
PERSPECTIVES

Diving for PERLS

Working and Performance Portfolios for Evaluation and Reflection on Learning

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Professional competence requires a commitment to lifelong learning, self-assessment, and excellence. Complex skills such as these require flexible and comprehensive teaching and assessment measures. We describe a combination of working and performance portfolios that both foster and evaluate the development of professional competence. We explain the conceptual and practical underpinnings that maximize the effectiveness of these tools. Drawing on experience with University of Washington residents, we identify 5 criteria that can help promote successful use of portfolios: separate working and performance functions of portfolios, developing a supportive climate, developing skills in faculty and residents, observing progress over time, and fostering mentorship opportunities.

KEY WORDS: evaluation; professionalism; medical education; medical residents; professional development.

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Much of the process of becoming a physician involves experiential learning. The experience of clinical practice is translated into learning through reflection; that is, the crucial intellectual task is to move from a description of the experience to understanding the learning derived from that experience,^{1,2} or as John Dewey succinctly expresses it, "We learn by doing and realizing what we did." Unfortunately, as Westberg and Jason acknowledge, "Many of our traditions in health professions education promote unreflective doing."^{3,4} The value of reflection in medical practice is gaining acceptance⁵ but has not been fully pursued in resident education. There is a need in residency education for an instrument that encourages reflection and promotes lifelong learning, self-assessment, and excellence.

We suggest the PERL (Portfolio of Evaluation for Reflection on Learning) program, a combination of working and performance portfolios developed at a University of Washington continuity clinic, as an approach that can be used to foster and evaluate the professional skills that

are central to the practice of medicine. We describe the conceptual and practical underpinnings that maximize the effectiveness of these tools. Used appropriately, portfolios can serve as a scaffold to foster a resident's learning experiences, rather than merely recording them. As a learner-directed system, portfolios can be adapted to the learner's needs, enlisting the learner's self-assessment skills and abilities. Portfolios complement the trend toward specialization in medical training, as they can be comprehensive and integrative.

Portfolios are one of the evaluation approaches suggested by the Accreditation Council on Graduate Medical Education (ACGME) Outcome Project.⁶ The ACGME core competencies for residency programs require documenting competence in 6 areas—patient care; medical knowledge; practice-based learning and improvement; interpersonal and communication skills; professionalism; and systems-based practice. A recent literature review defined competence as "the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and community being served."⁷ It describes professional competence as developmental, impermanent, and context dependent, requiring a commitment to lifelong learning, self-assessment, and excellence.⁸ Promoting and assessing competency in complex skills such as these require flexible and comprehensive teaching and assessment measures. The ACGME requirements, coupled with a better understanding of the features of professional competence, have required medical educators to search beyond their usual teaching and assessment strategies. Indeed, many residencies and medical schools have begun to experiment with portfolio evaluation methods (email correspondence with F. Poitier, 2002).

Beyond evaluation, the process of portfolio development promotes reflection. For example, a faculty member, deciding what evidence to include in the teaching portfolio, reflects on where learning and excellence have occurred. She tracks her growth as a teacher over time, and demonstrates this growth to her chair, based on the developmental process a portfolio can create.⁹ The faculty member sees her strengths, as well as her limitations that need work in the coming year. We see the potential in using portfolios to foster professional competencies in residents through a similar process of learning and development, as well as assessment and documentation.

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Table 1. Elements for a Successful Portfolio

Element	Element Features
Clarify goals of the separate portfolio functions	Distinguish the goals of working and performance portfolios
Supportive educational climate	Establish collegial educational climate and promote community-wide skills in feedback
Develop self-assessment skills	Teach and refine self-assessment acumen including goal setting; calibrate self-assessment via comparison to external feedback
Progress over time	Promote reflection on goals and progress over time
Mentorship	Support residents' development in setting of structured autonomy via ongoing dialogue with mentors

Portfolios can show progress over time, reinforcing the learning that happens experientially on a daily basis. Each of these features—adaptable, learner-directed, comprehensive, integrated, and developmental—help make portfolios effective teaching tools for the complex skills associated with professional competence. Portfolios have been reported elsewhere primarily as an evaluation technique limited to teaching activities; here we emphasize the high-yield features of portfolios, in which the evaluation comes through the learning process.

Elements of Successful Portfolios

Documenting, reviewing, and presenting one's work in a portfolio requires a range of complex skills. One develops and demonstrates critical thinking, self-reflection, and goal setting through a professional portfolio. Each of these skills and capacities is crucial to physicians' development.

The Portfolio of Evaluation for Reflection on Learning (PERL) program constitutes an integrated system of learner-directed evaluation. It highlights the identification of learning needs, the details of the learning experience, and a demonstration of the new skills learned. Recognizing that there is much more information available aside from numerical data, portfolios add a qualitative approach to the traditional quantitative one. Through a review of the literature and experience with portfolios in a medicine residency program, we have identified 5 elements that work together to enhance the likelihood of a successful use of portfolios (see Table 1). While the foci of the portfolio may vary depending on institutional or programmatic priorities, implementation consistent with the 5 elements will increase the probability of success. Each of the elements may require specific individual and group training, both for residents and faculty.

Separate Working and Performance Functions of Portfolio

The PERL program serves the process of both assessing and documenting experiential learning, by using two

types of portfolios: the working and performance portfolios, respectively. The working portfolio provides a sense of progress and process, while the final product is displayed in the performance portfolio. The PERL portfolios include verbal and written material, videotaping, and critical incident narratives (see Table 2) and can be displayed in many forms, from web-based files to 3-ring binders.

In distinguishing between the working and performance portfolios, both residents and faculty must be clear about the overall goals for each portfolio, as well as how the different pieces fit together, a process aided by keeping the working portfolio distinct from the performance portfolio although the contents may overlap. Separating the portfolios serves two main purposes: 1) to give the resident control over by whom and when the work is viewed and, 2) encouraging honest self-assessment by highlighting the differences between examining areas for improvement and that of showcasing achievements. Elements of the portfolio may be suggested by faculty, with the caveat that the residents must feel they have control over who sees which pieces of the portfolio so they feel comfortable taking risks or discussing weaknesses and mistakes. For example, a topic of preclinic conference may be mistakes that have occurred during a 4-month period, as a reflective exercise. The resident may keep track of several such incidents (working portfolio), but choose just specific incidents to share publicly at the end of the time period (performance portfolio). The performance portfolio may represent a culmination of learning and development over the course of one year, or the entire residency. As one resident explains: "In the working portfolio we examine what we can't do well; in the performance portfolio we highlight what we can."

Table 2. Sample Entries for Working and Performance Portfolios

Working Portfolio	Sample Elements
	Primary goals worksheet Colleague (peer, attending) feedback Preclinic conference self-evaluation Learner teaching evaluation Goal-tracking worksheet Videotape and self-evaluation worksheet Critical incident narratives Systems-based practice worksheets EBM presentations MiniCEX encounter Trimester self-assessment Self-summary of learning
Performance Portfolio	Sample Elements
	Primary goal summary Videotapes and self-evaluation Self-summary of learning MiniCEX encounters Overall department evaluations

EBM, evidence based medicine.

Create a Collegial Community that Normalizes Giving and Receiving Feedback

The residency climate must be one in which the residents can feel safe to be vulnerable. In our experience, a few practices can facilitate this safety. First, a collegial, nonhierarchical atmosphere must be established; the residents should be informed that they are equally respected members, with faculty, in a community of learners who differ only in where they are along the continuum of development.

Second, it is necessary to normalize feedback. Educational programs often give feedback only infrequently or when performance is in jeopardy. To have portfolios be a successful intervention, feedback must be given frequently, and include both negative and positive comments. It further facilitates the climate of learning and development if faculty also engage in the practice of eliciting ongoing feedback. If the faculty can model open discussion about their own strengths and limitations, identifying goals for themselves where they would like to work during the month, the residents can follow suit more easily.

Develop Self-assessment Skills

The training period for physicians, although lengthy, represents only a fraction of the time they will spend in practice during their career. The goal of residencies is to produce good physicians and not merely good residents; self-assessment skills are integral to being a good doctor. Moving from novice to expert is a journey. Schön has shown us that the process of learning professional skills requires reflection.¹⁰ Work by Gordon and Woolliscroft has shown that assessment skills can be learned but are not instinctual; they need to be taught and practiced.^{11,12} The PERL approach uses an iterative process of experience, feedback, and reflection to enhance these skills. Residents learn to refine their self-assessment skills by reconciling their own assessment and external feedback.

There is a series of reflection-on-practice questions that residents might ask themselves. For example: what was effective about my approach to patients today? What did not go well in my interaction? How can I do it better next time? What thought process did the consultant use in working through the care plan?

Portfolios can serve as means for personal goal setting (what do I need to learn and why), planning (what experiences do I need to learn that skill), benchmarking (how will I know when I have learned the skill), and dialogue (how does this skill fit into my larger professional responsibility) (Table 3).

Progress over Time

A common feature of all successful portfolios should include the capacity to reflect on progress over time. Watching how one's goals change from the beginning of one year to the next, or videotapes of patient visits from different

Table 3. Process of Goal Setting and Sample Worksheet

Steps in Goal Setting	Questions for Reflection and Planning
1. Personal goal setting	What do I need to learn <i>and why</i> ?
2. Planning	What experiences do I need to have to learn that skill?
3. Benchmarking	How will I know when I have learned the skill?
4. Reflection and context	How does this skill fit into my larger professional responsibility?

Worksheet Goals Setting: 2001-2002

There are many theories of adult learning but all agree that people learn best when they are learning something they care about, and when they set goals and then reflect on their progress to those goals and the new goals that arise from their learning.

- 1) What are your goal(s)?
- 2) How will you get there?
- 3) How will you know when you are there?

Possible topics for your goals may be:

Knowledge and Judgment

These may include topics you want to pursue, your ability to integrate medical facts, risk versus benefit consideration, use of outside sources for knowledge acquisition, use of evidence in practice, or problem-solving skills. May focus on specific acute and chronic disease diagnosis, prevention, and management.

Communications

These may include aspects of your interaction with patients, ability to present information to or interact with colleagues, tracking labs and studies, or charting. It may also include the use of informed consent, informed and/or shared decision making, etc.

Procedures

These may include aspects of physical examination, experience with certain procedures, and other aspects of technical ability.

Lifelong Learning Skills

This may include plans and techniques for continual learning, strategies for "keeping up with the literature" and selective retention of knowledge, seeking out and receiving feedback, or plans for increasing self-awareness, self-care, and personal growth.

years of training can provide a concrete marker of growth over time.

Structured Autonomy Through Mentorship

PERLs are personal reflection tools, but also serve as a point of discussion between residents and mentors. The self-directed learning aspects are key, but teachers have also found portfolios crucial for fostering a dialogue about practice and professionalism.^{9,13}

The PERL approach incorporates mentoring of a learner via structured autonomy. To foster and develop reflective skills, the working portfolio is shared with a mentor. The mentor can identify, help clarify, and facilitate the reflective process, for example, in review of videotapes of resident-patient encounters. All portfolio material, of which

there is an infinite number, can serve as rich discussion points regarding professional responsibility.

Both learner and faculty benefit from the portfolio review process. While the learner is assisted in the process of critical reflection, the faculty member can review a range of material on which to base her evaluation.

Specific Implementation Steps Used to Foster the Use of Portfolios in Our Program

The University of Washington internal medicine continuity clinic in which the PERL program was piloted has approximately 45 residents and 15 faculty preceptors. In the following discussion, we will build on the theoretical concepts with practical tips on the implementation of those ideas. Like most innovations, without the appropriate context and approach, the best of ideas can be trivialized once implemented.

The original conception of PERL was derived from the visual arts, a profession which historically has used portfolios to guide development. A portfolio is a collection of evidence gathered by an individual in her role as a learner. It allows an artist to reflect on her work, to set goals of what she wants to work on, to constantly revisit those goals based on her work and directly observe her own progression over time. She must cultivate a critical eye to find which of her pieces of work will best reflect her achievements. She must therefore be aware of relevant criteria in her discipline that allows others to also judge her work favorably. She must reflect over the range of her work and select examples that will demonstrate her depth. In so doing, she comes to know her skills and limitations intimately. In developing her portfolio, the artist also develops a sense of who she is as an artist.

Visual artists have the advantage of having a tangible product on which to reflect; by viewing their work they can see their progress. In medicine, we lack that tangible product to view and thus must learn from the field of teacher education where teachers in training have adapted the portfolio approach to make the activity of teaching visible.¹³

PERL was initially presented to the faculty in a works-in-progress session. To engage the faculty, the potential value of portfolios was illustrated by viewing a series of slides of self-portraits by Picasso, and the group discussing the use of portfolios by visual artists. The faculty were then split into three groups and asked to assume roles as residents, faculty, or residency directors, all reluctant portfolio participants, to brainstorm on what outcomes or benefits they would require to endorse the use of portfolios. This process both helped to define the outcomes we needed to achieve and involved the faculty in the process of instituting the program. Identifying and developing a group of faculty (and resident) supporters¹⁴ helped speed the program's acceptance.

In order to avoid the residents resisting portfolios as an overwhelming amount of paperwork, the portfolio components were introduced individually during preclinic

Table 4. Trimester Self-Assessment Narrative

Please write a narrative description of your personal progress. The narrative should be given to the residency program coordinator 1 week prior to your trimester evaluation meeting with your mentor. Be sure to include methods for data collection and self-assessment (lists, surveys, meetings, informal solicitation of feedback, etc.).

Please address the following:

I. Personal Aspects

- Medical knowledge, critical reasoning using evidence-based medicine, and clinical skills
- Commitment to primary care panel and practice management skills
- Professionalism and patient communication skills
- Teaching skills and educational attitude

II. Feedback to the Program

Please include any and all comments on curricula, faculty, staff, conferences, etc. so we can continue to improve your experience and our program. You may also wish to include how you are personally coping with the demands of residency training. *Please note: comments from this section will be treated as strictly confidential when delivering this feedback to the appropriate individuals.

III. Goals for the next 4 months and indicators for achieving those goals

Please describe your goals and objectives for your upcoming rotations and continuity clinic, and measurements for achieving those goals. Your mentor attending will discuss/help you with these as needed.

conferences and clinic retreats without labeling them as a portfolio. While all residents were expected to do all components of the portfolio, different residents found different elements more helpful. Residents who resonated with a specific component of the portfolio then led subsequent sessions on that activity. Somewhat surprisingly to us, after 4 years of portfolio activities, the residents, now convinced of its value, urged us to move beyond a stealth presentation and to formally label the activities they were already doing as parts of a portfolio.

The residents have assigned mentors within mentoring groups of 3 to 4 residents. The mentor's role is that of advocate, mentor, and advisor. An annual clinic retreat is held to foster the mentoring group relationships. At it, a resident facilitates discussion of the goal-setting process and then the mentoring groups meet so that individual goals can be formulated. Afterward, mentors meet regularly throughout the year with their "mentees" either in clinic or at the mentors' homes. Other meetings are held for the trimester self-assessment (Table 4) in which discussion of portfolio activities may occur. Residents bring varying levels of enthusiasm to the process. Some mentors demand that the self-assessment form be completed before the meeting can occur. Others use the meeting as a time of discussion that precedes completion of the written form or transcribe the residents' thoughts during the discussion.

Several faculty section meetings were devoted to learning feedback and mentoring approaches, and techniques

for viewing and critiquing videotapes and miniCEX.¹⁵ Our feedback program used the approach and the language espoused in the prerogative method described by Gordon.^{16,17} The trained faculty now actively give feedback to and seek feedback from the residents.

Learners bring varying levels of self-assessment skills and mentors in turn bring varying levels of skill in mentoring the development of self-assessment. Learning to set appropriate goals can take a year of practice and mentoring. Faculty often need training and opportunities for practice in developing the language for identifying workable goals and assessment strategies. Having questions and worksheets can help scaffold the process for faculty and trainees. For learners who are less sophisticated in their goal-setting skills and cannot form goals in response to global questioning, it helps to ask concrete questions such as—what resident do you admire and what traits do they have that you would like to develop—or—what problems do you have doing your work and what skills might help you do it more easily? Setting goals as a group activity such as a preclinic conference allows peer-to-peer education in the process.

There has been excellent acceptance of the program by the faculty; however, challenges to the implementation of PERL have arisen out of limitations on faculty and staff time. Mentoring time generally comes out of faculty's individual academic time, and awareness of the burden imposed by PERL must be addressed. Additionally, decreased office support has made the logistics of videotaping more difficult. Persisting in the light of these challenges necessitates creative solutions such as changes in residents' clinic schedules to permit in-clinic videotape review and devoting preclinic conference time specifically to mentoring. Logistical adaptations such as these are facilitated by the program having a strong faculty advocate.

DISCUSSION

Summarizing and Viewing Our Experience in the Context of Others'

To incorporate portfolios successfully into a residency program, we recommend including 5 elements (Table 1). We had success in our program by introducing the program slowly, and dedicating time to faculty education on mentoring, reflection, goal setting, and feedback skills, recognizing that the use of portfolios requires new skills and a cultural transformation. We are pleased by the residents' appreciation of the process, their honesty in sharing and evaluating personal areas of challenge, and their incorporation of this approach into other areas of their education. For example, a current inpatient chief resident, based on his experience of the importance of goal setting to learning, revised the structure of morning report to include weekly goal-setting sessions as well as a method to evaluate its effectiveness. Residents seeking employment report finding components of the portfolio helpful in creating their CVs, crafting their applications, and as display examples at job applications.

To date, the literature reports few trials of the portfolio method for assessing professional competence. The Post Graduate Education Accreditation (PGEA) in Britain illustrates sharing responsibility for learning between teachers and learners. PGEA experimented with portfolios as a flexible, targeted means of meeting continuing medical education (CME) requirements.¹⁸⁻²⁰

In their pilot study, physicians were responsible for identifying their own learning objectives and outlining how they were going to achieve and document those objectives. The physicians each met with a mentor to review appropriate objectives and realistic means for achieving them. Structured reflection was built into the process and was seen as strength, explicitly moving away from the passive approach of most traditional lecture-based CME courses.

In the PGEA experience, the shortcomings identified were time and mentor availability. However, participants found the "deep learning" and personal mastery they achieved to be well worth it. In addition, accrediting bodies had something of substance to review in assessing the practitioners' continuing education.

Portfolios fill a need within training programs to foster and document professional competencies.²¹⁻²³ For residents, training is a time of professional identity formation. The current format of most residencies—didactic conferences and time-consuming clinical work—emphasizes either a passive or unreflective learner role.

Through portfolios, residents can experience and develop the skills of lifelong learning, critical thinking, self-assessment, and excellence that can be carried forward into their future careers and practices. They can complete residency with a clearer sense of their own strengths and limitations, and a sense of who they are as physicians.

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REFERENCES

1. Kolb D. *Experiential Learning*. Englewood Cliffs, NJ: Prentice Hall; 1997.
2. Smith C, Irby D. The roles of experience and reflection in ambulatory care education. *Acad Med*. 1997;72:32-5.
3. Westberg J, Jason H. Fostering learners' reflection and self-assessment. *Fam Med*. 1994;26:278-82.
4. Westberg J, Jason H. *Fostering Reflection and Providing Feedback: Helping Others Learn from Experiences*. New York, NY: Springer Publishing Company; 2001.
5. Epstein RM. Mindful practice. *JAMA*. 1999;282:833-9.
6. ACGME. Outcome Project. Available at: <http://www.acgme.org/outcome/>. Accessed September 2003.
7. Epstein RM, Hundert EM. Defining and assessing professional competence. *JAMA*. 2002;287:226-35.

8. ABIM Foundation. American Board of Internal Medicine: ACP-ASIM Foundation. American College of Physicians-American Society of Internal Medicine: European Federation of Internal Medicine. Medical professionalism in the new millennium: a physician charter. *Ann Intern Med.* 2002;136:243-6.
9. Beecher A, Lindemann J, Morzinski J, Stimpson D. Use of the educator's portfolio to stimulate reflective practice among medical educators. *Teach Learn Med.* 1997;9:56-9.
10. Schön DA. *The Reflective Practitioner: How Professionals Think in Action.* New York: Basic Books; 1983.
11. Gordon MJ. A review of the validity and accuracy of self-assessments in health professions training. *Acad Med.* 1991;66:762-9.
12. Woolliscroft J, TenHaken J, Smith J, Calhoun JG. Medical students' clinical self-assessments: comparisons with external measures of performance and the students' self-assessments of overall performance and effort. *Acad Med.* 1993;68:285-94.
13. Bartell CA, Kaye C, Morin JA. Portfolio conversation: a mentored journey. *Teach Educ Q.* 1998;25:129-39.
14. Mouradian WE. Building and involving constituencies with the surgeon general's workshop and conference. *J Dent Res.* 2001; 80:1873-4.
15. Pinsky LE, Wipf JE. A picture is worth a thousand words: practical use of videotape in teaching. *J Gen Intern Med.* 2000;15:805-10.
16. Gordon MJ. A prerogatives-based model for assessing and managing the resident in difficulty. *Fam Med.* 1993;25:637-45.
17. Gordon MJ. Cutting the Gordian knot: a two-part approach to the evaluation and professional development of residents. *Acad Med.* 1997;72:876-80.
18. Challis M, Mathers NJ, Howe AC, Field NJ. Portfolio-based learning: continuing medical education for general practitioners—a mid-point evaluation. *Med Educ.* 1997;31:22-6.
19. du Boulay C. From CME to CPD: getting better and getting better?: individual learning portfolios may bridge gap between learning and accountability. *BMJ.* 2000;320:393-4.
20. Mathers NJ, Challis MC, Howe AC, Field NJ. Portfolios in continuing medical education—effective and efficient? *Med Educ.* 1999;33: 521-30.
21. McMullan M, Endacott R, Gray MA, et al. Portfolios and assessment of competence: a review of the literature. *J Adv Nurs.* 2003;41:283-94.
22. O'Sullivan PS, Cogbill KK, McClain T, Reckase MD, Clardy JA. Portfolios as a novel approach for residency evaluation. *Acad Psychiatry.* 2002;26:173-9.
23. O'Sullivan P, Greene C. Portfolios: possibilities for addressing emergency medicine resident competencies. *Acad Emerg Med.* 2002;9:1305-9.