

Competency-based faculty development: applying transformations from lessons learned in competency-based medical education

Perfectionnement du corps professoral fondé sur les compétences : évolutions tirées des enseignements de la formation médicale fondée sur les compétences

Karen W Schultz,¹ Klodiana Kolomitro,¹ Sudha Koppula,² Cheri H Bethune^{3,4}

¹Queen's University, Ontario, Canada; ²Department of Family Medicine, University of Alberta, Edmonton, Alberta; ³Northern Ontario School of Medicine, Ontario, Canada; ⁴College of Family Physicians of Canada, Ontario, Canada

Correspondence to: Dr. Karen Schultz, 70 Barrie St., Kingston, Ontario, K7L 3N6; phone 613-533-2543; fax 613-533-2132; email: kws@queensu.ca

Published ahead of issue: Aug 2, 2023; CMEJ 2023 Available at <https://doi.org/10.36834/cmej.75768>

© 2023 Schultz, Kolomitro, Koppula, Bethune; licensee Synergies Partners. This is an Open Journal Systems article distributed under the terms of the Creative Commons Attribution License. (<https://creativecommons.org/licenses/by-nc-nd/4.0>) which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is cited.

Abstract

Faculty development in medical education is often delivered in an ad hoc manner instead of being a deliberately sequenced program matched to data-informed individual needs. In this article, the authors, all with extensive experience in Faculty Development (FD), present a competency-based faculty development (CBFD) framework envisioned to enhance the impact of FD. Steps and principles in the CBFD framework reflect the lessons learned from competency-based medical education (CBME) with its foundational goal to better train physicians to meet societal needs. The authors see CBFD as a similar framework, this one to better train faculty to meet educational needs. CBFD core elements include: articulated competencies for the varied educational roles faculty fulfill, deliberately designed curricula structured to build those competencies, and an assessment program and process to support individualized faculty learning and professional growth. The framework incorporates ideas about where and how CBFD should be delivered, the use of coaching to promote reflection and identity formation and the creation of communities of learning. As with CBME, the CBFD framework has included the important considerations of change management, including broad stakeholder engagement, continuous quality improvement and scholarship. The authors have provided examples from the literature as well as challenges and considerations for each step.

Résumé

Dans l'enseignement médical, le perfectionnement du corps professoral se fait souvent de façon ad hoc et non dans le cadre d'un programme structuré en fonction des besoins individuels définis sur la base de données. Dans cet article, les autrices, qui ont toutes une vaste expérience en matière de perfectionnement du corps professoral (PCP), présentent un cadre pour le perfectionnement fondé sur les compétences (PCPFC) visant à renforcer les effets du PCP. Les étapes et les principes de ce cadre reflètent les enseignements tirés de la formation médicale fondée sur les compétences (FMFC), dont l'objectif fondamental est de former les médecins de façon à ce qu'ils puissent répondre aux besoins de la société. De manière analogue, le cadre PCPFC viserait à mieux former le corps professoral pour qu'il puisse répondre aux besoins éducatifs. Les éléments centraux du cadre comprennent la définition des compétences pour chacun des rôles que les enseignants remplissent, la création de programmes de formation structurés et axés sur le développement de ces compétences et l'élaboration d'un programme d'évaluation ainsi qu'un processus pour soutenir de manière individualisée l'apprentissage et la croissance professionnelle des enseignants. Le cadre présente des idées sur les modalités des formations de PCPFC, sur l'environnement dans lequel elles interviennent, sur l'utilisation du coaching pour promouvoir la réflexion et la construction d'identité et sur la création de communautés d'apprentissage. Tout comme la FMFC, le cadre du PCPFC répond aux importants enjeux liés à la gestion du changement, y compris l'engagement des parties prenantes, l'amélioration continue de la qualité et la recherche. Les autrices proposent des exemples tirés de la littérature scientifique et passent en revue les défis et les points importants à considérer pour chaque étape.

Introduction

Faculty who are competent to carry out their educational roles are a cornerstone of any effective education system. Faculty are being asked to do more now in their educational roles than in the past. Competency-based medical education (CBME) has new or enhanced education roles (e.g. academic coaches, competency committees) and needs (e.g. increased emphasis on work-place based assessment with fulsome feedback both verbal and written). Some of these needs are not new (e.g. the ability to give good feedback), yet despite existing faculty development (FD) faculty may still struggle with their roles.¹ This highlights the need for robust, holistic faculty development designed to develop faculty competence. Competency-based medical education (CBME) is a recent strategic educational approach designed to optimize clinical competency development in medical trainees—are there lessons to be learned from CBME as we reimagine faculty development?

CBME was envisioned and developed to improve patient care by ensuring trainees are competent upon graduation.² CBME implementation necessitated a multi-faceted approach that started with articulating the competencies necessary to meet patient and societal health care needs. Principles relating to curriculum planning, assessment, and program evaluation were then applied to support programs achieving these desired competency outcomes. Significant effort was also put into thinking broadly about the development of medical expertise using lessons from education and psychology literature about educating adult learners to optimize their growth and development. This CBME approach has highlighted potential new approaches to the design and delivery of faculty development (FD).

With a few notable exceptions,³ faculty development has tended to be more opportunistic or ad hoc. Faculty development often addresses the immediate day-to-day needs (or interests) of faculty members and departments, while sometimes losing sight of a strategic approach to enable faculty development to shape change (or be the agent of change) rather than follow change. The lack of a focused faculty development approach, as well as resource and/or time constraints have often resulted in faculty development either being dismissed, minimized, or leaving FD curriculum to drive itself.^{4,5} Establishing a strong approach to faculty development that facilitates meaningful change (at an individual and institutional level) and a culture of innovation and improvement is critical.

Several scholars have attempted to articulate what such an approach could look like, including the competencies needed by faculty⁶⁻¹⁰ and some initial discussions about assessment of faculty.¹¹ A recent review about FD in CBME identified gaps in FD, including the need to develop assessment processes for faculty and strategies to provide feedback to faculty on their teaching.⁵ What would be helpful in furthering these discussions about optimizing FD is a holistic framework to conceptualize FD as an integrated system, as has been done with CBME.¹² Just as CBME was designed to optimize trainees' development to become competent physicians to meet patient and societal needs by having a holistic approach,¹³ so too could faculty development (FD) be similarly envisioned to be a system deliberately designed to best educate faculty to meet learner and societal needs—so called competency-based faculty development (CBFD). In addition to articulating curriculum and assessment, CBFD would need to take into consideration the most effective pedagogical approaches for faculty to learn new or refine existing competencies. It would go beyond knowledge and skill acquisition and support behavioural change (i.e. aim for the top of Miller's pyramid¹⁴). To do so it would need to be seen as "relevant, accessible, desirable, feasible and valued by the institution"¹⁵ and provide the opportunity for practice, troubleshooting, feedback, reflection, and support.^{15,16}

This article presents just such a comprehensive CBFD framework in the hopes of tying together disparate elements of FD into a system that would enhance the effectiveness of FD.

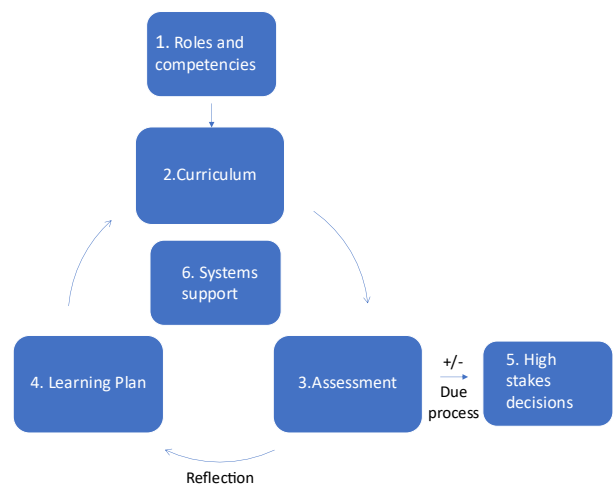


Figure 1. Competency-based faculty development (CBFD) holistic framework: A 6 step approach for a deliberate program of faculty development.

Table 1. Competency-based medical education implementation steps with application to Competency-based faculty development

Steps from Figure 1	CBME lessons learned	Potential applications to CBFD
Determine needs and competences to meet those needs.	Broad stakeholder input about the needs the educational endeavour is being designed for (e.g. for CBME determination of patient and societal needs involved asking patients, health care providers, regulatory authorities, ministry of health what physicians needed to be able to do.) Needs are then broken down into the knowledge, skills and attitudes required by above stakeholder groups. Developmental stages (benchmarks) and behaviourally specific standards for each stage is articulated to create transparent expectations	Broad stakeholder input into what educational roles faculty are expected to carry out (e.g from learners, educational leaders, accrediting bodies etc), taking into consideration local context Needs analyzed for knowledge, skills and attitudes required for carrying out each educational role. Where relevant, stages are determined and standards of expected performance articulated.
Curriculum to build competencies	Deliberate mapping of curriculum to support competency development with elimination of activities with little impact on competency development. Consideration of best educational practices for adult learners—e.g. activities are seen as relevant, experiential with a spiral curriculum to build skills from beginner to expert level Consideration of different types of curriculum to support all levels of Miller's pyramid from knowledge acquisition through to provision of care in the workplace. Consideration of available resources and contexts. More recently, consideration of curriculum to deliberately support identity formation and preparedness for practice.	Curriculum determined for each role. Curriculum designed for effectiveness—experiential, iterative (ideally based on previous assessment data directing next faculty development experience(s)) Deliberate attention to building faculty's identity from clinician to clinician-educator. Curriculum is accessible taking into consideration multiple demands on faculty time—a variety and choice of FD from synchronous to asynchronous, individual to group.
Assessment for and as learning (low stakes assessment)	A program of assessment fit for purpose=Assessment at all levels of Miller's pyramid with a focus on assessment at the does level (e.g. work-place based assessment) Deliberate use of effective feedback to support learning. Deliberate use of scaffolded self-reflection to support assessment as learning	Attention paid to how to engage faculty with this, including assessment being perceived as low stakes and relevant. Assessment at the 'Does' level of Miller's pyramid carrying out their educational role will capture assessment at the most authentic performance of that role(s). This will require credible assessors with time to do this role. Feedback and self-reflection on what was done well and what is needed for future growth should be built into all assessment strategies.
Assessment of learning (high stakes assessment)	Work place based assessment requires multiple assessors assessing over time and in different contexts to ensure trustworthiness of the data. High stakes assessment follows due process: transparency of expected standards of performance and assessment strategies as well as how, who and when decisions will be made with opportunities for feedback, growth and input by the person being assessed before a final decision is made. High stakes summative decisions made by a well functioning committee, not an individual	This may not be an element of Faculty Assessment but if it is it should align with best practices for due process outlined in CBME.
Individualized learning plans	Assessment for and of learning is tied to developing an individualized learning plan done in collaboration between the learner and competence coach to support development to next stage of growth. Learning plan is deliberately tied to curriculum to support that development.	Faculty create individualized learning plans for each role to support growth to next stage of development. Areas for growth should be data informed, with a mechanism to corroborate self-assessment (e.g. a coach, comparison to best practices) and an available choice of curriculum to fill in gaps.
Systems support	IT platform for collection and display of assessment data. Each learner has a coach to calibrate self assessment, discuss identity formation, challenges etc Resources for new roles and outcomes (competence coaches, competence committees, individualized learning plans) Evaluation of the system for fidelity of implementation and effectiveness using a CQI framework, ideally tied to educational scholarship	IT platform for faculty assessment data. Competence coach/mentor for faculty to scaffold self-reflection and discuss identity formation. Support for potential new roles: faculty coach, FD lead to oversee and evaluate the program of FD, for fidelity of implementation and effectiveness using a CQI framework, ideally tied to educational scholarship

There are six steps to the Cbfd framework namely: 1. Articulate the multiple roles and competencies needed by faculty, 2. Design curriculum that is longitudinal, iterative, pragmatic and embraces identity formation, 3. Implement low-stakes assessment (assessment *for* and *as* learning), 4. Link assessment to a learning plan for ongoing iterative development, 5. Embed fair high-stakes assessment (assessment *of* learning) processes, and 6. Apply a systems approach for program monitoring. Below are elements to consider in each of the steps and potential challenges and considerations.

Step 1: Articulate the multiple roles and competencies needed by faculty

In addition to their clinical role, faculty have other roles including being teachers, leaders, researchers/scholars, and administrators. There are unique competencies required for these myriad roles. A first step in Cbfd would be to identify all the different faculty roles and define their attendant competencies. There are already some broad-based faculty frameworks that lay an excellent foundation for this step.⁶⁻⁸ For example, within the frontline teacher role, critical competencies in the CBME context include knowledge about the theory and practice of CBME, use of direct observation, assessment using benchmarks, feedback skills, mentoring and coaching, including facilitating the development of self-assessment and self-reflection.⁵ Within leader, researcher/scholar and administrator roles, competencies related to change management, program evaluation, and policy development are crucial. Identified competencies would inform the content for a comprehensive curriculum for competency-based faculty development (Cbfd).

Challenges and additional considerations. Faculty competency frameworks and definitions about roles have been created in several countries, including the UK, USA, and Canada.⁶⁻⁸ Different contexts, resources and limitations will likely require their adaption for other settings. As we articulate or adopt competencies, we need to be mindful of their source of origin, and the transferability of those competencies to different contexts. In addition, creation of local frameworks and competencies can be an important step in engagement and should not be underestimated.

Step 2: Design curriculum

There are three intersecting aspects with curriculum design—what is the content and design needed for competency development and identity formation and how to make FD accessible.

a. Supporting competency development

As with CBME, developing Cbfd curriculum will mean taking the various role competencies articulated in step one and deliberately mapping curriculum to those. A deliberate curriculum would also require a comprehensive longitudinal, iterative design. It would need to consider not only what competencies to be included but also how they should be sequenced. Some faculty competencies would need to be acquired in a step-wise manner, for example providing impactful feedback could start with learning to provide feedback to an engaged learner and progress to providing constructive/“negative” feedback to a defensive learner. Having a progressive pathway for competency development also provides flexibility for different existing skill levels of faculty.

In addition to mapping, it would be critical to think about how curriculum is delivered to optimize its effectiveness. Would it be lecture based, simulation, or in the workplace? FD has typically been delivered away from the teaching setting. Just as CBME has highlighted the importance of work-place based feedback and assessment so too would there be value in delivering some FD in-situ where the educational role (e.g. teaching) is occurring.¹⁷ Embedding FD in the workplace provides an authentic opportunity for practice, troubleshooting, feedback, reflection, and support. These elements of feedback, reflection and support also point to the value of FD being delivered within a community of practice, ideally including a coach. A longitudinal relationship with a trusted coach to provide that feedback, reflection and support has the potential to greatly enhance Cbfd.^{15,16}

b. Supporting identity formation

Another lesson learned from CBME is the need to think beyond the competencies to considering the identity and mindset required to do the job well. Using the analogy of a mosaic picture, it is important to develop not only the knowledge and skills to carry out the job (e.g. the tiles in the mosaic), but also the characteristics that support safe, effective application of that knowledge and skills (e.g. the mortar and grout holding the tiles in place and filling in between them). In the CBME clinical realm, that mortar and grout is, among other things, the capacity to self-

reflect, adapt, deal with uncertainty and develop identity as a physician. For some faculty an important aspect of their development will be expanding their professional identity.¹⁸ Most medical educators are first and foremost trained to be clinicians. Embracing an expanded identity of being a clinician-educator and/or clinician-scholar is something that Cbfd should consider deliberately fostering to enhance the efficacy of their faculty.¹⁹

c. Curriculum delivery

The final consideration for a Cbfd curriculum is how and where to best deliver FD to facilitate participation. FD must be pragmatic. Busy clinicians with heavy clinical loads, will often need to prioritize clinical work over FD. Many faculty will live in communities distant from academic teaching centers. These practical demands mean that a menu of options for FD rather than a single approach is likely to be more effective at engaging more faculty. That menu could range from formal to informal offerings, both of which may be offered to individuals or groups. They may be synchronous or asynchronous in nature.¹⁶ Consideration should be given, no matter which modality, to building a social community around FD wherein participants can support and learn from each other.²⁰ In considering menus of options, the pandemic by necessity has had the silver-lining of spawning vastly improved online learning platforms and interactive communities of practice that broaden FD options. Given the common FD needs across institutions, sharing online learning resources makes sense. A number of open-access resources already exist (e.g. MedEd portal²¹) and others are being added on a continual basis.

Challenges and additional considerations. One of the biggest challenges for FD is faculty buy-in. As has been noted by many, the committed come, others (arguably perhaps those most in need of FD) do not. In addition to fostering an expanded self-identity from clinician to clinician-educator/scholar, which is likely to increase faculty engagement in FD, it can be helpful to consider the elements of change management models when trying to increase faculty buy-in. Some of these steps could include educating about the importance of engaging; having local champions; actively listening and responding to concerns; making change as easy as possible and celebrating “small wins”.²² It would also be helpful to think about how to enhance intrinsic and extrinsic motivation to increase uptake of FD. Intrinsic motivation can be bolstered by the instilling a sense of purpose and self-efficacy and being part of a community.¹⁵ Explicit requirements may help with

extrinsic motivation.⁷ Some institutions have made FD a requirement for hiring and ongoing employment. Others do not feel they have the leverage to insist that faculty engage in ongoing FD particularly when many of their teachers are in the community with minimum compensation for their teaching activities. Systems considerations in such cases will be important—could there be an increase in the tangible (e.g. salary, protected time to teach) benefits of working in an academic setting and/or the more intangible benefits (e.g. awards, public acknowledgement) or both?

Step 3: Implement low stakes (for learning) assessment

An important part of optimizing and reinforcing competency development is assessment. Traditionally, once out of formal training, faculty are provided with very little structured, deliberate, and meaningful assessment to promote their ongoing learning. They instead rely on self-assessment of their competencies and self-planning to address areas needed for improvement. Given the pitfalls of self-assessment²³, relying predominantly on this does not optimize the potential for faculty development. There are golden opportunities for Cbfd to learn from CBME when it comes to optimizing the impact of assessment *for* and *as* learning by incorporating best practices for low-stakes assessment (low stakes assessment being that designed to predominantly provide feedback for future growth).

If we apply to Cbfd the same system elements that support optimal use of assessment in CBME, these would include:

- a. A program of assessment utilizing a variety of different modalities of assessment, each one best suited to the competency being assessed. Using the previous feedback example, an example of assessing faculty feedback-giving skills might use two assessment methods. The first source could be trainees’ assessment of how helpful that faculty’s feedback was for their learning. A second source could be from that faculty self-assessing their written feedback skills through auditing a random selection of their submitted assessments of learners and comparing their written narratives to a template of best practices.

Data gathered would need to be relevant to the role being developed, tied to the identified competencies, and come from credible sources.

- b. Assessment being done by relevant stakeholders, at multiple points in time. Electronic accessible assessment forms would help this by allowing multiple

users in different locations access to assessment tools, be it on an app or desktop. The data would also then be stored in one place. This system would need to take into consideration confidentiality (both for the faculty and the stakeholders providing feedback).

- c. A means of interpreting data and using it for future growth. The electronic system storing the data would need to be intuitive and easy-to-use. It would need to not only collect the data but collate it, such that those accessing the data could use their time and cognitive load for interpreting the data rather than organizing it. There would need to be articulated standards of performance for each competency to gauge performance.
- d. Reflection being built into the assessment process (so called assessment as learning²⁴). Reflection could be done on an individual basis but guided, using a template to compare personal practice with published best practice and including ideas for improvement. Some faculty portfolios are being developed to allow for such personalized reflection to occur.²⁵ Optimally there would also be competency coaches/academic advisors to guide and support that reflection. Use of peer coaching (in person or through an online community of practice) has great potential to add to the impact of FD. Coaching could also foster mentorship such as broader developmental goals of professional identity growth.¹⁹ It is however a high-cost strategy so would have to be used judiciously.
- e. Institutional expectations for faculty to engage in both continuing medical education and FD will be important as will institutional buy-in for the use of data to inform faculty development.²⁶ There is an increasing push by paymasters and institutions to use clinical data to inform continuing medical education. The same expectation could be put in place for faculty performance data to inform their personal FD programs.^{27,28}

Challenges and considerations. This is arguably the most difficult component of CBFDF to actualize for a variety of reasons. Up until now faculty assessment has not usually been a part of FD and thus would require a culture change. Some potential challenges include lack of clear benchmarks for faculty roles, attitudinal barriers to assessment, and lack of resources and incentives.

With the widespread adoption of CBME there have been nationally articulated standards. It would make sense for

faculty competencies and benchmarks to also be articulated at the same organizational level. In addition, practicing physicians generally have been reluctant to be assessed for a variety of reasons. Assessment has not been a usual practice after residency. Most practicing physicians were trained in a time when assessment was generally high-stakes with an associated feeling of vulnerability. It was also often the case that individualized FD has been seen as remedial. Acknowledging these factors, normalizing and reframing assessment in FD as a growth opportunity will be an important step. Lastly, there are resource challenges associated with assessment in FD. Technical support for electronic faculty portfolios is one cost. Having a system to develop credible, competent, available FD coaches¹⁵ (a new role unto itself) and compensate these coaches for their role (e.g. financially and/or with protected time etc.) is another. In addition, unlike for trainees where a big incentive to engage in CBME is graduation from their program, faculty may need incentives to engage in CBFDF. Incentive/celebration can be challenging to build in. Accreditation standards and diversified promotion criteria may be a driver for this. Creating supportive communities of practice may be another strategy.²⁰

Step 4: Link assessment to a learning plan for ongoing iterative development

One of the principles of CBME is to individualize and optimize each trainees' developmental path. This is achieved by coaching (with guidance around self-reflection) to intermittently co-create a learning plan, based on assessed performance and with a clear goal(s) in mind. The purpose is to push each trainee into their zone of proximal development.²⁹ CBFDF should do the same. This would require in addition to the previously mentioned scaffolded self-reflection, a process to support creation of a learning plan and a way to connect that with available resources to address identified gaps or areas for future development.

Challenges and consideration. Where areas for ongoing growth have been identified, there have not necessarily been resources, or at least easily locatable resources, to address those growth needs. To identify gaps and not provide a way to fill those in would have an unintended and undesirable consequence of demoralization or demotivation. Having a bank of resources tied to competencies will be an important early CBFDF systems step. Sharing resources across institutions could be an

effective way to addressing growth needs and building collective knowledge.

Step 5: Embed fair high-stakes assessment processes

CBFD assessment could start and stay at the formative low-stakes assessment and personalized learning plan steps and iteratively build from there. However, for some faculty, depending on career goals and institutional regulations for hiring, promotion and tenure, high-stakes assessment of education roles may come into play. High stakes assessment is a judgment of performance with a potential career impacting outcome. Due process becomes a key element with such high-stakes outcomes. As with CBME due process in CBFD would require:

- published and accessible behavioural descriptors of competent performance
- multiple sources of credible trustworthy assessment
- a system to impartially look at assessment data for patterns and trajectory
- a way to tie summative decisions to a learning plan and opportunities for iterative improvement
- an expectation to be reassessed should significant gaps be identified
- an appeal system to allow an impartial external body to reassess data and decisions if need be.

To not have this subvert the previous step of low-stakes, for-learning assessment would mean being clear about how assessment will be used, when, and who will have access to it. Consideration would need to be paid to creating a culture of safety and/or a firewall for that formative, low-stakes assessment data to provide a safe space for such assessment to be used to promote learning.

Challenges and considerations. All of the above steps encounter similar challenges and require the same resource as outlined in Step 3.

Step 6: Apply a systems approach.

Like CBME, a systems approach surrounding CBFD will be needed to support and optimize the potential for CBFD.³⁰ These will include institutional financial and personnel commitment, attention to change management principles and a built-in program of quality improvement/quality assurance and scholarship. Just as FD on an individual level requires assessment and iterative growth so too will CBFD require programmatic evaluation and responsive change to improve. Like CBME where (usually anonymized) collated

assessment data of trainees is being used to inform curricular and assessment changes (and in some instances FD offerings), with CBFD faculties' collated assessment data of their development (step 3) could be used to inform FD programs. An excellent built-in quality improvement plan (CQI) for Faculty Developers themselves would also be important in such a systems approach.

Challenges and considerations: All the above recommendations will require time, personnel and financial resources. Advocating for these will be facilitated by a community of FD leaders who champion this pillar of academic institutions. Accreditation standards supporting a CBFD approach may be an important external motivator.

Conclusion

FD is currently at a stage where medical education was prior to the implementation of CBME. Faculty generally do well in their various roles due to high levels of intrinsic motivation and disparate excellent pockets of FD. However, meaningful change requires a coherent and systematic approach to faculty development. Medical education has benefited from developing competencies that focus on educating graduates being able to meet patient and societal needs and building a strong curriculum centered on such competencies while mining the value of assessment for learning. Using those same CBME principles has the potential to improve FD with the downstream effect being enhanced educational knowledge and practices for faculty members leading to even more robust educational systems. The CBFD framework is provided to add to the conversation about that growth and improvement.

Conflicts of Interest: The authors have no conflicts of interest.

Funding: There are no funding sources to declare.

References

1. Kornegay JG, Kraut A, Manthey D, et al. Feedback in medical education: a critical appraisal. *AEM Educ Train*. 2017; 1: 98-109. <https://doi.org/10.1002/aet2.10024>
2. Frank JR, Snell LS, Cate OT, et al. Competency-based medical education: theory to practice. *Med Teach*. 2010;32(8):638-45. <https://doi.org/10.3109/0142159X.2010.501190>
3. Fitzgerald JT, Burkhardt JC, Kasten SJ, et al. Assessment challenges in competency-based education: a case study in health professions education. *Med Teach*. 2016; 38:5: 482-490, <https://doi.org/10.3109/0142159X.2015.1047754>
4. Dath D, Iobst W. The importance of faculty development in the transition to competency-based medical education. *Med*

- Teach.* 2010;32(8):683-6.
<https://doi.org/10.3109/0142159X.2010.500710>
5. Sirianni G, Glover Takahashi S, Myers J. Taking stock of what is known about faculty development in competency-based medical education: a scoping review paper. *Med Teach.* 2020; 42 (8): 909-915.
<https://doi.org/10.1080/0142159X.2020.1763285>
 6. Walsh A, Koppula S, Antao V, et al. Preparing teachers for competency-based medical education: fundamental teaching activities, *Med Teach.* 2018; 40(1): 80-85.
<https://doi.org/10.1080/0142159X.2017.1394998>
 7. Academy of Medical Educators. *Professional standards* (3rd edn, 2014). Cardiff: Academic of Medical Educators. 2014.
 8. Srinivasan M, Li S-TT, Meyers FJ, et al. Teaching as a competency: Competencies for medical educators. *Acad Med:* 2011; 86 (10): 1211-122.
<https://doi.org/10.1097/ACM.0b013e31822c5b9a>
 9. Dewey CM, Jonker G, ten Cate O, Turner E. Entrustable professional activities (EPAs) for teachers in medical education: has the time come? *Med Teach.* 2017; 39 (8): 894-896,
<https://doi.org/10.1080/0142159X.2016.1270447>
 10. Favreau MA, Tewksbury L, Lupi C, Cutrer WB, Jokela JA, Yarris LM. AAMC core entrustable professional activities for entering residency faculty development concept group. Constructing a shared mental model for faculty development for the core entrustable professional activities for entering residency. *Acad Med.* 2017;92(6):759-764.
<https://doi.org/10.1097/ACM.0000000000001511>
 11. Yilmaz Y, Carey R, Chan T, et al. Developing a dashboard for faculty development in competency-based training programs: a design-based research project. *CMEJ.* 2021Sep.15; 12(4):48-64.
<https://doi.org/10.36834/cmej.72067>
 12. Schultz KW, Griffiths J. Implementing competency-based medical education in a postgraduate family medicine residency training program: a stepwise approach, facilitating factors, and processes or steps that would have been helpful. *Acad Med.* 2016; 91 (5): 685-689
<https://doi.org/10.1097/ACM.0000000000001066>
 13. Van Melle E, Frank JR, Holmboe ES, Dagnone D, Stockley D, Sherbino J. International competency-based medical education collaborators. a core components framework for evaluating implementation of competency-based medical education programs. *Acad Med.* 2019 Jul;94(7):1002-1009.
<https://doi.org/10.1097/ACM.0000000000002743>
 14. Miller GE. The assessment of clinical skills/competence/performance. *Acad Med.* 1990;65:S63-S67.
<https://doi.org/10.1097/00001888-199009000-00045>
 15. Orr CJ, Sonnadara RR. Coaching by design: exploring a new approach to faculty development in a competency-based medical education curriculum. *Adv. Med Educ Pract.* 2019; 10: 229-244. <https://doi.org/10.2147/AMEP.S191470>
 16. Steinhart Y. *Faculty development in health professions: a focus on research and practice.* New York; Springer. 2014.
<https://doi.org/10.1007/978-94-007-7612-8>
 17. Schreurs ML, Huvneers W, Dolmans D. Communities of teaching practice in the workplace: evaluation of a faculty development programme. *Med Teach.* 2016; 38 (8): 808-814.
<https://doi.org/10.3109/0142159X.2015.1112892>
 18. Cantillon P, Dornan T, De Grave W. Becoming a clinical teacher: identity formation in context. *Acad Med.* 2019; 94(10):1610-1618. <https://doi.org/10.1097/ACM.0000000000002403>
 19. O'Sullivan PS, Irby DM. Educator identity formation: a faculty development workshop. *MedEdPORTAL.* 2021 Jan 7;17:11070.
https://doi.org/10.15766/mep_2374-8265.11070
 20. de Carvalho-Filho MA, Tio RA, Steinert Y. Twelve tips for implementing a community of practice for faculty development. *Med Teach.* 2020; 42 (2): 143-149.
<https://doi.org/10.1080/0142159X.2018.1552782>
 21. The Association of American Medical Colleges. *MedEd Portal.* <https://www.mededportal.org/>. [Accessed Oct. 27, 2021].
 22. Kotter JP. Leading change: why transformation efforts fail. *Harv Bus Rev.* March/April 1995:110.
 23. Kruger J, Dunning D. Unskilled and unaware of it: how difficulties in recognizing one's own incompetence lead to inflated self-assessments. *J Pers and Soc Psych.* 1999; 77(6): 1121-1134. <https://doi.org/10.1037/0022-3514.77.6.1121>
 24. Dann R. Assessment as learning: blurring the boundaries of assessment and learning for theory, policy and practice. *Assess Ed.* 2014; 21(2): 149-166.
<https://doi.org/10.1080/0969594X.2014.898128>
 25. Foucault ML, Vachon B, Thomas A, Rochette A, Giguère CÉ. Utilisation of an electronic portfolio to engage rehabilitation professionals in continuing professional development: results of a provincial survey. *Disabil Rehabil.* 2018;40(13):1591-1599.
<https://doi.org/10.1080/09638288.2017.1300335>
 26. Fraser, A.B., Stodel, E.J., Jee, R. et al. Preparing anesthesiology faculty for competency-based medical education. *Can J Anesth* 2016; 63: 364-373. <https://doi.org/10.1007/s12630-016-0739-2>
 27. Lockyer J, Burse F, Richardson D, Frank JR, Snell L, Campbell C; ICBME Collaborators. Competency-based medical education and continuing professional development: a conceptualization for change. *Med Teach.* 2017; 39(6):617-622.
<https://doi.org/10.1080/0142159X.2017.1315064>
 28. Sargeant J, Wong BM, Campbell CM. CPD of the future: a partnership between quality improvement and competency-based education. *Med Educ.* 2018 Jan;52(1):125-135.
<https://doi.org/10.1111/medu.13407>
 29. Vygotsky LS. *Mind in society: The development of higher psychological processes* Cambridge, Mass.: Harvard University Press. 1978
 30. Kolomitro K, Hamilton J, Leslie K, et al. Viewing faculty development through an organizational lens: sharing lessons learned. *Med Teach.* 2021; 43(8):894-899.
<https://doi.org/10.1080/0142159X.2021.1931078>