

# Establishing a Community of Practice for Doctoral Studies Amidst the COVID-19 Pandemic

Christina M. Cantin

Queen's University, Kingston, ON, christina.cantin@queensu.ca

Sara Brune

Queen's University, Kingston, ON, 20smb4@queensu.ca

Laura Killam

Queen's University, Kingston, ON, l.killam@queensu.ca

Tyler Glass

Queen's University, Kingston, ON, tyler.glass@queensu.ca

Ruth Walker

Queen's University, Kingston, ON, ruth.walker@queensu.ca

*See next page for additional authors*

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# Establishing a Community of Practice for Doctoral Studies Amidst the COVID-19 Pandemic

## Authors

Christina M. Cantin, Sara Brune, Laura Killam, Tyler Glass, Ruth Walker, and Emma Vanderlee

Before the strain that the COVID-19 pandemic put on the health care system, the nursing profession was experiencing a notable shortage of PhD-prepared nurses (Stanfill et al., 2019; Thorne, 2016). Retirements, academic attrition, and low enrollment in PhD nursing programs all contribute to this shortage (Stanfill et al., 2019). An insufficient number of doctorate-prepared nurses may result in not enough qualified academics to meet the demand for urgently needed nursing graduates (Aragon et al., 2020; Boamah et al., 2021). As a result, the point-of-care nursing shortage may continue to worsen (Boamah et al., 2021).

Many PhD nursing students may intend to pursue faculty positions during or following their studies; there are also important roles for PhD-prepared nurse scientists outside education, such as in clinical practice settings, policy development, and administrative roles (McNett et al., 2021; Polomano et al., 2021). Doctorally prepared nurses make valuable contributions to developing new practice knowledge and integrating evidence into clinical settings (Andreassen et al. 2018; Polomano et al., 2021). Nurse scientists contribute to legislative and public policy development as health policy experts or through formal executive roles within health care organizations (Polomano et al., 2021). In addition to the challenges in undergraduate nursing education, the shortage of doctorally prepared nurses stalls the development of new nursing knowledge and limits mentorship opportunities for new nurse scientists (Stanfill et al., 2019). It is important to ensure that students in doctoral programs are successful because the shortage of PhD-prepared nurses in all roles is predicted to worsen as a large portion of the current workforce is nearing the age of retirement (Boamah et al., 2021; Canadian Association of Schools of Nursing, 2018).

PhD nursing programs are competitive and demanding, requiring a considerable amount of time and focus; attrition rates range from 23% to 70%, and they are higher in distance-based doctoral nursing programs than in in-person programs (Fang & Zhan, 2021; Terrell et al., 2015). Volkert et al. (2018) conducted an online survey of nurses in doctor of nursing practice and doctor of philosophy programs across the United States ( $n = 835$ ); the authors identified that program stressors ( $\beta = 0.366, p < .001$ ) and support issues ( $\beta = -0.126, p = .001$ ) significantly predicted student retention. This finding is further supported by researchers who frequently identify isolation as a factor influencing a student's intention to leave the program (Ames et al., 2018; McCray & Joseph-Richard, 2020; Sverdlik et al., 2018). Forming study groups and developing peer networks have been noted to decrease feelings of isolation and contribute to greater perseverance and persistence in achieving academic goals (Smith & Delmore, 2007). While support from family and friends is critical throughout a doctorate nursing program, Volkert et al. (2018) recommended that students interact with their cohort to build a sense of connection and presence. In this discussion paper, we describe the development of a virtual community of practice (CoP) that we established as first year PhD in nursing students enrolled in a large urban academic centre in Ontario, Canada. This CoP has been particularly important as the COVID-19 pandemic has restricted our ability to travel to the university campus or meet each other in person.

### **Communities of Practice**

CoPs have been identified as a potential strategy to foster engagement and connection. Wenger et al. (2002) defined CoPs as “groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis” (p. 4). Li et al. (2009) conducted a systematic review of CoPs in business and health care sectors and identified four common characteristics of a CoP: social interaction, knowledge sharing, knowledge creation, and identity building. These authors reported a wide

variation in the structures of CoP groups and the interpretations of the CoP concept (Li et al., 2009). CoPs are distinct from peer support groups in that the primary goals of CoPs are knowledge exchange, mutual learning, and professional development rather than support (Pyrko et al., 2017). However, peer support and CoPs are not mutually exclusive, with researchers reporting that peer mentoring and peer support can be accompanying advantages of CoPs (Adkisson et al., 2020; Lahenius, 2012). While our CoP came together with the common goal of thriving during our PhD studies, an additional benefit has been the support and mentoring experience that has evolved from this partnership.

The opportunity to consider diverse perspectives of CoPs within the literature enabled us to draw inspiration from contexts and definitions that were most congruent with our own. While the ideal size of a CoP remains unknown, researchers report that if a CoP is too large, members may lose interest as group pursuits become more diverse (Mohtar & Lawford, 2016). Conversely, if a CoP is too small, there may be insufficient membership to adequately address the full interests of the group (Mohtar & Lawford, 2016). According to Webber and Dunbar (2020), the feasibility of more frequent meetings among smaller CoPs fosters a stronger emotional connection and leads to increased feelings of inclusion and support among members.

Our CoP began with six PhD nursing students from diverse areas of practice. We are all registered nurses and brought various perspectives from our experiences working in hospital, community, and education settings. Creating a social support network early in our program was the initial focus of our CoP, with a long-term goal of successful program completion within the allotted timeframe. This CoP is of value given our shared experience of being the only cohort to complete the first year of the program fully online because of the COVID-19 pandemic.

Two of our CoP members had prior experience developing or leading CoPs. One member had experience leading an academic CoP in which faculty and staff examined opportunities for improving education. The other member of our cohort had experience developing an interdisciplinary CoP for graduate students in the Faculty of Health Sciences at a Canadian university during the completion of her master's degree in nursing. Wazni et al. (2021) described the experiences of these students ( $n = 19$ ) in a recent qualitative evaluation: There was value in sharing experiences, learning from others, networking with a variety of experts, and encouraging each other throughout the academic journey, particularly for international students (Wazni et al., 2021).

Another example of an inspiring CoP within a graduate nursing program was described by Pancheri et al. (2013), who formed a "collegial support group" of six PhD nursing students at a large urban university in the United States. Following their graduation, the authors conducted a retrospective analysis examining the dissertation duration and time to degree completion of their cohort as compared with traditional students ( $n = 54$ ) at the same university in the preceding 10 years. There were no significant differences between the two groups based on age, research method, interval between the master's and PhD program entry, or length of time from program entry to course completion. The groups were similar in the types of dissertations completed; however, the authors reported a significant difference in the duration of the dissertation process with the collegial support group having a mean duration of 0.97 years ( $SD = 0.068$ ) as compared with the traditional group at 2.13 years ( $SD = 1.06$ ) ( $p < .001$ ). Furthermore, there was a significant difference in the duration of PhD program entry to degree completion, with the collegial support group taking a mean of 4.86 years ( $SD = 0.356$ ) to complete the program as compared with a mean of 5.62 years ( $SD = 1.65$ ) for the traditional group ( $p = .007$ ) (Pancheri et al., 2013). Retrospective

studies are limited by an inability to determine cause-and-effect relationships, but these findings are encouraging for students developing a CoP. The important finding that PhD students who participated in the collegial support group completed their dissertation in half the time their counterparts did resonate with our cohort, highlighting the need to identify strategies for our success. A qualitative aspect of the Pancheri et al. (2013) study involved the six collegial support group members reflecting on their experiences. Three themes were identified: friends on a journey, scholarly growth, and the benefits outweigh the costs. These qualitative findings encouraged us to reflect on our commitment to developing a CoP that would foster our collective success.

The positive findings reported in the above-mentioned studies (Pancheri et al., 2013; Wazni et al., 2021) encouraged us to continue establishing a structure that would contribute to our success as first-year doctoral students. Five key strategies were identified: building community, fostering collaboration, strengthening connection, enhancing creativity, and promoting consistency. In this paper, we focus on our experience in the first year of the PhD nursing program and is limited to the CoP with six members.

### **Building Community**

Community, defined by McMillan and Chavis (1986) as feelings of connection and closeness among a social group, is important for graduate students. A sense of belonging in a community has both academic and psychological benefits for graduate students and improves the overall graduate school experience (Studebaker & Curtis, 2021). Building a community is a dynamic process. The program we are enrolled in transitioned from in-person delivery to online in 2018. Typically, there are planned opportunities to connect in person with faculty and other students throughout the academic year in a weeklong intensive study period in each of the three semesters in the first year of the program. The COVID-19 pandemic impeded our opportunity to make face-to-face connections at the start of the program, something that has been identified as a key strategy to building community (Berry, 2018). Our cohort found other ways to build a sense of community, including, but not limited to, creating multiple electronic platforms for communications such as Microsoft Teams group chats, identifying and sharing common interests, and meeting virtually with each other in academic and personal manners, such as celebrating birthdays and successful completion of coursework. These strategies are consistent with the social interaction characteristic of a CoP as described by Li et al. (2009). The next four strategies of fostering collaboration, strengthening connection, enhancing creativity, and consistency reciprocally contributed to our community.

### **Fostering Collaboration**

Prosperous CoPs include collaboration among members through sharing, accumulating, and co-creating knowledge (Wang et al., 2019). This collaboration enhances knowledge translation and information sharing and builds capacity to reach a common goal or outcome (McCloughlin et al., 2018). After establishing an initial sense of community, fostering collaboration for our group involved identifying skill sets within the group, sharing knowledge from our individual professional domains of practice, and bringing strengths together to benefit the whole. Knowledge sharing included information about our unique nursing roles, practice areas, previous research, and learning strategies, which contributed to expanding our skills and expertise.

Our group began collaborating early to build on existing knowledge and generate new knowledge. Part of these activities were related to completing requirements for our coursework, but we also sought out additional opportunities to collaborate, such as co-authoring manuscripts

and co-presenting at a recent graduate research day. Given that members were located geographically in different areas and time zones, collaboration was fostered through the technological infrastructures of Microsoft Teams, Zoom, SharePoint, and other innovative platforms.

### **Strengthening Connection**

Achieving success in a virtual learning environment is a demanding endeavour. Further to typical school pressures, we must also overcome social isolation, manage multiple technological platforms, and effectively self-regulate and self-motivate (Conley et al., 2017). Social connection is an important resource for overcoming these additional barriers and attaining success in a virtual learning program (Finch & Jacobs, 2012; Stürmer et al., 2018). Recently, we created channels in Microsoft Teams where we are building personal connections outside academic work. This was one strategy to acknowledge birthdays; share stories and photos of pets, children, and hobbies; and arrange times to virtually celebrate important milestones, such as the end of each semester. We also shared personal challenges, including health issues of family members, feelings of imposter syndrome and/or inadequacies, and challenges in our workplaces. Members of the CoP have reached out individually to other members, creating a sense of caring and belonging that strengthens the connections between members. Creating personal, social, and academic connections was an essential aspect of establishing our CoP. As structured classes have ended and we begin to focus more on our own research, we believe that this sense of connection will help keep our CoP strong in the years to come.

### **Enhancing Creativity**

We believe that creativity in our CoP emerged through discussing diverse perspectives when working towards shared goals. CoPs can have a considerable impact on creativity, although this may often be overlooked as a crucial component to success at the higher-educational level (Mavri et al., 2021). Creative outcomes that emerge through CoPs are influenced by individual personalities, traits, the overall creative process, and the environment in which the members of the CoP interact (Mavri et al., 2021). CoPs can be highly successful through organization, optimizing member interactions, and setting strategies and goals with supportive tools (Akhavan et al., 2015). Our CoP was rich in sharing creative ideas and processes, which led to using novel presentation platforms, unique methods of seminar delivery, and engaging dialogue and interactions, which we perceived as positively contributing to learning course content. Additionally, individual and group course projects were always met with an abundance of creative cogitations, which were a source of motivation, inspiration, and encouragement.

According to Contu (2014), when individuals in a CoP work together but have different skills, ideas, and viewpoints on a particular task, conflict may arise. This conflict may be defined as “creative abrasion” and may hinder the creative process because of issues of power and politics (Contu, 2014). Given that our CoP consisted of highly skilled, educated, and goal-directed individuals, we experienced these creative abrasions. Innovation and creativity can constructively move the group in a positive direction toward our common goal and desired outcome of collective support (Akhavan et al., 2015). The creation of a virtual safe space during meetings allowed members the opportunity to express challenges and frustrations, in addition to the successes of the group. Members used doodle polls, electronic surveys, and negotiation strategies to obtain group consensus. This fostered fulsome synchronous discussions that facilitated decision-making and resolved any conflict that we were experiencing, which was more effective than asynchronous chat

messaging. We recognize that it is important to resolve conflict within a CoP to foster continued innovation and creativity.

### **Promoting Consistency**

Consistency can be a key factor in the success or failure of many endeavours. Being consistent leads to habit formation, which can facilitate the ease of many processes, including forming excellent study and work habits, and serves a fundamental role in the formation and longevity of relationships (Marks et al., 2014; Nuutila et al., 2018; Scutelnicu et al., 2019). Trust is gained when individuals demonstrate consistency in their interpersonal interactions and exhibit stable behaviours (Alarcon et al., 2018; Marks et al., 2014). Consistent communication between friends and colleagues promotes reciprocal support and collaboration (Lloyd, 2019). Within our group, consistency took form in regular opportunities to connect on platforms including Zoom and Microsoft Teams. The purpose of these connections varied from discussions and encouragement pertaining to academic and collaborative work to celebrating and debriefing after the completion of particularly challenging assignments, semesters, or collaborative projects. Consistency in our relationship as a CoP developed slowly, with one or two key members taking the initiative to reach out to others time and again. This in turn motivated the rest of the members of our group to reach out more frequently, resulting in consistency among the group.

### **Next Steps for the CoP**

While our CoP has evolved over this past year, there remains opportunity for us to build a stronger and more cohesive community. We are still getting acquainted as a group and continue to learn about the diverse skills, knowledge, and experiences that each of us can contribute. Peer support is an integral factor in successful degree completion throughout doctoral studies, and especially during the latter and more solitary stages of doctoral work (Jairam & Kahl., 2012; Zahl, 2015). Going forward in our program, we will no longer have the shared experiences of coursework and assignments, and each of us will be at differing stages in preparing and writing comprehensive exams, developing our research proposals, and conducting our dissertation work. However, we can use this divergence to our benefit. Individuals in the group who complete these processes sooner than others can provide advice and guidance to those who have not yet started. Likewise, members who are completing these processes later than others can provide moral support and encouragement to those who complete these requirements earlier on in the program.

We will need to be deliberate and intentional in our exchanges to remain connected as we navigate this changing landscape. It will be vital to determine when and how often to meet over these next few semesters. Future engagements within our CoP may include identifying ways to help each other succeed, sharing resources, networking with experts, discussing the challenges of moving ahead in our program, and exploring ideas to successfully meet these challenges (Serrat, 2017).

We plan to engage and collaborate with upper years, in addition to supporting students in the cohorts behind us through mentorship, while maintaining a close-knit core of members as we continue our schooling and hopefully beyond. We plan to conduct an evaluation of our CoP consisting of a qualitative component regarding our experiences, as well as a quantitative aspect including metrics such as duration of thesis completion.

### **Recommendation for Nursing Leaders**

We recommend that administrators in graduate programs encourage the formation of CoPs among novice doctoral students. This encouragement can be achieved using a virtual platform or in-person networking opportunities. Inviting incoming graduate students to connect with one another and with students from previous cohorts also fosters CoP formation. As new doctoral students, we were given the opportunity to meet and speak with students in our program who were either one or two years ahead of us. These meetings, organized by our professors, were an invaluable experience; the students offered valuable tips to survive and thrive, and they answered our questions about various milestones throughout the program such as comprehensive exams and specific course requirements. Additionally, these connections were important as they provided an opportunity to see examples of students who had achieved success in the program and often gave us peace of mind related to upcoming program requirements. Given the alarming attrition rates of doctoral students (Fang & Zhan, 2021; Terrell et al., 2015) and the protective factors associated with peer support in doctoral student success (Jairam et al., 2012; Zahl, 2015), it is imperative that graduate program administrators and professors promote peer connection early in the doctoral program education process to ensure student success.

According to Kapucu (2012), facilitated leadership is essential before a CoP can be created. Graduate program administrators and professors can provide this leadership to assist novice graduate students in developing a CoP early in their programs. Furthermore, a variety of instructional techniques within the doctoral program curriculum design, including group discussion, interactive presentations, guest speakers, and case presentations, can be used to facilitate a CoP among students (Kapucu, 2012). Use of the aforementioned techniques have been shown to promote a significant increase in student friendship connections and a minor increase in student peer advice networks over the course of a semester (Kapucu, 2012). Such techniques were used by professors in the first year of our program, and two professors teaching in our first semester were instrumental in suggesting that we find ways to support each other as a group, which led to the creation of our CoP. Further virtual collaborative techniques used by instructors in our program included peer feedback assignments, breakout room discussions, and collaborative presentation assignments. These additional techniques supported growth in our collaborative practices, peer mentorship, and peer support over our first year. This facilitated leadership was particularly significant for our cohort given the distance-based delivery of our program.

As doctoral students, and in our professional careers, we can be leaders and innovators in delivering higher education and in conducting and disseminating research. Involvement in a CoP is not only essential for student success but has also been identified as an important factor in faculty involvement in the reform of higher education (Gonzalo et al., 2017; Mayne et al., 2015), including the facilitation of broad institutional changes in curricula (Gehrke & Kezar, 2017), the initiation and sustainment of cross-disciplinary connections (Annala & Mäkinen, 2017), the use of student-centric teaching techniques (Tomkin et al., 2019), and success among research groups (Degn et al., 2018). Participation in CoPs early in doctoral education will better prepare students not only for success in their program but also continued success as they progress through their careers. It is important for doctoral students to make connections with peers in their area of academic study and to also reach out to peers in other disciplines to improve both individual and interdisciplinary growth. Doctoral program administrators and educators can support this through the creation of cross-disciplinary seminars, research opportunities, and curricula that give doctoral students the opportunity to share and create knowledge together.

## **Conclusion**

In this paper, we have described five strategies that we have leveraged to establish a strong support system as we progress through the PhD nursing program and complete our dissertations. Given that our work as doctoral students will become more solitary from this point in our program onwards, as a group we will have to be intentional while building community, fostering collaboration, strengthening connection, enhancing creativity, and promoting consistency. We hope that other doctoral students may find these strategies useful when developing their own CoPs. Finally, considering the potential positive effect of CoPs on graduate student success, we implore graduate program administrators and professors to help promote the development of CoPs among their students. Emphasis of CoP engagement among novice students who are in the early stages of developing their doctoral programs may help prevent attrition and promote student success, thereby reducing the shortage of PhD-prepared nurses.

## References

- Adkisson, A., Coffman, K., Galloway, C., Jefferson-Evans, A., Miller-McCollum, K., Olszewski, C. A., Spivey, D. A., & Znamenak, K. (2020). Peer mentoring and communities of practice: Reflections from newly minted PhDs. *New Directions for Adult and Continuing Education*, 2020(167–168), 107–118. <https://doi.org/10.1002/ace.20402>
- Akhavan, P., Marzieh, B., & Mirjafari, M. (2015). Identifying the success factors of communities of practice (CoPs): How do they affect on students to create knowledge? *Very Informal Newsletter on Library Automation*, 45(2), 198–213. <https://doi.org/10.1108/VINE-03-2014-0022>
- Alarcon, G. M., Lyons, J. B., Christensen, J. C., Klosterman, S. L., Bowers, M. A., Ryan, T. J., Jessup, S. A., & Wynne, K. T. (2018). The effect of propensity to trust and perceptions of trustworthiness on trust behaviors in dyads. *Behavior Research Methods*, 50(5), 1906–1920. <https://doi.org/10.3758/s13428-017-0959-6>
- Ames, C., Berman, R., & Casteel, A. (2018). A preliminary examination of doctoral student retention factors in private online workspaces. *International Journal of Doctoral Studies*, 13, 79–107. <https://doi.org/10.28945/3958>
- Annala, J., & Mäkinen, M. (2017). Communities of practice in higher education: Contradictory narratives of a university-wide curriculum reform. *Studies in Higher Education*, 42(11), 1941–1957. <https://doi.org/10.1080/03075079.2015.1125877>
- Andreassen, P., & Christensen, M. K. (2018). “We’re at a watershed”: The positioning of PhD nurses in clinical practice. *Journal of Advanced Nursing*, 74(8), 1908–1918. <https://doi.org/10.1111/jan.13581>
- Aragon, S. A., Babbo, G. M., Bear, S. J., & Schaffner, M. L. (2020). Nurses at the table: Action now! for nursing education. *Online Journal of Issues in Nursing*, 25(1). <http://ojin.nursingworld.org/MainMenuCategories/ANAMarketplace/ANAPeriodicals/OJIN/TableofContents/Vol-25-2020/No1-Jan-2020/Nurses-at-the-Table-Action-Now-for-Nursing-Education.html>
- Berry, S. (2018). Building community in an online graduate program: Exploring the role of an in-person orientation. *The Qualitative Report*, 23(7), 1673–1687.
- Boamah, S. A., Callen, M., & Cruz, E. (2021). Nursing faculty shortage in Canada: A scoping review of contributing factors. *Nurse Outlook*, 69(4), P574–588. <https://doi.org/10.1016/j.outlook.2021.01.018>
- Canadian Association of Schools of Nursing. (2018). Registered nurses education in Canada statistics 2016–2017. <https://www.casn.ca/wp-content/uploads/2018/12/2016-2017-EN-SFS-FINAL-REPORT-supressed-for-circulation-r.pdf>
- Conley, Q., Lutz, H. S., & Padgitt, A. J. (2017). Creating participatory online learning environments: A social learning approach revisited. *Journal of Interactive Learning Research*, 28(1), 5–27.
- Contu, A. (2014). On boundaries and difference: Communities of practice and power relations in creative work. *Management Learning*, 45(3), 289–316. <https://doi.org/10.1177/1350507612471926>

- Degn, L., Franssen, T., Sørensen, M. P., & De Rijcke, S. (2018). Research groups as communities of practice—a case study of four high-performing research groups. *Higher Education*, 76(2), 231–246. <https://doi.org/10.1007/s10734-017-0205-2>
- Fang, D., & Zhan, L. (2021). Completion and attrition of nursing PhD students of the 2001 to 2010 matriculating cohorts. *Nursing Outlook*, 69(3), 340–349. <https://doi.org/10.1016/j.outlook.2020.12.014>
- Finch, D., & Jacobs, K. (2012). Online education: Best practices to promote learning. In *Proceedings of the human factors and ergonomics society annual meeting* (Vol. 56, No. 1, pp. 546–550). SAGE Publications.
- Gehrke, S., & Kezar, A. (2017). The roles of STEM faculty communities of practice in institutional and departmental reform in higher education. *American Educational Research Journal*, 54(5), 803–833. <https://doi.org/10.3102/0002831217706736>
- Gonzalo, J. D., Thompson, B. M., Haidet, P., Mann, K., & Wolpaw, D. R. (2017). A constructive reframing of student roles and systems learning in medical education using a communities of practice lens. *Academic Medicine*, 92(12), 1687–1694. <https://doi.org/10.1097/ACM.0000000000001778>
- Jairam, D., & Kahl, D. H. (2012). Navigating the doctoral experience: The role of social support in successful degree completion. *International Journal of Doctoral Studies*, 7, 311–329. <https://doi.org/10.28945/1700>
- Kapucu, N. (2012). Classrooms as communities of practice: designing and facilitating learning in a networked environment. *Journal of Public Affairs Education*, 18(3), 585–610. <https://doi.org/10.1080/15236803.2012.12001701>
- Lahenius, K. (2012). Communities of practice supporting doctoral studies. *The International Journal of Management Education*, 10(1), 29–38. <https://doi.org/10.1016/j.ijme.2012.02.003>
- Li, L. C., Grimshaw, J. M., Nielsen, C., Judd, M., Coyte, P. C., & Graham, I. D. (2009). Use of communities of practice in business and health care sectors: A systematic review. *Implementation Science*, 4(27), 1–9. <https://doi.org/10.1186/1748-5908-4-27>
- Lloyd, J. (2019). Honesty, respect, consistency are part of being a leader. *Health Care Registration*, 28(5), 3–5.
- Marks, M. J., Trafimow, D., & Rice, S. C. (2014). Attachment-related individual differences in the consistency of relationship behavior interpretation. *Journal of Personality*, 82(3), 237–249. <https://doi.org/10.1111/jopy.12048>
- Mavri, A., Ioannou, A., & Loizides, F. (2021). Cross-organisational communities of practice: Enhancing creativity and epistemic cognition in higher education. *The Internet and Higher Education*, 49, Article 100792. <https://doi.org/10.1016/j.iheduc.2021.100792>
- Mayne, W., Andrew, N., Drury, C., Egan, I., Leitch, A., & Malone, M. (2015). “There’s more unites us than divides us!” A further and higher education community of practice in nursing. *Journal of Further and Higher Education*, 39(2), 163–179. <https://doi.org/10.1080/0309877X.2013.817000>

- McCray, J., & Joseph-Richard, P. (2020). Towards a model of resilience protection: Factors influencing doctoral completion. *Higher Education*, 80(4), 679–699. <https://doi.org/10.1007/s10734-020-00507-4>
- McLoughlin, C., Patel, K. D., O’Callaghan, T., & Reeves, S. (2018). The use of virtual communities of practice to improve interprofessional collaboration and education: Findings from an integrated review. *Journal of Interprofessional Care*, 32(2), 136–142. <https://doi.org/10.1080/13561820.2017.1377692>
- McMillan, D. W., & Chavis, D. M. (1986). Sense of community: A definition and theory. *Journal of Community Psychology*, 14(1), 6–23.
- McNett, M., Masciola, R., Sievert, D., & Tucker, S. (2021). Advancing evidence-based practice through implementation science: Critical contributions of doctor of nursing practice- and doctor of philosophy-prepared nurses. *Worldviews on Evidence-based Nursing*, 18(2), 93–101. <https://doi.org/10.1111/wvn.12496>
- Mohtar, R. H., & Lawford, R. (2016). Present and future of the water-energy-food nexus and the role of the community of practice. *Journal of Environmental Studies and Sciences*, 6(1), 192–199. <https://doi.org/10.1007/s13412-016-0378-5>
- Nuutila, K., Tuominen, H., Tapola, A., Vainikainen, M.-P., & Niemivirta, M. (2018). Consistency, longitudinal stability, and predictions of elementary school students’ task interest, success expectancy, and performance in mathematics. *Learning and Instruction*, 56, 73–83. <https://doi.org/10.1016/j.learninstruc.2018.04.003>
- Pancheri, K., Fowler, D. L., Wiggs, C. M., Schultz, R., Lewis, P., & Nurse, R. (2013). Fostering completion of the doctor of philosophy degree through scholarly collegial support. *The Journal of Continuing Education in Nursing*, 44(7), 309–312. <https://doi.org/10.3928/00220124-20130515-38>
- Polomano, R. C., Giordano, N. A., Miyamoto, S., Trautman, D., Kempf, S., & Nuzzo, P. M. (2021). Emerging roles for research intensive PhD prepared nurses: Beyond faculty positions. *Journal of Professional Nursing*, 37(1), 235–240. <https://doi.org/10.1016/j.profnurs.2020.09.002>
- Pyrko, I., Dörfler, V., & Eden, C. (2017). Thinking together: What makes communities of practice work? *Human Relations*, 70(4), 389–409. <https://doi.org/10.1177/0018726716661040>
- Scutelnicu, G., Tekula, R., Gordon, B., & Knepper, H. J. (2019). Consistency is key in online learning: Evaluating student and instructor perceptions of a collaborative online-course template. *Teaching Public Administration*, 37(3), 274–292. <https://doi.org/10.1177/0144739419852759>
- Serrat, O. (2017). *Knowledge solutions*. Springer. [https://doi.org/10.1007/978-981-10-0983-9\\_61](https://doi.org/10.1007/978-981-10-0983-9_61)
- Smith, D. G., Jr, & Delmore, B. (2007). Three key components to successfully completing a nursing doctoral program. *Journal of Continuing Education in Nursing*, 38(2), 76–82. <https://doi.org/10.3928/00220124-20070301-01>

- Stanfill, A. G., Aycock, D., Dionne-Odom, J. N., & Rosa, W. E. (2019). Strategies and resources for increasing the PhD pipeline and producing independent nurse scientists. *Journal of Nursing Scholarship*, 51(6), 717-726. <https://doi.org/10.1111/jnu.12524>
- Studebaker, B., & Curtis, H. (2021). Building community in an online doctoral program. *Christian Higher Education*, 20(1-2), 15-27.
- Stürmer, S., Ihme, T., Fisseler, B., Sonnenberg, K., & Barbarino, M. (2018). Promises of structured relationship building for higher distance education: Evaluating the effects of a virtual fast-friendship procedure. *Computers and Education*, 124, 51-61. <https://doi.org/10.1016/j.compedu.2018.05.015>
- Sverdlik, A., C. Hall, N., McAlpine, L., & Hubbard, K. (2018). The PhD experience: A review of the factors influencing doctoral students' completion, achievement, and well-being. *International Journal of Doctoral Studies*, 13, 361-388. <https://doi.org/10.28945/4113>
- Terrell, S., Snyder, M., Dringus, L., & Maddrey, E. (2015). A grounded theory of connectivity and persistence in a limited residency doctoral program. *The Qualitative Report*, 17(31), 1-14. <https://doi.org/10.46743/2160-3715/2012.1747>
- Thorne, S. (2016). PhD without the Ph? *Nursing Inquiry*, 23(4), 281-282. <https://doi.org/10.1111/nin.12169>
- Tomkin, J. H., Beilstein, S. O., Morphew, J. W., & Herman, G. L. (2019). Evidence that communities of practice are associated with active learning in large STEM lectures. *International Journal of STEM Education*, 6(1), Article 1 (2019). <https://doi.org/10.1186/s40594-018-0154-z>
- Volkert, D., Candela, L., & Bernacki, M. (2018). Student motivation, stressors, and intent to leave nursing doctoral study: A national study using path analysis. *Nurse Education Today*, 61, 210-215. <https://doi.org/10.1016/j.nedt.2017.11.033>
- Wang, J., Zhang, R., Hao, J.-X., & Chen, X. (2019). Motivation factors of knowledge collaboration in virtual communities of practice: A perspective from system dynamics. *Journal of Knowledge Management*, 23(3), 466-488. <https://doi.org/10.1108/JKM-02-2018-0061>
- Wazni, L., Gifford, W., Cantin, C., & Davies, B. A. (2021). A community of practice for graduate students in health sciences. *Higher Education Evaluation and Development*, 15(2), 135-151. <https://doi.org/10.1108/HEED-10-2020-0037>
- Webber, E., & Dunbar, R. (2020). The fractal structure of communities of practice: Implications for business organization. *PloS One*, 15(4), Article e0232204. <https://doi.org/10.1371/journal.pone.0232204>
- Wenger, E., McDermott, R., & Snyder, W. (2002). *Cultivating communities of practice: A guide to managing knowledge*. Harvard Business School Press.
- Zahl, S. (2015). The impact of community for part-time doctoral students: How relationships in the academic department affect student persistence. *International Journal of Doctoral Studies*, 10, 301-321. <https://doi.org/10.28945/2297>