Twelve tips for implementing a community of practice for faculty development

de Carvalho-Filho, Marco Antonio; Tio, René A; Steinert, Yvonne

Title: 12 Tips for Implementing a Community of Practice for Faculty Development

Short title: Communities of Practice for Faculty Development

Marco Antonio de Carvalho-Filho[1,2]; René A. Tio[3,4]; Yvonne Steinert[5]

1 – Emergency Medicine Department, School of Medical Sciences, University of Campinas, São Paulo, Brazil

2 – Faculty Development Task Group - Center for Education Development and Research in Health Professions, University Medical Center Groningen, Groningen, The Netherlands.

3 – Department of Cardiology, Catharina Hospital, Eindhoven, the Netherlands

4 – Department of Educational Development and Research in the Faculty of Health, Medicine and Life Sciences, Maastricht University, The Netherlands

5 – Centre for Medical Education, Faculty of Medicine, McGill University, Montreal, Canada

Corresponding author:

Marco Antonio de Carvalho Filho, MD, PH.D., Internal Medicine Department, School of Medical Sciences, University of Campinas, Rua Tessália Vieira de Camargo, 126. Cidade Universitária Zeferino Vaz. CEP 13083-887 – Campinas, SP, Brasil. Telephone: +55 19 35219112 / + 55 19 996036684 / +31 6 21330898. Email: macarvalhofilho@gmail.com / macarval@fcm.unicamp.br / m.a.de.carvalho.filho@umcg.nl

Abstract

Teaching and learning practices often fail to incorporate new concepts in the ever-evolving field of medical education. Although medical education research provides new insights for curricular development, learners' engagement, assessment methods, professional development, interprofessional education, and so forth, faculty members often struggle to modernize their teaching practices. Communities of practice (CoP) for faculty development offer an effective and sustainable approach for knowledge management and implementation of best practices. A successful CoP creates and shares knowledge in the context of a specific practice towards the development of expertise. CoPs' collaborative nature, based on the co-creation of practical solutions to daily problems, aligns well with the goals of applying best practices in health professions education and training new faculty members. In our article, we share 12 tips for implementing a community of practice for faculty development. The tips were based on a comprehensive literature review and the authors' experiences.

Introduction

Faculty development programs are critical in facilitating the implementation of best practices in health professions education (Steinert et al. 2016). At the same time, healthcare systems demand professionals capable of dealing with an increasingly complex professional environment, while committed to ethical and moral values. These modern professionals need to become lifelong learners and cultivate leadership characteristics that enable them to build the efficient and equitable health care systems that society needs (Frenk et al. 2010). Education in health professions essentially depends on role-modeling, and it would be impossible to improve healthcare without heavily investing in faculty development strategies (Branch et al. 2014; Passi and Johnson 2016). Paraphrasing Gandhi, faculty members should be the change we want to see in health care.

How do we accomplish this ambitious goal in a world in which health professions education is expanding to various healthcare facilities, not always directly connected to a university or a medical education unit? The concept of Communities of Practice (CoP) matured in the business world and was based on the understanding that learning is a social enterprise (Wenger 1996). Defined as "a persistent, sustaining social network of individuals who share and develop an overlapping knowledge base, set of beliefs, values, history and experiences focused on a common practice and/or enterprise" (Barab et al. 2002) , this concept has been applied as the primary strategy for knowledge management in different settings with great success (Scarso et al. 2009). In general, CoPs prove their value by guiding the innovative process of creating or reformulating practices, solving critical problems, facilitating the transfer of best practices, developing professional skills, and recruiting and retaining talent (Wenger and Snyder 2000).

The concept of CoPs can also be applied to medical education in general (Cruess et al. 2018), and to faculty development in particular (Steinert 2010), with several potential benefits. First, CoPs are grounded in the reality of practice, allowing its members to cooperate on solving relevant problems (Wenger et al. 2002). Second, a CoP framework acknowledges the importance of connecting people through formal and informal interactions while developing a shared identity committed to improving teaching and learning (Steinert 2010). Finally, by acknowledging that learning is a social enterprise based on knowledge-sharing and mentorship relationships, a CoP framework can support individuals who are motivated to move faculty development further and change the culture towards evidence-informed educational practice. (Steinert 2010). Summarizing, CoPs can be sustainable communities with tailored activities, both formal and informal, that can reflect the reality of daily practice and go beyond the traditional approaches of faculty development based on time-limited training, courses, or workshops (Steinert 2010).

Originally, CoPs were described as developing spontaneously from groups with a shared practice and a common professional identity (Wenger 1998). Gradually, however, different organizations embraced the concept and intentionally fostered the creation of CoPs as a strategy for knowledge management (Li et al. 2009). Considering the context of faculty development, spontaneously developed CoPs can be an important component of knowledge sharing and management, and medical schools can take advantage of their existence (Reilly et al. 2012; Abigail 2016; Cruess et al. 2018). We can find such spontaneous CoPs in different settings: among dedicated physicians in a clinical skills center or simulation lab devoted to enhancing teaching methods; among basic scientists sharing and creating new approaches to large group lectures; among medical educators collaborating with doctors to improve assessment in the workplace; or among scholars in medical education interacting to ameliorate their research practices. However, when CoPs are not spontaneously generated,

medical schools can adopt specific strategies to stimulate and nurture their creation, eventually as a key approach for faculty development (Scarso et al. 2009; Chen et al. 2017).

In this 12 tips article, we intend to focus on strategies to facilitate and stimulate the formation of CoPs devoted to faculty development. The tips can also be useful for the optimization of spontaneous groups already formed and involved in some faculty development initiatives. Our objective is to build on the principles proposed by Wenger and colleagues (Wenger et al. 2002) and share practical strategies that can support and guide the nurture of such communities. The original principles proposed by Wenger et al. (2002) include the following: (1) design for evolution; (2) open a dialogue between inside and outside perspectives; (3) invite different levels of participation; (4) develop both public and private community spaces; (4) focus on value; (5) combine familiarity and excitement; and (7) create a rhythm for the community. Our 12 tips (outlined in Box 1) build on Wenger's principles to fit the context of faculty development in health professions education.

Our target audience is anyone keen to start a Faculty Development CoP, be it a vice-dean for education, a faculty developer, a key educational leader, or a motivated teacher. The selected tips come from a synthesis of the available evidence from the scientific literature related to CoPs as well as the authors' experiences in developing and evaluating CoPs in the context of faculty development. It should also be noted that these tips are meant to serve more as a guide than as a set of rules to be followed strictly; in fact, considering that CoPs fall within the spectrum of sociocultural theories, different institutional or national cultures should be considered in developing and implementing CoPs.

BOX 1

12 Tips for Implementing a Community of Practice for Faculty Development

Tip 1 - Gather a core group to launch the process

Tip 2 - Articulate the goals and value of the CoP

Tip 3 - Start with a specific task or project – make it problem-oriented

Tip 4 - Keep the CoP open

Tip 5 - Intentionally invite members with expertise (memory) and fresh ideas (innovation)

Tip 6 - Choose a facilitator – "primus inter pares"

Tip 7 - Make it worthwhile for members and the institution

Tip 8 - Work to ensure institutional support

Tip 9 - Promote sustainability

Tip 10 - Communicate success

Tip 11 - Go online

Tip 12 - Evaluate the CoP

Tip 1 - Gather a core group to launch the process

A successful CoP creates and shares knowledge in the context of a specific practice towards the development of expertise (Probst and Borzillo 2008). The organizational literature

describes many examples that illustrate how to cultivate and sustain a spontaneous CoP (Wenger et al. 2002); however, little is known about the necessary steps to achieve success when CoPs are intentionally created. Undoubtedly, the first step is to gather a core group of pioneers who will assure a welcoming atmosphere to pave the way for creativity and innovation. They should also be passionate, for learning in general and for medical education in particular.

However, passion is not enough. The pioneers should be respected as leaders in medical education and strive to create a safe environment that invites cooperation for knowledge sharing and creation (Preece 2004; Roberts 2006). They also need to nurture a collaborative atmosphere, stimulating members to seek opportunities to help each other and to bring questions and problems to the group, without the fear of feeling embarrassed when sharing difficulties or lack of knowledge (Preece 2004; Usoro et al. 2007). As one of Wenger's principles suggests, CoPs should be designed for evolution (Wenger et al. 2002). To facilitate such evolution, these first members should act as role models, be open-minded, be capable of incorporating new ideas and members, and acknowledge the importance of creativity and communication (Probst and Borzillo 2008).

CoP initiators should also be aware of the complexity of faculty development and choose one element to start, keeping the goals as clear and as practical as possible. At the beginning of such a process, it is essential to motivate and engage faculty members – and to address their perceived needs (Molenaar et al. 2009; Srinivasan et al. 2011). There are different ways of performing teachers' needs assessments, ranging from formal quantitative or qualitative surveys to informal chats with key faculty members (Gibson and Campbell 2000; Milner et al. 2011). Whatever the method, linking teachers' needs to the faculty development CoP's goal is the simplest way to assure its value and attract new faculty members.

Tip 2 – Articulate the goals and value of the CoP

In the field of faculty development, the CoP could start by targeting an urgent problem shared by many faculty members, e.g., poorly crafted lectures, ineffective assessment methods, low acceptance of feedback by students, or insufficient accreditation processes. The Faculty development CoP can also target broader issues when specific problems cannot be identified, such as best practices in teaching and learning; curricular design, innovation, implementation, and evaluation; career development; and research in health professions education.

Faculty members organized as CoPs can build a shared repertoire of practices, exchanging expertise and co-constructing new knowledge and solutions which may be applied to different practical problems related to teaching and learning (Steinert 2010). The formal and informal interactions among members allow CoPs to thrive in situations of insufficient or less-than-ideal institutional support. Importantly, the foundation of a CoP framework recognizes learning as a process of becoming. The socialization around a common goal associated with the mutual support inside the CoP creates a sense of belonging that culminates in a shared identity and the translation of the generated knowledge into meaningful practices (Wenger 2000; Krishnaveni and Sujatha 2012).

The ultimate goal of a faculty development CoP is to influence the institutional culture in a way that it will embrace and support the improvement of educational practices (Wenger et al. 2002; Probst and Borzillo 2008).

Tip 3 - Start with a specific task or project – make it problem-oriented

The practice domain is crucial to the development and functioning of a CoP (Probst and Borzillo 2008). Collaborating on a solution to a specific problem is fundamental to connecting the members. For example, members gather to solve problems, applying and co-constructing

new knowledge, which, in turn, is transformed into solutions that can be stored and revisited in the future, as a collective memory. This process is intrinsically rewarding since it generates a feeling of competence and mutual understanding. The lack of a "problem to solve" can hinder motivation and possibly demobilize the group.

The "problem to solve" can be selected by the core group or by educational leaders based on institutional needs. For instance, members of the CoP can identify the improvement of workplace-based assessment as the primary goal, but course directors may be more concerned with students' reactions to feedback methods, and organizational leaders may be more preoccupied with the translation of best evidence to teaching practices. Negotiation around the task to be accomplished (as well as its goals and targets) can help to strengthen the CoP's creation while generating responsibility and accountability. The CoP should also balance autonomy with institutional alignment, stressing the importance of communication and collaboration to find a common purpose. One way or another, the recommended solution (or solutions) should have an institutional impact. Otherwise, the CoP members will lose the meaning of their practice, which may culminate in discouragement and disengagement.

Tip 4 – Keep the CoP open

The CoP should be inclusive, and faculty members who want to join must feel welcome to share ideas and ask for help. The atmosphere should not be judgmental, and the team should address all problems presented. A group member's value for fellow members is not only related to "what a member knows" but to "what a member shares" (Chow and Chan 2008; Wang and Noe 2010). The understanding of the potential of every individual is a fundamental element of educators, and the CoP should model this desired behavior within the group. Including newcomers helps to keep the door open to fresh ideas, which can enhance creativity, renew interactions, and foster new collaborations (Wenger 2000).

The openness of the CoP is also aligned with two of the principles introduced by Wenger: CoPs should be designed for aliveness, which demands constant dialogue between the internal and external worlds and should combines familiarity with excitement (Wenger et al. 2002). Communicating and discussing ideas and views with faculty members and others outside the CoP may strengthen the CoP itself and may also motivate outsiders to join.

CoP members should be aware that there are different ways of experiencing membership. Every CoP has its core members, who participate more actively and engage in most of the formal and informal activities (Wenger 2000; Wenger et al. 2002). These core members are directly responsible for creating and sustaining the identity of the group. However, peripheral members are also important, as they can function as bridges, connecting the faculty development CoP with other professional CoPs inside the institution (Borthick 2000). As an example, members of the university teaching academy may bring in new ideas about assessment from other faculties; alternatively, clinical teachers can challenge the CoP with problems related to workplace-based learning and assessment. These bridges are an essential source of ideas and problems to solve, all of which are fundamental to keeping a healthy academic environment (Wenger 2000).

Tip 5 – Intentionally invite members with expertise (memory) and fresh ideas (innovation)

Although the CoP should be open to any faculty member interested in teaching and learning, the core group should actively invite selected members for their expertise and influence. Bringing in people who have mastered different aspects of medical education contributes to a CoP's sustainability and credibility.

In addition to expertise, a CoP should also benefit from fresh ideas. The hierarchy in health care organizations and medical schools can function as a potential barrier to the incorporation

of new practices (Nembhard et al. 2009). Novice members are the best antidote to structures incapable of adapting to the ever-evolving world of health profession education. However, without support, new faculty can freeze in the face of the difficulties of implementing change. In this regard, faculty development CoPs have to provide a collaborative atmosphere, in which new teachers, with new methodologies, will be supported and encouraged in their attempts to improve teaching practices (Wenger and Snyder 2000).

Tip 6 - Choose a facilitator – "primus inter pares"

There is no consensus in the CoP literature on the necessity of a facilitator. However, in the particular context of an intentionally created CoP to foster faculty development, the authors consider it essential. Facilitators can actively improve relationships and connections, helping to build trust and lending social capital to the group. Facilitators should also demonstrate educational and social competence and be effective communicators (Haynor 2002). Communication is critical to coordinating the activities of the CoP, but also to sharing its results within the institutional community and to negotiating projects and goals with all stakeholders. Facilitators can bridge the CoP with the overall organization.

Facilitators can also stimulate and organize the interaction of the faculty development CoP with other professional CoPs inside the institution. In general, faculty development CoP members are also participants in different CoPs that sometimes have divergent institutional positions or interests, which can be a source of distress or conflict. A good facilitator recognizes the tension and provides relief through communication, tolerance, and understanding (Probst and Borzillo 2008). For instance, let us consider the situation in which a faculty development CoP decides to improve workplace-based assessments, and clinicians are resisting the change, feeling overwhelmed by clinical duties. The facilitator should ask the members who are also clinicians for strategic advice, allowing them to share, contextualize, and, when suitable, advocate for their peers' concerns.

Additionally, facilitators should develop strategies to mitigate hierarchy inside the CoP, assuring horizontal dialogue among active members, fostering collaboration over competition and co-creation over authorship (Roberts 2006; Pemberton et al. 2007). The democratic space of the CoP provides an excellent atmosphere for creativity, which is fundamental for adapting research findings on health professions education to the actual learning environment.

Tip 7 - Make it worthwhile for members and the institution

Becoming a member of a faculty development CoP should bring a sense of accomplishment and recognition (Lieff et al. 2012). Teachers must believe that belonging to the CoP culminates in self-improvement and better qualifications. Notably, the CoP can optimize the personal fulfillment of its members, matching the individual preferences and competencies with the needs of the group and delegating the right problems to the right people. Teachers must also feel valued by the institution when dedicating time and putting effort into CoP activities. In the long run, organizational leaders should assure that being an active member of a CoP for faculty development will have a positive impact on teacher's professional and academic careers.

CoPs can also become a "safe port" for educators. Sailing academic waters means dealing with power relationships, political interests and hidden agendas. To connect with people with shared understandings and mindsets can be revitalizing. Membership can create a sense of belonging while providing agency and empowerment, nurturing the identity of a faculty member (teacher or educator) or faculty developer. The CoP's meetings could function as a source of institutional and emotional support to members, reaffirming their commitment to

teaching and learning activities. Ideally, this will also lead to enhanced motivation among faculty members, which will help the institution to develop further.

Health professions education has become an active field (Albert et al. 2007) . Competency-based education, interprofessional education and practice, workplace-based assessment, multi-source feedback, simulation based-teaching and patient safety, are a few examples of the ever-growing complexity of the field. In the coming years, the transfer of knowledge from research in health professions education to learning practices will challenge universities and teachers (van der Vleuten and Driessen 2014). Developing CoPs for faculty development offers a practical and potentially cost-effective solution since CoP members will engage spontaneously in knowledge sharing and creation. Besides, CoPs can be malleable structures that can independently move the institutional agenda forward, as they can respond to specific organizational demands or even develop particular projects or areas of inquiry.

Tip 8 – Work to ensure institutional support

The institution should provide a budget, space, and technical support to the faculty development CoP. A defined budget is essential for planning the activities and assuring institutional autonomy. The physical space provides a venue for formal and informal interactions, both crucial for community development. Technical support is vital to develop online strategies and assure effective communication.

Whenever possible, members should have protected time to devote to CoP activities. Getting updated in health professions education is as challenging as getting updated in any clinical specialty. Therefore, CoP members need to reserve time to read, understand, reflect on and apply new knowledge to the problems and challenges faced by the CoP. Developing expertise has a price that is worth paying by the institution. As the majority of teachers work simultaneously in different communities, for instance, clinical communities or basic science communities, institutions should value their activities related to faculty development; otherwise, faculty development CoP enterprises will lose ground to clinical duties or research activities. If possible, the institution should formally reward departments and disciplines who have members participating in such activities. This reward could be economic (e.g., an extra budget) or political (e.g., assuring support for further development of innovation projects).

Tip 9 – Promote sustainability

The creation of a CoP (or multiple CoPs) devoted to faculty development is an opportunity to consolidate the culture of quality in teaching and learning. However, the sustainability of CoPs represents a challenge. CoPs are "answer providers," so there must be questions; this means that teachers who are providing the daily and regular learning experiences must see the CoP as a practical, trustworthy, and available advisory board. In our opinion, when looked at from an angle of supply and demand, there will always be a demand, i.e., a need amongst teachers (new and old) to improve their teaching capacity and to further develop themselves. Therefore, it is crucial that teachers understand CoP activities as a way of addressing their routine problems, as a welcome help and not as a burden. The best way to keep the questions coming is to make the CoP's achievements public, formally and informally, within the institution.

Action research practices can also offer a strategy to keep the CoP alive and its members motivated (Botelho et al.). Action research strategies rely on consecutive cycles of problem-identification, planning, acting, observing, and reflecting. The cycles provide a *rhythm* for the community that fosters engagement by engendering the feeling of continuous improvement, in accordance with one of Wenger's principles. Also, the reflective nature of each one of the cycles binds theory with practice, and conceptualization with implementation, while

empowering CoP members as agents of change. The knowledge and practices produced during each cycle often result in a "commodity" that belongs to the group and its members (Sandars 2012). The consecutive cycles of improvement fuel the group and sustain the morale, both crucial elements to the sustainability of a social endeavor such as faculty development CoPs.

Tip 10 – Communicate Success

The recognition of the CoP as a valuable organizational asset brings a direct and positive impact on the self-esteem of members while advertising the CoPs' qualities to attract new members and opportunities. The communication of the accomplishments can be through newsletters, workshops, or informal networks. Moreover, CoP members can actively engage with different departments and disciplines to get in touch with their questions and problems. The new educational experts must have access to the real issues teachers are facing on a daily basis. This connection of the CoP with the different academic departments inside the institution is an effective strategy to promote sustainability, culture change, and the development of scholarship in health professions education.

Tip 11 – Go online

The online environment can reach people in different places and contexts. CoPs can benefit from an online platform in several ways. Members can connect to each other whenever they want to ask questions, share solutions or think together. Teachers can use the platform to pose new questions or problems and to share the impact or results of previous activities. The online interactions can keep alive the conversations started in regular meetings, fostering the sense of belonging and mutual understanding. The online environment can also increase a sense of familiarity by providing opportunities for informal interactions (Ranieri et al. 2012; De laat et al. 2014; Tseng and Kuo 2014; Macià and García 2016).

An ideal online platform can also store the answers according to their primary subjects, functioning as an online repository of solutions that can be applied to different problems and contexts, optimizing time and efforts. The institution can keep track of the developments accomplished by the CoP through online reports and content (Cross et al. 2006). Finally, the online environment fits the purpose of communicating the successes of the group to the entire academic community, through private as well as public community spaces (Wenger et al. 2002).

Tip 12 – Evaluate the CoP

Although there is an ongoing debate about the best strategy to evaluate a CoP, experts agree on the necessity of regularly listening to members to identify areas for improvement and understand the impact of CoP activities on the institution as a whole (Wenger and Snyder 2000). More specific evaluations can rely on teachers' satisfaction, career development of members, execution and implementation of innovation projects, students' satisfaction, educational outcomes, patients' satisfaction, clinical outcomes, and so forth (Vescio et al. 2008; Molenaar et al. 2009; Engbers et al. 2013; Molenaar and Zanting 2015). Noteworthy, it is essential that a transparent evaluation process parallel any activity developed in the context of the CoP, so that the institution and CoP members could reflect on their own development, generating insights for next steps (Verburg and Andriessen 2006; Power et al. 2018).

If an action research framework is adopted (or partially adopted), CoP core members and facilitators can also keep a record of the consecutive cycles of development together with the projects that were devised and implemented. This memory can guide the development of parallel or subsidiary CoPs, prevent the recurrence of mistakes, and offer research data to develop best practices for faculty development CoPs (Botelho et al. 2010). Literature outside the medical education field has already shown how implementing CoPs for faculty

development can change the reality of teaching practices (Botelho et al. 2010; Goodnough 2010).

However, the ultimate evidence of a CoP's success is a cultural shift towards the consolidation of health professions education as a valuable and indispensable facet of the institution. Cultural changes are always difficult to measure, but evidence of change can be found in the number of teachers searching for a career pathway in education, engagement of teachers in curricular innovations or reform, students' evaluations of teaching activities, involvement of clinical teachers in educational activities, and other parameters directly related to the CoPs' initiatives.

Although CoPs have many advantages, they also have limitations. Eventually, consolidated CoPs can become stationary structures, with fixed norms and hierarchical relationships, resisting the changes that CoPs were supposed to guide. This organizational rigidity can create a tension in CoP members as they develop a new identity while going from a peripheral to a central participation. Creating a new identity demands a process of negotiation between who one is and who one wants to become, and this negotiation can be demotivating if CoP members are not allowed to keep the personal or professional characteristics they feel proud of (Cruess et al. 2018). To mitigate this risk, CoPs' members should create a safe environment to discuss openly the eventual frictions that can arise when newcomers start. Newcomers offer the light that can guide CoPs' eyes towards the way out of outdated practices and meaningless norms. Thus, institutional leaders should stimulate new participants to join in faculty development CoPs, while facilitators are crucial to empower the newcomers to speak up (Singh et al. 2012).

Conclusion

Health professions educators often feel isolated inside academic institutions, powerless to fight for the changes they believe necessary. CoPs are an efficient strategy to gather faculty members committed to teaching and learning activities while creating a safe and trusting environment. CoPs' collaborative nature, based on the co-creation of practical solutions to daily problems, aligns well with the goals of applying best practices in health professions education and training new faculty members.

The authors believe that faculty development CoPs are powerful organizational mechanisms that can engender the change we need in the academic culture towards the recognition of teaching and learning as valuable and worthwhile activities. The power of change comes from the collective spirit that arises when CoP members work together, with generosity and cooperation, as they aim for practical solutions to daily problems. The change happens in a stepwise process; it starts with teacher development, continues with educational innovation, and culminates in the consolidation of educational scholarship. Finally, CoPs can create a lively and fulfilling institutional environment, which nurtures teachers with the necessary energy to fight for the health care our society needs, through a better education of our professionals.

References

Abigail LKM. 2016. Do communities of practice enhance faculty development? Health Prof Educ. 2(2):61-74.

Albert M, Hodges B, Regehr G. 2007. Research in medical education: balancing service and science. Adv Health Sci Educ Theory Pract. 12(1):103-115.

Barab SA, Barnett M, Squire K. 2002. Developing an empirical account of a community of practice: Characterizing the essentials tensions. J Learn Sci. 11(4):489-542.

Borthick AF. 2000. Analysis of design from a community of practice dialogue: negotiating the meaning of auditing information system development. J Info Syst. 14 (Supplement):133-147.

Botelho MN, Kowalski R, Bartlett S. 2010. Buttercups and daisies: building a community of practice amongst teachers in a Brazilian university. Educational Action Research 18(2):183-196.

Branch WT Jr, Chou CL, Farber NJ, Hatem D, Keenan C, Makoul G, Quinn M, Salazar W, Sillman J, Stuber M et al. 2014. Faculty development to enhance humanistic teaching and role modeling: a collaborative study at eight institutions. J Gen Intern Med. 29(9):1250-1255.

Chen HC, Wamsley MA, Azzam A, Julian K, Irby DM, O'Sullivan PS. 2017. The Health Professions Education Pathway: Preparing students, residents, and fellows to become future educators. Teach Learn Med. 29(2):216-227.

Chow WS, Chan LS. 2008. Social network, social trust and shared goals in organizational knowledge sharing. Inf Manag. 45(7):458-465.

Cross R, Laseter T, Parker A, Velasquez G. 2006. Using social network analysis to improve communities or practice. Calif Manage Review. 49(1):32-60.

Cruess RL, Cruess SR, Steinert Y. 2018. Medicine as a community of practice: implications for medical education. Acad Med. 93(2):185-191

De laat MF, Schreurs B, Nijland F. 2014. Communities of practice and value creation in networks. In: Poell RF, Rocco T, Roth G, editors. The Routledge companion to human resource development. New York (NY): Routledge; p. 249-257

Engbers R, de Caluwé LI, Stuyt PM, Fluit CR, Bolhuis S. 2013. Towards organizational development for sustainable high-quality medical teaching. Perspect Med Educ. 2(1):28-40.

Frenk J, Chen L, Bhutta ZA, Cohen J, Crisp N, Evans T, Fineberg H, Garcia PJ, Ke Y, Kelley P et al. 2010. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. Lancet. 376(9756):1923-1958.

Gibson DR, Campbell RM. 2000. Promoting effective teaching and learning: hospital consultants identify their needs. Med Educ. 34(2):126-130.

Goodnough K. 2010. The role of action research in transforming teacher identity: modes of belonging and ecological perspectives. Educational Action Research 18(2):167-182.

Haynor PM. 2002. Leader as communicator. Nurs Leadersh Forum. 7(2):77-82. eng.

Krishnaveni R, Sujatha R. 2012. Communities of practice: an influencing factor for effective knowledge transfer in organizations. The IUP Journal of Knowledge Management. 10(1):26-40.

Li LC, Grimshaw JM, Nielsen C, Judd M, Coyte PC, Graham ID. 2009. Use of communities of practice in business and health care sectors: a systematic review. Implement Sci. 4:27.

Lieff S, Baker L, Mori B, Egan-Lee E, Chin K, Reeves S. 2012. Who am I? Key influences on the formation of academic identity within a faculty development program. Med Teach. 34(3):208-215.

Macià M, García I. 2016. Informal online communities and networks as a source of teacher professional development: A review. Teach Teach Educ. 55:291-307.

Milner RJ, Gusic ME, Thorndyke LE. 2011. Perspective: Toward a competency framework for faculty. Acad Med. 86(10):1204-1210.

Molenaar WM, Zanting A. 2015. Experiences with the implementation of a national teaching qualification in university medical centres and veterinary medicine in the Netherlands. Perspect Med Educ. 4(1):43-46.

Molenaar WM, Zanting A, van Beukelen P, de Grave W, Baane JA, Bustraan JA, Engbers R, Fick TE, Jacobs JC, Vervoorn JM. 2009. A framework of teaching competencies across the medical education continuum. Med Teach. 31(5):390-396.

Nembhard IM, Alexander JA, Hoff TJ, Ramanujam R. 2009. Why does the quality of health care continue to lag? Insights from management research. Acad Manag Perspect. 23(1):24-42.

Passi V, Johnson N. 2016. The impact of positive doctor role modeling. Med Teach. 38(11):1139-1145.

Pemberton J, Mavin S, Stalker B. 2007. Scratching beneath the surface of communities of (mal)practice. The Learning Organization: The International Journal of Knowledge and Organizational Learning Management. 14(1):62-73.

Power CM, Thorndyke LE, Milner RJ, Lowney K, Irvin CG, Fonseca-Kelly Z, Benjamin EJ, Bhasin RM, Connelly MT. 2018. Advancing professional development through a community of practice: the New England Network for Faculty Affairs. J Contin Educ Health Prof. 38(1):73-78.

Preece J. 2004. Etiquette, empathy and trust in communities of practice: stepping-stones to social capital. J Univers Comput Sci. 10(3):294-302.

Probst G, Borzillo S. 2008. Why communities of practice succeed and why they fail. Eur Manag J. 26(5):335-347.

Ranieri M, Manca S, Fini A. 2012. Why (and how) do teachers engage in social networks? An exploratory study of professional use of Facebook and its implications for lifelong learning. Brit J Educ Technol. 43(5):754-769.

Reilly JR, Vandenhouten C, Gallagher-Lepak S, Ralston-Berg P. 2012. Faculty development for E-Learning: a multi-campus community of practice (COP) approach. Journal of Asynchronous Learning Networks. 16(2):99-110.

Roberts J. 2006. Limits to communities of practice. J Manage Stud. 43(3):623-639.

Sandars J, Singh G, McPherson M. 2012. Are we missing the potential of action research for transforming change in medical education? Education for Primary Care. 23:239-241.

Scarso E, Bolisani E, Salvador L. 2009. A systematic framework for analysing the critical success factors of communities of practice. J Knowl Manag. 13(6):431-447.

Singh G, McPherson M, Sandars, J. Continuing professional development through reflexive networks: disrupting online communities of practice. University of Stirling, Stirling (2012).

Srinivasan M, Li ST, Meyers FJ, Pratt DD, Collins JB, Braddock C, Skeff KM, West DC, Henderson M, Hales RE et al. 2011. Teaching as a competency: competencies for medical educators. Acad Med. 86(10):1211-1220.

Steinert Y. 2010. Faculty development: from workshops to communities of practice. Med Teach. 32(5):425-428.

Tseng F-C, Kuo F-Y. 2014. A study of social participation and knowledge sharing in the teachers' online professional community of practice. Comput Educ. 72:37-47.

Usoro A, Sharratt MW, Tsui E, Shekhar S. 2007. Trust as an antecedent to knowledge sharing in virtual communities of practice. Knowl Man Res Pract. 5(3):199-212.

van der Vleuten CP, Driessen EW. 2014. What would happen to education if we take education evidence seriously? Perspect Med Educ. 3(3):222-232.

Verburg RM, Andriessen JHE. 2006. The assessment of communities of practice. Knowl Process Manag. 13(1):13-25.

Vescio V, Ross D, Adams A. 2008. A review of research on the impact of professional learning communities on teaching practice and student learning. Teach Teach Educ. 24(1):80-91.

Wang S, Noe RA. 2010. Knowledge sharing: A review and directions for future research. Hum Resour Manage R. 20(2):115-131.

Wenger E. 1996. How we learn. Communities of practice. The social fabric of a learning organization. Health Forum J. 39(4):20-26.

Wenger E. 1998. Communities of practice: learning, meaning, and identity. Cambridge (UK): Cambridge University Press.

Wenger E. 2000. Communities of practice and social learning systems. Organization 7(2):225-246.

Wenger E, McDermott RA, Snyder W. 2002. Cultivating communities of practice : a guide to managing knowledge. Boston (MA).: Harvard Business School.

Wenger EC, Snyder WM. 2000. Communities of practice: the organizational frontier. Harvard Bus Rev. 78(1):139-145.