

MITE Monthly Tip

The Objective Structured Teaching Exercise (OSTE): Tips for Faculty Development

Corinn Martineau, PharmD, BCACP, CDOE

It is clear that faculty development is important to enhance clinical teaching skills, however there are few objective measures of the impact of faculty development on these skills. An Objective Structured Teaching Exercise (OSTE) is both a training modality and an assessment method for the teaching skills of faculty members, preceptors, and residents. Similar to the idea of the well-known OSCE (Objective Structured Clinical Examination), the OSTE offers opportunities to engage in and practice targeted teaching skills with a standardized student (1).

Take a moment to think, “When was the last time I was observed teaching a student or resident in my clinical setting?” Clinical educators are rarely observed teaching in their clinical environment and rarely receive feedback from peers with only minimal feedback from learners. Quality of clinical teaching is generally measured by written evaluations from learners, however these generally tend to comment on a teacher’s communication skills or interest in teaching and not concrete skills.

The OSTE’s simulated teaching scenario and utilization of the standardized learner provides the opportunity for the faculty member or preceptor to develop and practice key teaching skills while being assessed objectively with immediate feedback provided to the teacher. Some of the key benefits of this modality are the ability to adjust scenarios to provide a range of difficulties (support both your junior faculty and senior faculty), provide control over the variable clinical setting, and the chance to practice teaching skills and receive immediate feedback in a safe environment (2). Furthermore, the OSTE may offer interprofessional faculty training opportunities to engage faculty members that are involved in teaching a variety of professional learners, for example, a Clinical Pharmacist Faculty member developing skills in teaching a standardized Family Medicine Resident.

Boillat and colleagues provide wonderful insight and important tips on how to use the OSTE as a faculty and preceptor development tool. Summarized below are key tips and themes gathered from their work (2):

Clarify the Goal

- What specific teaching skill are you looking to develop or enhance?
- Is the teacher a seasoned faculty member or a first-year resident completing a Residents as Teachers curriculum?
- A needs assessment may be helpful prior to this step to clarify the goal prior to the creation of the scenario.
 - If the OSTE is something to be incorporated into a faculty development curriculum, a needs assessment might help identify trends multiple faculty members hope to improve upon.

Determine Context and Target Audience

- Will the OSTE be one component of a larger faculty development curriculum?

- Will your target audience be junior preceptors or experienced faculty?
 - This will help to guide the level of difficulty of your scenarios.
- Consider space restrictions and/or availability of standardized learners.

Identify the Teaching Skill to be Addressed

- Teaching skills to be addressed should be observable behaviors that can be measured.
- Will the scenario be focused on the ability to teach a specific procedure or focused on a specific competency such as communication?
- The sky is the limit here! Refer to the article for many helpful examples.

Prepare the Scenario

- Consider focusing on a scenario that is based upon real life situations.
 - Perhaps the OSTE illustrates a specific teaching challenge discovered during your needs assessment.
- Scripts should be detailed leaving minimal room for improvisation
- Make sure the scenario is relevant to all preceptors or faculty participating.
 - Consider altering scenarios for teachers from different disciplines

Develop the Assessment Tool

- Assessment is key and may be formative or summative.
- Consider an objective assessment tool that outlines the observable behaviors of the teaching skill
- Assessment may include self-assessment, assessment by standardized student(s), and assessment by peer-teachers.

In summary, the OSTE is a unique teacher and faculty development modality that consists of a standardized teaching encounter with a standardized learner and an iterative process of feedback and practice for the teacher. OSTE's are a strong faculty development tool as they offer genuine scenarios, objective, real-time assessment, and direct feedback from peers and learners. Furthermore, OSTE's can offer opportunity for targeted faculty development based upon a needs assessment with opportunity for repeated practice.

References:

1. Sturpe DA, Schaivone KA. A primer for objective structured teaching exercises. *Am J Pharm Educ.* 2014;78(5):104.
2. Boillat M, Bethune C, Ohle E, Razack S, Steinert Y. Twelve tips for using the objective structured teaching exercise for faculty development. *Med Teach.* 2012;34(4):269-273.
3. Trowbridge RL, Snyderman LK, Skolfield J, Hafner J, Bing-You RG. A systematic review of the use and effectiveness of the objective structured teaching encounter. *Med Teach.* 2011;33(11):893-903.



Twelve tips for using the Objective Structured Teaching Exercise for faculty development

Miriam Boillat, Cheri Bethune, Elizabeth Ohle, Saleem Razack & Yvonne Steinert

To cite this article: Miriam Boillat, Cheri Bethune, Elizabeth Ohle, Saleem Razack & Yvonne Steinert (2012) Twelve tips for using the Objective Structured Teaching Exercise for faculty development, *Medical Teacher*, 34:4, 269-273, DOI: [10.3109/0142159X.2011.599891](https://doi.org/10.3109/0142159X.2011.599891)

To link to this article: <https://doi.org/10.3109/0142159X.2011.599891>



Published online: 28 Mar 2012.



[Submit your article to this journal](#)



Article views: 1628



[View related articles](#)



Citing articles: 7 [View citing articles](#)

TWELVE TIPS

Twelve tips for using the Objective Structured Teaching Exercise for faculty development

MIRIAM BOILLAT¹, CHERI BETHUNE², ELIZABETH OHLE², SALEEM RAZACK¹ & YVONNE STEINERT¹

¹McGill University, Canada, ²Memorial University, Canada

Abstract

Background: The importance of faculty development to improve clinicians' teaching skills has been well articulated in the literature. There are few objective measures of the impact of faculty development on teaching skills. The objective structured teaching exercise (OSTE) is a faculty development tool that may meet this challenge. It also has great potential to be used in the development and enhancement of teaching skills. The OSTE consists of a simulated teaching scenario involving a standardized learner with objective and immediate feedback given to the teacher, and includes a pre-determined behaviourally based scale or checklist to assess teaching performance.

Aim: There is little information in the literature on the practical aspects of how to develop and deliver an OSTE in a faculty development context. Based on our experience, we created a framework to guide the use of the OSTE for faculty development.

Methods: Twelve tips for using the OSTE for faculty development are outlined in this article. These include: clarifying the goal and target audience, identifying what teaching skills to focus on, developing the scenario and the assessment tool, choosing and training the standardized learner, holding a dry run, protecting the teacher, integrating the OSTE into one's own context and promoting buy-in, and evaluating the activity.

Conclusions: The OSTE is a novel tool to enhance faculty development. We describe 12 key elements that are important for its successful development and delivery.

Sample OSTE scenario

A teacher observes a standardized learner conduct an interview with a simulated patient who is behaving in a seductive manner and requesting medication for anxiety. The teacher provides feedback to the learner while being observed by peers. The standardized learner and peers then provide feedback to the teacher on the skill of giving effective feedback to the learner in this context. The learner has been trained to portray a specific role and to give feedback to the teacher using pre-determined criteria.

Introduction and background

The importance of faculty development to enhance clinicians' teaching skills has been well articulated in the literature (McLean et al. 2008); however, there are few objective measures of the impact of faculty development on teaching skills (Steinert et al. 2006). The objective structured teaching exercise (OSTE) is a tool that may meet this challenge. It can also help teachers acquire necessary skills.

The OSTE consists of a simulated teaching scenario using a standardized learner with objective and immediate feedback given to the teacher. The OSTE has been used in medical education for a number of years and offers several advantages over more traditional approaches to enhance teaching skills. These include: high-fidelity teaching situations with a range of difficulties; control over the variability of clinical settings; and

opportunities to practice teaching skills and receive feedback in a low-threat environment (Simpson et al. 1992). In other words, the OSTE provides a *standardized* teaching encounter with a *standardized* learner and an iterative process of feedback and practice for the teacher.

Clinical teachers are rarely observed by peers and they do not often receive direct feedback from learners. During an OSTE, teachers demonstrate their skills and obtain objective and immediate feedback from standardized learners and peers in a safe environment. The OSTE can also be used successfully for interdisciplinary faculty development. In one university, clinical teachers from medicine, dentistry, pharmacy and nursing were videotaped in encounters with standardized students and they were invited to review and discuss their videotaped performance with other workshop participants (Gelula et al. 2003).

Teaching skills, like clinical skills, include different levels of competence. These levels of clinical competence have been well described by Miller (1990) in the form of a triangle and are applicable in this context. The base of the triangle represents the learner's knowledge (*knows*); the next level indicates if the learner *knows how* to use the knowledge; in the third level, the learner demonstrates a skill in a simulated environment based on the knowledge (*shows how*); and in the final step, at the tip of the triangle, the learner incorporates the skill into everyday situations (*does*). The OSTE allows teachers to *show how* they teach. Best practices in faculty development include practical, hands-on, contextual and authentic teaching and learning

Correspondence: M. Boillat, McGill University, 1110 Pine Avenue West, Room 105, Montreal, Quebec H3A 1A3, Canada. Tel: (514) 398-5661; fax: (514) 398-6649; email: miriam.boillat@mcgill.ca

methods based on an appropriate learning theory (e.g. experiential learning). Participants should also have the opportunity to demonstrate their newly acquired teaching skills (Steinert et al. 2006). Thus, the OSTE incorporates many of the elements of an 'ideal' faculty development tool by: (1) creating authentic teaching contexts; (2) enhancing the objective assessment of teaching skills with standardized learners and pre-determined criteria; (3) allowing direct feedback from learners and peers; and (4) providing an opportunity for repeated practice.

In addition to its role in developing teaching skills, the OSTE can be used for evaluating teaching skills. According to Wamsley et al. (2005), 'the quality of clinical teaching is often measured by learner-written evaluations. However, evaluations may relate more to a teacher's charisma or communication style than actual teaching skills'. The OSTE has been used to evaluate the teaching skills of community preceptors, with acceptable psychometric standards and credible assessments by standardized students (Prislin et al. 1998; Schol et al. 2001). Others have used the OSTE to evaluate the teaching skills of junior doctors (Dunnington et al. 1998; Morrison et al. 2002; 2003; Zabar et al. 2004; Gaba et al. 2007). The OSTE can also be used to look at the impact of faculty development programmes in improving teaching skills, although this is not the focus of our paper (Stone et al. 2003).

This article will focus on the OSTE as a tool for faculty development. There is little information in the literature on the practical aspects of *how to* develop and deliver an OSTE in this context. We will describe 12 important tips for using the OSTE as an authentic teaching simulation that provides clinical teachers with the opportunity to practice, demonstrate and receive feedback on their teaching skills.

Twelve Tips for Using the OSTE

Tip 1

Clarify the goal

The goal of the *sample OSTE scenario* described at the outset of this article is to improve the skill of 'giving effective feedback'. Common goals of OSTE are to improve and/or assess specific teaching skills of clinical teachers, junior doctors or both. Based on a needs assessment, it is important to clarify the specific goal of the OSTE before using it. Will it be used for faculty development (formative) or as an evaluation tool (summative)? Is the goal to promote reflection on teaching practices or to present a cognitive framework for a particular teaching skill such as the *One Minute Preceptor* (Neher et al. 1992). With the growth of distributed medical education and the development of community-based clinical teaching sites, innovative methods such as the OSTE are helpful to support the development of new teachers. One example of this is a learner-centred approach to teaching that was offered to supervisors in a community-based clerkship prior to having students join their practice (Lesky & Wilkerson 1994). Finally, the OSTE is useful for the study of clinical teaching. The simulation of a teaching encounter permits detailed examination of the process of supervision and of the impact of

this process on clinical reasoning and problem solving (Ellen et al. 1994).

Tip 2

Determine the context and target audience

Faculty development activities are varied in format and include workshops, seminars, short presentations at rounds or conferences, and one-on-one instruction. The feasibility of using the OSTE in different settings should be carefully reviewed. For example, the OSTE may be a single component of a larger faculty development programme, or it may be a multi-station stand-alone activity. The number of participants attending the session and the available resources must also be considered (e.g. space; the availability of standardized learners). The target audience may be clinical teachers or junior doctors. Moreover, participants may be novices or experienced in teaching; they may be 'first-timers' or 'frequent flyers' of faculty development activities. Knowing the target audience will guide the appropriate level of difficulty desired in the scenarios, and can suggest the degree of 'anxiety' that may occur in the teachers. If each participant is in the 'hot seat' at least once, more participants will require an increased number of scenarios and longer time frame for the OSTE activity. Available resources will also determine the complexity of the scenarios (e.g. one or multiple standardized learners, the inclusion of standardized patients or other members of a clinical team).

Tip 3

Identify the teaching skill(s) to be addressed

The OSTE may focus on one or several teaching skills. These skills should be clearly specified and should include observable behaviours that can be measured. In our *sample OSTE scenario*, the emphasis is on giving effective feedback. Examples of observable feedback behaviours that can be measured include: invites self-assessment; starts with positive feedback; identifies specific changeable behaviours in the learner; uses 'I' messages; verifies perceptions with the learner; makes suggestions for change.

There are many other teaching skills that may be targeted by an OSTE such as identifying learner needs, teaching a procedure and teaching around specific competencies such as communication. Simulated teaching encounters may involve groups of learners or simply a teacher-learner dyad. They may take place in a variety of clinical settings such as at the bedside, in the ambulatory setting, in a multidisciplinary team or at a family meeting. Given the resource-intensive nature of the OSTE, it is important to focus on the 'value added' that simulation offers. The OSTE provides a high-fidelity teaching situation and allows one to manipulate both the degree of difficulty in a scenario and the teaching context.

Tip 4

Prepare the scenario

In our experience, the best trigger for the OSTE is a clinical situation based on real life from which a teaching skill is extracted. The author of the *sample OSTE scenario* observed an encounter between a resident and a seductive patient, and needed to provide helpful feedback to the resident who felt very uncomfortable in that situation. An OSTE scenario can also be created to illustrate a specific teaching challenge. For the encounter to feel authentic and be reproducible, however, the script must be detailed, leaving little room for improvisation. The standardized learner must demonstrate subtle differences in behaviours and reactions. Common errors such as disorganized presentations, premature closure and failure to synthesize must be purposefully integrated into the scenario. In order to mirror the reality of clinical teaching, the OSTE should reflect common clinical problems, varying complexity of patients, different learner styles, time constraints and interruptions. If the teachers learning together come from different disciplines (e.g. surgery and psychiatry), the additional challenge of developing a scenario that is relevant to all must be met.

Tip 5

Develop the assessment tool

An integral part of the OSTE is the assessment of the teaching skill(s). This assessment can be of a formative or summative nature. It may include self-assessment, assessment of the teacher by the standardized student and by peer-teachers. An objective measurement tool that outlines the observable behaviours of the teaching skill being assessed in the scenario should be used. It serves as a framework for structured self-reflection and for feedback by the standardized learner and peers. The measurement tool can be a checklist of teaching skills, or a behaviourally anchored rating scale. If using a checklist, each item requires a description of the desirable teacher performance, that is either present or absent. In our *sample OSTE scenario*, the checklist we used included the following 10 items that were rated as either 'Not Done', 'Done' or 'Done Well': (1) Set the stage; (2) Clarify mutual expectations; (3) Invite self-critique; (4) Start with positive feedback; (5) Make objective observations; use 'I' messages; (6) Focus on specific changeable behaviours; (7) Question effectively; (8) Invite the learner's suggestions for change; (9) Make appropriate suggestions for change; and (10) Plan for follow-up.

If a multi-point scale is used, a description of the levels of teaching competence should be included. These anchors allow observers to determine to what extent a teaching behaviour is demonstrated. For example, a five-point scale for the skill 'provided positive feedback' might include the following anchors: The rating 'strongly disagree' corresponds to the anchor 'did not provide positive feedback'. The rating 'strongly agree' corresponds to the anchor 'provided specific positive feedback that clearly reinforced what student did right' (Morrison et al. 2002). Behaviourally anchored rating

scales have been shown to result in greater change in teachers than feedback from alternative formats (Hom et al. 1982).

Tip 6

Choose the standardized learner

Standardized learners come from a number of sources and present advantages and disadvantages. They may be trained actors, volunteers from other professions such as retired teachers or nurses, medical students and junior doctors. Depending on the scenario, simulated patients may also be required in the OSTE. In our *sample OSTE scenario*, an actor played the role of the first-year junior doctor as the standardized learner, and a second actor played the role of the seductive patient. The value of using trained 'standardized patient actors' as learners resides in the opportunity for rigorous standardization of the teaching encounter. They can also be extensively trained in methods of giving feedback. Even though it is often more practical to use medical students or junior doctors as standardized learners, one disadvantage is the potential impact of having a 'real learner' interact with and give feedback to a 'real supervisor'. This is particularly true in smaller training programmes where learners and teachers interact frequently. Preparing actual learners to honestly and directly give quality feedback needs to be considered when choosing the learners. On the other hand, a disadvantage of using actors is their lack of clinical knowledge and familiarity with medical terminology. Medical students and junior doctors are familiar with clinician-learner interactions, have background clinical knowledge and know what is generally expected of a medical trainee at a given level. The final decision regarding the selection of 'standardized learners' often depends on available specialized resources such as actors, the feasibility of recruiting medical students and junior doctors, and the practical aspects of training both in terms of time and cost.

Tip 7

Train the standardized learner

The specific training needs of the standardized learner depend on whether the learner is a medical student, junior doctor, volunteer or professional actor. In general, standardized learners require a detailed script of the scenario, case presentation materials and additional background information (e.g. selected readings). If the standardized learner is not a medical student or junior doctor, opportunities to observe actual supervisor-student interactions may also be needed. Standardized learners must be trained to demonstrate common problems for which a specific teaching intervention is desired. These include poor communication skills, failure to explore certain aspects of the history, errors in clinical reasoning, various attitudinal issues and a limited differential diagnosis or management plan. The standardized learners should also be provided with formal training on giving appropriate feedback to the teacher. The time requirements for training are variable,

and can be anywhere from 1 or 2 hours for an experienced standardized learner, to a full day of training.

Tip 8

Hold a 'dry run'

In our experience, it is helpful to go through the OSTE scenarios with the standardized learners prior to holding the actual activity; this planning meeting, often called a 'dry run', provides an opportunity to review the scenario with the standardized learner, uncover inconsistencies in the simulation, clarify terminology or roles and adjust the standardized learner's attitude, knowledge or skill level. The dry run also promotes a more accurate portrayal of the clinical situation, corrects potential errors and maximizes the fidelity of the scenario.

Tip 9

Protect the teacher in the 'hot seat'

The OSTE is sometimes perceived by teachers as a threatening exercise and can create resistance. It is important to protect the teacher who is in the 'hot seat' and follow the principles of effective debriefing. The debriefing is similar to the process used when debriefing a role play (Steinert 1993). The teacher should have the first and last word. Ideally, the debriefing begins with self-assessment. The teacher is then offered feedback from the standardized learner and peer-teachers, but has the option to decline. As always, feedback should be descriptive, based on observations, related to learning goals, limited in quantity and include positive elements.

Tip 10

Incorporate the OSTE into faculty development in your context

The OSTE can be integrated into faculty development in a variety of ways. Role plays are often used to enhance the experiential nature of a faculty development session, but they are dependent on the engagement of the participants and they lack standardization. The OSTE offers an alternative to role plays, and can challenge teachers by its realistic portrayal of a teaching encounter. A multi-station OSTE provides training in multiple clinical teaching skills. For example, participating teachers can rotate through sequential OSTE stations, each one focusing on a different skill. Feedback is provided to the teacher at the conclusion of each station, and at the end of the entire exercise.

The OSTE can also be used in a more informal manner, with individual or small groups of supervisors in their office settings. Because the OSTE may create some anxiety in teachers, its inclusion in a faculty development event should be made explicit to the participants and used in a context-appropriate way. The OSTE is a resource-intensive endeavour and this is one of its major limitations.

Tip 11

Promote buy-in

Some clinical teachers feel that teaching is intuitive and that participation in an 'artificial' teaching exercise will not improve their teaching skills. The authenticity and fidelity of the OSTE should therefore be emphasized when promoting it as a faculty development activity. Faculty may also appreciate the novelty and challenge of the OSTE. Specific learning needs may be identified and addressed with the OSTE. For example, it has been used to help teachers recognize and intervene when confronted with unprofessional behaviours in learners (Srinivasan et al. 2004). Finally, the immediate feedback from the standardized learners and the debriefing with peers are unique aspects of the OSTE that can be highlighted.

Tip 12

Evaluate the activity

As for all faculty development activities, programme evaluation should be part of the planning process from the beginning. Pre and post-workshop surveys, written evaluations and qualitative comments are the usual methods of evaluation. Specific questions that relate to the OSTE include: (1) How effective was the interaction with standardized learners? (2) What was it like to receive immediate feedback from peer-teachers? (3) How realistic were the scenarios? (4) How threatening did the learning experience feel? (5) What was the added value of the OSTE over other learning modalities?

Conclusion

In summary, the OSTE is a tool to enhance faculty development by providing authentic teaching scenarios with standardized learners, pre-determined behaviourally based scales or checklists for the assessment of teaching performance, possibilities for repeated practice, immediate feedback from trained learners and peers and opportunities to demonstrate newly acquired teaching skills. The development and delivery of an OSTE is resource-intensive and this may be a barrier to its use in faculty development. Therefore, it is important to identify the added benefits of using the OSTE in specific contexts and with particular groups of teachers. Allowing additional time for training standardized learners, holding a dry-run and promoting buy-in are important considerations. Another limitation of the OSTE relates to the limitations of simulation itself; it is rarely as authentic as work-based learning. Despite these limitations, the OSTE holds much promise as a novel teaching and learning method that assesses teaching skills, and allows for objective measures of the impact of faculty development activities on these teaching skills.

Declaration of interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.

Notes on contributors

MIRIAM BOILLAT, MDCM, CCFP, FCFP, is an associate professor and interim chair of the Department of Family Medicine, associate dean of Faculty Development, and member of the Centre for Medical Education at McGill University. She teaches medical students and residents in clinical and non-clinical settings and practices family medicine at St. Mary's Hospital.

CHERI BETHUNE, MD, CCFP, FCFP, is a professor of Family Medicine at Memorial University in Newfoundland, Canada. Her interests include faculty development and experiential learning. She is exploring methods of enhancing teaching skills of part-time clinical teachers in a distributed post graduate education programme.

ELIZABETH OHLE, MS, is a trainer with the Standardized Patient Program. She has extensive experience in this field at Memorial University, the Ohio University School of Osteopathic Medicine and the Ohio State University School of Medicine. She serves on the board of directors of the Association of Standardized Patient Educators.

SALEEM RAZACK, MD FRCP(C), is an associate professor of Pediatrics and member of the Centre for Medical Education at McGill University. He practices as a paediatric critical care medicine physician. His major interests in medical education include core competencies training, equity issues and social accountability in health professions education. He is the assistant dean of Admissions, Equity and Diversity for the Faculty of Medicine of McGill University.

YVONNE STEINERT, PhD, a clinical psychologist and professor of Family Medicine, is the director of the Centre for Medical Education at McGill University. Her educational and research interests include the impact of faculty development on the individual and the organization, the continuing professional development of health care professionals, and the teaching and evaluation of professionalism.

References

- Dunnington GL, DaRosa D. 1998. A prospective randomized trial of a residents-as-teachers training program. *Acad Med* 73(6):696–700.
- Ellen J, Giardino AP, Edinburgh K, Ende J. 1994. Simulated students: A new method for studying clinical precepting. *Teach Learn Med* 6(2):132–135.
- Gaba ND, Blatt B, Macri CJ, Greenberg L. 2007. Improving teaching skills in obstetrics and gynecology residents: Evaluation of a residents-as-teachers program. *Am J Obstet Gynecol* 196:87.e1–87.e7.
- Gelula MH, Yudkowsky R. 2003. Using standardised students in faculty development workshops to improve clinical teaching skills. *Med Educ* 37:621–629.
- Hom PW, DeNisi AS, Kinicki AJ, Bannister BD. 1982. Effectiveness of performance feedback from behaviourally anchored rating scales. *J Appl Psychol* 67(5):568–576.
- Lesky LG, Willkerson L. 1994. Using 'standardized students' to teach a learner-centered approach to ambulatory precepting. *Acad Med* 69(12):955–957.
- McLean M, Gilliers F, Van Wyk J. 2008. Faculty development: Yesterday, today and tomorrow. *Med Teach* 30(6):555–584.
- Miller GE. 1990. The assessment of clinical skills/competence/performance. *Acad Med* 65(9):S63–S67.
- Morrison EH, Boker JR, Hollingshead J, Prislin MD, Hitchcock MA, Litzelman DK. 2002. Reliability and validity of an objective structured teaching examination for generalist resident teachers. *Acad Med* 77(10):S29–S32.
- Morrison EH, Rucker L, Boker JR, Hollingshead J, Hitchcock MA, Prislin MD, Hubbell FA. 2003. A pilot randomized, controlled trial of a longitudinal residents-as-teachers curriculum. *Acad Med* 78(7):722–729.
- Neher JO, Gordon KC, Meyer B, Stevens N. 1992. A five-step 'microskills' model of clinical teaching. *J Am Board Fam Pract* 5:419–424.
- Prislin MD, Fitzpatrick C, Giglio M, Lie D, Radecki S. 1998. Initial experience with a multi-station objective structured teaching skills evaluation. *Acad Med* 73(10):1116–1118.
- Schol S. 2001. A multiple-station test of the teaching skills of general practice preceptors in Flanders, Belgium. *Acad Med* 76(2):176–180.
- Simpson DE, Lawrence SL, Krogull SR. 1992. Using standardized ambulatory teaching situations for faculty development. *Teach Learn Med* 4(1):58–61.
- Srinivasan M, Litzelman D, Seshadri R, Lane K, Zhou W, Bogdewic S, Gaffney M, Galvin M, Mitchell G, Treadwell P, et al. 2004. Developing an OSTE to address lapses in learners' professional behavior and an instrument to code educators' responses. *Acad Med* 79(9):888–896.
- Steinert Y. 1993. Twelve tips for using role-plays in clinical teaching. *Med Teach* 15(4):283–291.
- Steinert Y, Mann K, Centeno A, Dolmans D, Spencer J, Gelula M, Prideaux D. 2006. A systematic review of faculty development initiatives designed to improve teaching effectiveness in medical education: BEME Guide No. 8. *Med Teach* 28(6):497–526.
- Stone S, Ferguson W, Mazor K, Wellman S, Devaney-O'Neil S, Jacobson E, Starr S, Hatem DS, Quirk M. 2003. Development and implementation of an Objective Structured Teaching Exercise (OSTE) to evaluate improvement in feedback skills following a faculty development workshop. *Teach Learn Med* 15(1):7–13.
- Wamsley MA, Julian KA, Vener MH, Morrison EH. 2005. Using an objective structured teaching evaluation for faculty development. *Med Educ* 39:116.
- Zabar S, Hanley K, Stevens DL, Kalet A, Schwartz MD, Pearlman E, Brenner J, Kachur K, Lipkin M. 2004. Measuring the competence of residents as teachers. *J Gen Intern Med* 19:530–533.