Chapter 6
Leveraging Knowledge Through Communities of Practice

Eric Chi-Keung Cheng

Abstract This chapter presents a case study of cultivating communities of practice (CoP) for leveraging knowledge for higher education institutional development. CoPs have been shown to encourage member participation in collaborative learning and to enhance knowledge acquisition from one member to another (Wenger, Ivey Business Journal, 2004). This is a knowledge management tool for capturing organization knowledge. However, to launch a CoP in any organization is difficult, for it cannot be mandated or created, but it can only be coordinated, facilitated, and cultivated (Wenger et al., Cultivating communities of practice: A guide to managing knowledge, 2009). The model of communities of practice is based on the idea that one cannot separate knowledge from practice. Through participation in the CoP's activities, knowledge of CoP members could be captured and codified into tangible capital, and this "making things real" process is called reification. Participation and reification are intertwined and interdependent in cultivating a CoP for leveraging knowledge in organizations.

Keywords Communities of practice · Knowledge management · Participation and reification

6.1 Introduction

Knowledge expansion, government policy, and changing organizational environment altogether create impacts and challenges to any organization. Knowledge on how to perform an organization's goals is a critical issue for the organization's sustainable development. Organizations should formulate effective strategies to retrieve, share, create, and apply knowledge for organization development and to capture and retain knowledge for sustaining their development. These processes could be

E.C.-K. Cheng (✉)
Department of Curriculum and Instruction, The Education University of Hong Kong, Tai Po, N.T., Hong Kong
e-mail: eckcheng@eduhk.hk

S.C. Kong et al. (eds.), *Emerging Practices in Scholarship of Learning and Teaching in a Digital Era*, DOI 10.1007/978-981-10-3344-5_6

conceptualized as knowledge management processes. The overall approach an organization intends to adopt to manage the knowledge management processes and to align its knowledge resources and capabilities for enhancing organizational performance could be defined as knowledge management (KM) strategy (Zack, 1999). KM strategies can be divided into two categories: codification for knowledge storing and interpersonal interactive knowledge sharing (Hansen, Nohria, & Tierney, 1999; Zack, 1999). Interpersonal interactive knowledge sharing emphasizes the use of dialogue through social networks, including occupational groups and teams, and knowledge can be obtained in this way from experienced and skilled people (Swan, Newell, & Robertson, 2000). In such instances, individuals can provide their insights to the particular person or people in need of them (Snowden, 2002). This enhances shared knowledge through person-to-person contact (Hansen et al., 1999). The strategy attempts to acquire internal and opportunistic knowledge and share it informally (Jordan & Jones, 1997). It involves the knowledge processes of retrieval, sharing, and utilization. KM tools that can be applied for enacting the codification and personalization strategies are critical for KM implementation.

A communities of practice is an interpersonal interactive knowledge-sharing tool that supports knowledge transfer among working professionals. It can bring people together for rigorous conversations that are conducive to knowledge sharing and enable them to make connections with others so as to create powerful learning experiences for them and will lead directly to powerful learning for students (Cheng, 2009). It may not only realize personalization strategies but also help to codify knowledge for storing and using an organization's explicitly documented knowledge. In such instances, individuals strive to explicitly encode their knowledge into a shared knowledge repository, such as a database, and also retrieve knowledge they need, which has been added by other individuals to the repository. A CoP could be applied as a knowledge management tool for leveraging knowledge. However, a CoP cannot be self-created, but requires cultivation and facilitation. Facilitation of the CoP needs to be carried out through balancing participation and reification. This chapter discusses how to apply CoP as a KM tool to manage knowledge in a higher education institute.

6.2 Literature Review

The knowledge-sharing themes reflected in CoP have increasingly grown in popularity among practitioners. The CoP approach has been used by organizational learning approaches in workplace learning (Boud & Middleton, 2003). CoPs are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly. The term "community of practice" was first coined by Jean Lave and Etienne Wenger in a research project on social learning for the Institute for Research and Learning in 1990 and subsequently published as a book, Situated Learning: Legitimate Peripheral Participation (Lave & Wenger, 1991). They used ethnographic approaches to understand how people

acquired knowledge in informal work settings, by using informal social relationships. "Communities of practice perspective suggests that knowledge construction is relational and dynamic and that learning is an inseparable aspect of social practice. It is to be found in the relationship between people and the context of their activities" (Leshem, 2007, p. 290). "Learning involves engagement in social activities and it is seen as an evolving form of membership" (Lave & Wenger, 1991, p. 53). The knowledge-sharing themes reflected in communities of practice have increasingly grown in popularity among practitioners.

Wenger, McDermott, and Snyder (2002) define communities of practice as "*a group of people who share a concern or passion for something they do and learn how to do it better as they interact regularly*" (p. 4). This implies that three principal characteristics need to be satisfied for a communities to be defined as a communities of practice: joint enterprise, engagement in mutual learning, and shared repertoire of resources. Wenger (1998) argues that only by the development of these three characteristics in parallel does one cultivate a community of practice which allows for co-construction of knowledge. The first characteristic, joint enterprise, provides common ground for communication and a sense of common identity for the members. If the domain is well defined, the purpose and value of the community will be legitimized by the members and the stakeholders. The members know what to contribute and how to participate. Joint enterprise reflects the diverse and complex motivations and personal situations of the teachers involved in those collective practices. The second characteristic, engagement in mutual learning, constitutes a social fabric of learning. If the community is strong and mature, it fosters interactions and relationships based on mutual respect and trust. Members are willing to share ideas, expose one's own ignorance, ask difficult questions, and listen carefully. CoP is based on, and in, social relationship which is related to collaborative learning activities in small-class teaching among teachers. The third characteristic, shared repertoire of resources, refers to a set of frameworks, ideas, tools, information, and documents that members share. It is the specific knowledge members develop, share, and maintain. It enables members to deal effectively with the domain of knowledge. The products of shared repertoires of resources are not limited to teaching notes and student handouts developed by the teachers, but also extend to the sharing practice that is cultivated by them during their participation. These characteristics create a driving force to the community at different stages of development. When they work together well, the community will produce its own structure which encourages the development and sharing of knowledge.

CoPs have been shown to encourage member participation in collaborative learning and to enhance mutual knowledge acquisition (Wenger, 2004). Previous empirical research indicated that CoPs had significant positive effects on both the process and the outcome of collaborative learning (Holland 2005), as well as a reciprocal relationship with teacher professional development and instructional improvement interventions (Schlager & Fusco, 2004). CoPs could be a prerequisite to designing social learning infrastructure that supports knowledge transfer of education professionals. It brings teachers together for rigorous conversations that are conducive to knowledge sharing and enables teachers to make connections with

other teachers so as to create powerful learning experiences for them (Cheng, 2009). That is why knowledge transfer through social learning in communities of practices (CoPs) has increasingly grown in popularity among the teaching profession (Brouwer, Brekelmans, Nieuwenhuis, & Simons, 2012; Kimble, Hildreth, & Bourdon, 2008; Kirschner & Lai, 2007), including higher education institutes.

6.2.1 A CoP in Higher Education Institutes (HEIs)

A CoP could be applied in HEIs to overcome intellectual isolation, generation of tangible research outcomes, increased synergy and leverage, and creation of collaborative research (Ng & Pemberton, 2013). It brings a group of academics together who have a shared vision to overcome dynamics of fragmentation, isolation, and competition within universities (Pharo, Davison, McGregor, Warr, & Brown, 2014). The CoP could assist teacher educators to learn alongside more experienced colleagues and become fully fledged researching academics (Hill & Haigh, 2012). The knowledge management strategy of using CoP to enhance knowledge sharing could not only cultivate a culture that links teaching practice to scholarship within an organizational framework for group interactions (Gallagher, Griffin, Ciuffetelli Parker, Kitchen, & Figg, 2011), but also provoke a reflective culture through critical reflection and dialogue to justify individual teaching experiences (Herbers, Antelo, Ettling, & Buck, 2011).

A CoP is a professional development framework for teacher educators in which collaborative learning can support growth and change (Hadar & Brody, 2010). It may be seen as a new peer mentoring model to cope with the increased focus on interdisciplinarity and collaboration in academia (Henrich & Attebury, 2010). Under an effective facilitation and cultivation, CoP can be effective and sustainable in enhancing learning, teaching, and professional development with far-reaching consequences. Institution-led teaching fellowships that focus on pedagogic research and operate within the context of collaboration and sharing of practice are thought to be an effective model for promoting real teaching excellence (Jones, 2010). It could have a positive impact on early-career academics' interest in the teaching process, their identity as a member of the university community, and their understanding of, and interest in, the scholarly work of teaching and learning (Cox, 2013). The development of CoP can be promoted by using knowledge sharing in the form of selected boundary objects, such as knowledge for writing research proposals (Benn, Edwards, & Angus-Leppan, 2013).

6.2.2 Cultivating CoPs

A CoP consists of dynamic social structures that require cultivation so that they can emerge and grow (Wenger et al., 2002). A CoP emerging from bottom-up initiatives

does not mean that organizations cannot do anything to influence their development. Most CoPs are increasingly initiated by a sponsor in the senior management level, instead of emerging spontaneously (Fontaine, 2001). Despite the fact that CoPs do not usually require heavy institutional infrastructures, the school could design a community environment, foster the formalization of the community, and plan activities to help grow and sustain a CoP. Although the concept of a CoP is different from a team or group (Wenger et al., 2002), the existence of a common goal as a driving force to bond the members together at the initial stage of the development would be very similar, and thus, strategies for building a team or group that focuses on developing a common goal may also be adopted to launch a CoP.

Facilitation can be defined as "*making things easier by using a range of skills and methods to bring the best out in people as they work to achieve results in interactive events*" (Townsend & Donovan, 1999, p. 2). The facilitator role entails a wide variety of behaviors, including leadership behaviors (Schuman, 2005). An effective facilitation strategy is critical to the development and sustainment of CoP. Facilitation strategies may focus on how to balance member participation and the reification of the knowledge deliverable. Participation is used to describe the activities of members in engaging with other community members and in the life of the community. It is not limited to simple collaborative behaviors. "It can involve all kinds of relations, conflictual as well as harmonious, intimate as well as political, competitive as well as cooperative" (Wenger, 1998, p. 56). Because of the participation, CoP members could develop their identities in the CoP. Because participation in a community contributes to their identity, they carry your participation with them wherever they go. Reification means "making things real." A CoP creates artifacts such as documents and transcripts and records in the course of their activity. Reification points to the activity in a CoP of transforming knowledge into tangible and transferable capital. A CoP produces knowledge, but reification, the process of producing knowledge, does not merely support communications and interactions between participants; it eventually becomes a payoff to the KM activities. Between participation and reification, they form a mutually supportive ecology. They are in tension because if either dominates, then the other one suffers, and the community will collapse. If participation dominates at the expense of reification, then the value of participation to members suffers, and so participation declines. If reification dominates at the expense of participation, then the life and richness of the community disappears, and reification itself dries up (Wenger, 1998, pp. 65–71). While this duality may appear highly theoretical, it has some very practical implications for how communities are established, resourced, and managed. Figure 6.1 shows the relationship between participation and reification through a diagram of Tai-chi (Yin–yang).

Fig. 6.1 Participation and reification of CoP facilitation

6.3 A CoP in Field Experience Supervision

The research question of the chapter is: How can we balance the participation and reification of a CoP for leveraging knowledge? The CoP of this study brings together academic and teaching staff who have some responsibility for supervising student–teachers' field experience to share experience and seek solutions that will enhance field experiences for student–teachers. Through sharing meetings, seminars, and workshops, the CoP has enabled the members to retrieve, share, and use the knowledge on FE supervision and effectively supported the implementation of the new FE curriculum. Best practices of FE supervision have been codified into explicit knowledge as a guidebook by capturing tacit knowledge from the CoP members for knowledge transfer. Members know how to apply effective facilitation skills for provoking student's reflection during their FE supervision, in which they help their student–teachers to internalize pedagogical theories into their own knowledge and teaching skills. The CoP of FE supervision aims to facilitate the professional learning and sharing of knowledge about FE and capture good practice in supervision so as to improve it.

The researcher as the facilitator of the CoP has kept a reflective diary for self-evaluation. The evaluation mechanism involves setting evaluation criteria, collecting feedback and information after each activity, and interpreting the information for improvement. The criteria which were defined as relevant indicators for the CoP's success were strongly linked to the objectives defined in the proposal, which are related to learning, knowing, or process improvements. The frequency of meetings and the attendance rate of the communities of practice members were also collected. Data gathering thus aimed at uncertainty reduction for the core team in the sense that it allowed team members to assess their work against the formal project objectives. The research then decided whether the activities were a success or a failure and whether the criteria defined at the beginning had to be adapted or not.

Finally, the knowledge about what should and could be improved was held by the researcher.

6.3.1 How the CoP Was Nurtured?

At the preparation stage, we conducted our first CoP meeting to share our visions for the CoP and the development of field experience (FE) in our institute. We then consented to conduct a review of the existing knowledge resources from previous projects related to FE. We conducted our second meeting to present the FE resource list that is related to the FE projects conducted in the last time few years to build a repertoire to store the FE resources and as a platform for knowledge sharing on FE. At the development stage, we consented to organize a few seminars for knowledge sharing on FE so as to recruit new CoP members. We conducted workshops on lesson observation and analysis to improve the effectiveness of teaching supervision in the institute. The workshops were conducted in the form of a seminar and joint lesson observation, and analysis activity so that participants could share with others their experience of lesson observation and analysis during teaching supervision. In the workshops, these experiences were shared among colleagues to raise the quality of teaching supervision. We conducted a seminar to report on our CoP project on FE supervision to colleagues so as to recruit more members. The importance of FE supervision for student learning and the function of CoP for knowledge transfer were also disseminated.

To honor member participation, we introduced a recognized reward mechanism in our CoP. Members who participated in CoP meetings and shared their experience were appreciated by others. The CoP coordinators thanked them and invited them to facilitate the upcoming CoP meetings for building reputation. In fact, our CoP members are motivated by obligation and are willing to work out the joint enterprise of the CoP. We all knew that the social relationship for creating mutual engagement cannot be regulated by the reward mechanism imposed by an organization. Moreover, for scholars, the greatest reward is the new knowledge which they can exchange and the benefit it brings to research, teaching, and scholarships. Since the motivation for participation of our members is still high, the existing peer recognition practices and coordinators' positive feedback are deemed to be effective.

6.3.2 How the CoP Was Evolved?

At the knowledge-leveraging stage, we conducted storytelling workshops to identify the challenges of FE supervision and capture the tacit knowledge of the participants to draft the outline of the FE supervision booklet. We conducted a knowledge café to provide colleagues with a sharing platform that facilitates open

and creative communication. The participants shared their experience and exchanged views on how to provoke student–teachers' reflection in the post-lesson conference or other specific topics under FE supervision. Useful facilitation techniques helping student–teacher reflection were captured, which took the form of a four-stage consecutive discussion which logically passes through: objective discussion, reflective discussion, interpretive discussion, and decisional discussion. Another example was to provide student–teachers with a safe communicative environment that is conducive to professional dialogue and reflection. These examples were captured and codified into guidelines as reification of the CoP.

In this stage, there were multiple levels of participation in our CoP during the operation stage. The core group members had passion and engagement to energize and nurture the CoP. We inquired about the needs of the members and invited knowledgeable members to share ideas so as to sustain the CoP. There were active members who were recognized as practitioners and who defined the domains of CoP when they had some specific points in FE supervision to contribute to the CoP. However, some members had a sustained connection to the CoP for knowledge retrieval with less engagement because they did not have as much personal experience in FE supervision and they played a role as CoP users. Other members participated only when the topic was of their special interest because they wanted to receive or provide a service or to gain access to guidelines produced by the CoP. It has to be acknowledged that time pressure was an issue and arises due to significant competing demands on staff time, leading to difficulties in convincing staff to engage in and prioritize the CoP activities. This can be evidenced in both reluctance to engage and also a practical approach to engagement which may compromise the ability to develop shared practice and a collective identity.

6.3.3 Rebalance Participation and Reification

It is a fact that expecting everyone to contribute to the CoP is a myth. When most of the members retrieved the knowledge they wanted, their participation became inactive. This inactive participation alerted us to reconsider the domain of our joint enterprise. The domains of lesson observation and facilitation skills in FE supervision had been discussed for over 2 years; it was therefore time to review and renew so as to develop the competencies in FE supervision of our existing members and potential members. The solution up to this stage was to change the domain so as to rebalance the participation and reification to sustain the function of the CoP. We had been inquiring about the needs of the members and colleagues in order to design the domain of knowledge sharing.

The domain of the CoP should be aligned with the needs of the members. A new domain was identified, which meant the CoP supported the implementation of the new FE curriculum framework of our institute. The new domain of the CoP was to seek a standardization and modulation of the FE assessment. The goal of the CoP was to fill the knowledge gap of the implementation plan for standardization and

modulation by using a video-based learning community (VBLC). VBLC is a Web platform which enables video-based FE assessment function. Members could compare their assessment records with the norm from all assessors regarding a lesson. CoP is commonly adopted as a "tool" to leverage knowledge to support the implementation of an organization development or implementation plan. We had found the point of balance between participation and reification to optimize knowledge sharing for producing best practice by shifting the CoP domain to form another joint enterprise.

New domains of the CoP which indicated the possible directions for sustaining the CoP were generated from professional dialogue during the meetings. The domain was also related to member professional practices: conducting FE assessment. There had been constructive values emerging from different stories of FE supervision and assessment which seemed to indicate that inconsistent practices were exercised, but they reflected different thinking that was driven by varying pedagogies. We also discovered that there were different approaches in facilitating student–teacher reflections. For example, regarding different expectations of a good lesson plan, some might focus on teaching strategies, and others might look for pedagogical content knowledge. There was a debate on whether we should make comments on the lesson plan in detail within a very short time. Some might worry about causing stress and affecting the deliberative teaching behavior of the student–teacher, but others argued that it is our obligation to do so. Identifying the conflicts or inconsistent practices among FE supervisors through lesson observation and assessment in the VBLC enables the coordinator to formulate critical issues for professional dialogues in the CoP meeting. Lesson planning, managing student diversities, assessment of learning, and assessing student–teachers' reflective abilities are examples of the critical issues in FE supervision.

6.3.4 Evaluation of the CoP

The core team of the CoP has conducted periodic self-evaluation after conducting each activity. The mechanism involves setting evaluation criteria, collecting feedback and information after each activity, and interpreting the information for improvement. The criteria which were defined as relevant indicators for the CoP success were strongly linked to the objectives defined in the CoP proposal, which are related to learning, knowing, or process improvements. The frequency of meetings and the attendance rate of the community of practice members were also collected. Data gathering thus aimed at uncertainty reduction for the core team in the sense that it allowed team members to assess their work against the formal project objectives. The core team then decided whether the activities were a success or a failure and whether the criteria defined at the beginning had to be adapted or not.

The CoP members are mainly FE coordinators and supervisors from different departments of the institute. They want to learn how to do it better in the course of

regular interactions. This reflects that they are highly motivated to participate knowledge-sharing events and this participation defines their membership. They have given very positive comments on the VBLC. They agree that the VBLC serves as a user-friendly online platform that contributes to the co-construction of knowledge in lesson analysis. The VBLC has generated descriptive statistics for users to compare their assessment results with the overall mean scores of each assessment item. The VBLC enables member reflections on their discrepancies with the norms and also provides the agenda for the face-to-face meeting. The statistical reports generated from the VBLC show that most of the standard deviations (SDs) of same items in the FE supervision form have been reduced from 0.8 to 0.6 on average. This reflects that the discrepancies on what were good teaching practices regarding our new FE curriculum among the members have been narrowed.

The CoP has cultivated a culture of trust among the members such that they feel free to share their tacit knowledge, ideas, and even the problems encountered during their FE supervision in a safe environment. The notion of "safety" and "trust" commonly appears in CoP literature. Safety and trust within a community of practice are important for developing a learning environment. A CoP is different from a project team. CoP members are accountable mutually, but project team members are accountable to their line mangers. A CoP provides a safe communicative environment to facilitate organizational learning. Members do not mind exposing their ignorance to others in the CoP; they accept that making mistakes is a learning opportunity. Eventually, a booklet was produced to provide examples to illustrate the rubric of the new FE supervision form and effective facilitating skills in post-lesson discussion.

6.3.5 Learning from Cultivating the CoP

There are many learning points on cultivating the CoP in FE supervision. Firstly, we observed that the better the personal relationships among members, the more the trait knowledge that was elicited. To cultivate a culture of trust is a critical success factor for running a CoP for knowledge sharing. Secondly, supporting professional practices of the members and the implementation of the institute policy should be considered as the key principle in designing the domain of the CoP. The members join the CoP in FE supervision because FE supervision is one of their major professional practices. They want to learn how to implement the new FE curriculum. Domains of CoP should be aligned with the major concern of the institute's development plans so as to fill the potential knowledge gaps for implementing the development plans. Thirdly, the reification and participation should be balanced to sustain the development of the CoP. Participation is the direct interaction between CoP members. Reification is a way of making an abstract and concise representation of practice and is carried out through knowledge elicitation from member participation. Reification of knowledge and members' participation support each

other until reaching a saturation point for generating best practice until members become reluctant to participate and share. Then, they become opposing factors.

6.3.6 *Self-sustaining Mechanism*

Following the rule of balancing participation and reification, a self-sustaining mechanism has been nurtured in the CoP in FE supervision. The mechanism attracts interest and active participation, effective promotion, provision of information resources, and rewards. Core CoP members will continue to identify the needs of the members related to their professional practices in FE supervision and then organize knowledge-sharing activities to address their needs. To create mutual engagement for sustaining the CoP, active CoP members will be invited to conduct seminars and workshops. A knowledge repertoire, a tangible booklet, and intangible collective intellectual resources among CoP members have been created. The CoP in FE supervision is an organic community that develops and grows as it disseminates its outputs to the institute. The CoP facilitators nurture the development and mutual recognition among individual members into a team or collective. This has led to more consistency for students and more cohesion of teaching and learning within programs. Additionally, as collective identities have formed, this has led to the development of a collective voice for members and involvement in policy discussions within the institute. We would argue that these outcomes suggest that our CoPs have generated benefits for the institute and for students, as well as for staff.

6.4 Conclusion

This paper aims at examining the theory for its potential contribution to the cultivation of a CoP, in an attempt to gain a balance between participation and reification. A communities of practice (CoP) is a group of people conducting a joint enterprise to improve their professional practice. The staff engage mutually in CoP activities and aim to create a sharing repository for sharing knowledge and supporting their learning. As an effective approach for enhancing staff professional competencies in lesson analysis and FE supervision, the ultimate goal of the CoP is for the improvement of student learning. The VBLC enables the staff to perform inquiry on their profession practices of lesson analysis and strengthen their FE supervision skills. The digital technology applied in the VBLC helps to broaden the conceptualization of organizational learning, and it supports SoLT activities and supports staff capacity building in changing teaching practice as well as performing inquiry on the change.

A CoP can be applied as a knowledge management tool for leverage knowledge to support organization development. It helps to connect the shared domain to the

institutions' strategic focus, to encourage the members to move forward with agenda, as well as to keep a focus on the shared domain. The alignments between the institutes' goals and CoP's goals need to be constantly verified. A CoP cannot be self-created, but requires cultivation and facilitation. For that reason, the institution plays an important role in engaging staff in the SoLT activities through the participation in CoP activities if leaders of institutions really want to develop the professional competencies of their staff. Institutions should cultivate a knowledge-sharing culture, support staff to have a professional identity as knowledge workers, and capitalize on existing knowledge recourse to address issues.

Being a disciple of CoP for professional growth, the author has shared the practices of CoP through many seminars in the institution and has disseminated the theory CoP through paper presentation in many international conferences and publications including a paper entitled *Developing Strategies for Communities of Practice* and a book entitled *Knowledge Management for School Education*. The author will continue to apply CoP to leverage knowledge not only for improving his professional practices but also for building research capacities.

References

Benn, S., Edwards, M., & Angus-Leppan, T. (2013). Organizational learning and the sustainability community of practice: The role of boundary objects. *Organization & Environment, 26*(2), 184–202.

Boud, D., & Middleton, H. (2003). Learning from others at work: Communities of practice and informal learning. *Journal of Workplace Learning, 15*(50), 194–202.

Brouwer, P., Brekelmans, M., Nieuwenhuis, L., & Simons, R. J. (2012). Community development in the school workplace. *International Journal of Educational Management, 26*(4), 403–418.

Cheng, C. K. (2009). Cultivating communities of practice via Learning Study for enhancing teacher learning. *KEDI Journal of Educational Policy, 6*(1), 81–104.

Cox, M. D. (2013). The impact of communities of practice in support of early-career academics. *International Journal for Academic Development, 18*(1), 18–30.

Fontaine, M. (2001). Keeping CoP afloat: Understanding and fostering roles in communities. *Knowledge Management Review, 4*(4), 16–21.

Gallagher, T., Griffin, S., Ciuffetelli Parker, D., Kitchen, J., & Figg, C. (2011). Establishing and sustaining teacher educator professional development in a self-study community of practice: Pre-tenure teacher educators developing professionally. *Teaching and Teacher Education, 27*(5), 880–890.

Hansen, M., Nohria, N., & Tierney, T. (1999). What's your strategy for managing knowledge? *Harvard Business Review, 77*(2), 106–116.

Hadar, L., & Brody, D. (2010). From isolation to symphonic harmony: Building a professional development community among teacher educators. *Teaching and Teacher Education, 26*(8), 1641–1651.

Henrich, K. J., & Attebury, R. (2010). Communities of practice at an academic library: A new approach to mentoring at the University of Idaho. *The Journal of Academic Librarianship, 36*(2), 158–165.

Herbers, M. S., Antelo, A., Ettling, D., & Buck, M. A. (2011). Improving teaching through a community of practice. *Journal of Transformative Education, 9*(2), 89–108.

Hill, M. F., & Haigh, M. A. (2012). Creating a culture of research in teacher education: Learning research within communities of practice. *Studies in Higher Education, 37*(8), 971–988.

Jones, J. (2010). Building pedagogic excellence: Learning and teaching fellowships within communities of practice at the University of Brighton. *Innovations in Education and Teaching International, 47*(3), 271–282.

Jordan, J., & Jones, P. (1997). Assessing your company's knowledge management style. *Long Range Planning, 30*(3), 392–398.

Kimble, C., Hildreth, P. M., & Bourdon, I. (2008). *Communities of practice: Creating learning environments for educators*. Charlotte, NC: Information Age.

Kirschner, P. A., & Lai, K. W. (2007). Online communities of practice in education. *Technology, Pedagogy and Education, 16*(2), 127–131.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York: Cambridge University Press.

Leshem, S. (2007). Thinking about conceptual frameworks in a research community of practice: A case of a doctoral programme. *Innovations in Education & Teaching International, 44*(3), 287–299.

Ng, L. L., & Pemberton, J. (2013). Research-based communities of practice in UK higher education. *Studies in Higher Education, 38*(10), 1522–1539.

Pharo, E., Davison, A., McGregor, H., Warr, K., & Brown, P. (2014). Using communities of practice to enhance interdisciplinary teaching: Lessons from four Australian institutions. *Higher Education Research & Development, 33*(2), 341–354.

Schlager, M., & Fusco, J. (2004). Teacher professional development, technology, and communities of practice: Are we putting the cart before the horse? In S. Barab, R. Kling, & J. H. Gray (Eds.), *Designing virtual communities in the service of learning* (pp. 120–153). Cambridge, MA: Cambridge University Press.

Schuman, S. (2005). *The IAF handbook of group facilitation: Best practices from the leading organization in facilitation*. San Francisco, CA: Jossey Bass.

Snowden, D. (2002). Complex acts of knowing: Paradox and descriptive self-awareness. *Journal of Knowledge Management*, *6*(2), 100–111.

Swan, J., Newell, S., & Robertson, M. (2000). Limits of IT-driven knowledge management for interactive innovation processes: Towards a community-based approach. In R. H. Sprague (Ed.), *Proceedings of the 33rd Annual Hawaii International Conference on Systems Sciences, HICSS-33* (pp. 84–94). Los Alamitos, CA: IEEE Computer Society.

Townsend, J., & Donovan, P. (1999). *The facilitator's pocketbook*. Hants: Management Pocketbooks.

Wenger, E. (1998). *Communities of practice: Learning, meaning and identity*. NewYork: Cambridge University Press.

Wenger, E. (2004). Knowledge management as a doughnut: Shaping your knowledge strategy through communities of practice. *Ivey Business Journal*, January/February. Retrieved June 26, 2010 from, http://www.iveybusinessjournal.com/topics/leadership/knowledge-management-as-a-doughnut#.UdrMjjtmCXQ.

Wenger, E., McDermott, R., & Snyder, W. (2002). *Cultivating communities of practice: A guide to managing knowledge*. Cambridge, MA: Harvard Business School Press.

Zack, M. H. (1999). Developing a knowledge strategy. *California Management Review, 41*(3), 25–45.