect on them, but they could have incorporated a deeper level of reflection. They need to think of the impact of everything they said, and try and relate it to previous knowledge, beliefs and assumptions. They then need to think how this will inform their future actions.
Nonreflector	The student has made an attempt at describing some of their experiences, but with no attention to personal thoughts or relation to previous experiences. They need to provide a clearer description of the situations they have mentioned, and convey some personal feelings and relate to learning.

RESULTS

A total of 24 students participated in focus groups, 13 supervisors / preceptors engaged in interviews and informal feedback, and 853 student reflective accounts were graded in this research, over 3 years.

Phase 1

Two assessors provided their views on the assessment tool. Both agreed that overall the students had not managed to reflect on their experiential placement experiences. It was stated that the existing version did not support the students' ability to reflect, and would be better suited to students who had extensive experience with reflective writing assignments.

Thirteen students participated in two focus groups. Deductive thematic analysis looking at the usefulness of the template for assessment of their placement revealed two themes: (i) novice reflectors; and (ii) short duration of the placement. Participants reported that they struggled to think of critical incidents or other experiences to reflect on:

"…I mean, I was there for, like [sic], 4 hours, what can possibly happen in 4 hours to help you become a better pharmacist?" [Phase 1, Participant 6]

Additionally, it was the first time they attempted this type of assessment and they felt particularly challenged by switching from "descriptive" to "reflective" writing:

"I was not really sure why the second bit of the template ["so what"] was different to the first one ["what"], I still had to describe my impressions, right?" [Phase 1, Participant 4]
Deductive thematic analysis was used to identify the areas which had an impact (positive or negative) on the students' learning from the placement. Data from the focus group identified three main areas: (i) structure, (ii) supervision, and (iii) experiences/case studies. These were used as the main constructs to create an entirely new version of the template (v2).

Formal written feedback on version 2 was obtained from three placement supervisors. They noted an additional construct which felt impacted on their preparedness for the placement, and hence on the students' quality of experience: logistics (including timings, number of pharmacy students present, supervision of other healthcare students, preparation time). They noted that the students would not be able to comment on these aspects, but the result was that preceptors/supervisors did not feel they approached pharmacy student placements consistently at all times. Version 3 (v3) was created taking this result into account, with two additional sub-questions for the preceptor's/supervisor's section: approach toward placement structure and flexibility towards students' learning outcomes.

Phase 2

The categories in table 1 were used to grade 365 reflective entries from students in MPharm 1-3. Results are presented in table 1. All entries that were graded under the category "critical reflector" were further analyzed thematically, using a deductive approach, to identify the factors which led to these entries being of particularly high quality. The intention was to incorporate some of these factors into subsequent versions of the template, to support enhanced reflection by students in future placements. Factors identified included: providing a high level of detail, taking account of personal feelings, and being able to relate to previous experiences. In addition, an inductive approach was utilized in order to identify any further constructs; however, no additional themes were found. Version 4 (v4) was created by adding these additional supporting questions.

Eleven students participated in two focus groups, where they were presented with versions 3 and 4 of the template. Deductive thematic analysis looking at the usefulness of these templates for assessment of their placement, revealed two themes: (i) value of structured template and (ii) value of prompt questions:

"This [v4] is soooo [sic] much better, I mean, you know what you need to talk about here" [Phase 2, Participant 10]
"You know what, this really gives me something to think about, yes, I understand all the little areas I need to think about now and it makes me realise I achieved quite a lot [in my placement]" [Phase 2, Participant 7]

During the focus group, a card activity was used to explore additional potential prompt questions that could be helpful to support student reflections. This produced four additional sub-questions for the template: (i) supervisor's professional attitude, (ii) supervisor's approach towards workplace dynamics, (iii) sharing experiences with peers who completed a placement in a different setting, and (iv) experiences that made students think about roles of other health and social care professionals.

Feedback on v4 from eight placement preceptors/supervisors also resulted in additional prompt questions: (i) a section inviting students to reflect on their own professional attitude, (ii) engagement with placement, and (iii) proactive behaviour related to achieving learning outcomes. Version 5 (v5) incorporated results from feedback of both key stakeholder groups.

Phase 3

The categories in table 1 were used to grade 488 reflective entries from students in MPharm 1-4. Results are presented in table 1. The percentage of entries graded under the category "Critical reflector" increased from 6 to 62.9. Only three entries (0.6%) were graded under the category "Nonreflector". Further review of these entries revealed that all three students had not engaged with the template (i.e. many of the questions were left blank) in their reflective account of their placement.

This review of outcomes suggested that version 5 supported students to find experiences to reflect on, understand how much they learned, and use this knowledge to inform future behaviors and practice:
"It is a pain to write these reflective entries but when you finish with all the questions you realise how much you have actually learned" [Phase 3, MPharm 3 student]

This was the case for students from all years, regardless of what type of placement they attended; it was the case even for students who perceived that their overall placement

experience was not a very good one. For many students, the section on preceptors'/supervisors' approach towards placement dynamics proved to be a useful prompt for students to reflect on how flexibility is a useful trait as a health care professional.

"It was just a hectic day, you could see Dan [the support worker in a Drug and Alcohol Misuse Unit] was just overwhelmed with one thing after the other. And you know, he managed to not only find stuff for us to do, but explain everything that was going on. I mean if you juggle keeping students happy and juggle your other job, imagine what you can do for your patients! [Phase 3, MPharm 3 student]

It was decided that no more iterations of the form were needed and v5 would be used in future assessments.

Table 1. The number of entries designated as nonreflector, reflector and critical reflector.

Category	**Phase 2 - Number of entries (%*) graded against that category, n=365**	**Phase 3 - Number of entries (%) graded against that category, n=488**
Nonreflector	157 (43.0)	3 (0.6)
Reflector	186 (50.9)	178 (36.5)
Critical reflector	22 (6.0)	307 (62.9)

*Percentages do not add up to 100 due to rounding of data

DISCUSSION

A report published by the British Pharmaceutical Students' Association[43] in the UK showed that students wished to undertake placements from year one and continue throughout their pharmacy degree. To ensure that students make the most of their experiential learning they need to develop reflective skills to make sense of their experiences, and to be able to relate gaps in knowledge and skills to their professional development.[1,2,44-48] Reflective skills, even though not inherent, can be taught with appropriate support.[4,49-51] This has been recognised by a number of pharmacy education regulators from around the world, where reflection and personal development is a key requirement for initial education for pharmacy students and as a requirement for competencies standards.[52-55]

The tool described in this paper provides a more structured approach to support pharmacy students, as novice reflectors, to maximise learning from placement experiences. A range of less structured approaches to develop students' reflective practice have been reported in the literature for health care education other than undergraduate pharmacy, and for placements of at least 2-

week duration. These tools sit at one end of a structure continuum. Blogs, portfolios and reflective essays are completely unstructured whilst reflective statements adopt only minimal structure. Blogs have been shown to promote group reflection and social interactions, when used for internship placements with mature students in medical[30] and allied health education.[7] Hanson and Alexander[56] used blogs to encourage students to engage in reflective and critical thinking, within the field of dentistry, after regular clinical experiences. Portfolios, a collection of evidence on work experiences that have transformed the candidate's personal and professional development,[34] are routinely used for to support practitioners,[57] including practising pharmacists.[58-61] In pharmacy education, portfolios have been used with success to link academic learning and regular exposure to practice, but their nature makes them more appropriate for longer placements.[35-38,62-65] Reflective essays have also been used with pharmacy students, but focusing more on concepts within teaching activities rather than on clinical experiences.[33]

The minimal structure provided by reflective statements has been shown to be useful for postgraduate students' reflections on their learning.[29] However, none of these tools have been utilized with pharmacy students undertaking shorter periods of placements (less than 2 weeks), in all experiential placement environments, traditional or non-traditional.

In the first cycle of this action research project, the researchers adopted an assessment tool from the literature with minimal structure i.e. three broad questions. This proved to be unsuccessful in supporting students as novice reflectors. Many students were not able to identify a suitable opportunity/incident to reflect on, as they associated "critical incidents" with unexpected clinical scenarios as opposed to a general learning opportunity. The short duration of the placement did not allow them to experience such "critical incidents". Students found the short duration of the placements, in combination with the broad scope of the initial structure of the template, an overwhelming challenge. The final tool that has been developed and evaluated in this research sits at the other end of the structure continuum, for which there was a gap in the published literature. It provides tailored structure to encourage reflection on action,[66] supports professional development, and promotes reflection in action during placements later in the curriculum and as a graduate. This novel and innovative approach to support the novice reflector is a flexible tool that can be utilized in a number of different placements in pharmacy curricula around the world.

In addition, this study has illustrated how critical it is to engage with all stakeholders when developing professional development tools. The student perspective ensures that the tool is at the

appropriate level and provides them with sufficient support. For work based learning, the views sought from placement providers ensure issues around preparation and management of different roles in the workplace are accounted for. This, in turn, prompts students to appreciate the impact of such leadership skills on developing as a healthcare professional. The iterative approach enabled by action research further allows and embeds a continuous reflection of educators on their own viewpoint and subsequent practice. Ultimately, in this study, direct involvement of all stakeholders resulted in an increased quality of the placements provided. Even though this was not a direct aim of the study it is in line with current literature.[67-69]

Limitations:

This was an action research project conducted in one school of pharmacy in the United Kingdom. Even though the study investigated a number of cohorts of students over a period of three years, no comparisons can be made with cohorts of students in other Universities, as no research data is available. As such, results need to be interpreted with caution, and the tool should be piloted locally before adoption by other institutions.

Future studies:

The generic nature of the tool means that it can be used by different disciplines internationally. Evaluation of its use in other disciplines will explore its value in other healthcare placement settings.

CONCLUSION

This paper describes the stakeholder-informed evolution of a new and original tool to provide structured support for development of reflection in undergraduate pharmacy students on placement. This new tool can be used internationally to support students' learning and development as reflective practitioners, regardless of their placement setting or duration.

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