# The teaching portfolio as a professional development tool for anaesthetists

N. S. Sidhu*

**Summary**
A teaching portfolio (TP) is a document containing a factual description of a teacher's teaching strengths and accomplishments, allowing clinicians to display them for examination by others. The primary aim of a TP is to improve quality of teaching by providing a structure for self-reflection, which in turn aids professional development in medical education. Contents typically include a personal statement on teaching, an overview of teaching accomplishments and activities, feedback from colleagues and learners, a reflective component and some examples of teaching material. Electronic portfolios are more portable and flexible compared to paper portfolios. Clinicians gain the most benefit from a TP when it is used as a tool for self-reflection of their teaching practice and not merely as a list of activities and achievements. This article explains why and how anaesthetists might use a TP as a tool for professional development in medical education.

**Key Words:** teaching, medical education, anaesthesia

The use of teaching portfolios (TPs) in academia is not a novel concept and is particularly common in North America. In the United Kingdom, clinician-educators and junior doctors with an interest in medical education have been encouraged to adopt the use of TPs[1]. Although there is information on TPs in medical education literature, anaesthetists may not be aware of their utility. Unlike many other specialties, the majority of our clinical teaching encounters occur in the operating room with one-on-one interactions. This article explains why and how some anaesthetists might use a TP as a tool for professional development in medical education and includes specific considerations for the specialty.

## What is a teaching portfolio?

A TP is a factual description of a teacher's teaching strengths and accomplishments[2]. It is also referred to as a teaching dossier, educator's portfolio, or educational portfolio. Typically used by academics to document activity, performance and accomplishments in teaching, it includes materials that collectively outline the scope and quality of teaching performance[2]. The selected information it contains allows clinicians to display their teaching accomplishments for examination by others and demonstrate evidence for their effectiveness[2]. It serves a different, yet complementary, purpose to the inclusion of teaching activities in a curriculum vitae, which is only a listing of professional activities. It is not to be confused with learning portfolios, which document evidence of learning but similarly emphasise reflective practice.

* MBChB PGCertHealSc(Resus) FANZCA MClinEd, Consultant Anaesthetist, Department of Anaesthesia and Perioperative Medicine, North Shore Hospital, Auckland, New Zealand
Address for correspondence: Dr Navdeep Sidhu. Email: nav.sidhu@waitematadhb.govt.nz
Accepted for publication on January 6, 2015

## Why should an anaesthetist maintain a teaching portfolio?

In the North American medical education system, TPs are often used when appraisals are conducted for promotion purposes and where evidence of poor teaching can have a negative impact on promotion decisions[3]. In one survey, 64% of medical schools in the United States provided resources for staff to compile TPs[3]. However, unlike the United States, vocational training in New Zealand, Australia, the United Kingdom and many other countries takes place in public hospitals accredited by a vocational training college. These colleges do not employ the clinicians who deliver teaching and are not involved in the appraisal of their teaching. Some anaesthetists who hold university academic positions may play a role in vocational training by virtue of working as a clinician in a public hospital, but their academic focus may be on research and undergraduate teaching. What then, are the potential benefits for clinician-educator anaesthetists who have significant teaching roles but are not affiliated with an academic institution?

While the concept of a TP originates from academia, teaching goes beyond what occurs in a lecture theatre and anaesthetists are often involved in various forms of teaching. Apart from regular in-theatre teaching, many anaesthetists provide small-group teaching, simulation-based teaching and oral examination practice. Some are also involved in designing and assessing examinations for vocational training while others participate in undergraduate education. The students that we teach come from diverse backgrounds and include vocational trainees, prevocational doctors, medical students, nurses, midwives, allied health professionals and our own peers.

### *Professional development*

Kuhn states that the very existence of a portfolio acts as an incentive towards accomplishing teaching objectives, as clinicians who place a degree of importance on their role as educators tend to be highly motivated[4]. Advocates for its use argue that the process of compiling material and reviewing documents relating to teaching activities can stimulate a reflective process which, at its most basic level, will prompt a clinician-educator to think about the methods, approaches and strategies that have worked and those that have not, compelling a review of their activities, strategies and plans moving forward[2,4,5].

Qualitative analysis of nurse academics who utilised TPs shows that the process is associated with a sense of validation as well as stimulation of professional and personal growth[6]. After being introduced to the concept of a portfolio as a professional development tool, nurse unit managers and school principals who reported sustained use of the portfolio did so to focus and direct their professional development[7]. Tigelaar et al interviewed five medical academics and their mentors about their experience with using a TP and found consensus that a structured portfolio aids professional development and stimulates self-analysis of teaching performance[8]. However, elements that are overly detailed or directive tend to be viewed negatively.

### *Evaluation and appraisal*

A TP also serves as the primary repository of evidence and specific data about the competence and effectiveness of a clinician's teaching abilities[2,5]. Prior to compiling a TP, clinician-educators have minimal cohesive evidence of teaching and the results of evaluations and learner feedback are typically stored in various locations[9]. In institutions with a strong academic focus, a TP may be used to evaluate teaching ability and contribution to medical education, in order to guide hiring and promotion decisions[2,4,10].

Vocational training programs are increasingly placing greater emphasis on teaching and scholarly activities. Demonstration of competence in various aspects of teaching is now required of trainees in both the Australian/New Zealand and United Kingdom anaesthesia vocational training programs[11,12]. This is part of a general trend to recognise teaching as a skill in its own right, the basics of which should be demonstrable by specialist doctors. However, this author does not advocate the routine use of a TP as an assessment tool for clinician-educators due to the need to have standardised portfolios marked against detailed and validated assessment rubrics in order to minimise assessor subjectivity. The need for standardisation in assessment may prevent individuals tailoring each portfolio to their practice, thus hindering its use as a personal professional development tool. Conversely, informal peer evaluation or evaluation by medical educationists for formative feedback should be encouraged. Peer evaluation allows colleagues to gain insights into each other's teaching practices and styles; a process that is reported as a positive experience by nursing academics in one study[6]. Depending on the quality of the formative feedback, a review of a portfolio by an expert would allow clinician-educators to take active steps in advancing their own learning and improving their reflective ability.

The contents of a TP can be used to complete the teaching profile component of a curriculum vitae or as evidence of teaching activity for a continuing professional development program. During performance appraisals, a TP may be presented without being formally assessed. Consultants in the United Kingdom who act as clinical supervisors and education supervisors are being appraised for their performance in their educational roles, although the number and frequency of reported appraisals are lower than desired[13]. This transparency and sharing of information on the role of a medical educator will facilitate recognition of that role in hospital anaesthetic departments by management and peers.

### *Reflection*

The ultimate purpose of maintaining a TP is to improve the quality of teaching[2]. TP proponents argue that it provides a structure for self-reflection, which aids professional development in medical education[2,4,5,9,10]. Reflection is a poorly understood concept, even amongst medical educators[14]. Medical practitioners perform reflection as part of their daily practice[15] when they look back at a case or event and consider the issues surrounding it, although this frequently occurs on a subconscious level. This may result in insight and learning but may not necessarily lead to the critical reflection required for transformative learning[16]. Critical reflection requires high-level analysis, questioning and reframing of an experience to improve practice[16]. A survey of 'excellent' clinician-educators, as identified by learners, identified three reflective phases: anticipatory reflection (planning teaching activities based on past experience), reflection-in-action (flexibility during teaching encounters) and reflection-on-action (critical analysis of teaching encounters)[17].

Portfolios allow the documentation of less successful experiences which would not usually find their way onto a curriculum vitae, and learning can be derived from systematic reflection of negative experiences[7]. Pinsky and Irby interviewed 20 clinician-educators, who were identified by medical students and junior doctors as excellent teachers, and found that 80% indicated poor teaching encounters were as, or more, important than successful teaching encounters in shaping their teaching practice[18]. However, another survey of 'excellent' clinician-educators found that 71% of respondents placed equal or greater

Table 1

*Proposed content for a teaching portfolio for anaesthetists*

| Item and description |
|---|
| *1. Cover page with list of contents* |
| *2. Personal statement on teaching*<br>A concise account of teaching style, basic goals and desired outcomes that would include goals for educational activities (providing framework for all formal and informal teaching), characteristics of teaching activities (including personal teaching style), roles and responsibilities of the learners and process for evaluating teaching. |
| *3. Teaching responsibilities*<br>A description of teaching activities and responsibilities: summary of in-theatre teaching, simulation-based teaching (high-fidelity, in situ, part-task trainers), small-group facilitation activities, tutorials, lectures, mock oral examinations, skills teaching, etc.<br>Different learner groups (e.g. specialists, vocational trainees, non-training junior doctors, medical students, nursing staff) and context of teaching (courses, workshops, clinical environment, university lectures, etc.) should be noted. |
| *4. Supervisory and assessment activities*<br>Summary of responsibilities as supervisor of vocational trainees, medical students, fellows or non-training junior doctors (details should include number of individuals supervised and duration).<br>Assessments performed on learners and peers, including workplace-based assessments, peer-review and feedback, vocational training examiner activities.<br>Documentation of research projects or manuscripts supervised, mentoring activities, invited reviewer activities. |
| *5. Development and management*<br>Curriculum development, evaluation or review (e.g. planning a departmental teaching program), description of service on education-related committees, development of assessment tools, innovations in teaching, editing the departmental trainee handbook, course director or advisor role, etc. |
| *6. Measures of teaching effectiveness*<br>Feedback from learners or observers, student evaluation (many courses collect this information), systematic peer-based evaluation, self-assessment of teaching activities, student performance on standardised tests, testing of learners' knowledge pre- and post-teaching, visual recording of teaching accompanied by self-analysis of session, etc. |
| *7. Continuing education*<br>Courses, conferences, seminars or workshops related to medical education which were attended/completed to improve instructional ability. |
| *8. Research, papers, and presentations*<br>Related to teaching and education (e.g. audit, research, peer-reviewed publications, book chapters, textbooks, editorials, presentations, educational software, multimedia material).<br>Material not peer-reviewed should have a clear description of its utility and its evaluation for effectiveness. |
| *9. Long-term goals*<br>Presented by each portfolio category with timeline for implementation.<br>Should be reviewed annually, including a summary on progress towards goals. |
| *10. Awards and recognition*<br>Prizes, letters of appreciation, awards, etc. |
| *11. Ancillary materials*<br>Handouts, audio/videotape of teaching, examination questions, lesson plans, other relevant documents. |

importance on successful teaching encounters compared to failures in shaping future teaching practice[17]. This indicates that some teachers reflect more on their failures, while others place greater importance on their successes, and it is likely that a clinician-educator can improve their teaching practice by analysing both types of encounters.

Beecher et al qualitatively evaluated the effectiveness of a TP for stimulating reflection about educational practice among ten medical school faculty members[19]. All faculty members demonstrated that the use of a TP stimulated reflection about their teaching activities that would affect their future practice, with eight describing transformation of their teaching practice[19]. However, it was the practice of this institution to review TPs for promotion decisions and this may have affected study results. Qualitative analysis of TPs used by educators in a Dutch medical school highlighted examples of reflection in various aspects of teacher functioning[20]. A qualitative study of nurse academics reported that the development of reflective statements on teaching evoked emotions, prompted insights and was seen as a validating and worthwhile experience[6]. Identification of short- and long-term goals was made easier because these were now based on reflective statements and supported by documented evidence[6].

The use of a TP does not automatically yield high-quality reflection-on-action. After being given guidelines on reflective writing, schoolteachers using TPs predominantly used technical reflective language in their portfolios but only a small proportion (6.6%) used critical reflection to aid their professional development, although this was higher (20%) in teachers who were given more prescriptive instructions in writing their portfolio[21].

Table 2
*Examples of clinical teaching approaches in anaesthesia*

| Teaching approach | Description |
|---|---|
| Ad hoc teaching | Teaching characterised by a non-specific flow of talk, as and when required during a clinical encounter without a planned approach. Usually restricted to items viewed as important for the learner to know as decided by the teacher. |
| Unstructured questioning | Similar to ad hoc teaching but characterised by the use of questions in an effort to encourage the learner to actively think about the topic being discussed. Questions are not planned and are conceived as the case progresses. |
| Structured questioning | Similar use of questions as above but questions are conceived with a learning need in mind. When structured well, one question leads to another, resulting in deeper understanding of the topic being discussed. |
| Unstructured practical skills teaching | No prior discussion takes place. The teacher observes the learner performing the skill, commenting on particular aspects of their performance if deemed necessary. Feedback may or may not be given at the end. |
| Structured practical skills teaching* | Set: determine learner's knowledge and experience with skill.<br>Demonstration: teacher uses a video of the procedure, with or without commentary, to demonstrate the skill (videos of most medical procedures are available for free on http://www.youtube.com).<br>Deconstruction: teacher talks through procedure using actual tools or instruments with explanations and clarifies points raised by learner.<br>Comprehension: learner familiarises themselves with the equipment (depending on prior experience) and talks through procedure.<br>Performance: learner performs procedure on patient while describing steps.<br>Closure: feedback based on observed performance with guidance for future practice. A more detailed discussion may include points on how to adapt the procedure to match different clinical requirements. |
| Provision of feedback | May be brief and unstructured or detailed and structured. Not dependent on method of teaching and may even occur without any real instruction having taken place, based purely on observation of learner. |
| Planned teaching encounter | Prior discussion between teacher and learner (possibly the day before) with a plan for topics to be discussed. The teacher may or may not invite the learner's input with regards to the plan. Method of teaching may be variable. Feedback at the end of the session may or may not occur. |
| Briefing, intraoperative teaching, debriefing (BID) model† | A model for structured teaching that may be applied to a whole session, individual cases or practical skills teaching.<br>Briefing: short interaction at the beginning of the session to assess learner background/experience and jointly establish learning objectives.<br>Intraoperative teaching: focused on learning objectives. May or may not use questions to aid learning.<br>Debriefing: short interaction at the end of the session as a form of structured feedback. Learner is asked to reflect on their performance and whether they met their learning objectives. Teacher provides feedback on positive and negative aspects of practice and guidance for future practice. |

*Adapted from the four-stage model for teaching with part-task trainers[30].
†Adapted from the surgical BID model[31]. BID=briefing, intraoperative teaching, debriefing.

## Are there any downsides?

Portfolio critics cite the large amount of work involved in producing a portfolio, possibly rendering it more trouble than it is worth, and the rigid rules for portfolio content as barriers for effective portfolio use[22]. While compiling TPs, some nurse academics reported negative emotions such as lack of motivation, uncertainty with regards to content and the anxiety inherent in sharing private thoughts and feelings[6]. Among school principals, nurse unit managers and staff nurses who chose not to continue compiling a portfolio, the main reasons cited were that it was time-consuming, was not mandatory and was not helpful for short-term professional development[7]. Even when found to aid professional development, overly detailed or directive elements are viewed negatively by compilers of TPs[8]. Therefore, a TP should not serve as an exhaustive repository of teaching activities, but should be tailored to the needs of the teacher by being a selective and purposeful collection of materials that allows for critical reflection[22].

It is difficult to perform critical reflection without some guidance, as it does not come naturally to most. A review by Mann et al provides modest evidence that suggests reflective thinking can be further developed using certain interventions[15]. Without these interventions, reflective practice may still develop naturally in a professional context, but this has not been demonstrated[15].

Some authors have commented on the TP's use for both assessment and professional development and whether it is possible to combine these objectives[23,24]. Would the requirements of an assessment process result in superficial use of the TP, thereby negatively affecting its function as a professional development tool? Or would compulsory use for appraisal purposes result in educators embracing the portfolio as a professional development tool? TPs adopted voluntarily are less likely to result in sustained use compared to mandatory compilation, even when shown to encourage reflection that facilitates professional development[7].

## What might a TP for an anaesthetist look like?

There are no explicit requirements for what is included in a TP, although some institutions may have templates prepared for their educators. Broadly speaking, it should contain a personal statement on teaching, an overview of teaching accomplishments and activities, feedback from colleagues and students for verification of success of teaching activities, a reflective component and some examples of teaching material. Table 1 contains a proposed list of items along with brief descriptions, drawn from the literature[3,4,10,20,25]. Note that this is merely a guide and clinician-educators should select topics that are relevant to their own practice.

The initial phase of compiling a TP involves the development of a personal statement on teaching, or

Table 3
*Framework for reflection in a teaching portfolio*

| | Event | Analysis | Response |
|---|---|---|---|
| Description | A factual description of the situation/ experience. | Making sense of the experience by integrating beliefs, assumptions, feelings, points-of-view (supporting and dissenting) and significance with the situation. This may include challenging the established definition of the 'problem'. | Connecting the experience with future actions. 'How will these insights and actions contribute to my knowledge or teaching practice?' 'What am I going to take from this and what are the possible consequences?' |
| Example 1 | *While instructing on a high-fidelity simulation (HFS) course, I observed a mid-level registrar from another city perform poorly during crisis situations, both from a clinical knowledge and non-technical skills perspective. During a tense group debriefing, I attempted to frame his actions but found him lacking in both judgement and insight. I did explicitly state that some of his actions were incorrect and provided some references for further reading.* | *What I really wanted to tell him was that his practice was terrible and he should reconsider his career plan—but that would have helped no one. He may well be a competent registrar with trouble buying-in to HFS. This is a safe environment where mistakes can happen with no harm to patients and trainees can learn from them. But what if he truly is incompetent and his ability to manage crises has never been tested? How do I know if he's learnt from the course? Have I sent a lemon back into the system to cause harm to patients? Why can't we use the course for formative assessment and feedback to his supervisor of training?* | *As a course facilitator, I am bound by a confidentiality agreement that protects the integrity of the course and allows the learner to make mistakes without being penalised. Some countries use HFS for high-stakes assessment but it's yet to gain acceptance here. I will talk to senior instructors to get their perspective and see if they would have handled things differently. Probably about time I go for a debriefing course as well. Will ask fellow instructors to sit in on some sessions for them to provide feedback on my debriefs.* |
| Example 2 | *Collated feedback from the small-group Primary Exam teaching sessions that I give every six months indicated that trainees rated my sessions as below average. Comments included 'unhelpful', 'too much information' (twice), 'boring', 'not relevant to exam' (twice), and 'could have stayed home and read a textbook'.* | *This really got me down because I enjoy giving these sessions. The trainees seemed to be ok with my teaching in the past though we never really had formal feedback. Am I getting out-of-touch with things? Is it the new syllabus? Isn't cardiovascular physiology still the same? A younger colleague who's done some education papers said that small-group teaching should promote active learning rather than just being a lecture to a smaller audience.* | *The content of some articles on small-group teaching makes sense except it requires a significant revision of how I give this talk. It probably does need an update after eight years. The new syllabus is a bit different and I should really keep my talk in line with the learning objectives, despite how important I think other bits of information are. The next feedback should tell me if this has made a difference.* |
| Example 3 | *A registrar came up to me at the end of her six-month rotation and said that she enjoyed our theatre sessions and that I was the best clinical teacher she had ever had. When I asked her why, she said, "Because you give us learning objectives and whenever you disagree with an aspect of our management plan, you turn it into a learning opportunity by debating the alternatives."* | *It was quite gratifying to hear this. We rarely get any feedback on our teaching so this reassured me that I was on the right track. Having said that, how would I know if the other trainees felt the same? They may think I'm terrible! If I am doing something right though, why aren't more of my colleagues doing it? Why did the trainee find my teaching technique useful?* | *I have designed an anonymous feedback form that I aim to give to trainees halfway through their rotation and at the end. This will be an ongoing practice and I could suggest that other department members use it. If needed, I may invite someone with an education background to talk to the department on clinical teaching.* |

teaching philosophy. As clinician-educators, we are likely to already practice a particular approach to teaching—it is probably the case that we have never been fully conscious of it, let alone attempted to describe and document it. In many cases, our personal approach to teaching is likely to be derived from our own previous educational and teaching experience[9]. Formulating a teaching philosophy may help guide teaching efforts, direct medical education research and ensure that our goals are aligned with our department and institution[6,26].

The primary educational responsibilities of a clinician-educator should be presented in sufficient detail while other activities may be given shorter descriptions. For many anaesthetists, the majority of teaching encounters occur in the clinical environment, usually inside an operating theatre. After noting the learner background, clinical teaching methods could be described in further detail, as outlined in Table 2. These examples are not comprehensive, nor do they necessarily occur in isolation, as different approaches may be combined during a single session with a learner. Reading a list of clinical teaching approaches usually prompts the reader to briefly question and examine their own methods of clinical teaching and it is intended that a process of documentation and analysis using a TP would elicit a similar but deeper and more sustained response.

Whatever the format, portfolios should be updated at regular intervals and particular emphasis should be placed on reviewing the teaching philosophy and long-term goals.

It is by reviewing these two items, after taking into account evaluation and feedback from peers and learners, that a clinician-educator is able to reflect on his or her teaching practice and to improve skills. Lastly, some teaching material should be preserved for review as all claims in a TP should be supported by evidence, similar to a curriculum vitae[2]. Samples of particular sessions may be included but this should not be an exhaustive repository of material for all teaching that has taken place.

## Where do I start with reflection?

Driessen et al identified four conditions for successful reflective portfolio use among medical students: i) coaching, ii) structure and guidelines, iii) experiences and material and iv) summative assessment[27]. In the context of a TP for anaesthetists, assessment is unlikely but it could form part of an appraisal process for a clinician-educator. While teaching critical reflection is beyond the scope of this article, clinician-educators maintaining a portfolio may use a basic framework (Table 3), simplified and adapted from Mezirow[28]. The examples of reflective practice in Table 3 could be easily expanded upon, but are written concisely for the purposes of this article.

## How would I go about compiling a TP?

Barriers to compiling a TP include lack of motivation, uncertainty with regards to content, feelings of vulnerability in making our teaching practice visible to others and anxiety related to sharing private thoughts and feelings[6]. While this article will hopefully go some way to addressing some of these issues, advice from a colleague on methods of documenting teaching activity and effectiveness would be beneficial. In an institution not affiliated with a university, this may be a member of the department who has completed a formal qualification in medical education. Larger institutions affiliated with an academic centre may have access to medical education units.

Electronic portfolios offer significant advantages over paper-based portfolios as the former are easier to edit and more portable. The simplest way to get started is to use word processing software such as Word® (Microsoft Corporation, Redmond, WA, USA). Supporting documents and images may be scanned and/or embedded into the file. An alternative to scanning is using a smartphone camera, possibly with an application such as CamScanner (http://www.camscanner.com), which will immediately convert the image into a PDF file. When presenting the TP for review, the entire document may be saved as a PDF file, as this ensures that the layout is preserved, regardless of which version of software is used to read the file. Latest versions of Word are able to do this natively using the 'Save As' function but one should check that embedded files and hyperlinks are preserved when saving from Word format to PDF. Free online software is available to merge multiple PDF files into a single document (http://www.ilovepdf.com). Video files may be too large to embed in a file, depending on the resolution and format. These could instead be stored in an electronic folder accompanying the TP.

Software such as foliofor.me (http://foliofor.me), LiveText (http://livetext.com) and Taskstream (http://www.taskstream.com) provide templates for electronic portfolios, with multimedia content readily supported. In one study, web-based portfolios were found to have a more positive effect on learner motivation and were more user-friendly compared to paper portfolios, but there was no difference with regards to quality of reflection or owner satisfaction[29].

## Conclusion

This article is intended to facilitate the preparation of a TP by clinicians whose primary role may not be an academic one. As Weeks writes, "The portfolio is a comprehensive collection of data and, like a good wine cellar, the longer it is kept and developed, the more effective it will be as a tool for professional development"[5]. Improvement in teaching skills should be seen as the main benefit, in keeping with the overall aim to promote excellence and scholarship in medical education within anaesthesia as a specialty. TPs are clearly not for everyone and the evidence for their use is not wholly conclusive. No research has been done specifically looking at improvement in teaching among anaesthetists and this would be difficult to measure. Nonetheless, the utility of reflective learning and a log of teaching activities with feedback may justify its use among anaesthetists who consider teaching an integral component of their duties. The use of a TP by a clinician-educator, although to be encouraged and facilitated, should remain voluntary. Mandatory implementation among anaesthetists would likely result in superficial use in order to fulfil set requirements. In order for them to gain maximum benefit, anaesthetists should themselves see the utility of maintaining a TP and use it for self-reflection of their teaching practice. To forgo the reflective component would render the portfolio as simply a list of activities and achievements.

## Conflicts of interest

The author has a part-time academic role at the Department of Anaesthesiology, University of Auckland and serves on the Teaching and Learning Subcommittee of the Australian and New Zealand College of Anaesthetists.

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