Finding Your People in the Digital Age: Virtual Communities of Practice to Promote Education Scholarship

Lalena M. Yarris, MD, MCR (@lainieyarris)
Teresa M. Chan, MD, MHPE (@TChanMD)
Michael Gottlieb, MD (@MGottliebMD)
Amy Miller Juve, EdD (@JuveAmy)

Medical educators have described a number of barriers that may prevent them from reaching their education scholarship goals, including limited time, resources, mentorship, access to expertise, and intrinsic reward.[1] In the graduate medical education field, program directors may feel isolated, undervalued, and overextended. The administrative demands of residency and fellowship programs may leave little time for traveling to conferences or attending meetings that can provide opportunities for collaboration, mentorship, scholarship, and a sense of community. Engaging in a virtual community of practice (vCoP) may help educators overcome barriers to successfully generate scholarship.

Communities of practice (CoPs) began to emerge in the education community among groups of people who interact around a common educational question, problem, or specific passion. Members of a CoP share information and advice, problem solve, and support each other. Over time, the group develops a deep, unique, and shared understanding about their practice and may produce educational materials such as manuals, standards, or tools to support their work.[2] The structure of a CoP can be defined by the presence of 3 characteristics: (1) a mutual agreement where members establish group norms and build relationships with each other; (2) a joint enterprise where the group determines its focus or "domain"; and (3) a shared repertoire of resources.[3–5]

Initially starting as communities that interact face-to-face, CoPs have evolved with technology, and now vCoPs are becoming commonplace.[6] A vCoP is a CoP that utilizes web-based technology to facilitate communication and engagement.[7] Derivative of Lave and Wenger's original theories on situated learning, the practice of educators gathering together to connect over their craft is not a new one.[4,5] However, many institutions may have limited educational specialists.[8,9] Therefore, vCoPs can provide access to a larger community with which to share knowledge, build relationships, and foster innovation.[9,10] Virtual CoPs can also expand one's resources for collaboration independent of geography or time zones.[11,12] This can facilitate study site recruitment and administration of multisite studies, which can produce robust scholarship.[13] Furthermore, vCoPs can create opportunities for shared learning. One of the more popular versions of vCoP uses web-based resources, such as Twitter or Instagram. However, newer approaches can also include closed platforms (eg, Slack, Basecamp, WhatsApp, or Facebook groups).[14–16]

Educators wishing to explore vCoPs that have evolved among the health professions may find their community in existing open, blog-based, or closed communities of practice (TABLE). However, educators wanting to develop their own vCoP can take a stepwise approach that builds on literature-based recommendations (FIGURE 1).[2–5,17]

As vCoPs become more common in medical education, there will be increasing opportunities for scholarly work—from innovations and discovery research to online ethnography and program evaluation, through harnessing the power of archived comments to discovering what works (or doesn't) in these online environments.[18,19] There are opportunities to galvanize individuals within a defined vCoP to support research efforts and to recruit study sites or participants.[13,20,21] In our experience cultivating a vCOP to support and develop medical education scholarship, we found that an apprenticeship model allowed for variation in the levels of engagement based on participant interest, availability, and experience. New members have the opportunity to assume gradual progression to core membership (FIGURE 2).[14] It is important that members at all levels of engagement, from peripheral to leadership, experience benefits from participation and feel included and

DOI: http://dx.doi.org/10.4300/JGME-D-18-01093.1

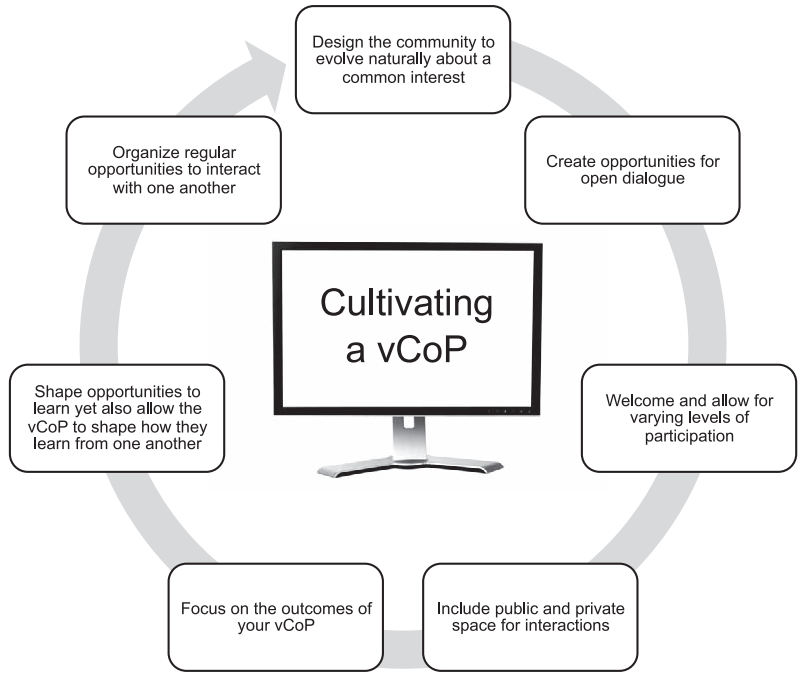

FIGURE 1
Creating a Virtual Community of Practice

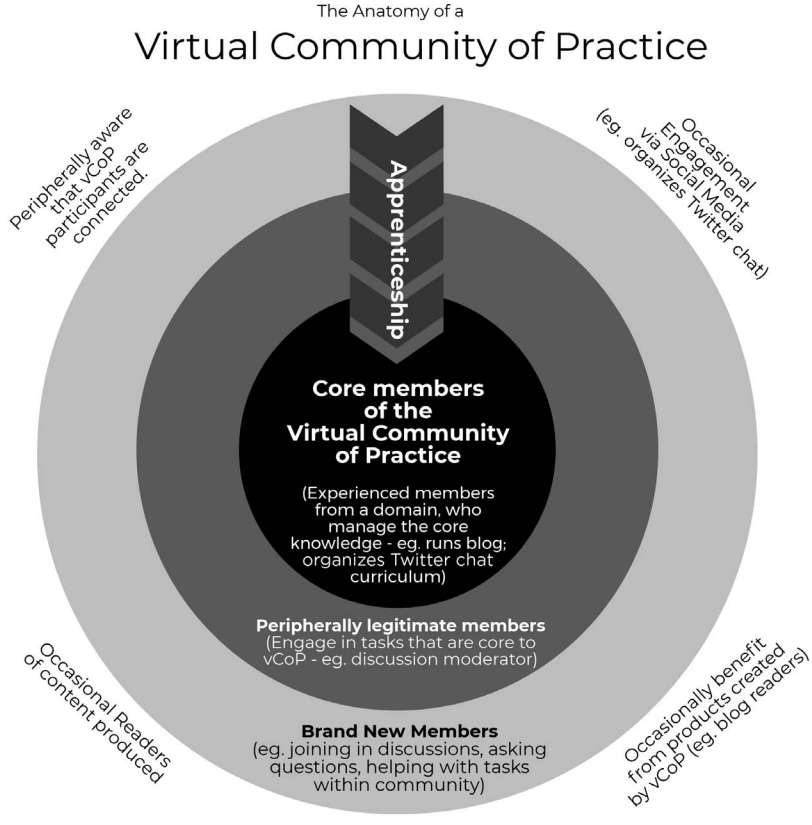

FIGURE 2
The Anatomy of a Virtual Community of Practice

TABLE
Virtual Communities of Practice for Health Professions Educators

Virtual CoP	Audience	Description	Examples
Open Networks	Open participation *Usually via Twitter, (although communities will arise on other platforms over time).*	▪ Open engagement of multiple stakeholders ▪ Loose associations ▪ Common practice, usually around a specific area (eg, discipline in medicine, medical education) ▪ Anchored connecting continuously, no real home base	▪ #FOAMed[9] ▪ #FOAMsim[24] ▪ #MedEd[25] ▪ #HMIchat ▪ #WomeninMedicine
Blog-based	Open participation with moderation *Usually focused on a curated topic (eg, a specific journal article, topic, or artifact). Not all blogs qualify as fostering a vCoP; there must be active participation of members to engage with one another.*	▪ Open engagement of multiple stakeholders ▪ Focused on some form of archiving via a blog, for posterity ▪ Evolving applications in graduate medical education[26]	▪ ALiEM Medical Education in Cases (MEdIC) Series[27] ▪ #ALiEMJC[28] ▪ #NephJC[29–31] ▪ #JGMEscholar[32] ▪ CanadiEM blog[33] ▪ St. Emlyn's blog[34] ▪ International Clinician Educator Blog's Education Theory Made Practical series[35]
Closed networks	Selective participation *Harnessing the safety of a closed network, these groups are often used to foster development within a smaller group.*	▪ Closed networks allow groups to engage in a smaller group, creating a safer space that is less intimidating than an open network. ▪ Closed networks can give more junior or introverted educators a more consistent, defined CoP, which can facilitate networking and peer mentoring in a format targeted to their developmental career stage.	▪ ALiEM Faculty Incubator on Slack[14] ▪ ANZCEN project on Trello[36] ▪ CanadiEM.org editorial team on Slack[33]

Abbreviations: FOAMed, Free Open Access Medical education; FOAMsim, Free Open Access Medical SIMulation education; MedEd, medical education; HMIchat, Harvard Macy Institute chat; AliEM, Academic Life in Emergency Medicine; NephJC, Nephrology Journal Club; JGMEscholar, *Journal of Graduate Medical Education* scholarship.

intrinsically motivated to contribute. In addition, succession plans should be built into the model to prevent core member burnout and maintain fresh perspectives, ideas, and enthusiasm.

Ethical issues may arise when performing research using online communities. Individuals engaging in these online forums are creating open-access content, which may raise discussion and debate regarding data ownership and subject consent for participation in research. However, some research ethics boards have broadly approved research involving vCoP data, and it is likely that further taxonomy of best practices and ethical standards will follow trends in online data collection and analysis.[22,23]

Graduate medical educators can at times feel lonely in their academic pursuits. Developing or engaging in a vCoP can facilitate the sharing of workload and expertise, and provide a support network to boost scholarship, career satisfaction, and ultimately advance the science of education. Burgeoning virtual opportunities are a great place to start for educators who struggle with limited time, local networks, or opportunities for travel.

References

1. Yarris LM, Juve AM, Artino AR, Sullivan GM, Rougas S, Joyce B, et al. Expertise, time, money, mentoring, and reward: systemic barriers that limit education researcher productivity-proceedings from the AAMC GEA Workshop. *J Grad Med Educ*. 2014;6(3):430–436. doi:10.4300/JGME-D-14-00340.1.
2. Wenger E, McDermott RA, Snyder W. *Cultivating Communities of Practice: A Guide to Managing*

Knowledge. Boston, MA: Harvard Business Press; 2002.
3. Wenger E. Communities of practice: learning as a social system. *Syst Thinker.* 1998;9(5):2–3.
4. Lave J, Wenger E. *Situated Learning: Legitimate Peripheral Participation*. Cambridge, UK: Cambridge University Press; 1991.
5. Wenger E. *Communities of Practice: Learning, Meaning, and Identity.* Cambridge, UK: Cambridge University Press; 1990.
6. Von Wartburg I, Rost K, Teichert T. The creation of social and intellectual capital in virtual communities of practice: shaping social structure in virtual communities of practice. *Int J Learning Change*. 2006;1(3):299–316. https://doi.org/10.1504/IJLC.2006.010972.
7. Dubé L, Bourhis A, Jacob R. The impact of structuring characteristics on the launching of virtual communities of practice. *J Organ Change Manag*. 2005;18(2):145–166. doi:10.1108/09534810510589570.
8. Coates WC, Runde DP, Yarris LM, Rougas S, Guth TA, Santen SA, et al. Creating a cadre of fellowship-trained medical educators: a qualitative study of faculty development program leaders perspectives and advice. *Acad Med*. 2016;91(12):1696–1704. doi:10.1097/ACM.0000000000001097.
9. Thoma B, Brazil V, Spurr J, Palaganas J, Eppich W, Grant V, et al. Establishing a virtual community of practice in simulation: the value of social media. *Simul Healthc*. 2018;13(2):124–130. doi:10.1097/SIH.0000000000000284.
10. Li LC, Grimshaw JM, Nielsen C, Judd M, Coyte PC, Graham ID. Use of communities of practice in business and health care sectors: a systematic review. *Implement Sci*. 2009;4:27. doi:10.1186/1748-5908-4-27.
11. Gottlieb M, Chan TM, Sherbino J, Yarris L. Multiple wins: embracing technology to increase efficiency and maximize efforts. *AEM Educ Train*. 2017;1(3):185–190. doi:10.1002/aet2.10029.
12. Gottlieb M, Fant A, King A, Messman A, Robinson D, Carmelli G, et al. One click away: digital mentorship in the modern era. *Cureus*. 2017;9(11):e1838. doi:10.7759/cureus.1838.
13. Thoma B, Paddock M, Purdy E, Sherbino J, Milne WK, Siemens M, et al. Leveraging a virtual community of practice to participate in a survey-based study: a description of the METRIQ study methodology. *AEM Educ Train*. 2017;1(2):110–113. doi:10.1002/aet2.10013
14. Chan TM, Gottlieb M, Sherbino J, Cooney R, Boysen-Osborn M, Swaminathan A, et al. The ALiEM faculty incubator: a novel online approach to faculty development in education scholarship. *Acad Med*. 2018;93(10):1497–1502. doi:10.1097/ACM.0000000000002309.
15. Smith T, Lambert R. A systematic review investigating the use of Twitter and Facebook in university-based healthcare education. *Health Educ*. 2014;114(5):347–366. doi:10.1108/HE-07-2013-0030
16. Valdez L, Gray A, Ramos G, Siu H. Medical education in infectious diseases. Using smartphone apps for active learning. *Open Forum Infectious Diseases*. 2017;4(suppl 1):444. doi:10.1093/ofid/ofx163.1128.
17. Ardichvili A. Learning and knowledge sharing in virtual communities of practice: motivators, barriers, and enablers. *Adv Develop Human Resources*. 2008;10(4):541–554. doi:10.1177/1523422308319536.
18. Chretien KC, Tuck MG, Simon M, Singh LO, Kind T. A digital ethnography of medical students who use Twitter for professional development. *J Gen Intern Med*. 2015;30(11):1673–1680. doi:10.1007/s11606-015-3345-z.
19. Dimitri D, Gubert A, Miller AB, Thoma B, Chan T. A quantitative study on anonymity and professionalism within an online free open access medical education community. *Cureus*. 2016;8(9):e788. doi:10.7759/cureus.788.
20. Chen E, Tsoy D, Upadhye S, Chan TM. The acute care of chronic pain study: perceptions of acute care providers on chronic pain, a social media-based investigation. *Cureus*. 2018;10(3):e2399. doi:10.7759/cureus.2399.
21. Artino AR Jr, Driessen EW, Maggio LA. Ethical shades of gray: international frequency of scientific misconduct and questionable research practices in health professions education. *Acad Med*. 2018 Aug 14. doi:10.1097/ACM.0000000000002412. [Epub ahead of print].
22. Zimmer M, Proferes NJ. A topology of Twitter research: disciplines, methods, and ethics. *Aslib J Inf Manage*. 2014;66(3):250–261. https://doi.org/10.1108/AJIM-09-2013-0083.
23. Conway M. Ethical issues in using Twitter for public health surveillance and research: developing a taxonomy of ethical concepts from the research literature. *J Med Internet Res*. 2014;16(12):e290. doi:10.2196/jmir.3617.
24. Melvin L, Chan T. Using Twitter in clinical education and practice. *J Grad Med Educ*. 2014;6(3):581–582. doi:10.4300/JGME-D-14-00342.1.
25. Cadogan M, Thoma B, Chan TM, Lin M. Free Open Access Meducation (FOAM): the rise of emergency medicine and critical care blogs and podcasts (2002–2013). *Emerg Med J*. 2014;31(e1):e76–e77. doi:10.1136/emermed-2013-203502.
26. Khadpe J, Joshi N. How to utilize blogs for residency education. *J Grad Med Educ*. 2016;8(4):605–606. doi:10.4300/JGME-D-16-00357.1.

27. Chan TM, Thoma B, Lin M. Creating, curating, and sharing online faculty development resources: the medical education in cases series experience. *Acad Med*. 2015;90(6):785–789. doi:10.1097/ACM.0000000000000692.
28. Lin M, Joshi N, Hayes BD, Chan TM. Accelerating knowledge translation: reflections from the online ALiEM-Annals global emergency medicine journal club experience. *Ann Emerg Med*. 2017;69(4):469–474. doi:10.1016/j.annemergmed.2016.11.010.
29. #NephJC blog. http://www.nephjc.com. Accessed December 10, 2018.
30. Topf JM, Sparks MA, Iannuzzella F, Lerma E, Oates T, Phelan PJ, et al. Twitter-based journal clubs: additional facts and clarifications. *J Med Internet Res*. 2015;17(9):e216. doi:10.2196/jmir.4639.
31. Topf JM, Hiremath S. Social media, medicine and the modern journal club. *Int Rev Psychiatry*. 2015;27(2):147–154. doi:10.3109/09540261.2014.998991.
32. Riddell J, Patocka C, Lin M, Sherbino J. *JGME*-ALiEM hot topics in medical education: analysis of a multimodal online discussion about team-based learning. *J Grad Med Educ*. 2017;9(1):102–108. doi:10.4300/JGME-D-16-00067.1.
33. Ting DK, Thoma B, Luckett-Gatopoulos S, Thomas A, Syed S, Bravo M, et al. CanadiEM: accessing a virtual community of practice to create a Canadian national medical education institution. *AEM Educ Training*. October 3, 2018. https://doi.org/10.1002/aet2.10199.
34. Carley S, Beardsell I, May N, Crowe L, Baombe J, Grayson A, et al. Social-media-enabled learning in emergency medicine: a case study of the growth, engagement and impact of a free open access medical education blog. *Postgrad Med J*. 2018;94(1108):92–96. doi:10.1136/postgradmedj-2017-135104.
35. International Clinician Educator (ICE) Blog. #ICEICLE: A new series on education theory. https://icenetblog.royalcollege.ca/2017/01/26/iceicle-a-new-series-on-education-theory. Accessed December 10, 2018.
36. Nickson C. Calling all educators—make a difference in ICU education. Life in the Fastlane. https://litfl.com/calling-all-educators-make-a-difference-in-icu-education/ Accessed December 10, 2018.

Lalena M. Yarris, MD, MCR, is Professor of Emergency Medicine, Oregon Health & Science University; **Teresa M. Chan, MD, MHPE,** is Assistant Professor of Emergency Medicine and Adjunct Scientist, McMaster Program for Education Research, Innovation, and Theory, Mcmaster University, Hamilton, Ontario, Canada; **Michael Gottlieb, MD,** is Assistant Professor of Emergency Medicine and Director of Emergency Ultrasound, Rush University Medical Center; and **Amy Miller Juve, EdD,** is Associate Professor of Anesthesiology and Perioperative Medicine and Professional Development, and Program Improvement Specialist for Graduate Medical Education, Oregon Health & Science University.

Corresponding author: Lalena M. Yarris, MD, MCR, Oregon Health & Science University, Mailcode CDW-EM, 3181 SW Sam Jackson Park Road, Portland, OR 97239, 503.494.2962, yarrisl@ohsu.edu