A Successful Faculty Development Program for Implementing a Sociocultural ePortfolio Assessment Tool

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Abstract

Portfolios are emerging as a tool for documenting learning progression and assessing competency. ePortfolios are appealing as a portable and fluid means of documenting both learning and relevant experiences in a large number of students. Competence and learning can be especially difficult to document in important aspects of education and training, such as patient-centeredness, the cultural context of disease, and social determinants of health that do not lend themselves to fact-based assessment methods. Successful implementation of a method such as an ePortfolio requires explicit faculty development, as many faculty members have limited expertise with modern educational assessment technology. As part of the authors' introduction of a Sociocultural ePortfolio Assessment Tool in the undergraduate medical curriculum, three faculty development workshops were held to expand faculty skills in using this technology. In addition to gaining comfort using a new Web-based technology, faculty members also needed to develop skills with providing mentored feedback and stimulating student reflection. Workshops were modeled after other successful programs reported in the literature and allowed faculty to develop a structured format for evaluating student content. Faculty members were given multiple opportunities to practice their newly developed skills providing mentored reflections using an ePortfolio. The workshop evaluations were positive, suggesting that faculty participation in the workshops were a necessary component for them to develop sufficient assessment skills for providing mentored reflection. Faculty members who participated in this program—whether or not they had content expertise in sociocultural medicine—valued the hands-on faculty development program.

Teaching students of any discipline to care for diverse patient populations can be difficult to navigate. The Liaison Committee on Medical Education (LCME) specifically mandates that medical students understand "the total medical needs of their patients and the effects that social and cultural circumstances have on their health.… [T]o demonstrate compliance … schools should be able to … demonstrate the extent to which the objectives are being achieved."[1] More recently, the LCME adopted standards that require schools to provide an educational framework populated by exercises that allow teaching and growth around basic principles of culturally competent care and recognition of health disparities.[1]

Portfolios have been used in medical, dental, and nursing education; they have also been used in teacher training and development.[2–4] Portfolios can be a useful tool for demonstrating and assessing competence.[5–11] Portfolios are a viable way for students and professionals in many disciplines to demonstrate personal and professional growth. However, implementing new methodology and technology can be challenging. A recent article examined training and preparation in portfolio use in several teacher education programs and found that dedicated training in ePortfolio use was an important component of successful implementation.[12] Because portfolios are now being created electronically (ePortfolios), this platform offers an interface to organize instructional and assessment materials as well as provide space for students' reflections on previous course work that can be guided and evaluated by faculty in a mentoring role.[13–15] An ePortfolio project was introduced several years ago at the University of Ottawa. Here, students serve as formal advisors, providing feedback to the ePortfolio Faculty Committee.[16] ePortfolios also have the potential benefits of being both personalized and ongoing—work can be added that demonstrates and documents milestone competency or further growth. Providing individual feedback to large numbers of learners can be challenging; an ePortfolio is one way to meet that need. Communication via an ePortfolio also is a means to provide feedback to students who are in more remote locations.

Self-reflection is increasingly recognized as an essential skill that needs to be developed; portfolio learning is recognized both as a means to promoting reflection and an opportunity to document it.[17] Despite this, whole-scale

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implementation of portfolios used at U.S. medical schools is just beginning to gain moderate attention. One possible cause of reluctance is that most faculty are not prepared to use this new technology. Programs that promote and develop faculty skills in teaching with technology are critical for medical curriculum innovation.[18,19] Today's medical school faculty are training tomorrow's health care providers—providers who will be required to use technology (electronic medical records, text messages, telemedicine, etc.) as part of patient care. Additionally, education and credentialing organizations are using technology to confirm training and competency.[20–23]

The Sociocultural Curriculum is unlike other educational sequences at the University of Michigan Medical School in that it is woven into the core curriculum of the first three years. It includes readings, lectures, and related hands-on experiences in the community, often embedded in the basic science curriculum. Unlike other components of preclinical education, where mastery is typically demonstrated through multiple-choice testing, sociocultural learning objectives can be more difficult to demonstrate and thus require different types of assessment. Additionally, confirming students' mastery of reflective learning requires faculty skill and involvement. Implementation of individual, longitudinal student feedback presented a challenge because few members of the medical school faculty had previous experience in assessing preclinical medical students' progress in sociocultural competence. Additionally, none of the participating faculty members possessed experience using portfolios as an assessment tool. Thus, we initiated a development program to provide faculty members with the necessary skills to navigate this tool.

Sociocultural ePortfolio Assessment Tool and Content

We assembled a secure, password-protected, Web-based portfolio tool—the Sociocultural ePortfolio Assessment Tool (SePAT)—integrating a Sakai-based (Sakai Foundation, Ann Arbor, Michigan), open-source learning management system with our institutional software platform. Using an ePortfolio was a new skill for almost all faculty members. Thus, we enlisted internal computer programming and instructional design staff to help in the faculty development workshops, answer questions about the technology, and enhance the efficacy of the Web-based tool.

Multiple artifacts, from the first and second years of medical school, were electronically assembled from pertinent aspects of the curriculum and added to each student's portfolio. Near the end of each of the first and second years, students completed a required essay in which they explored and demonstrated their own personal development in sociocultural medicine. The exact content of the essays was flexible, but students were specifically asked not to simply review or reiterate previous work from the sociocultural curriculum. Instead, they were expected to discuss their affective response to their experiences in the sociocultural curriculum or other related experiences, including those less embedded in the formal medical school curriculum. We also asked them to consider their growth or changes in attitude with regard to the relevance of sociocultural issues in medicine. The essays were expected to be one to two pages in length. Although they were not evaluated for spelling or grammar, we asked the students to adhere to conventional writing standards. These year-end essays were the focus of our faculty's assessment and feedback. Using formal focus group techniques, we qualitatively explored the dynamic nature of reflective strategies and barriers that both students and faculty may have to ePortfolio use.

Faculty Development

Framework

The faculty development sessions adhered to well-established principles known to promote and sustain skill development and used Kolb's[24] learning cycle, a framework which is especially appropriate for adult learners. These principles emphasize the need to offer multiple workshops and to provide faculty members with opportunities to practice the intended skills. The workshops were augmented with both immediate peer feedback on developing skills and the opportunity to self-reflect. All sessions included (1) a hands-on experience with the tool; (2) faculty assignments requiring reflective feedback of prior curricular and extracurricular experiences related to sociocultural medicine; (3) development of a rating scale to aid their conceptualization of distinct evidence of experiential learning and growth; and (4) practice exercises reviewing sample essays similar to those they would actually assess in the future (Charts 1 and 2). Applying this framework to new technologies has been found to aid faculty in developing expertise in their assessment abilities.[25]

Faculty participants

Faculty mentors were selected by the sociocultural course director on the basis of research interest in health care disparities, practice patterns in the care of the underserved, or stewardship in cultural competency, diversity, or sociocultural education. Because of the pilot nature of this experience, faculty had to be willing to invest uncompensated teaching time, as they were not afforded protected administrative time for this educational endeavor. We targeted a faculty-to-student ratio of approximately 1:12 to 1:13. Multimedia staff were included in each session to facilitate the educational technology training and use of the SePAT.

Faculty development activities

There were three faculty development workshops in the initial pilot year of the SePAT and one workshop in preparation for the second year (Chart 1). The participants received continuing medical education credit for the first two workshops. The initial workshops were designed to familiarize faculty members with ePortfolios and give them practice providing feedback, or mentoring, on the students' reflective essays. The final workshop was structured to elicit faculty perspectives on their experiences with the entire process.

First Faculty Workshop

The objectives of the first workshop were to:

1. understand the nature of critical reflection and transformative learning and how they serve to promote the development from student to physician;

2. use the faculty's combined experience as physician educators, committed to culturally competent care, to review standards for student feedback;

Chart 1
Development Framework for Creating Successful Faculty Development Workshops

Steinert and colleagues' successful workshop framework[26]	University of Michigan application of Steinert and colleagues' workshop model
Plenary presentation	Provide a workshop overview
Small Group Practicum I	
Define a topic	Define topic using curriculum guidelines
Identify the target audience	Identify faculty interested in topic with appropriate time to commit to workshops and ePortfolio education
Conduct a needs assessment	Poll participating faculty on experience with ePortfolio and providing reflective essay on narrative material
Define workshop goals and objectives	Establish workshop goals and objectives through review of literature
Define and design workshop content	Determine workshop content based on intended learning outcomes of necessary skills and performance
Match teaching methods with content	Use adult learning principles and offer faculty members multiple opportunities to practice intended skills. Ask faculty members to: • Write personal reflections on a relevant topic and share with the group • Read a sample reflective essay • Provide 1–3 unanswerable questions that would promote students' further development • Share their own previous experiences receiving positive and negative feedback • Discuss feedback and opinions on the essay and attempt to reach group consensus on quality of essay • Practice logging in and sending feedback to learners via the ePortfolio
Choose teaching aids/learning methods	Suggest teaching aids, such as: • Sample student reflective essays • Hands-on development of scoring ePortfolio • Hands-on instruction on ePortfolio use
Small Group Practicum II	
Develop workshop agenda	Develop agenda to establish future expectations, content, and context and include practice of pertinent skills
Design the workshop evaluation	Give faculty the opportunity to critique both the process of ePortfolio instruction and of providing formative feedback
Recruit and prepare workshop faculty	Prepare faculty to provide feedback via their: • Review of student essay instructions • Review of scoring/assessment strategy
Fine-tune the workshop plan	Give faculty the opportunity to impact content and necessary training to fill knowledge gaps
Finalize administrative details	Offer faculty opportunities to become comfortable with technology and aware of resources available for assistance

3. acquire tools to promote reflection and transformative learning in sociocultural medicine; and

4. demonstrate an ability to provide the type of feedback that promotes reflection and transformation in sociocultural medicine.

During the initial workshop, faculty received an overview of the sociocultural curriculum and a demonstration of the ePortfolio technology. This workshop also included a review of the literature regarding portfolio use in education, and medical education in particular. This literature provided specific details on portfolio implementation and key educational strategies for using ePortfolios as a record of a learner's critical reflections, demonstrating transformative learning over time.[6,26,27]

In addition to the above objective, computer staff provided a hands-on overview of the ePortfolio and its interface with other curriculum software.

In the setting of small-group discussions, faculty members were asked to share their own experiences with receiving feedback in order to generate criteria for both effective and ineffective feedback. These personal feelings of receiving feedback were used to stimulate consensus on key characteristics and components of useful feedback. Additionally, faculty discussed providing feedback to students, sharing best practices and reviewing necessary components of written feedback.

The third goal, to acquire tools to promote reflection and transformative learning in sociocultural medicine, was addressed by having faculty members

review a sample sociocultural essay and consider how to best provide feedback that would stimulate critical reflection. As the ePortfolio had not been part of the curriculum in previous years, we solicited third-year students to write sample essays for use in the faculty development sessions as practice exercises. Students' reflections demonstrated a wide spectrum of appropriate and meaningful reflection and thus were ideal for discussion and standardization of faculty perceptions of quality work. Faculty members were encouraged to consider how well the student demonstrated reflection on portfolio artifacts, representing work throughout the year, rather than merely listing assignments. With input from the workshop facilitator, the faculty concluded that an effective approach to providing written feedback would be through two or three sentences summarizing the overall

Chart 2
Curriculum/Faculty Development Models Used to Design Faculty Training for the Sociocultural ePortfolio Assessment Tool, University of Michigan Medical School

Kern Approach to Curriculum Development[32]	Bruckner Model of Effective Feedback[33]	University of Michigan application of Kern and Bruckner Models
Problem identification and needs assessment	Develop feedback scenarios	Lack of longitudinal assessment strategy identified through Liaison Committee on Medical Education mandate for sociocultural curriculum
Needs assessment of targeted learners	—	Faculty reported that despite their comfort with issues related to the sociocultural curriculum, they had limited expertise in evaluating reflections or using ePortfolios
Goals and objectives	Describe student behaviors	Determined goals based on intended learning objectives of the sociocultural curriculum
Educational strategies	Develop feedback strategies	Developed a scoring checklist to provide assessment with feedback to students
Implementation	Practice feedback	Faculty practiced grading multiple student essays and using ePortfolio platform
Evaluation and feedback		Faculty reached consensus on assessment strategies (e.g., scoring checklist) through their discussions with peers
Curriculum maintenance and enhancement	Wrap-up	On completion of experience, faculty reviewed process and provided program feedback.
		Faculty also received feedback on their feedback to students per their request.
Dissemination		Regional and international dissemination of our findings[34,35]

quality and content of the essay, followed by two or three "honest" questions[28] to which a correct answer was not apparent. Thus, the faculty participants established that feedback to the student would include the following:

1. three to five sentences of meaningful feedback; and

2. one to three "honest" questions (e.g., questions that you do not have the answers to), in order to promote reflection.

These feedback strategies were developed both as a method to stimulate student reflection[29] and to evoke the guided mentoring that faculty would ultimately perform for each student's final sociocultural curriculum essay.[30]

Second Faculty Workshop

The second workshop incorporated suggestions from participants regarding what they needed to cover before using the SePAT to evaluate medical students. Faculty members specifically requested additional practice reviewing student essays and providing mentored reflection. Thus, third-year medical student volunteers wrote sample reflective essays for faculty to evaluate. The goals of the second workshop were to:

1. improve faculty-mentored reflections of sociocultural themes;

2. review standards for student ePortfolio essay evaluation; and

3. demonstrate an ability to provide feedback that promotes reflection and transformation in sociocultural medicine.

To achieve these goals, faculty members reviewed several rubrics used in portfolio assessment. Faculty members then developed a list of possible criteria to use when giving feedback on the sample essays, derived from these sample rubrics. Most faculty members agreed that, in addition to narrative comments they would provide students, it was important to include criteria by which all students would be evaluated. These criteria could be used as the starting place for narrative comments and were inclusive of both positive and negative assessment points (List 1). After actively applying various criteria to the essays, faculty identified key points for an essay requirement checklist—for example, use of sound grammar and clear expression of thoughts in writing. These checklist items were provided to students in addition to individual narrative comments intended to stimulate reflection.

All faculty members participated in a discussion regarding the challenge of using feedback to promote reflection and personal development. Practicing in a workshop setting helped faculty to clarify difficulties and share strategies. Finally, because reflective writing is an unfamiliar and possibly uncomfortable endeavor for many medical students, the group decided to provide a gold standard essay for first-year students as a resource.

In the initial year, each faculty member was assigned 12 to 14 first-year medical students to assess. Faculty members were expected to both use the scoring checklist they had developed and provide narrative feedback. They were given one month in which to complete evaluations for assigned students. The software platform allowed faculty to review all of their students' sociocultural portfolio artifacts online via a secure connection. Communication between faculty and students was electronic, either within the secure SePAT or via e-mail.

Third Faculty Workshop

The third workshop was conducted after the faculty had completed their student assessments. Faculty members had an opportunity to reflect on their experiences of using the SePAT and providing a different form of feedback to medical students. Faculty were also provided with students' feedback on the process to discuss. Faculty members discussed technical issues using the ePortfolio platform as well as their personal responses to the student essays. Participating faculty members acknowledged the value of developing a scoring checklist to guide and standardize evaluation of student reflections. Faculty members openly discussed their feeling of being novices, both in using an ePortfolio and in providing feedback to stimulate reflection and growth. Although we have no hard data about interrater reliability

List 1

Sample Essay Scoring Criteria Used in Faculty Training for the Sociocultural ePortfolio Assessment Tool, University of Michigan Medical School

1. Expresses clear ideas in writing
2. Uses sound grammatical and mechanical conventions
3. Effectively uses reflective strategies and the information/resources presented in the portfolio/assignment
4. Accurately assesses/synthesizes the value of information incorporated in terms of relevance, credibility, and bias
5. Offers insightful responses/review to the readings and their submission
6. Demonstrates logical and critical thinking
7. Provides a rationale for changes or lack of changes in perception
8. Has demonstrated understanding of sociocultural issues in health care
9. Has produced evidence of understanding the concepts and educational objectives of the sociocultural curriculum, and there was evidence of self-reflection
10. Writing consists largely of a series of unrelated statements or passages unified by only a common theme
11. Writing does not demonstrate exploration of personal learning experiences and their potential meanings
12. Writing required the reader to search for connections between ideas and guess at writer's intent
13. Writing is cohesive
14. Writing demonstrates personal exploration of learning experiences

(and this was a pass–fail exercise, perhaps somewhat lowering the stakes of interrater reliability), we did audiotape faculty discussions about evaluating essays. Faculty members noted that they valued the experience of reading sample essays and discussing them in a small group to help set norms for expectations and type of feedback to provide. More detailed analysis of faculty response to participating in this ePortfolio project is discussed elsewhere.[31] Faculty members assessed the same cohort of students at the end of the second year of medical school. They were each also assigned a second cohort of first-year students to evaluate during year two of the pilot program.

Implementation Considerations

Many medical schools, nursing schools, residency programs, and other community settings continue to face the dual challenges of assessing learning in areas of diversity and health disparities as well as preparing faculty members for evaluating students. Despite obstacles, our faculty development program shows that preparing faculty to provide longitudinal formative feedback via an ePortfolio is possible.

On the basis of our experience, there are important considerations in planning to implement a similar program. First,

accounting for faculty time and effort is important to ensure that individual educators will be able to commit time to this type of project. In the United States and beyond, medical school faculty are often keenly aware of pressure to be clinically productive. Some medical school departments specifically reward their faculty members for time spent on educational activities. Our faculty members spent on average 20 hours preparing for and then using the ePortfolio to give feedback to approximately 13 medical students each. This can be compared to four or five half-days of clinical work. More frequent student feedback would clearly take additional time, although there would be relatively less time invested in mastering the system.

Our program was successful because of the time and energy invested in developing faculty expertise. The faculty members selected all had a strong commitment to sociocultural issues in medicine. This was evidenced in part by their willingness to invest significant amounts of uncompensated time participating in this pilot project. Despite the effort and uncompensated time, all faculty members agreed to participate again in the subsequent academic year. We interpret this faculty commitment as an indirect mark of the program's success. However, it is difficult to estimate how many mentors will

willingly continue to participate without institutional support.

Our experience also supports the concept that medical students are willing to engage in an ePortfolio. To better understand medical students' perceptions of and experiences with the ePortfolio, end-of-year focus groups were conducted with students. A thematic analysis of the focus group transcripts revealed that students recognized the utility of the system as a tool for collecting key artifacts of their learning experience and providing both formative and summative feedback. One student stated that the ePortfolio was good for "having a place to go back and look at what we've done previously and where we've grown and the previous experiences that have shaped us." With regard to the sociocultural aspects of the curriculum, a student commented that "these types of assignments … force us to think about our development and to formulate those thoughts and put them down on paper." Students also appreciated feedback from engaged faculty members: "it was nice that we got personal feedback for whatever we wrote … got a chance to actually get extensive feedback from someone." Another student commented that having "a fresh perspective" from "someone not in our regular sphere of people is good for having an outside opinion."

Faculty Development Outcomes

The development of the SePAT as a platform for mentored reflection and as an assessment tool was central to updating our institution's sociocultural curriculum. Therefore, it was critical to the success of the program that the faculty received adequate training on the use and goals of ePortfolios. In two workshops, faculty participants were introduced to and gained familiarity with a new technology; they also developed criteria on how to assess a reflective essay. These workshops were valuable for fostering the skills medical school faculty members needed to successfully navigate an ePortfolio and provide meaningful student feedback. In general, faculty felt that using an ePortfolio was a valuable asset to the curriculum and that the skills they garnered during the faculty development sessions would be applicable in other aspects of teaching.

After the first year, the SePAT was expanded to both the first and second-year medical students. All faculty participants remained in the program as faculty mentors, demonstrating that they recognize the important role of faculty in this novel curricular assessment tool. Additionally, our faculty valued the training that they received, which led them to feel competent and thus willing to invest time and energy into an educational program that they have come to believe is worthwhile. The entire medical school is moving toward the use of a similar tool to include all components of the undergraduate medical student curriculum.

Given the longitudinal design of the sociocultural curriculum, ongoing assessment of student reflections over time is critical. Continued faculty development is necessary and, as we found, desired by faculty to ensure that they maintain sufficient skills to provide meaningful student feedback. Further investigations will serve to determine the validity of the program for mentored reflection and as a longitudinal assessment tool.

This ePortfolio was developed to meet the needs of one medical school; however, ePortfolios have been used successfully in other areas of medical training and development. Thus, a variety of other programs may find that an ePortfolio is the best way to document and assess sociocultural learning. Our intent is to share a faculty development strategy that will allow others to successfully implement ePortfolio tools at their own institutions.

References

1 Liaison Committee on Medical Education. Structure for Accreditation of Medical Education Programs Leading to the MD Degree. Functions and Structure of a Medical School. Washington, DC: Liaison Committee on Medical Education; 2008.

2 McMullan M, Endacott R, Gray MA, et al. Portfolios and assessment of competence: A review of the literature. J Adv Nurs. 2003;41:283–294.

3 Swanson KW. Constructing a learning portfolio in transformative teacher development. Reflect Pract. 2010;11:259–269.

4 Gadbury-Amyot CC, McCrakcen MS, Woldt JL, Robert B. Implementation of portfolio assessment of student competence in two dental school populations. J Dent Educ. 2012;76:1559–1571.

5 Challis M. Portfolio-based learning and assessment in medical education. Med Teach. 1999;21:370–386.

6 Van Tartwijk J, Driessen EW. Portfolios for assessment and learning: AMEE guide no. 45. Med Teach. 2009;31:790–801.

7 Lamme L, Hysmith C. One school's adventure into portfolio assessment. Lang Arts. 1991;68:629–640.

8 Dannefer EF, Henson LC. The portfolio approach to competency-based assessment at the Cleveland Clinic Lerner College of Medicine. Acad Med. 2007;82:493–502.

9 Austin C, Braidman I. Support for portfolio in the initial years of the undergraduate medical school curriculum: What do the tutors think? Med Teach. 2008;30:265–271.

10 Fishleder AJ, Henson LC, Hull AL. Cleveland Clinic Lerner College of Medicine: An innovative approach to medical education and the training of physician investigators. Acad Med. 2007;82:390–396.

11 Davis M, Ponnamperuma G. Examiner perceptions of a portfolio process. Med Teach. 2010;32:e211–e215.

12 Wilhelm L, Puckett K, Beisser S, Wishart W, Merideth E, Sivakumaran T. Lessons learned from the implementation of electronic portfolios at three universities. Tech Trends. 2006;50(4):62–71.

13 Dekker H, Driessen E, Ter Braak E, et al. Mentoring portfolio use in undergraduate and postgraduate medical education. Med Teach. 2009;31:903–909.

14 Gans RO. Mentoring with a formative portfolio: A case for reflection as a separate competency role. Med Teach. 2009;31:883–884.

15 Sandars J. The use of reflection in medical education: AMEE guide no. 44. Med Teach. 2009;31:685–695.

16 Hall P, Byszewski A, Sutherland S, Stodel EJ. Developing a sustainable electronic portfolio (ePortfolio) program that fosters reflective practice and incorporates CanMEDS competencies into the undergraduate medical curriculum. Acad Med. 2012;87:744–751.

17 Shumway J, Harden R. AIMEE guide no. 25: The assessment of learning outcomes for the competent and reflective physician. Med Teach. 2003;25:569–584.

18 Searle NS, Thibault GE, Greenberg SB. Faculty development for medical educators: Current barriers and future directions. Acad Med. 2011;86:405–406.

19 McGee JB, Kanter SL. How we develop and sustain innovation in medical education technology: Keys to success. Med Teach. 2011;33:279–285.

20 Hsiao C-J, Hing ES, Socey TC, Cai B. Electronic Medical Record/Electronic Health Record System of Office-Based Physicians: United States, 2009 and Preliminary 2010 State Estimates. Hyattsville, Md: National Center for Health Statistics; 2010.

21 Nasca TJ, Philibert I, Brigham T, Flynn TC. The next GME accreditation system—rationale and benefits. N Engl J Med. 2012;366:1051–1056.

22 Lawrence D. Let's meet onscreen. The use of video is expanding beyond rural areas. Healthc Inform. 2010;27:26, 28.

23 Hanauer DA, Wentzell K, Laffel N, Laffel LM. Computerized Automated Reminder Diabetes System (CARDS): E-mail and SMS cell phone text messaging reminders to support diabetes management. Diabetes Technol Ther. 2009;11:99–106.

24 Kolb DA. Experiential Learning: Experiences as the Source of Learning and Development. Englewood Cliffs, NJ: Prentice Hall; 1984.

25 Chism N. Using a framework to engage faculty in instructional technologies. A conceptual framework enables faculty development planners to better estimate the potential effectiveness of various strategies. Educause Rev. 2004;30(2):39–45.

26 Steinert Y, Boillat M, Meterissian S, Liben S, McLeod PJ. Developing successful workshops: A workshop for educators. Med Teach. 2008;30:328–330.

27 Driessen E, van Tartwijk J, van der Vleuten C, Wass V. Portfolios in medical education: Why do they meet with mixed success? A systematic review. Med Educ. 2007;41:1224–1233.

28 Sparks D. Honor the human heart: An interview with Parker Palmer. J Staff Dev. 2003;24(3):49–53.

29 Aronson L. Twelve tips for teaching reflection at all levels of medical education. Med Teach. 2011;33:200–205.

30 Pee B, Woodman T, Fry H, Davenport ES. Appraising and assessing reflection in students' writing on a structured worksheet. Med Educ. 2002;36:575–585.

31 Perlman RL, Ross PT, Christner J, Lypson ML. Faculty reflections on the implementation of socio-cultural ePortfolio assessment tool. Reflect Pract. 2011;12:375–388.

32 Kern D, Thomas P, Howard D, Bass E. Curriculum Development for Medical Education: A Six-Step Approach. Baltimore, Md: John Hopkins Press; 1998.

33 Brukner H. Giving effective feedback to medical students: A workshop for faculty and house staff. Med Teach. 1999;21:161–165.

34 Perlman RL, Ross PT, Christner JG, Lypson ML. Faculty reflections on the implementatin of a Sociocultural ePortfolio assessment tool. Presented at: 14th Ottawa Conference on the Assessment of Competence in Medicine and the Healthcare Professions; 2010; Miami, Fla.

35 Ross PT, Botimer N, Marra T, Chapman C, Lypson ML. Development of an eportfolio platform for an undergraduate sociocltural curriculum. Presented at: Society of General Internal Medicine; 2010; Minneapolis, Minn.