Use of a learning portfolio for continuous professional development: A study of pharmacists in Ontario (Canada)

ZUBIN AUSTIN[1], ANTHONY MARINI[2], & BERNIE DESROCHES[3]

[1]*Faculty of Pharmacy, University of Toronto, Toronto, Ont., Canada, M5S 1A1,* [2]*University of Calgary, Calgary, Alta., Canada, T2N 1N4, and* [3]*Ontario College of Pharmacists, Toronto, Ont., Canada*

Abstract
The use of learning portfolios in health professions has been widely described and discussed as an important tool for promoting reflective practice and continuing professional development. Within pharmacy, there have been reports of the use of the learning portfolio in practice and education. The Ontario College of Pharmacists, as part of its maintenance of competency requirements, requires practicing pharmacists to maintain a learning portfolio as a written record of learning activities, resources used and outcomes. For this study, surveys were distributed to 1415 pharmacists in Ontario, Canada (representing approximately 20% of all pharmacists in the province) and data was collected related to use of the learning portfolio in practice.

In addition, anecdotal feedback was collected and analyzed to identify the value of the portfolio in maintenance of competency activities for pharmacists. Results indicate that initially pharmacists may express misunderstanding or misapprehension regarding the role of the learning portfolio and optimal ways of documenting learning in practice. However, with additional support (including the use of facilitated, peer-based discussions), attitudes towards learning portfolios shift towards acceptance and understanding. Quantitative data indicates a wide variation in the number of learning objectives identified per pharmacist per year, the amount of time spent in continuous professional development activities, and the impact of these activities on changing practice.

Keywords: *Learning portfolio, quality assurance, maintenance of competency, continuous professional development*

Introduction

In a wide variety of fields, portfolios are used to provide evidence of learning and development. Most frequently associated with artistic fields, portfolios are generally described as a collection of artifacts or works produced in the course of experiential learning. For example, in the visual arts, portfolios may consist of sketches, ideas jotted down upon napkins, fully realized paintings or other depictions. When taken as a whole, the portfolio provides the learner — and the teacher — with an opportunity to observe and reflect upon growth, development and learning.

Over the last twenty to thirty years, there has been increasing interest in the role of portfolios across other disciplines, particularly the health professions (Dornan et al., 2001). Drawing upon the experience of artists, advocates of portfolios in the other professions suggest that they too can provide an important trigger for self-reflection and professional development.

Most frequently, such documents are referred to as learning portfolios to emphasize their role in continuous professional development. The exact structure and format of learning portfolios in the health professions are rarely emphasized; instead, individuals are encouraged to develop their own portfolio systems based on their individual circumstances. Most frequently, learning portfolios in health professions consist of a series of documents (e.g. references and articles), records (e.g. certificates, materials from courses attended), logs (descriptions of significant events in practice) and reflections

Correspondence: Z. Austin, Faculty of Pharmacy, University of Toronto, 19 Russell Street, Toronto, Ont., Canada, M5S 1A1. Tel: 416 978 0186. Fax: 416 978 8511. E-mail: zubin.austin@utoronto.ca

2   *Z. Austin et al.*

(analysis of the ways in which documents, records and logs have lead to new understandings or new ways of practicing). In some circumstances, more formal tools for recording and reflecting upon experiences may be used to provide a more structured approach to identifying practice-based learning needs, tools for addressing these needs and outcomes associated with learning.

The role of reflection in personal and professional development has been well described. Wenger (1998) notes that social learning theorists have emphasized the role of social context in learning, particularly the role of observation, modeling and mentorship. For these theorists, reflection provides a critical hub around which individuals and environments interact, and the filter through which learning occurs.

Schön (1983) coined the term "reflective practitioner" to describe the constellation of attributes required for fully-functioning professionals in society. Schön's work begins with his claim that professionals in all fields are in crisis, and that professional work itself was in danger of being de-legitimized due to excessive focus on technical and procedural elements. For Schön, the essence of professional work is its non-standardized, ambiguous and "messy" character; failure to understand the nature of this work was in large part due to the non-reflective nature of professions and professionals themselves. The cost of this lack of reflection was a growing disconnection between professionals and the public they purport to serve. Schön advocates education of professionals in such a way as to produce individuals with the skills and propensity necessary to reflect upon their practice for the purpose of improving themselves, and has noted that these skills are vital for professional practice.

The link between reflection, self-improvement and professional development is particularly salient in the context of adult learning and education. Bruning et al. [Q2] (1995) have identified the propensity towards high levels of reflective activity as a defining characteristic [Q3] of effective learners and experts. Mezirow (1998) has noted that, for adults, learning involves "...critical reflection and discourse in human communication (resulting in) the transformative potential of our interpretive frame of reference". For Mezirow, the portfolio is an integral part of this process, insofar as it requires the individual to collect, analyze and critically [Q4] judge key artifacts of their professional experience. The process of actually assembling the portfolio — selecting key items, organizing them, identifying their value, etc. – provides the vehicle by which critical self-reflection and personal growth may occur.

Despite these findings, for some professionals the practical value of reflective practice may still remain somewhat nebulous. In general, experienced practitioners rely heavily upon use of tacit knowledge, a source of knowledge they are unaware of as they use it. Tacit knowledge is built through experience, including formal and informal learning, and is most frequently associated with the routine, commonplace activities of any professional's work. While such activities may account for the majority of daily activities, professional work is characterized by its non-routine nature; on occasion, situations will arise for which tacit knowledge will not be adequate, and where highly routine responses will simply not work. During non-routine times, professionals must actively engage in problem-solving and thinking, building upon their existing fund of knowledge and synthesizing new knowledge from on-the-spot learning and previous experiences. Flannagan (1994) has noted that individuals experienced in and comfortable with on-going reflective practice are better able to deal with unstructured or ambiguous situations, and consequently, professionals who are accustomed to reflective practice are better able to deal with the real-world contingencies of professional practice. Boud, Keogh & Walker (1985) have noted the value of written diaries or journals in providing a more formal structure for reflection, one that allows individuals to re-read and re-visit situations to continue to learn from them. Building on the Critical Incident Technique first used as a tool for promoting reflection and debriefing of pilots in World War II, the act of writing, reading and re-reading structured reflections on real-world events has demonstrated advantages over simply thinking alone.

Within the health professions, there has been increasing interest in reflective practice and the role of portfolios in facilitating reflection. Despite general agreement regarding the value of reflection, skepticism remains regarding the correlation between portfolios, reflection and professional development. Grant & [Q4] Dornan (2001) note that many physicians appear uncomfortable with the notion of committing their learning to paper in the form of a portfolio. Commonly cited arguments against the learning portfolio include the excessive time required for assembly, the lack of feedback provided regarding development and maintenance of a portfolio, and the absence of any real evidence to suggest its value in maintenance or enhancement of competence.

There are four major values associated with the development of a learning portfolio (Grant & Dornan, [Q4] 2001). Firstly, written learning portfolio entries provide the individual with a focus for professional development. Unwritten goals are frequently nebulous, easily forgotten, and readily avoided. The discipline of maintaining a learning portfolio provides in itself a demonstrated personal commitment to professional development.

Secondly, many experienced practitioners (in all fields) are unaccustomed to examining their thoughts and emotional responses to professional experiences. Frequently trained within a scientific/technical paradigm that may diminish or negate feelings of

inadequacy, sadness, or fear, professionals may frequently ignore their own feelings, thereby depriving themselves of important source material for their own development. The tendency to avoid reflecting on emotional responses to failures, errors, or inadequacies may confer useful short-term self-protection, but in the longer term may result in individuals perpetuating past errors. The written learning portfolio may initially provoke discomfort, insofar as it requires individuals to commit to writing their learning needs; however such discomfort is rewarded through greater self-awareness and insight.

Thirdly, reflective learning and practice are active processes. By providing a series of concrete, structured activities (including identification of learning needs, documentation of practice-related incidents, logs of continuing education activities, etc.) the learning portfolio facilitates reflection.

Finally, in the 21st century, all professionals will need to produce evidence of their continuous professional development activities. Even for those who are resistant to self-reflection and are skeptical of the value of committing learning to writing, the portfolio provides a concrete paper-trail of on-going learning.

The evidence supporting the value of learning portfolios in health professions has been mixed. Simple learning diaries (i.e. descriptions or accounts of an experience with no summary of what was learned as a result) have generally been found to be ineffective (Jolly, 1999; Kelly & Murray, 1999; Dolmans, Schmidt, van der Beek & Beintema, 1999). Challis, Mathers, Howe & Field (1997) compared general practitioners' use of learning portfolios (with both descriptions and analyses of experiences) to traditional continuing education documentation, and noted the portfolio's superiority in encouraging interaction with peers, and connection of learning with day-to-day practice.

Despite mixed evidence regarding its utility and ambivalence from practitioners, many professions have now mandated the use of learning portfolios as part of the on-going assessment of the competency of practitioners. Student-practitioners in many fields are also required to maintain learning portfolios as part of their pre-registration and registration activities. Within the profession of pharmacy, the use of learning portfolios is now being reported as part of maintenance of competency requirements (Austin, Croteau, Marini & Violato, 2003).

In 1996, the Ontario College of Pharmacists (OCP) introduced the Learning Portfolio as a component of its Quality Assurance Peer Review process. OCP is the regulatory and licensing body for the largest provincial pharmacy community in Canada. Pursuant to provincial regulations, all self-regulating health professions must develop and implement a process for ensuring on-going competency of licensed members.

To date, 10 of 21 health professions in Ontario have already implemented portfolio systems as a means to help practitioners monitor and reflect upon their professional growth. Most of the remaining 11 health professions are developing similar systems.

As part of OCP's Quality Assurance Peer Review process, pharmacists involved in provision of direct patient care are randomly selected on an annual basis to participate in a series of activities designed to measure maintenance of competency activities. Phase I of this process involves a survey randomly distributed to 20% of pharmacists providing direct patient care services to the public. These selected pharmacists are required to complete and submit this survey as a condition of maintaining their licensure. Phase I consists of a self-assessment component in which pharmacists reflect upon their practice and identify personal learning needs and a summary of continuing education activities from the previous year. For this summary, pharmacists are required to extract data from their Learning Portfolio as part of their report to OCP. In Phase II of the process, 200 pharmacists are randomly selected from the Phase I pool to participate in a direct assessment of patient care competencies. Phase II components include a written test of clinical knowledge, a 6-station objective structured clinical examination and a Learning Portfolio Information and Sharing Session (a facilitated discussion regarding continuous professional development activities enablers and barriers).

No specific format for the Learning Portfolio is mandated; instead OCP has developed a model portfolio and guidelines to assist pharmacists. These guidelines indicate that each learning portfolio should include an identification of learning needs, resources used to address these needs, and the outcome of new learning on practice. OCP has also developed a variety of print- and web-based resources and supports to explain the process of developing, and expected outcomes of maintaining, a Learning Portfolio.

While the use of learning portfolios in pharmacy has become more commonplace, the impact of this tool on practice has not been systematically evaluated. In order to understand, from the pharmacist's perspective, the value and impact of the learning portfolio on professional practice and continuous professional development, qualitative research was undertaken using the OCP Learning Portfolio.

Research objectives

The primary objective of this research was to measure pharmacists' continuous professional development activities, as self-reported in their Learning Portfolios. A secondary objective of this study was to evaluate the role of the Learning Portfolio in assisting pharmacists with continuous professional development activities.

4   *Z. Austin et al.*

Materials and methods

Quantitative and qualitative research methods were used to address primary and secondary research objectives. To measure the extent of continuous professional development activities, surveys from Phase I of the OCP Quality Assurance Peer Review process were collected and analyzed. Phase I consists of a survey randomly distributed to 20% of pharmacists who provide direct patient care services. As part of this survey of learning needs and goals, pharmacists were required to extract information from their own learning portfolio to their continuous professional development activities and outcomes over the previous 12-month period.

To evaluate the role of the Learning Portfolio in continuous professional development, a qualitative analysis of pharmacists' written comments was also undertaken. As part of the survey, pharmacists were provided with an opportunity to (and encouraged to) provide their own written comments and insights regarding the value of the Learning portfolio in their own professional development, as well as suggestions for improving documentation of activities and outcomes. These free-form notes were gathered, transcribed, coded and categorized for thematic analysis using an inductive method. In addition, verbal feedback and written comments were solicited from participants in Phase II of the Quality Assurance Peer Review process, after individuals had an opportunity to participate in a facilitated "learning portfolio sharing session" with 4–5 other pharmacists to discuss use of the portfolio and professional development issues. Notes from these sessions were also made anonymous, categorized and coded.

Results

Phase I

From January to December 2003, a total of 1415 surveys were distributed to pharmacists providing direct patient care services, representing approximately 20% of pharmacists in the province. Since submission of completed surveys is a mandatory requirement for renewal of licensure, response rate was 100%; however not all respondents answered all questions in the survey. Respondents were statistically representative of the pharmacist population in Ontario: A total of 67.2% had graduated from a Canadian school of pharmacy, 6.8% had graduated from an American school of pharmacy, and the remainder (26.0%) had been educated outside North America. A total of 75.1% cited community pharmacy as their primary place of employment, followed by 18.0% in hospital pharmacy, 5.7% in other fields (including academia, consulting, pharmaceutical industry or government), with the remainder (<1%) identifying themselves as "unemployed". A total of
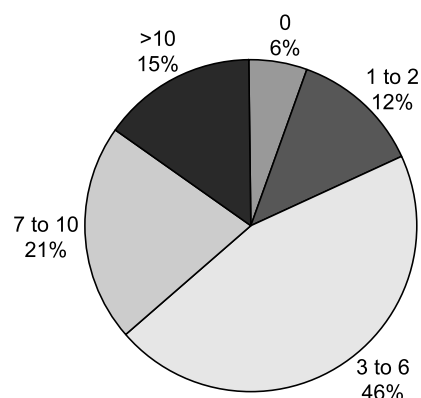

Figure 1. Total number of learning objectives identified/year (2003) ($n = 1368$).

41% of respondents had been in practice 15 years or less, 30.7% had been in practice 16–25 years, and the remainder (28.3%) had been practicing for more than 25 years.

Responses to key survey questions are noted in Figures 1–4. Each question required participants to extract information from their own learning portfolio and report, based on categories established for the survey. While the number of respondents to the survey remained constant ($n = 1415$), not all questions were answered in all surveys; consequently, data reported in these figures are based on the total number of respondents to each specific question only.

The total number of learning objectives identified by the pharmacist in 2003 (mean: 5.56 learning objectives/pharmacist/year, with a range of 0–10 learning objectives/year, Figure 1). For this study, the quality or nature of each learning objective was not assessed in any way.

Pharmacists' were asked to identify the percentage of self-identified learning objectives achieved during the year (mean: 63.34 ± 24.63%, Figure 2).

Total hours spent on individual learning activities including structured continuing education events such as workshops, lectures, and seminars, as well as
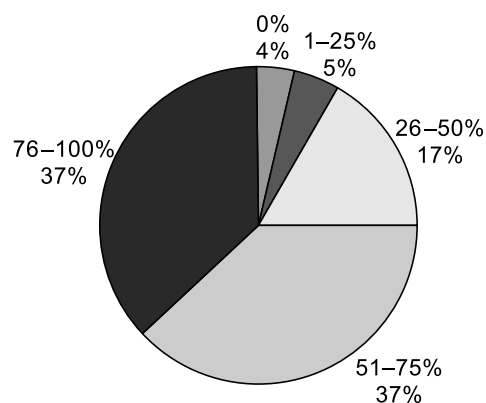

Figure 2. Percentage of identified learning objectives achieved (2003) ($n = 1360$).
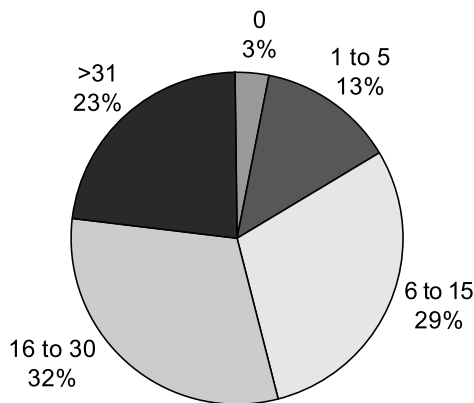
Figure 3. Total number of hours spent on individual learning activities/year (2003) ($n = 1367$).

unstructured workplace learning, were also evaluated (mean: 17.79 h/year $\pm$ 10.21 h, Figure 3).

The outcome of specific learning objectives, where pharmacists were asked to identify the number of learning objectives/activities that resulted in a change to practice (mean of 2.22 changes/pharmacist/year, with a range of 0–6 changes/year, Figure 4).

Data from this study indicates there is a wide variability in the number of learning objectives defined each year, as well as in the time spent on achieving these objectives. Of interest, there is less variability in the self-reported impact of these learning activities on professional practice, suggesting there is not necessarily an association between time spent completing learning objectives and changes to one's practice.

Qualitative analysis

After completing the Phase I survey, pharmacists were invited and encouraged to provide written comments and feedback regarding the role and value of the learning portfolio in their own professional development. Comments from pharmacists were made
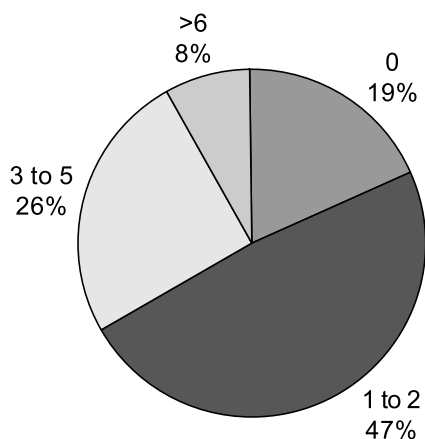

Figure 4. Total number of learning activities that resulted in a change to pharmacist's practice (2003) ($n = 1360$).

anonymous (to prevent identification of the individual making the comment), categorized and coded. In addition, verbal comments from the pharmacists were also gathered, categorized and coded at debriefing sessions following completion of the Quality Assurance Peer Review process. Based on this analysis, several key themes emerged:

Difficulty in initiating and maintaining a learning portfolio. Most pharmacists expressed some frustration about the learning portfolio, fearing it was yet another time consuming task with little potential for providing any value, and insufficient structure for its initiation or maintenance.

"Initially, I felt it was another task requiring documentation" (while important, a term heard ad nauseum).

Others commented that for their individual needs, the learning portfolio may not be particularly relevant. In particular, those with more years of practice experience and/or those working in more specialized settings felt the learning portfolio concept may be somewhat simplistic and unhelpful.

[The learning portfolio] may not be necessary after the first few years [of practice].

I found the [portfolio] somewhat redundant — I developed my own sheets describing CE activities, areas to be looked into, and information to be gained from the CE activity.

I feel this format doesn't work ideally for me.

It is difficult to decide what to put down in the portfolios as we are dealing with questions daily.

I'm not used to recording in a learning calendar. In theory — a good idea, but I never think to go to my portfolio.

Learning portfolio's limited effectiveness in promoting self-reflection. A key outcome of using a learning portfolio is purported to be its value in promoting self-reflection and improvement. In general, pharmacists felt they were sufficiently self-reflective without having to rely upon the Portfolio, and in some cases commented that the work required to maintain the Portfolio actually seemed to interfere with professional development activities insofar as it was yet another time consuming task.

I'm not sure it will force me to improve my knowledge as a pharmacist. I will do this regardless. I believe some form of mandatory CE would benefit pharmacists better [sic].

Learning portfolio is not useful to me — I keep my own version of learning needs/schedules, etc.

It is still...tedious and time consuming for me...a fatal flaw in my current lifestyle.

Value of opportunity to share CPD experiences with other pharmacists. A component of Phase II of the Quality Assurance Peer Review process includes a Learning Portfolio Information and Sharing session, a facilitated discussion in which pharmacists discuss principles, practices and enablers and barriers to continuous professional development. Pharmacists responded positively to this session, and believed the facilitated discussion provided them with important insights into both professional development and the potential role of the Learning Portfolio in practice.

> Now I find it is worthwhile. The hardest part is getting started. It's helpful to keep learning in the "front" of the mind.
>
> I feel better prepared to utilize the documentation after our group discussion and after hearing everyone else's reservations/concerns and trying to come to practical solutions.
>
> I have a better idea now on how my colleagues are doing — all going on towards the goal of better practice.
>
> Very useful! Without it, most of us would postpone what has to be done for later.

Discussion

This research suggests that pharmacists may benefit from more systematic and structured orientations to key concepts such as "continuous professional development" and important tools such as the Learning Portfolio. Qualitative data illustrates that many pharmacists initially perceive maintenance of a Learning Portfolio to be an onerous, time-consuming and not particularly meaningful or productive activity. While all pharmacists acknowledged (in principle) the value of continuous professional development and its importance for practitioners, the value of the Learning Portfolio in promoting the self-reflection and analysis integral to CPD was questioned.

Of interest, pharmacists candidly commented on the degree to which the Learning Portfolio could be "faked", and prepared just-in-time to submit for regulatory requirements. Importantly, many pharmacists did not understand the nature of self-identified learning objectives, the way in which these objectives ought to be framed and vehicles for addressing objectives and learning needs.

Quantitative data suggests pharmacists may not actually perceive the Learning Portfolio to be a serious or important tool for practice. The relatively small number of learning objectives identified and achieved on average, the relatively low number of hours spent on individual learning objectives/activities, and their seeming lack of impact on practice suggests that pharmacists in general have not made a connection between self-reflection, documentation and practice enhancement.

Such findings raise important questions for regulators, educators and practitioners. Throughout the world, there has been a shift away from compulsory or encouraged continuing education towards self-directed initiatives such as CPD. There is extensive literature that supports this shift, indicating the lack of value of compulsory CE in changing professional's or pharmacists' behaviours (Austin et al., 2003)

However, the cognitive demands of CPD may not have been adequately understood, and the implications of changing regulatory requirements towards CPD with insufficient training or education of practitioners may be significant. This study suggests most pharmacists initially consider the Learning Portfolio a burden and a regulatory requirement rather than a meaningful part of their professional practice. Even when submitting data from their Portfolio to a regulatory body (a situation that one would imagine would more likely lead to deliberate over-reporting of activities, rather than under-reporting), the CPD activities undertaken by pharmacist appear to be somewhat less than in jurisdictions where compulsory continuing education (CE) requirements are in place, and where most frequently, a minimum of 20 h of CE are required annually. Of course, issues of effectiveness and efficiency of learning must be considered, since time spent on CE alone is not necessarily indicative of learning.

Qualitative reports (Austin, Marini, Macleod-Glover & Croteau, 2005) suggest that many pharmacists may have significantly under-reported their activities due to a lack of understanding of how to develop and maintain their Learning Portfolio. As indicated in the Results section, upon completion of the Learning Portfolio Information and Sharing Session, pharmacists in general appeared far more informed, aware and supportive of the Portfolio concept, and indicated enhanced confidence in being able to move forward.

This finding suggests that the Learning Portfolio may indeed be a valuable contribution to the professional practice of pharmacists — provided it is implemented in a systematic and structured manner with sufficient support and training for practitioners. It is important to note that OCP has developed extensive print- and web-based resources for pharmacists to assist them in developing their own Portfolio. Most participants reported such materials simply did not resonate with their needs; despite having read and reviewed this material, it was only "brought to life" during the Sharing Session. As a result, OCP is currently working to develop new systems (for example, a PDA-based learning portfolio, and peer-facilitated learning portfolio sharing discussions in local communities) to address these issues.

This research suggests that regulators and professional organizations cannot necessarily assume that all pharmacists will have the innate knowledge, skills and abilities to translate static educational resources into a living process. Pharmacists require convincing of the value of the Learning Portfolio, and peer discussions (rather than directives, guidelines, or other externally imposed documents) appear to be an important motivator for change. Of course, this finding raises a difficult dilemma. In Ontario, there are over 10,000 pharmacists; the logistics of coordinating and running Sharing Sessions for all currently-licensed pharmacists would be daunting, if not impractical. While issues related to CPD and Learning Portfolios are now covered as part of the undergraduate pharmacy program, new practitioners represent only a small fraction of the overall population of pharmacists.

To truly unleash the potential of the Learning Portfolio, new methods for engaging pharmacists in peer-based discussions around their own learning are required. In part, Phase II of the Quality Assurance Peer Review process is serving this function, but again with only a small fraction of the pharmacists in the province. A key challenge going forward will be to develop innovative ways of disseminating understanding regarding the Learning Portfolio, rather than allowing misconceptions or apprehension to fester. Innovative alternatives for using the workplace itself as a facilitator for the development and sharing of learning portfolios are being discussed, since traditionally the workplace and the interruption-driven nature of typical community pharmacy practice has been identified as a significant barrier to documentation of learning.

A lesson illustrated through this research is the importance of understanding the reality faced by practitioners. In its purest form, CPD requires an idealized type of individual: self-reflective, open to change, interested in their own development and willing and able to organize themselves and their environment to support learning. This research suggests such an assumption may be unfounded; while pharmacists may indeed be able to achieve this endpoint, most appear to require structured support (preferably within a peer learning context). Recognizing this reality should assist regulators in developing the supports necessary for pharmacists.

Conclusion

The Learning Portfolio has become a much promoted tool within the health professions. As part of the process of CPD, the Portfolio is clearly aligned with the ideals of professional development. However, the reality of implementation and acceptance by practitioners requires further examination.

This research has suggested that implementation of a Learning Portfolio system within a profession may be quite complex. Practitioners' self-directed learning propensities, self-assessment skills, and self-monitoring abilities cannot be presumed given the time-pressured realities many of them face. Traditional static vehicles for communicating messages or changes to busy professionals, such as e-mails, web-based or print-based resources, etc. may be ineffective in facilitating the cognitive changes required to support CPD and the Portfolio. Education, implementation, monitoring, and follow-up are all required to assist practitioners in developing the skills necessary to advance their own practice. This research has suggested that an interactive, facilitated peer-based discussion, such as that provided through the OCP Quality Assurance/Peer Review process, may provide an important bootstrap, although on-going research to determine the longevity of this effect is required. However, the need to provide pharmacists with supports and resources to facilitate objectives of the use of a learning portfolio are required, and do appear to contribute positively to successful outcomes.

References

Austin, Z., Croteau, D., Marini, A., & Violato, C. (2003). Continuous professional development: The Ontario experience in professional self-regulation through quality assurance and peer review. *American Journal of Pharmaceutical Education*, *67*(2), 56–63.

Austin, Z., Marini, A., Macleod-Glover, A., & Croteau, D. (2005). Continuous professional development: A qualitative study of pharmacists' attitudes, behaviours, and preferences in Ontario (Canada). *American Journal of Pharmaceutical Education*, *69*(1) article 4.

Boud, D., Keogh, R., & Walker, D. (Eds.) (1985). *Reflection: Turning experience into learning*. London: Kogan Page.

Challis, M., Mathers, N. J., Howe, A. C., & Field, N. J. (1997). Portfolio-based learning: Continuing medical education for general practitioners — a mid point evaluation. *Medical Education*, *31*, 22–26.

Dolmans, D., Schmidt, A., van der Beek, J., Beintema, M., & Gerver, W. J. (1999). Does a student log provide a means to better structure clinical education? *Medical Education*, *33*, 89–94.

Epstein, R. M. (1999). Mindful practice. *The Journal of the American Medical Association*, *282*, 833–839.

Flannagan, J. C. (1994). The critical incident technique. *Psychological Bulletin*, *51*, 327–358.

Grant, A., & Dornan, T. L. (2001). What is a learning portfolio? *Diabetic Education*, *18*, 1–4.

Jolly, B. (1999). Clinical logbooks: Recording clinical experiences may not be enough. *Medical Education*, *33*, 86–88.

Kelly, D. R., & Murray, T. S. (1999). The development and evaluation of a personal learning log for senior house officers. *Medical Education*, *33*, 260–266.

Mezirow, J. (1998). On critical reflection. *Adult Education Quarterly*, *48*, 185–198.

Schön, D. A. (1983). *The reflective practitioner*. New York: Basic Books.

Wenger, E. (1998). *Communities of practice: Learning, meaning and identity*. New York, NY: Cambridge University Press.

Q6

Author Queries

Q1 The reference Dornan et al. (2001) is cited in the text but not provided in the reference list. Kindly check.

Q2 The reference Bruning et al. (1995) is cited in the text but not provided in the reference list. Kindly check.

Q3 Mezirow (1996) has been changed to Mezirow (1998) as per the reference list. Kindly confirm.

Q4 Grant and Doman (2001) has been changed to Grant and Dornan (2001) as per reference list.Kindly confirm.

Q5 Austin et al. (2004) has been changed to Austin et al. (2005) as per the reference list. Kindly confirm

Q6 Epstein (1999) is provided in the list but not cited in the text. Kindly confirm.