A Curriculum for Enhancing Physician Teaching Skills: The Value of Physician-Educator Partnerships

Mara M Hoffert[1], Karla D Passalacqua[1] (ID), Alexis Haftka-George[2], Odaliz Abreu Lanfranco[3] and Robert A Martin[4]

[1]Department of Graduate Medical Education, Henry Ford Hospital, Detroit, MI, USA. [2]Division of Internal Medicine, Henry Ford Hospital, Detroit, MI, USA. [3]Division of Infectious Disease, Henry Ford Hospital, Detroit, MI, USA. [4]Department of Organizational Leadership, Oakland University, Auburn Hills, MI, USA.

ABSTRACT: Developing as a physician requires an enormous amount of complex training, and quality of instruction greatly affects training outcomes. But while physicians are expected to teach trainees within the clinic, they often do not receive formal training in effective instructional practices. Providing faculty development programs is one way that institutions can help physicians develop teaching skills, but these programs often are developed without the input of educational specialists and not based in educational theory. In this methodology paper, we describe a 5-module curriculum that was developed in a cross-disciplinary collaboration between instructional designers and physician faculty. By merging educational and medical expertise and using adult learning theory with the Charlotte-Danielson educational framework, an essentials for clinical teaching educational endorsement program (ECTEEP) was created as a feature of the institutional curriculum within a large, urban teaching hospital. Here we describe how the program was developed through a physician-educator partnership, outline the program's key content, and highlight essential aspects of successful implementation. The ECTEEP incorporates active learning approaches within an abbreviated format, distilling 5 critical aspects of effective teaching that are relevant to the clinical environment: cultural humility and safe learning environments, instruction practices for engaging learners, instruction and assessment strategies, receiving and giving feedback, and mentorship and coaching. A central feature of the program is that facilitators actively model the teaching behaviors they are conveying, which underscores the critical importance of facilitator preparation and skill. Our curriculum is offered here as a basic template for institutions that may want to establish a program for enhancing physician teaching skill.

KEYWORDS: Active learning, adult learning, assessment, coaching, cultural humility, feedback, instructional practices, mentoring, teach the teacher

Introduction

Medical professionals develop through training: a complex interplay between learner and instructor. Yet physicians do not normally receive explicit training in how to teach, even though training others is a fundamental feature of medical practice. At teaching hospitals in the United States, the Accreditation Council for Graduate Medical Education (ACGME) requires physician faculty at accredited institutions to be competent in instruction, maintain educational environments that are conducive to educating trainees, and pursue development to enhance teaching skills.[1] Physician trainees (residents and fellows) are also expected to have a certain fluency as teachers, since they often teach a range of clinical procedures to medical students and their peers.[2,3] And of course, all medical professionals are educators for their patients. Thus, teaching expertise is a multi-faceted necessity for physicians. But developing a range of competencies to include patient care, research, and education creates competing interests and enormous demands on time.[4] Yet physicians need to hone their teaching skills to optimally transmit clinical knowledge, critical behaviors, and essential skills.[5,6] Fortunately, creation of faculty development programs for physicians to acquire teaching skills has been increasing, and programs have taken many forms.[7-10]

How do physicians develop as teachers? Although some physicians may spend a great deal of time and effort on professional level training in education,[11] the more common way that physicians learn how to teach is at the individual level, acquiring skills in an ad hoc manner and constructing knowledge based on observation and personal experience.[5] But an institutional culture that values education and provides opportunities for physicians to develop a teaching practice[4] is crucial for enhancing the physician-teacher identity.[5] Institutional programming efforts for promoting physician teaching expertise are a feasible, practical way of helping physicians become skilled in the art of teaching.[8] A best evidence medical education (BEME) review of faculty development initiatives to improve effectiveness of medical education showed that physicians often reported increased knowledge of educational principles and adult learning theory[12] and gains in teaching skills after participating in development programs such as workshops, seminars, and short courses,[10,13] emphasizing that formal initiatives are a valuable strategy: in essence, underlining

the importance of developing an intentional pedagogy with efficacy.

While studies have shown that "teach the physician to teach" programs work and are well-received,[14] we have observed a lack of discussion on the cross-disciplinary collaboration between physicians and non-medically trained educational professionals in creating physician teacher-training programs. Educators and instructional designers—those professionals trained in the art and science of teaching methods—have an enormous amount of knowledge and experience that can support the development of programs to help physicians become skilled teachers. In this Methodology article, we outline the key features of our essentials for clinical teaching educational endorsement program (ECTEEP) that was created by a PhD-level instructional designer who previously served as a teacher, leader, and administrator in the world of public education. The ECTEEP was developed and refined in collaboration with physicians in a large urban teaching hospital. The marriage of instructional design rooted in fundamental educational approaches with the expertise of physicians who have real-world clinical insight was the perfect recipe for creating a feasible and successful teach-the-teacher program.

The ECTEEP is based on a synthesis of andragogy/adult learning theories[15] with the Charlotte–Danielson[16-18] teaching framework and comprises 5 educational topics that are fundamental for delivering high-quality instruction. Notably, the program aims to convey information about intentional teaching decisions and model these crucial teaching strategies through skilled facilitation. The objective of the ECTEEP is to provide feasible, practical learning opportunities for attending physicians and trainees to explicitly develop teaching or pedagogical skills with structured feedback and a professional endorsement. Demand for the program within and outside our institution has grown rapidly, highlighting physician desire for improving teaching skills. Here, we describe a brief history of how the program was developed, provide a thorough outline of the ECTEEP structure, and emphasize key lessons learned from having implemented and refined the ECTEEP over 3 years.

Program Development—Synthesizing Theory, Educational Framework, and Clinical Expertise

A need for integrating theory and conceptual frameworks into physician-teacher training design has been highlighted,[10,19] and non-medical professional educators can play a key role in this process. At our urban teaching hospital, a team of instructional designers in the Department of Graduate Medical Education (GME) support medical faculty across more than 50 resident and fellowship training programs. When program directors and physician faculty expressed a desire for creating institutional support for physician teacher training, a staff instructional designer with expertise in college and K-12 education initiated program design.

First, the ACGME common program requirements and guidelines were studied to identify the critical teaching expectations of physicians. The requirements emphasize a scholarly approach to patient care, which involves synthesizing teaching, learning, and research to encourage curiosity and critical thinking in trainees. Thus, faculty must be able to ask meaningful questions, demonstrate compassion, show commitment to excellence in teaching and patient care, and exhibit professionalism and a dedication to lifelong learning.[1] Some of the ideal behaviors of clinical teachers are enthusiasm, empathy, patience, accessibility, competence, organization, and responsiveness, among others.[20] Based on these expectations and characteristics, a range of theories and frameworks that form the intellectual foundation for what constitutes quality teaching were researched. Ultimately, several aspects of adult learning theory and a constructivist approach with the Charlotte Danielson teaching framework were chosen to anchor the program structure.

The instructional designer then contacted multiple experts in the K-12 and college educational fields and worked with them to create instructional content that combined medical education philosophy with general adult learning philosophy, merging facets of pedagogy and andragogy from outside the world of medicine to craft a clinically relevant curriculum. After outlining a basic curriculum, a panel of physicians reviewed the program and provided critical feedback and clinical content. This essential step included incorporating proper clinical terminology and real-world clinical scenarios into the learning modules. After merging educational and clinical content, a 6-module series of 2-hour seminars was established, and qualified facilitators for each module were found.

For the first iteration of the program, session facilitators were not physicians or clinical professionals, but rather were acclaimed educational leaders from local universities and other educational arenas, each with a specific area of expertise. After launching a pilot program for internal medicine trainees and another multi-specialty institution-wide session for physicians, the instructional designer integrated feedback and refined the program.

Thus, the ECTEEP was revised into what is now a 5-module series of 2-hour interactive seminars with optional in-clinic observational assessment that includes personal feedback sessions and the potential for a professional endorsement upon full completion.

The critical elements of teaching addressed in the 5-session ECTEEP are the following (Figure 1):

1. Cultural humility and safe learning environments
2. Instructional practices: engaging learners
3. Instruction and assessment strategies
4. Receiving and giving feedback
5. Mentorship and coaching

A crucial point, however, is that the ECTEEP is more than a compilation of course content describing quality teaching behavior; rather, the way in which the modules are delivered is key to program design. Although this creates a challenge for replication in other environments, the success of the program
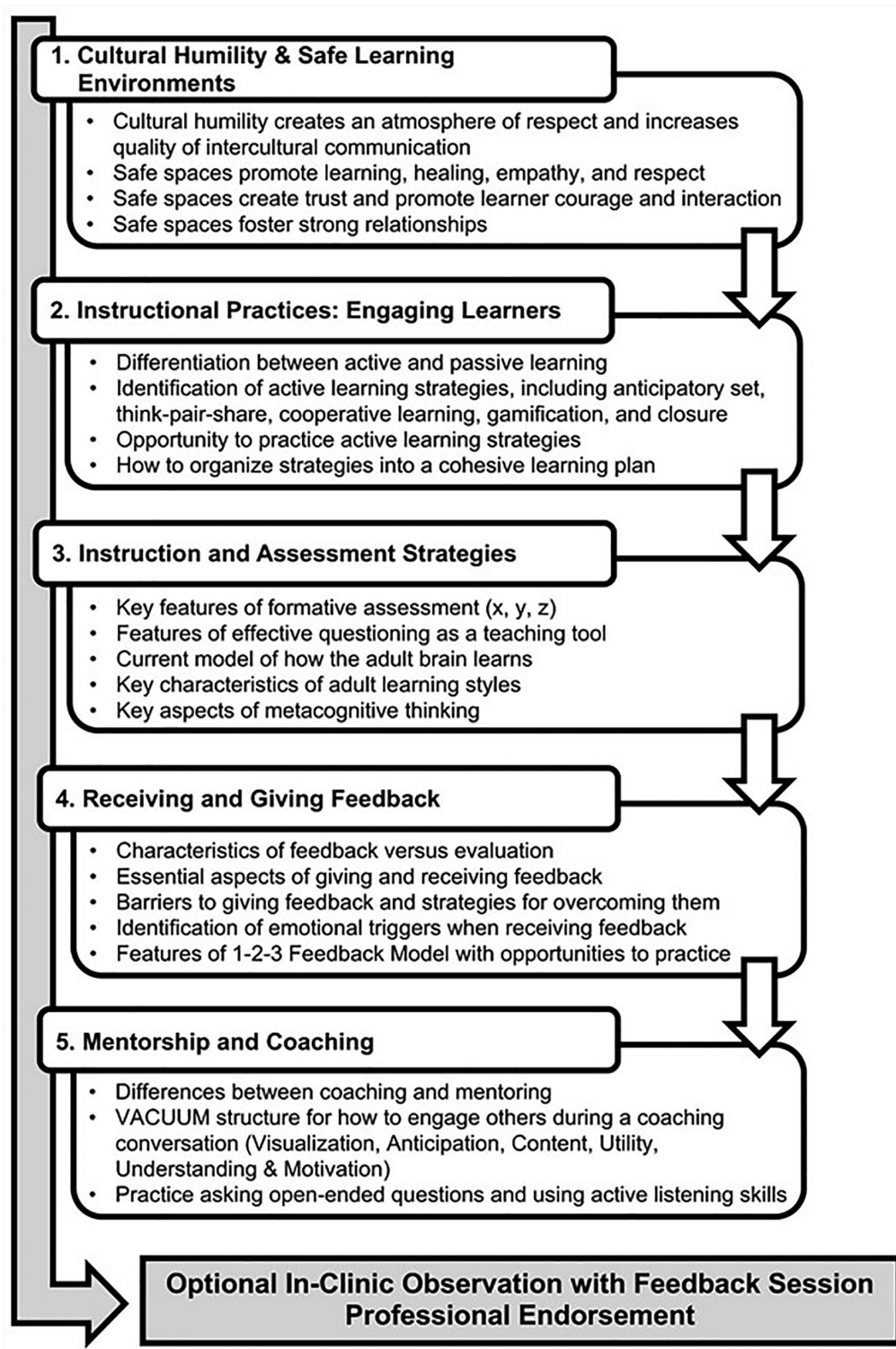
1. Cultural Humility & Safe Learning Environments

- Cultural humility creates an atmosphere of respect and increases quality of intercultural communication
- Safe spaces promote learning, healing, empathy, and respect
- Safe spaces create trust and promote learner courage and interaction
- Safe spaces foster strong relationships

2. Instructional Practices: Engaging Learners

- Differentiation between active and passive learning
- Identification of active learning strategies, including anticipatory set, think-pair-share, cooperative learning, gamification, and closure
- Opportunity to practice active learning strategies
- How to organize strategies into a cohesive learning plan

3. Instruction and Assessment Strategies

- Key features of formative assessment (x, y, z)
- Features of effective questioning as a teaching tool
- Current model of how the adult brain learns
- Key characteristics of adult learning styles
- Key aspects of metacognitive thinking

4. Receiving and Giving Feedback

- Characteristics of feedback versus evaluation
- Essential aspects of giving and receiving feedback
- Barriers to giving feedback and strategies for overcoming them
- Identification of emotional triggers when receiving feedback
- Features of 1-2-3 Feedback Model with opportunities to practice

5. Mentorship and Coaching

- Differences between coaching and mentoring
- VACUUM structure for how to engage others during a coaching conversation (Visualization, Anticipation, Content, Utility, Understanding & Motivation)
- Practice asking open-ended questions and using active listening skills

Optional In-Clinic Observation with Feedback Session
Professional Endorsement

Figure 1. Outline of the 5-module essentials for clinical teaching educational endorsement program with key learning points.

hinges on the fact that it was created to impart best practices in teaching through the direct modeling and facilitation of critical teaching behaviors. Over the 3-year implementation, physician leaders have been integrated into the program as facilitators. With direction and feedback from the instructional designer, 2 of the 5 sessions (Receiving & Giving Feedback and Mentorship & Coaching) are now fully led by physicians who have been specifically trained in facilitation methods for each module. As the program evolves and interest grows, more physician leaders will be trained by the GME instructional design team to promote quality and consistency. Another key element is that the program is offered not only to established clinical teaching faculty, but also to residents and fellows in training. This multidisciplinary and mixed level group dynamic fosters collaboration

and communication across the medical hierarchy and gives early career physicians with an interest in pursuing a teaching track an opportunity to launch a successful teaching trajectory.

The following sections outline the theoretical and educational framework used for creating the ECTEEP, the detailed substance of the 5 modules, and a summary of critical lessons learned during implementation, in particular the difficulty in preparing facilitators for active learning within a medical professional context. We hope that our experiences and framework will help other institutions implement an effective and streamlined teaching skills curriculum for physicians by adapting our program for their specific environment and needs.

Program Foundation—Theory and Framework

Physician faculty and trainees are established professionals who have devoted enormous time to obtaining clinical education and therefore have distinct learning needs. Adult learning theories recognize the unique situations adult learners face that are different from those of children. One of the major adult learning theories is andragogy (adult education), a term juxtaposed to pedagogy (childhood education). In an approach rooted in andragogy, adults are recognized as learning best through experiences, as having a preference for learning things that they believe are relevant, and as desiring involvement in how they are taught.[21,22] Thus, adults must feel a sense of ownership and choice in their learning, and this consideration is paramount for designing effective training programs for medical professionals. Working directly with clinicians to develop clinical course content was one major way that we incorporated physician ownership, content relevance, and personal involvement in our ECTEEP. However, for adaptation within other institutions, clarifying the specific, relevant needs of unique professional populations is essential.

While rooting the individual ECTEEP sessions in adult learning theory, we also focused on incorporating elements of social learning, constructivist, and cognitivist theories. Sociocultural approaches state that learning takes place within a cultural context, where social and individual processes are interdependent, dynamic, and social aspects of development.[23-26] Language and other symbolic means of communication are viewed as being powerful drivers in how and what we learn. Therefore, all learning modules for the ECTEEP were designed to be taught through multiple learning modalities (eg, auditory, kinesthetic, visual, tactile) and to implement teaching for promoting exploration and discovery while reducing learner fear and stress. For example, during the safe learning and cultural humility session, the facilitator uses an array of learning exercises that include lecture (auditory), short video (visual), props such as charts to apply content to real-world goals and aspirations (tactile and visual), and partner activities that use physical aids (eg, legos) and movement with ice-breaker activities (kinesthetic and tactile).

Put simply, constructivist theory posits that individuals build their own learning based on prior knowledge and experience, which is counter to the idea of knowledge being passively absorbed.[27-30] Thus, understanding is achieved by the learner establishing connections between past facts and new information. Social constructivism has been used in some areas of healthcare professional learning research,[31] and because physicians must engage in professional lifelong learning within a social context, this theory provided the inspiration to incorporate activities that address some important issues in medical training, such as recognizing and handling bias and racism in the clinic. Providing participants opportunities to adapt each learning strategy to their own discipline within each session was also a top priority. In the module that addresses strategies for engaging learners, participants are provided a Learning Plan template that organizes a general learning encounter and lists all the strategies and assessments that are covered in the session (Figure 2a). The participants then begin to adapt the plan for their own needs. So, faculty who perform large group didactics may focus on developing an anticipatory set feature to grab an audience's attention, while those who teach small groups within the clinic may outline activities such as interactive demonstrations, think-pair-share, problem-based instruction, or cooperative learning exercises.

A cognitivist approach focuses on the mental processes involved in learning, and components of this approach include considering relevance of learning (as in andragogy), thinking about what is happening, discussing content, and experimenting with new ideas and concepts.[32-35] One way that the cognitivist framework was integrated into program design was through an emphasis on requiring facilitators to consistently ask learners to communicate experiences from their professional lives that relate to the topic of study. Then, new scenarios and instruction in best methods are given, and learners are asked to weave together their real-world encounters with newly acquired knowledge and strategies.

Observational learning is another way that educators integrate social cognitive theory into instruction. In the ECTEEP, learners watch facilitators model specific teaching behaviors, underscoring the crucial element of facilitator skill. For example, in the module on creating a safe environment, the facilitator enacts scenarios (such as handling a situation where an improper comment has been made) while explaining the importance of the modeled behaviors (eg, making sure a learner feels heard). Also, reproduction is an important cognitive element, so participants are given the opportunity, as time allows, to apply and practice the modeled behavior, often through small breakout group discussions and activities. Importantly, physicians who complete all five sessions can opt to have an instructional designer observe their teaching in the clinic, which further cements the cognitive aspects involved in improving one's teaching skills.

Using the Charlotte Danielson Framework

To synthesize the theoretical foundations outlined above, a practical educational framework was used when creating the learning modules. The Charlotte Danielson (CD)[16] teaching framework

(a)

LEARNING PLAN   TOPIC: DATE:

OBJECTIVES: ACGME MILESTONE:

ANTICIPATORY SET:
- Short activity that activates interest and prior knowledge
- Connects to the objectives and purpose, answering the question of <u>why</u> the content is important.

Strategies

o Think/Pair/Share
o Cooperative Learning
o Lecture
o Large Group Discussion
o Case Study
o Demonstration
o Simulation
o Debate
o Jigsaw
o Stations
o Flipped Classroom
o Problem Based Instruction
o Project Based Instruction
o Gamification

Assessments

o Questioning
o Written Summary
o Exit Ticket
o Observation/Feedback
o Presentation
o Project
o Published Work
o Game
o Work Sample
o Self-Assessment
o Quiz/Test

ACTIVITIES & ASSESSMENTS
- Promote active learning.
- Often limited to smaller "chunks" of 15-20 minutes.

CLOSURE ACTIVITY:
- Promotes reflection, assesses learner's understanding, informs subsequent instruction, emphasizes key information, and/or corrects misunderstandings.

REFLECTION:

Henry Ford HEALTH SYSTEM

(b)

Coaching Best Practices

Ask open-ended questions, listen attentively, remain curious with reflective statements.

- What are you wondering about?
- What will help you make progress or develop in this area?
- What will you try next time? [Action planning]
- How will you hold yourself accountable?
- What would you like to discuss next time? (when appropriate)
- What is your takeaway from today? [Closing the conversation]

Avoid negative "why" questions.
Replace with "Tell me more" or questions beginning with "What" or "How."

Henry Ford HEALTH SYSTEM **1-2-3 FEEDBACK (MODEL)**
This Model provides a consistent framework for setting expectations & conducting two-way feedback (receiving and giving) conversations.

1   EXPECTATIONS AND LEARNING GOALS
- Preview plan/case <u>OR</u> tell trainee you will **observe** him/her.
- **Establish Learning Goals** (by learner; by faculty):
  - What is challenging about this case?   · What specifically will we look for?
- Set Ground Rules: **PIVOT***: *"If you are not sure how to proceed, we will PIVOT**. I will **guide you or take over**, if needed."

2   OBSERVE the Learner:

3   FEEDBACK Conversation: Post-Procedure; Post-Operative; Post-Event

How did it go?... What went well?

This is what I saw that you did well. Faculty specifically describes actions/skills that were performed well.

Looking back, what would you have done differently? (Listen to response)   Discuss **PIVOT***, if appropriate.

What feedback have you received in the past? Here are some additional important points: _____.

What is your take-away point? What will you try next time? Be sure this is observable.

Close the loop: When will you be able to do this again so it can be observed?

***PIVOT** (<u>P</u>ause and guide, <u>I</u>nter<u>V</u>ene <u>O</u>r <u>T</u>akeover). Examples: "Consider doing: _____." OR "That's your second attempt; I'll take over."
Important: Faculty should **not take over or step in** unless there is a serious misunderstanding or danger to patient
Feedback Project Henry Ford Hospital: Pulmonary Critical Care, Neurosurgery, IM, GME. Powered by Vital Talk, CLEAR Conversations, CAST Concepts (v 4.4.19)
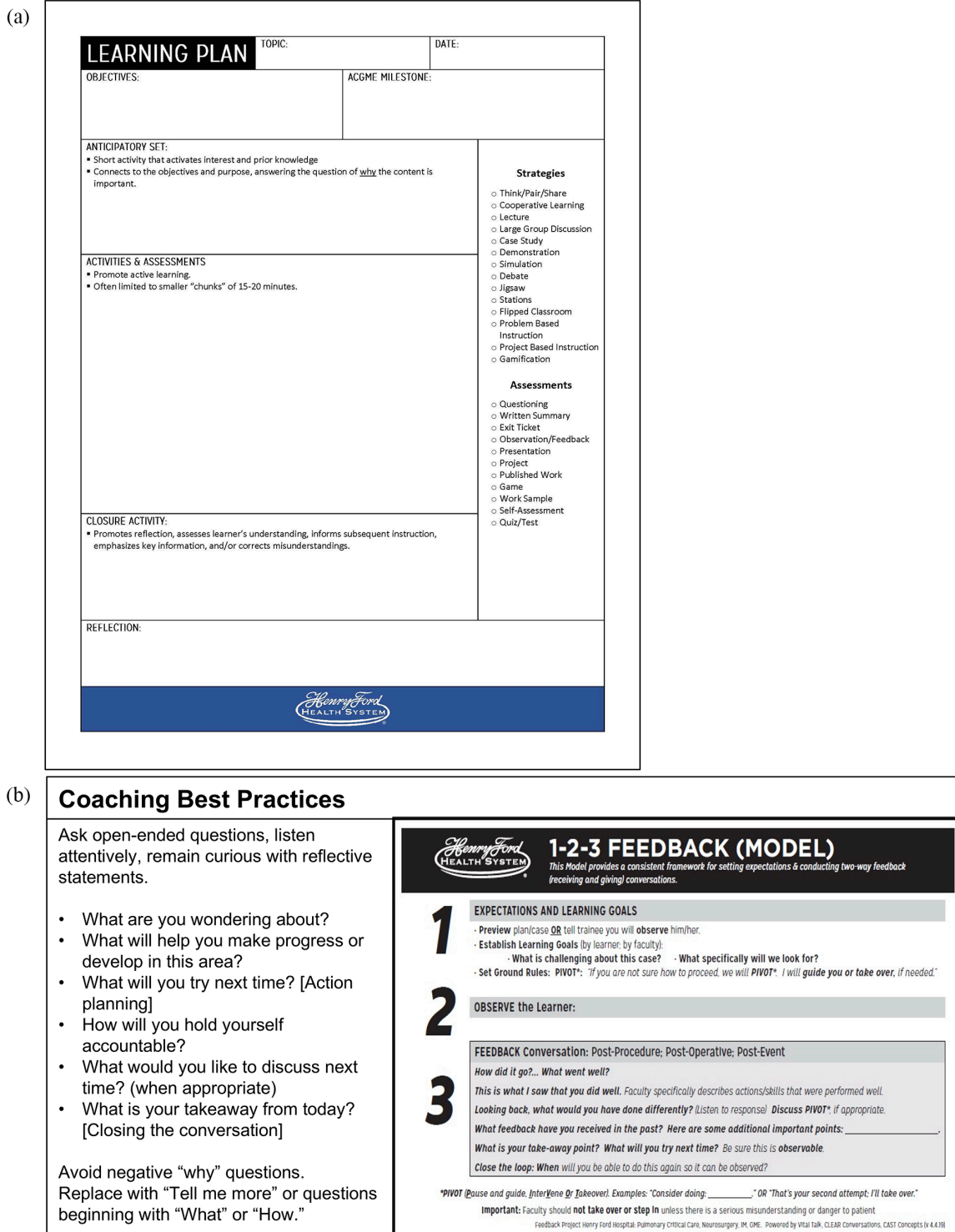
Figure 2. Examples of resources for physicians from the Essentials for clinical teaching educational endorsement program (ECTEEP). (a) A Learning Plan template that contains key teaching and assessment strategies as well as a general outline of recommended lesson elements (from the ECTEEP module "Instructional Practices: Engaging Learners"). (b) An easy-access summary of best practices for coaching and giving feedback. This tool was created to merge the 1-2-3 Feedback model presented in "Receiving and Giving Feedback" with open-ended questioning strategies covered in "Mentorship and Coaching."

is based on the central aspects of effective teaching that have been assessed through empirical research. It divides the act of teaching into 4 key domains: (1) planning and preparation, (2) the classroom environment, (3) instruction, and (4) professional responsibilities. All domains were considered within all 5 modules to ensure that the program had a practical structure that would promote consistency, effectiveness, and learner engagement. The Table 1 below describes the 5 learning modules, highlighting key content features and indicating the CD framework elements that were used: a detailed discussion of each module follows.

Table 1. Characteristics of the 5 essentials for clinical teaching educational endorsement program modules.

MODULE TITLE[a]	CD DOMAINS[b]	KEY COURSE ACTIVITIES	REQUIRED FACILITATOR SKILLS AND KNOWLEDGE[c]
Cultural humility and safe learning environments	• D1. Planning and Preparation • D2. Classroom Environment • D2a. Respect and Rapport • D4. Professional Responsibilities	• Reflection on medical education practice • Didactic on how diversity strengthens teams (Who is in the Room?) • Mini-lecture on Scott Page's Diversity Bonus[36] • Lego communication activity • SGD on recognizing, acknowledging, and embracing differences • RPA on how to address racist comments	• Able to give consistent, quality feedback during exercises • Creates atmosphere of trust and safety • Model listening and inquiry skills • Able to guide participants in kinesthetic exercises • Manages and models difficult and controversial conversations
Instructional practices: engaging learners	• D1. Planning and Preparation • D3. Instruction	• *Your Turn*: SGD on recognizing when learners are engaged • *My Favorite Movie*: SGD to learn "anticipatory sets." • *Start with Why*: SGA to design anticipatory sets • *PowerPoint Use*: SGD on selections from paper about effective presentations • *Gamification*: SGA using online game to summarize key content • *Whip Around*: SGA to show how tools from session will be used.	• Able to facilitate SGD and SGA to promote active knowledge acquisition • Can model each learning strategy • Manages multiple activities within 1 session
Assessment strategies	• D1. Planning and Preparation • D3. Instruction	• Fist-to-Five Formative Assessment Routine • SGD: Exploring adult learning styles • SGA: Using and mapping Impactful Question Types • *I used to think. . . Now I think*: Visible Thinking Routine • *Drawing/Coaching*: SGA on 2-way communication	• Can spontaneously model good questioning techniques • Able to coach participants in question development • Meta-cognitive facilitation to convey through processes during instruction • Can name and reinforce adult learning styles • Able to help participants identify how each skill can be applied to their practice
Receiving and giving feedback	• D2. Classroom Environment • D3. Instruction • D4. Professional Responsibilities	• SGD on Feedback vs Evaluation • SGD to identify barriers to feedback • *Video simulations*: Cases to practice 1-2-3 Feedback Model	• Can engage participants in practicing giving feedback • Can assist participants in developing strategies to overcome barriers to giving feedback • Effectively coaches participants in 1-2-3 Feedback method using video cases • Helps participants reflect on prior experiences with feedback
Mentorship and coaching	• D1. Planning and Preparation • D2. Classroom Environment • D4. Professional Responsibilities	• *Shoelace exercise*: SGA to coach each other in how to tie a shoe • Listening skills SGA to practice active listening and asking open-ended questions • Bedside coaching SGA to practice applying coaching framework	• Can conduct discussions to elicit participation for key concept construction • Can actively demonstrate good medical coaching and mentorship skills • Can demonstrate differences in how to coach, mentor, give feedback, and advise

Abbreviations: RPA, role playing activity; SGA, small group activity; SGD, small group discussion.
[a]See Figure 1 for key learning points contained within each module.
[b]Domain of the Charlotte Danielson (CD) Framework for Quality Teaching.
[c]These are essential facilitator skills in addition to having thorough knowledge and mastery of information included in the module.

Module 1: Cultural humility and safe learning environments

In the ECTEEP pilot program, "cultural competency" (the original title of the module) and "creating a safe learning environment" were taught as separate modules. However, content within these modules overlapped, and instructional designers condensed them into 1 unit to include only the most essential aspects of each. Additionally, the term "cultural competency" was updated to "cultural humility" to align with current and accurate terminology within the diversity, equity, and inclusion context. One objective for this module is to demonstrate the need for establishing a safe and receptive learning environment across cultural differences, with an emphasis on understanding and embracing individual cultures and perspectives. Another objective is to establish awareness that every learner has a unique story. One activity that serves these objectives is called "Who's in the room?" The facilitator begins with a general question, such as "Who had coffee this morning?" As learners become comfortable, it opens a space for the facilitator to ask more sensitive questions, such as "Who is the firstborn in their family?" This strategy allows the participants to discover aspects of their colleagues they did not know about, establishing a safe space to take risks. During this session, the facilitator models, offers modifications, and uses other tools to create an environment where learners are willing to be more vulnerable and take chances. Thus, because the participants are learning about safe learning environments, the facilitator's ability to establish a truly open environment is essential.

Other topics covered are acknowledging differences, recognizing the diversity premium,[36] othering and belonging, and discussing tangible team results from embracing differences and creating belonging. The CD instruction domain was integrated through an emphasis on stating clear objectives and using cognitive tools such as active inquiry and interactive learning approaches such as reacting to scenarios and video clips. The domain of professional responsibility was integrated by having learners reflect on their own practice with the goals of encouraging individual growth and actively fostering culturally appropriate interactions with colleagues. This module covers potentially sensitive topics, and the ability to interactively guide a group through the activities thoughtfully and with equanimity is critical, which makes this module the most difficult one to facilitate.

Module 2: Instructional practices—engaging learners

The module that addresses how to engage learners was designed to answer a critical question: *How do we apply instructional strategies to increase learners' engagement with a topic?* This module is, unsurprisingly, a particularly interactive session, where participants learn to differentiate between active and passive learning, learn about and practice active learning strategies, and design a learning plan that uses these strategies to increase engagement. Participants create a lesson specific to their specialty and are given the opportunity to demonstrate at least part of the lesson.

The CD domain of instruction contains the directive to "engage students in learning," which is the namesake of this module. Thus, the CD framework is embedded in this session through exploration and modeling of multiple active learning strategies, including think-pair-share, cooperative learning (eg, flipped classrooms and problem-based learning), closure, and gamification (eg, use of the online platform Kahoot!).[37-43] This domain also highlights the importance of communicating with students and integrating specific objectives and purpose into a lesson. The strategy of *anticipatory sets*, which are short vignettes at the beginning of a lesson to catch students' attention, is a useful tool that physicians can use to communicate the importance of a topic while helping the learner connect their interests to the purpose of a lesson. Facilitators display a picture that they had found compelling and then provide context and history that was unknown to them at the time they first saw the picture. A discussion ensues about how context matters and can change one's perspective. Physicians leave this session with a toolbox of interactive teaching strategies that they can adapt to their own needs (Figure 2a). Again, the facilitator's ability to demonstrate and use all the active learning tools is essential to this module's success.

Module 3: Instruction and assessment strategies

During medical training, physicians are continually assessed through academic exams, board examinations, institutional protocol training, and continuing medical education requirements. Despite being subjected to multiple assessments throughout professional development, physicians are rarely given the opportunity to learn about how to effectively perform learning assessments. This module aims to address this knowledge gap with 3 components: (1) effective use of questioning; (2) understanding how the adult brain learns; and (3) the importance of modeling metacognitive thinking to learners. Facilitators focus on making learning visible by speaking the technique being used. One example is called "fist-to-five," where the facilitator asks the learners at the beginning of the session, "How comfortable are you understanding how your residents learn best?" The facilitator asks participants to hold their hand in front of their chest so as not to be visible to others and asks them to show either a fist (0) or a number of fingers (1-5) that demonstrates their comfort (with 5 being the most comfortable). The facilitator then explains that the hand-to-chest posture was to maintain privacy and was meant to help the facilitator assess whether participants become more comfortable with identifying learning styles as the module progresses. This module mainly encompasses the CD instruction domain by delving into educational communication, effective questioning and discussion techniques, engagement of

learners, assessment during instruction, and the critical need for instructor flexibility and responsiveness.

Module 4: Receiving and giving feedback

Feedback is an integral aspect of medical education that has been studied extensively.[44-47] The ECTEEP session on feedback focuses on exploring the importance of clarity and relationship building in quality feedback exchange by using a multidisciplinary model to guide challenging conversations. Participants learn the differences between feedback and evaluation and gain specific language to use when delivering feedback to trainees, which creates a common language around this important clinical tool within the institution. For example, the instructor explains a specific feedback model, the 1-2-3 feedback model (Figure 2b). Then learners view a simulated physician-patient engagement and apply the feedback model to the video-based case. Barriers to giving feedback (eg, not wanting to hurt another person's feelings) and barriers to receiving feedback (eg, feelings of failure) are demystified, and group discussions about fear help alleviate these barriers.

A concern often voiced by physicians in training is that they feel they are not given enough feedback during their training, and a strategy that ECTEEP participants learn to alleviate this problem is to establish key language (words or phrases) to alert the beginning of the feedback process. Participants also learn how to recognize encounters that can facilitate actionable, timely, and consistent feedback.

This module relies heavily on the CD instruction domain, providing physicians with multiple tools to create rapport, listen, and engage learners in the feedback process. For this module, the facilitator stresses that the giver and receiver engage in a 2-way dialogue to increase the safety surrounding the feedback messaging. Additionally, participants are taught that the learner must have clear assessment criteria, the feedback must be timely and accurate, and learners must engage with the content immediately. Providing physicians with tools for delivering feedback encompasses the CD domain of professional responsibilities, since feedback is a central feature of medical training, and both providing feedback on resident performance and receiving feedback as evaluation are required of faculty by the ACGME (of note, the word "feedback" is used 23 times in the ACGME Common Program Requirements for Residency).[1]

Module 5: Mentorship and coaching

The final module aims to help participants teach through coaching and mentoring and to clarify the differences between these 2 training strategies. The International Coaching Federation defines coaching as, "partnering with clients in a thought-provoking and creative process that inspires them to maximize their personal and professional potential";[48] whereas mentors are defined as "a trusted counselor or guide."[49] By learning the benefits of each role and when each strategy is best

used, physicians gain the ability to pivot between working in partnership, exploring needs, and taking action during encounters with trainees (Figure 2b). Facilitators use an array of modalities to engage learners, including didactics and hands-on tactile activities. One such activity has participants pair up as a coach and a trainee. They are given a laminated drawing of a shoe with holes in it and a pair of shoelaces. The coach is not allowed to touch the props or model any action, but rather, must use only words to help the trainee successfully tie the shoe. This activity helps convey the idea that coaches view trainees as being whole, resourceful, and creative, and that coaching is done to promote success.

The CD domains of planning and preparation, classroom environment, and professional responsibilities anchor this module. Facilitators must create a safe environment to allow participants the freedom to take risks and help participants work with the material in auditory and tactile ways. Facilitators also address how to professionally engage in conversations about personal and professional advancement and must be able to model both coaching and mentoring behaviors in an impromptu way.

The Critical Control Points of Skilled Facilitation (or What Went Wrong?)

In our experience, the most crucial and difficult aspect of implementing the ECTEEP has been the availability, vetting, and training of facilitators. Pioneering work on faculty-teaching improvement initiatives has emphasized the importance and feasibility of facilitator preparation for disseminating quality programming nationwide.[50] Our pilot program brought into stark relief that facilitators must be perceived as credible by a physician audience and must be able to mediate instruction that can be practically applied within the context of medical practice. This problem reveals a conundrum: professional educators have expertise in education but not in medicine, and physicians have expertise mainly in medicine but not education—yet skilled facilitation for teaching physicians how to teach requires both. Because it would be impossible for 1 person to facilitate all 5 modules for every iteration of the program, the process of facilitator preparation is a critical quality control point. Our experiences implementing the ECTEEP offer several anecdotes that highlight key aspects of quality "teach the teacher teachers."

For our pilot program, facilitators for all modules were non-medical educational professionals with high achievement in their fields. While most of the educational professionals were able to bridge the 2 worlds and were well-received by physicians, we note that professional acumen in 1 arena does not guarantee the ability to apply one's expertise into a new domain. Before the pilot program launched, the instructional designer who created the ECTEEP spent many one-on-one hours preparing educator-facilitators to ensure that they understood specific medical terminology and the jargon of the teaching

hospital because all modules contained medically based content to ensure relevance for the physician audience. But some of our initial facilitator experiences were less than ideal.

For example, 1 master teacher, who was a highly acclaimed college educator, struggled with applying educational knowledge in a hospital setting, and the physician audience disengaged from the conversation and showed disassociated body language during the session. Additionally, anecdotal feedback from physician participants conveyed that the facilitator did not connect information to their environment, and therefore the content did not relate to them. Teaching outside of one's comfort zone and within an unknown culture is a significant challenge, stressing a need for training facilitators who have taught a range of audiences and providing sufficient support while facilitators prepare to teach.

Other hurdles were minor and sometimes humorous. The original module on creating safe spaces employed some yoga practices, but physicians do not normally work in yoga-friendly clothing, and this created some limitations during active learning exercises. More importantly, some active learning practices, such as paired activities or physical movements, may be outside of a participant's comfort zone, and proper respect for this must be considered by the facilitator.

Our experiences revealed 2 crucial aspects of facilitation: First, an educator-facilitator who knows the course content thoroughly and who has been successful in delivering ECTEEP content to a physician audience should be available during program implementation to train and monitor facilitators and to provide feedback to facilitators for program quality improvement. Second, a strong initiative to train medical professionals in educational theory and techniques to serve as facilitators should be a top priority. Using physician facilitators creates some unique challenges, such as emergency clinical situations that may arise and conflict with scheduled sessions; however, the credibility and rapport that expert physician facilitators bring to the ECTEEP is valuable. Currently, 2 of the 5 modules in our program are taught by physician facilitators, and the other 3 are taught by instructional designers who have a personal rapport with many of the physicians at the institution. We have found that whether the instructor is a non-medical guest facilitator, an in-house instructional design specialist, or a physician, the audience responds best to instructors who can, through effective active learning modeling, convey the relevance of the topics to the clinical setting.

Adding Value—The Path to Institutional Endorsement

Physicians who attend any ECTEEP session receive CME credit, since the program aligns with ACGME requirements for professional development in teaching. As an added value, participants can opt to pursue a professional endorsement by completing the 5 modules within 2 years, being observed at least 1 time by an instructional designer while teaching in a clinical situation, and having at least 1 feedback/mentorship

session with the instructional designer based on the clinical observation. We felt that this option would encourage physicians to seek feedback within a real-world situation. For residents and fellows who are considering a teaching career, the endorsement is a tangible step in that direction.

As of the writing of this article, at least 25 physicians have received the full ECTEEP endorsement, and the informal feedback we have received on the program has been gratifying. Physicians have shared their experiences of the ECTEEP with their trainees, which has kept interest in the program growing. We have had full attendance for every offering at our institution so far, and the instructional design team is scrambling to keep up with course offerings while also performing iterative course improvement. The COVID-19 pandemic forced us to offer the ECTEEP online in 2020 and part of 2021, and implementing the program online in a way that retains an interactive atmosphere has been challenging, but surprisingly successful.[51] Endorsement recipients have spoken highly about the ECTEEP to their colleagues at institutions nationwide, and we have received multiple requests from institutions that would like to implement their own ECTEEP. We are now in the process of designing an advanced ECTEEP after having had multiple requests, and we are happy to share specific methods and resources to augment the general overview of the program illustrated in the Figures and Table.

Workflow Requirements

After 2 pilot and 16 official program offerings, we now have what we believe is a feasible, sustainable, and highly regarded program. Although it is hard to give an exact quantification of the time, person-power, and expertise needed for program implementation, we would give the following rough estimate. For development of the program, 1 full-time PhD-level instructional designer spent several months creating the program, which included consultations with at least 5 physicians and 4 or 5 other educational experts. This represents a high initial investment of time and expertise. Now that the program is up and running, we require at least 1 or 2 facilitators per the 5 modules (average 7-10 faculty total) who conduct 2-hour sessions from 1 to 3 times per academic year. Running the program also requires the assistance of 2 administrators.

Facilitators must prepare for teaching, and preparing facilitators is the most time-intensive aspect of the ECTEEP. Each facilitator is trained individually in consultation with an in-house educational expert, with ongoing revision and feedback, which could require 12 to 30 hours of training and preparation time, depending on the facilitator's experience. Facilitators must have attended the program, have demonstrated skill in teaching in the clinic, and show a strong commitment to helping disseminate and improve the program. Educational experts ensure that would-be facilitators gain knowledge of pedagogical methods, are able to conduct the central activities of the module, and generally have the basic competencies to establish an effective and positive learning experience.

Facilitators from different disciplines may emphasize certain key aspects of the modules that are more relevant to their field, and this may lead to extra preparation time in consultation with program developers. For example, an anesthesiologist facilitating the Mentorship and Coaching module to anesthesiology residents may use personal anecdotes about how they have used coaching tools during a difficult procedure, emphasizing how to engage others during a coaching conversation; whereas an internal medicine facilitator might focus more on active listening skills and how to ask open-ended questions. Thus, a successful program requires a high level of expertise and major time commitments on the part of educational experts and clinical facilitators, as well as a great deal of flexibility and good humor.

The Perennial Challenge of Time and Support

Lastly, we note that the modules are each only 2 hours long, resulting in a 10-hour commitment to complete all courses and 2 to 3 additional hours for optional observation and feedback. It is obviously impossible to fully and deeply cover every teaching method within such a short amount of time. Additionally, although the courses were designed in conjunction with physicians, the fact that audiences are multi-disciplinary means that not all clinically relevant content will be specifically relevant to everyone. In course evaluations, requests for even more clinical examples and for more opportunities to practice are made. However, physicians face enormous time constraints while juggling commitments to patients, meetings, research, professional development, and personal lives, and we believe that the 10-hour core ECTEEP covers an adequate range of teaching methods that physicians can choose from to adapt to their unique teaching needs. Developing discipline-specific modules is one way to handle the need for more clinically centered activities, but again, the issue of time and expertise are needed for this next phase of the project.

When we developed ECTEEP we did not have a full research plan in mind, and so evaluation methods were not developed to gather generalizable knowledge. However, quality improvement surveys given after each module show a few trends. First, participants often comment on how they appreciate the ability of physician instructors to convey real-world anecdotes and experiences. Second, when sharing what they found most helpful/relevant/enjoyable about the classes, participants often detail specific activities and tools that they learned and highlight an appreciation for the interactive nature of the activities. Lastly, when queried about whether they learned anything about themselves as educators, participants provide a wide range of insights, such as recognizing behaviors they were unaware of and remarking on areas they would like to improve. A qualitative study to explore how physicians who have received full ECTEEP endorsement have implemented the training and what they value most about it is being planned.

We would be remiss by not pointing out that this program was made possible by substantial institutional support, and lack of institutional support is a major barrier to providing teaching improvement resources to physicians.[8] Leaders who believe that clinical teaching can be improved through explicit training and support financing and personnel for this endeavor are critical. We hope that this basic outline of our program and the lessons learned will inspire other institutions to create similar programs. Ultimately, helping physicians become more skilled, confident, and satisfied in their teaching abilities will not only contribute to high-quality medical training, but should also translate into optimal patient care.

Key Take-home Messages for Establishing Clinician–Teacher Development Initiatives

Course Content:

- All teaching strategies and course content must be applicable within physician teaching encounters (ie, must be medically relevant and feasible in the clinic).
- The physician perspective must be included within all course content; physicians must see themselves represented realistically within the courses.
- Designing medical relevance into course content requires input from physicians and expertise from multiple medical disciplines.
- Courses must include time for practice and application and a takeaway tool or resource that can be implemented in medical practice.
- A lead program coordinator who knows all the course content and who can fill in for any module keeps the program cohesive and prevents course disruptions due to instructor scheduling problems.
- Optional observations in the clinic with trained feedback experts is one way that physicians can cement learning.

Course facilitation:

- Facilitators and physician participants should engage in learning interactively throughout the course.
- Having clinical faculty and physician trainees (residents and fellows) participate in the course together is a way to build connection and a team ethic regarding learning and teaching.
- Blocking protected time from the clinic for residents and fellows helps ensure participation.
- Training outside educational experts on the medical facets of the content and aspects of medical culture is crucial and difficult.
- Training physicians to be course facilitators is the best way to promote credibility and engagement, and this process requires a high level of expertise and time investment.
- Modeling behavior is central to the program. Facilitators must be able to demonstrate how to implement each teaching method with a participant.
- Group discussion about how learners have dealt with module topics generates enthusiasm and participation.

ORCID iD

Karla D Passalacqua (iD) https://orcid.org/0000-0002-2672-3261

REFERENCES

1. ACGME. ACGME common program requirements (residency). Published 2020. Accessed April 30, 2020. https://www.acgme.org/Portals/0/PFAssets/ProgramRequirements/CPRResidency2020.pdf
2. Hafler JP. Residents as teachers: a process for training and development. *J Nutr*. 2003;133:544S-546S.
3. Morrison EH, Friedland JA, Boker J, Rucker L, Hollingshead J, Murata P. Residents-as-teachers training in U.S. residency programs and offices of graduate medical education. *Acad Med*. 2001;76(10 Suppl): S1-S4.
4. Elmberger A, Björck E, Liljedahl M, Nieminen J, Bolander Laksov K. Contradictions in clinical teachers' engagement in educational development: an activity theory analysis. *Adv Health Sci Educ Theory Pract*. 2019;24:125-140.
5. Cantillon P, D'Eath M, De Grave W, Dornan T. How do clinicians become teachers? A communities of practice perspective. *Adv Health Sci Educ Theory Pract*. 2016;21:991-1008.
6. Cantillon P, Dornan T, De Grave W. Becoming a clinical teacher: identity formation in context. *Acad Med*. 2019;94:1610-1618.
7. Skeff KM, Campbell M, Stratos G, Jones HW, Cooke M. Assessment by attending physicians of a seminar method to improve clinical teaching. *J Med Educ*. 1984;59:944-950.
8. Skeff KM, Stratos GA, Mygdal W, et al. Faculty development. A resource for clinical teachers. *J Gen Intern Med*. 1997;12:S56-S63.
9. Skeff KM, Stratos GA, Mygdal WK, et al. Clinical teaching improvement: past and future for faculty development. *Fam Med*. 1997;29:252-257.
10. Steinert Y, Mann K, Anderson B, et al. A systematic review of faculty development initiatives designed to enhance teaching effectiveness: a 10-year update: BEME guide no. 40. *Med Teach*. 2016;38:769-786.
11. Daily JA. The quest to become a master teacher: one Cardiologist's story and recommendations for others. *J Am Coll Cardiol*. 2016;68:2382-2384.
12. Knowles MS. *Andragogy in Action*. 1st ed. Jossey-Bass; 1984.
13. Steinert Y, Mann K, Centeno A, et al. A systematic review of faculty development initiatives designed to improve teaching effectiveness in medical education: BEME guide no. 8. *Med Teach*. 2006;28:497-526.
14. Skeff KM, Stratos G, Campbell M, Cooke M, Jones HW. Evaluation of the seminar method to improve clinical teaching. *J Gen Intern Med*. 1986;1:315-322.
15. Mews J. *Leading Through Andragogy*. College & University; 2020.
16. Danielson C. *Enhancing Professional Practice: A Framework for Teaching*. Association for Supervision and Curriculum Development; 1996.
17. Danielson C. *The Handbook for Enhancing Professional practice: using the framework for teaching in your school*. Association for Supervision and Curriculum Development; 2008.
18. Danielson C, Axtell D. *Implementing the Framework for Teaching in Enhancing Professional Practice*. ASCD; 2009.
19. Philpott J, Batty H. Learning best together: social constructivism and global partnerships in medical education. *Med Educ*. 2009;43:923-924.
20. University of Maryland Medical Center. Teaching skills – residents as teacher – ACGME competencies. Accessed December 2, 2020. https://www.umms.org/ummc/pros/gme/acgme-competencies/practice-based-learning/teaching-skills-residents-teachers
21. Misch DA. Andragogy and medical education: are medical students internally motivated to learn? *Adv Health Sci Educ Theory Pract*. 2002;7:153-160.
22. Rogers J. Andragogy: a medical student's response. *Clin Teach*. 2016;13:231-232.
23. Hausfather SJ. Vygotsky and schooling: creating a social context for learning. *Action Teach Educ*. 1996;18:1-10.
24. John-Steiner V, Mahn H. Sociocultural approaches to learning and development: a Vygotskian framework. *Educ Psychol*. 1996;31:191-206.
25. Kahlke RM, McConnell MM, Wisener KM, Eva KW. The disconnect between knowing and doing in health professions education and practice. *Adv Health Sci Educ Theory Pract*. 2020;25:227-240.
26. van der Zwet J, Dornan T, Teunissen PW, de Jonge LPJWM, Scherpbier AJJA. Making sense of how physician preceptors interact with medical students: discourses of dialogue, good medical practice, and relationship trajectories. *Adv Health Sci Educ Theory Pract*. 2014;19:85-98.
27. Appleton JV, King L. Journeying from the philosophical contemplation of constructivism to the methodological pragmatics of health services research. *J Adv Nurs*. 2002;40:641-648.
28. Lauridsen EI, Higginbottom G. The roots and development of constructivist grounded theory. *Nurse Res*. 2014;21:8-13.
29. Mills J, Bonner A, Francis K. Adopting a constructivist approach to grounded theory: implications for research design. *Int J Nurs Pract*. 2006;12:8-13.
30. Rieger KL. Discriminating among grounded theory approaches. *Nurs Inq*. 2019;26:e12261.
31. Thomas A, Menon A, Boruff J, Rodriguez AM, Ahmed S. Applications of social constructivist learning theories in knowledge translation for healthcare professionals: a scoping review. *Implement Sci*. 2014;9:54.
32. Clark KR. Learning theories: cognitivism. *Radiol Technol*. 2018;90:176-179.
33. Leigland S. On cognitivism and behaviorism. *Am Psychol*. 2000;55:273-274.
34. McKenna G. Learning theories made easy: cognitivism. *Nurs Stand*. 1995;9:25-28.
35. Shaker D. Cognitivism and psychomotor skills in surgical training: from theory to practice. *Internet J Med Educ*. 2018;9:253-254.
36. Page SE. *The Difference How the Power of Diversity Creates Better Groups, Firms, Schools, and Societies*. Princeton University Press; 2008.
37. Chen F, Lui AM, Martinelli SM. A systematic review of the effectiveness of flipped classrooms in medical education. *Med Educ*. 2017;51:585-597.
38. Garrison E, Colin S, Lemberger O, Lugod M. Interactive learning for nurses through gamification. *J Nurs Adm*. 2021;51:95-100.
39. Kahoot. Kahoot! Accessed February 10, 2021. https://kahoot.com/.
40. Martinelli SM, Chen F, DiLorenzo AN, et al. Results of a flipped classroom teaching approach in anesthesiology residents. *J Grad Med Educ*. 2017;9:485-490.
41. McCoy L, Pettit RK, Kellar C, Morgan C. Tracking active learning in the medical school curriculum: a learning-centered approach. *J Med Educ Curric Dev*. 2018;5:238212051876513.
42. Pluta WJ, Richards BF, Mutnick A. PBL and beyond: trends in collaborative learning. *Teach Learn Med*. 2013;25:S9-S16.
43. van Gaalen AEJ, Brouwer J, Schönrock-Adema J, Bouwkamp-Timmer T, Jaarsma ADC, Georgiadis JR. Gamification of health professions education: a systematic review. *Adv Health Sci Educ Theory Pract*. 2021;26:683-711.
44. Ende J. Feedback in clinical medical education. *JAMA*. 1983;250:777-781.
45. Miles A, Ginsburg S, Sibbald M, Tavares W, Watling C, Stroud L. Feedback from health professionals in postgraduate medical education: influence of interprofessional relationship, identity and power. *Med Educ*. 2021;55:518-529.
46. van de Ridder JMM, McGaghie WC, Stokking KM, ten Cate OTJ. Variables that affect the process and outcome of feedback, relevant for medical training: a meta-review. *Med Educ*. 2015;49:658-673.
47. Van De Ridder JMM, Stokking KM, McGaghie WC, Ten Cate OTJ. What is feedback in clinical education? *Med Educ*. 2008;42:189-197.
48. International Coaching Federation. All things coaching. Accessed February 10, 2021. https://coachingfederation.org/about.
49. Dictionary MW. Mentor definition. Accessed February 10, 2021. https://www.merriam-webster.com/dictionary/mentor.
50. Skeff KM, Stratos GA, Berman J, Bergen MR. Improving clinical teaching. Evaluation of a national dissemination program. *Arch Intern Med*. 1992;152:1156-1161.
51. Gordon M, Patricio M, Horne L, et al. Developments in medical education in response to the COVID-19 pandemic: a rapid BEME systematic review: BEME guide no. 63. *Med Teach*. 2020;42:1202-1215.