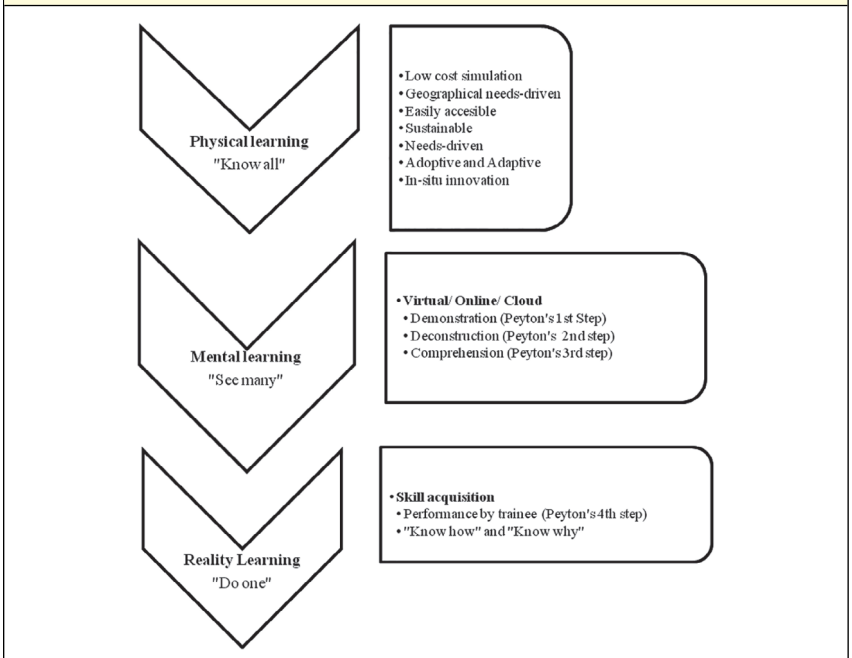
Surgical training "Before COVID-19 (BC)" to "After COVID-19 (AC)": Needs-driven approach for the Global South

Editor

COVID-19 pandemic is an unprecedented global healthcare crisis; one of its many collateral damages is the universal disruption of surgical training. 'Live' surgical learning opportunities have been significantly affected due to the reduced number of operations, reduced elective surgery exposure, reduced resident staff in operating rooms; and necessitated a focus on service rather than learning[1]. Surgical educators promptly rose to the challenge with e-teaching in the form of online case presentations, lectures, symposia, webinars, and journal clubs; however, teaching safe surgical skills requires innovative ideas.

Halsted's traditional surgical training model (see one-do one-teach one) through apprenticeship, has become unsustainable for quite some time due to restrictions in trainees' working hours and ethical issues involved in 'live' operative training[2]. Simulation is well known as a valuable and necessary adjunct to learning safe surgical skills when opportunities in the real clinical setting are inadequate like in these times. Video-guided modification of Peyton's "Four-Step-Approach" (demonstration, deconstruction, comprehension, and performance) has been shown to have a better translation into learning surgical skills; and can be an appropriate substitute for traditional ways of surgical training[3]. Incorporation of simulation-rich surgical boot-camps can accelerate safe and structured learning of key skills by surgical trainees. The involvement of trainees in designing the curricula of their needs-driven short duration simulation training courses is another simple change that helps to fill the gap in their skills development[4]. Institutes in the global south do not have access to expensive simulation modules; however, the development of low-cost simulation modules with more 'hands-on mentoring' can have its translational effects on resident quality, patient outcomes, and patient care practices[5]. We propose a needs-driven module of surgical training involving readily available low-cost simulation-based training and more 'hands-on mentoring' (*Fig. 1*). This model cannot replace surgical training as it was before the COVID-19 era but has the potential to strengthen surgical training after COVID-19.

Figure 1 'Needs-driven approach' depicting the sequence of virtual training into real performance using the best of each, for the global south



Surgical training has evolved through different periods starting with Halsted's watershed model of "See one, Do one, Teach one". The surgical trainees advanced to using "Pye's surgical handicraft" and "Condon's manual of surgical therapeutics" as *vade mecums*. These have provided the foundation over which the edifice of modern surgical education can be built up by incorporating innovative ideas based on local needs. Using the best of each idea is the only way to continue nurturing a surgical resident to become a good surgical technician (knows 'how') and a good surgical intellectual (knows 'why'), even in these difficult times.

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