Emergency Transition to Virtual Education during COVID-19: Lessons and Opportunities for Experiential Learning and Practice Socialization

Joel Mintz[1], Waseem Wahood[1], Salimah Meghani [2], Vijay Rajput[1]

Corresponding author: Dr Vijay Rajput vrajput@nova.edu
Institution: 1. Nova Southeastern University, Dr. Kiran C. Patel College of Allopathic Medicine, 2. University of Pennsylvania, School of Nursing; New Courtland Center for Transitions and Health; and Leonard Davis Institute of Health Economics
Categories: Educational Strategies, Teaching and Learning, Clinical Skills

Received: 27/05/2020
Published: 09/07/2020

Abstract

In response to COVID-19, health professional schools made an emergency transition to virtual learning. The speed and scope of virtual learning adoption is unprecedented and poses major challenges to health professional schools to maintain important elements of their curriculum and pedagogical structure. Some challenges include maintaining fidelity of experiential and bedside clinical learning, along with practice socialization. These challenges may be amplified in traditionally underrepresented and poor students. There are some practical solutions to minimize these challenges. For example, health professional schools can find new means of encouraging community engagement and mentor-mentee relationships such as using technology to connect students with faculty and patients to mitigate losses in clinical experiences, and using video-chat over speech only forms of communication that can help establish some sense of learning community while online. Health professional schools may also use the COVID-19 crisis to establish new norms in health profession education, by developing hybrid educational content between multiple programs or health professions, with the goal of establishing or strengthening interprofessional educational opportunities and increasing access to them.

Keywords: COVID-19; experiential learning; practice socialization; virtual learning

Introduction

In response to the current COVID-19 pandemic, the Centers for Disease Control and Prevention (CDC) recommended urgent actions to reduce the spread of the disease. Key features of these recommendations were social distancing policies and a lock-down of all educational activities on campuses. The CDC and World Health
Organization (WHO) defines social distancing as maintaining a physical distance from others through two key mechanisms: maintaining a 6-foot distance from others in public and avoiding large gatherings (CDC, 2020; World Health, 2020). The adoption of social distancing in education resulted in school closures throughout K-12 and higher education. Closure of schools is not a novel public health response to a pandemic, as children and young adults have traditionally been viewed as disease vectors (Glass and Glass, 2008). Although some schools were closed during the Spanish Influenza pandemic of 1918, an often cited comparison to the current COVID-19 crisis, educators can now use the Internet to maintain curricular continuity, even while their students are physically apart (Roser et al., 2020).

All health professional schools have temporarily moved to virtual, non-patient contact instruction to minimize COVID-19 infections. Prior to the COVID-19 pandemic, academic institutions were already using virtual learning to help facilitate delivery of educational content. However, the speed at which this transformation occurred is unprecedented. Complete virtual health profession instruction is a drastic change that threatens the principles and pedagogical practices of a high-quality education for future clinicians. Therefore, there are contemporary challenges and opportunities in delivering virtual medical education in the areas of experiential learning, and practice socialization during the unfolding COVID-19 pandemic.

Virtual Learning

Virtual learning in professional health settings is not a new concept. Video-recorded lectures in medical schools can date back to 2000, when they were used to enhance in-person lectures (Dev et al., 2000). Currently, many health professional schools deliver at least some educational content virtually and are used by many students (Evans et al., 2014). Virtual delivery often consists of pre-recorded videos or live recordings of didactic sessions and offers students flexibility to learn at one’s own pace, outside the bounds of a traditional classroom. This independent form of virtual learning is termed asynchronous learning.

The current pandemic has forced health professional schools to also adopt synchronous virtual learning, whereby students meet in groups with faculty via some online platform, such as Zoom or Bluejeans. Educators and administrators are challenged with the task to swiftly adapt their curriculums to a rather unfamiliar synchronous apparatus and to balance the transfer of knowledge, skills and attitudes that were originally intended to be transmitted in-person.

The Implications of Virtual Strategies for Experiential Learning

Pedagogical strategies require that the content, skills, and methods of instruction are consistent with the learning objectives and cognitive domains (Churches, 2010). Many schools use student-driven sessions to enhance active learning. These sessions are commonly used to instill future proof competencies, such as leadership, humanism, communication, teamwork, critical thinking, and many others (Gade and Chari, 2013). A virtual classroom should encourage students and facilitators in small groups to get creative with the way that they present and design educational activities, which can improve student retention of knowledge through active engagement (Beeland, 2002; Heflin, Shewmaker and Nguyen, 2017). The experience of these classrooms and sessions is much different than their in-person counterparts, minimizing the critical transfer of future proof competencies to the majority of health professional students. The effect of virtual learning becomes more pronounced in clinical training due to a lack of patient-centered experiential learning.

Clinical experiential learning is essential for building students’ abilities to form therapeutic relationships, diagnostic acumen and other professional skills that are crucial for professional identity formation. Medical students learn best through bedside teaching on clerkships and designated preclinical experience alongside educators (Lehmann et al.,...
Many other health professionals also extract similar benefits from in-person patient centered clinical experiences (Tucker et al., 2003; Buccieri, Pivko and Olzenak, 2011). Currently, clinical rotations and preceptorships across the country and many parts of the world have been delayed or modified to maintain student safety and meet the requirements of local government ordinances. All schools and health profession organizations provided various mandates and guidelines to replace clinical experiences with alternative synchronous and asynchronous virtual learning activities. Accreditation bodies require schools to provide evidence of minimum supervised-direct patient hours for certification exams. COVID-19 has challenged schools to provide these hours by alternative means (COVID19 Policy FAQs, 2020).

A combination of virtual group sessions and virtual clinical skills tools such as AquiferTM has replaced clinical experiences in the United States. While such tools provide a comprehensive format to teach common disease modalities, they struggle to replace the actual variability and uncertainty of clinical syndromes and patient management. In real time clinical settings, critical thinking, problem solving, and judgment must be used in situations that are often unstructured, disorganized, and confounded by human factors such as emotion. Emotional connections have been shown to be beneficial for long-term retention of knowledge and provide a framework for health professional students to link their outside studies to real patients (Kensinger, 2009). Additionally, the absence of in-person clinical time also reduces the amount of practice students have to perform professional duties under supervision, which may disadvantage them as they return to clinics and preceptorships once the pandemic ends.

Teaching humanism requires the emotions of face-to-face interactions that are difficult to transfer via video chat (Kohoulat et al., 2017). A key aspect of humanism is respect for the concerns and values of others (Stern et al., 2008). During in-person sessions, students from all different backgrounds are exposed to the values and beliefs of their peers. These daily interactions are critical as they minimize negative perceptions of underrepresented groups and strengthen intercultural communication (Veal, Bull and Miller, 2012), (Veal, Bull and Miller, 2012). Combined with minimal student resources and lack of in person mentoring, traditionally underrepresented health professional students may lose out, especially as many may not have the same technological access and dedicated physical space for virtual learning as their peers (Perrin and Turner, 2019).

### The Implications of Virtual Learning on Practice Socialization

Practice socialization stems from interpersonal interactions between, peers, role models, mentors, other health professionals, and patients (Cruess et al., 2015). Every healthcare organization has its own culture and learning environment whereby students are exposed to various aspects of professional practice and values. Moreover, each health professional institution has elements designed to teach socialization in healthcare (Vaidyanathan, 2015). Importantly, health professional schools offer students the opportunity to roleplay as competent and humanistic healthcare providers (Cruess et al., 2015). With a virtual curriculum, many of these critical elements of practice socialization are minimized or entirely absent.

Experiential learning increases interconnectedness between students and faculty in addition to encouraging the development of a community within each school (Brandl et al., 2017). Fostering the development of a community provides the backbone on which practice socialization can occur (McGene, 2014). Communities also provide a means of enhancing practice socialization via the creation of strong social support networks, which can reduce psychological distress and increase the sense of belonging (McGene, 2014; Lehmann et al., 2018). Using synchronous virtual learning, faculty and students can see all other members simultaneously, allowing them to gauge reactions and assess understanding. Faculty can see themselves at the same level of each student, allowing them to connect more with their trainees. Lecturers can give talks from the comfort of their clinic, home or office, which improves the likelihood of their availability and accessibility. Introverted students may also be given an opportunity
to shine in a virtual environment, as they may be in a more suitable position to contribute to group discussions and activities. When the benefits of synchronous virtual learning are weighed against the limited experiential learning and face-to-face time with peers and mentors, professional identity formation of medical students will be hindered in this environment.

Due to the COVID-19 pandemic, inadequacies of predictive models, and unpredictability of future outbreaks, there is an urgent need to develop strategies to maintain fidelity of health professional education using virtual learning. Specifically, educators should focus on employing a wide array of innovative strategies to improve experiential learning, and practice socialization.

**Opportunities for Virtual Learning**

Clinical experiential learning can be restored through finding innovative ways to connect students with patients. This can be done directly through using telemedicine services in outpatient clinics, performing triage functions for hospital systems, or by virtually joining residents and attending during teaching rounds after appropriate permission. Telemedicine services had already been on the rise prior to the pandemic, and COVID-19 gives students a chance to practice this evolving means of patient contact (Barnett et al., 2018). Patient contact through telemedicine can help restore some aspects of that emotional and social connection with patients and allow them to practice verbal communication and clinical reasoning. One solution that may be well received by students and patients alike, is to allow students to call and update patient families under supervision of attending and residents. Clinicians can use technology, such as Google Glass or video conferencing, to allow students to observe or engage in clinical encounters in hospitals and emergency rooms. This can help restore meaningful, active engagement in clinical care.

It is also important to keep students engaged during synchronous virtual learning activities. One method is to create virtual breakout rooms during video conferencing sessions. In breakout rooms, the class can be randomly subdivided so they can discuss and solve problems together. This encourages and reinforces student teamwork and active learning, in addition to increasing student accountability for sharing material they have learned (Brandl et al., 2017). Students may also use screen sharing features to review articles and learning websites as a group. Furthermore, small group learning not only increases interconnectedness between students, but also encourages a sense of community within health professional schools (Brandl et al., 2017). This can be reinforced by having students remain connected via video, rather than voice or text only chat (Schilbach et al., 2008).

Practice socialization is deeply linked to experiential learning and professional identity formation. By restoring patient contact and maximizing experiential learning sessions, educators can return the ability to roleplay as a healthcare professional to their students. While this effect may be somewhat diminished by the inability to touch and feel patients, it can help return the critical feeling of providing patient care. Students will eventually return to rotation sites and be thrust into patient care when the pandemic ends, proving it critical to discover new methods to keep students engaged in high fidelity healthcare experiences.

Virtual learning is an ideal means for encouraging interprofessional collaboration, which can also facilitate practice socialization. Using a synchronous learning apparatus, students across the country can connect in real time and share their educational experiences. Schools from around the world may benefit from reaching out to other schools to hold large, health professional activities that span multiple institutions.

**Enhancing Digital Communication Skills Through Virtual Learning**

Virtual learning also can be used to enhance digital communication skills, which are important for 21st century
physicians (Meskó et al., 2017). The COVID-19 pandemic presents an opportunity for students to master digital communication technologies through sheer repetition. However, if well executed, virtual learning can help transfer other digital skills, such as digital empathy. Digital empathy education is an evolving area of need in health professional education, as online disinhibition in traditional digital encounters often diminishes provider empathy (Terry and Cain, 2016). (Terry and Cain, 2016; van Laar et al., 2017). Blends of teaching and technology can be used to aid future students rather than hinder them.

Conclusion

The COVID-19 pandemic has occurred during an era of an unprecedented and unfolding digital transformation in our society. While the health professional training response to the pandemic in the United States was swift, it also identified opportunities and shortcomings in preparedness to continuing pedagogical missions in a national and global health crisis. There are challenges and opportunities in virtual learning, with specific considerations for experiential learning, practice socialization, and health professional identity formation. Practice socialization and experiential learning should be complemented by and integrated in virtual learning, wherever possible. Health professional educators must adapt to new tools and engage in a rigorous dialogue about future preparedness for effective educational missions in the time of global emergencies.

Take Home Messages

- In response to COVID-19, health professional schools made an emergency transition to virtual learning.
- Experiential learning, and practice socialization are difficult to overcome in medical education and for professional identity formation.
- There are innovative practical solutions needed to minimize the impact by methods to encourage virtual community engagement, mentor-mentee relationships, and digital communication training.
- Interprofessional educational opportunities with other health professional schools or programs can be established.

Notes On Contributors

Joel Mintz is a second-year medical student, Nova Southeastern University, Dr. Kiran C. Patel College of Allopathic Medicine, Davie, FL. ORCID: https://orcid.org/0000-0002-8121-1736

Waseem Wahood is a first-year medical student, Nova Southeastern University, Dr. Kiran C. Patel College of Allopathic Medicine, Davie, FL. ORCID: https://orcid.org/0000-0002-2963-4096

Salimah H. Meghani is Professor and Term Chair of Palliative Care, University of Pennsylvania, School of Nursing; NewCourtland Center for Transitions and Health; and Leonard Davis Institute of Health Economics, Philadelphia, PA. ORCID: https://orcid.org/0000-0002-5866-8279

Vijay Rajput is Professor and Chair, Department of Medical Education, Nova Southeastern University, Dr. Kiran C. Patel College of Allopathic Medicine, Davie, FL. ORCID: https://orcid.org/0000-0001-5203-5342
Acknowledgements

We want to acknowledge Ms. Meera Rajput for her valuable contribution by reviewing and editing the manuscript.

Bibliography/References

Barnett, M. L., Ray, K. N., Souza, J. and Mehrotra, A. (2018) 'Trends in Telemedicine Use in a Large Commercially Insured Population, 2005-2017', JAMA, 320(20), pp. 2147-2149. https://doi.org/10.1001/jama.2018.12354

Beeland, W. D., Jr. (2002) 'Student engagement, visual learning and technology: can interactive whiteboards help?', http://vtext.valdosta.edu/xmlui/handle/10428/1252 (Accessed: 23/04/2020).

Brandl, K., Schneid, S. D., Smith, S., Winegarden, B., et al. (2017) 'Small group activities within academic communities improve the connectedness of students and faculty', Med. Teach., 39(8), pp. 813-819. https://doi.org/10.1080/0142159X.2017.1317728

Buccieri, K. M., Pivko, S. E. and Olzenak, D. L. (2011) 'How Does a Physical Therapist Acquire the Skills of an Expert Clinical Instructor?', Journal of Physical Therapy Education, 25(2), p. 17, https://journals.lww.com/jopte/Abstract/2011/01000/How_Does_a_Physical_Therapist_Acquire_the_Skills.5.aspx (Accessed: 01/05/2020).

CDC (2020) Coronavirus Disease 2019 (COVID-19). Available at: https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/social-distancing.html (Accessed: 14/04/2020).

 Churches, A. (2010) 'Bloom's digital taxonomy', http://burtonslifelearning.pbworks.com/f/BloomDigitalTaxonomy2001.pdf (Accessed: 23/04/2020).

COVID19 Policy FAQs (2020). Available at: https://www.nursingworld.org/certification/covid19-policy-faqs/ (Accessed: 20/04/2020).

Cruess, R. L., Cruess, S. R., Boudreau, J. D., Snell, L., et al. (2015) 'A schematic representation of the professional identity formation and socialization of medical students and residents: a guide for medical educators', Acad. Med., 90(6), pp. 718-725. https://doi.org/10.1097/ACM.0000000000000700

Dev, P., Rindfleisch, T. C., Kush, S. J. and Stringer, J. R. (2000) 'An Analysis of Technology Usage for Streaming Digital Video in Support of a Preclinical Curriculum', Proc. AMIA Symp., https://pubmed.ncbi.nlm.nih.gov/11079869/ (Accessed: 23/04/2020).

Evans, S., Knight, T., Sønderlund, A. and Tooley, G. (2014) 'Facilitators’ experience of delivering asynchronous and synchronous online interprofessional education', Med. Teach., 36(12), pp. 1051-1056. https://doi.org/10.3109/0142159X.2014.918254

Gade, S. and Chari, S. (2013) 'Case-based learning in endocrine physiology: an approach toward self-directed learning and the development of soft skills in medical students', Adv. Physiol. Educ., 37(4), pp. 356-360. https://doi.org/10.1152/advan.00076.2012
Glass, L. M. and Glass, R. J. (2008) 'Social contact networks for the spread of pandemic influenza in children and teenagers', *BMC Public Health*, 8, p. 61. https://doi.org/10.1186/1471-2458-8-61

Heflin, H., Shewmaker, J. and Nguyen, J. (2017) 'Impact of mobile technology on student attitudes, engagement, and learning', *Comput. Educ.*, 107, pp. 91-99. https://doi.org/10.1016/j.compedu.2017.01.006

Kensinger, E. A. (2009) 'Remembering the Details: Effects of Emotion', *Emot. Rev.*, 1(2), pp. 99-113. https://doi.org/10.1177/1754073908100432

Kohoulat, N., Hayat, A. A., Dehghani, M. R., Kojuri, J., et al. (2017) 'Medical students' academic emotions: the role of perceived learning environment', *J Adv Med Educ Prof*, 5(2), pp. 78-83, https://www.ncbi.nlm.nih.gov/pubmed/28367464 (Accessed: 21/04/2020).

Lehmann, L. S., Sulmasy, L. S., Desai, S., Acp Ethics, P., et al. (2018) 'Hidden Curricula, Ethics, and Professionalism: Optimizing Clinical Learning Environments in Becoming and Being a Physician: A Position Paper of the American College of Physicians', *Ann. Intern. Med.*, 168(7), pp. 506-508. https://doi.org/10.7326/M17-2058

McGene, J. (2014) 'Social Fitness and Resilience: A Review of Relevant Constructs, Measures, and Links to Well-Being', *Rand Health Q*, 3(4), p. 7. https://www.ncbi.nlm.nih.gov/pubmed/28083312 (Accessed: 17/04/2020).

Meskó, B., Drobni, Z., Bényei, É., Gergely, B., et al. (2017) 'Digital health is a cultural transformation of traditional healthcare', *Mhealth*, 3, p. 38. https://doi.org/10.21037/mhealth.2017.08.07

Perrin, A. and Turner, E. (2019) 'Smartphones help blacks, Hispanics bridge some – but not all – digital gaps with whites', https://www.pewresearch.org/fact-tank/2019/08/20/smartphones-help-blacks-hispanics-bridge-some-but-not-all-digital-gaps-with-whites/ (Accessed: 22/04/2020).

Roser, M., Ritchie, H., Ortiz-Ospina, E. and Hasell, J. (2020) Coronavirus Disease (COVID-19) – Statistics and Research. Available at: https://ourworldindata.org/coronavirus (Accessed: 16/04/2020).

Schilbach, L., Eickhoff, S. B., Mojzisch, A. and Vogeley, K. (2008) 'What's in a smile? Neural correlates of facial embodiment during social interaction', *Soc. Neurosci.*, 3(1), pp. 37-50. https://doi.org/10.1080/17470910701563228

Stern, D. T., Cohen, J. J., Bruder, A., Packer, B., et al. (2008) 'Teaching humanism', *Perspect. Biol. Med.*, 51(4), pp. 495-507. https://doi.org/10.1353/pbm.0.0059

Terry, C. and Cain, J. (2016) 'The Emerging Issue of Digital Empathy', *Am. J. Pharm. Educ.*, 80(4), p. 58. https://doi.org/10.5688/ajpe80458

Tucker, K., Wakefield, A., Boggis, C., Lawson, M., et al. (2003) 'Learning together: clinical skills teaching for medical and nursing students', *Med. Educ.*, 37(7), pp. 630-637. https://doi.org/10.1046/j.1365-2923.2003.01558.x

Vaidyanathan, B. (2015) 'Professional socialization in medicine', *AMA J Ethics*, 17(2), pp. 164-170. https://doi.org/10.1001/virtualmentor.2015.17.2.msoc1-1502
van Laar, E., van Deursen, A. J. A. M., van Dijk, J. A. G. M. and de Haan, J. (2017) 'The relation between 21st-century skills and digital skills: A systematic literature review', *Comput. Human Behav.*, 72, pp. 577-588.
https://doi.org/10.1016/j.chb.2017.03.010

Veal, J. L., Bull, M. J. and Miller, J. F. (2012) 'A framework of academic persistence and success for ethnically diverse graduate nursing students', *Nurs. Educ. Perspect.*, 33(5), pp. 322-327,
https://www.ncbi.nlm.nih.gov/pubmed/23061191 (Accessed: 21/04/2020).

World Health Organization. (2020) *Advice for public*. Available at:
https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public (Accessed: 20/04/2020).

## Appendices

None.

## Declarations

*The author has declared that there are no conflicts of interest.*

*This has been published under Creative Commons "CC BY 4.0"* (https://creativecommons.org/licenses/by-sa/4.0/)

## Ethics Statement

Ethical approval was not required for this perspective paper because it is not reporting research findings.

## External Funding

This article has not had any External Funding

---

MedEdPublish: rapid, post-publication, peer-reviewed articles on healthcare professions’ education. For more information please visit www.mededpublish.org or contact mededpublish@dundee.ac.uk.