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1) The title of the paper	**Virtual care is growing, but who will train upcoming learners to practice it? A commentary**
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Virtual care is growing, but who will train upcoming learners to practice it? A commentary

In this issue of Medical Education, Shepherd and colleagues report on their qualitative exploration of how faculty and learners experience learner integration into virtual care (VC)[1]. This provocative study raises questions into the paradox and contradiction of faculty and learner VC integration, and invites further reflection and discussion. Given the inevitable adoption of VC following the COVID-19 pandemic, and the subsequent hasty efforts to accommodate learners, the work could not be more well-timed.

The paradox and the contradiction the authors identify reflect the desire of the faculty participants to keep VC as a part of their practice, but for most, without involving learners. Faculty paradoxically saw VC as valuable and not valuable – helpful for patients but not for learners. This is not surprising given that the original intended beneficiaries of VC were patients, not learners. As the authors note, learners have historically been an afterthought when the medical profession responds to disruption. To the faculty, clinical education via VC should neither demand extra effort nor cost, nor bother their more critical patient care task; rather, it should flow smoothly, in the same way as in-person learner training had long proceeded. Since faculty found it challenging to integrate learner training into their pandemic VC delivery—with its unfamiliar, disrupted, and overwhelming workflow—their reluctance is not surprising.

Although VC has been around for 30 years, it has mostly been a niche technology that never enjoyed mainstream adoption by the majority of potential users. Several theories explaining factors affecting the adoption of innovation have been proposed, and can add a theoretical layer to the authors' interpretations. Among the most intensively researched of these is the Theory of Planned Behavior (TPB)[2], which posits that behavioral intention is influenced by three factors: one's *attitude toward a behavior* (the degree to which a behavior is positively valued),

subjective norms (perceived social approval for engaging in a behavior), and *perceived behavioral control* (the degree to which performance of a behavior is self-determined). Among faculty, the value of these three factors with respect to VC and subsequent learner integration into mandated VC, tends to be negative, making them less inclined to adopt it. Thus, for those who regard VC as an inferior learning platform (attitude), perceive a diminished educational mandate (norm), and experience disrupted routines and time management challenges (control), the behavioral intention to adopt the innovation of VC learner training will be low. To our knowledge, no effort has been made to optimize the determinants of VC training to give it positive value for faculty.

What can we do to facilitate successful VC integration for learners at this point? The answer may be three-fold: communicate persuasively with faculty; design finely-tuned instructional interventions that optimize VC affordances; and devise alternative virtual learning experiences.

First, if we are to see the diffusion of this innovation, individual faculty must be persuaded about its advantages, which have not been well-explicated up to now. Shepherd and colleagues urge a shift in the messaging about clinical education in VC, such that it is viewed not as a substitute for in-person training but as a valuable complement for a richer educational experience. From the TPB framework, such messaging can increase the perceived value of learner integration into VC (attitude). In addition, messaging can be designed to convey that such learner training is easy to control and responsive to the choices of faculty (control). Finally, messaging can enhance the perceived social approval for this training approach by emphasizing the responsibility of faculty as educators (norm).

Instructional interventions must help learners realize the unique affordances of VC and acquire needed competencies for future practice. The study interviews revealed that VC as a learning medium is a good set-up for teaching "informed consent, privacy issues and VC etiquette, and communication" "observing learners non-intrusively," and efficient assessment (p. 18). In other words, VC functionally offers these affordances to learners, and VC curriculum design should

embrace them. These affordances cannot guarantee particular learning outcomes; however, a well-designed instructional intervention should be geared toward VC fluency equipped with the VC competencies[3].

Lastly, learner's clinical exposure in the virtual setting needs to be diversified, perhaps by devising alternative virtual learning experiences. A virtual patient (VP) is a promising modality that can be readily adopted for clinical training by simulating real-life clinical scenarios, in which learners emulate the role of health care providers[4 5]. The affordances of VP training are active learning in contrast to passive observation, personalized exercises in a nonthreatening environment, and performance assessment with opportunities for reflection and feedback. Its distributed nature avoids logistic complexity and can provide time-spaced learning to support training transfer. Virtual nurse agents tailored to patient demographics could perform pre-visit screening and provide after visit discharge instructions[6]. Software for converting a virtual visit into an in-person visit can be developed to offer pushbutton simplicity. Integration of VC with the most widely used EHRs could streamline workflow and offer time savings for providers, enabling them to direct more time to education. A virtual OSCE (a clinical test using simulated patients who learners interview, examine, diagnose, and manage) can also be one of the alternatives used[7].

While practitioners may be enthusiastic teachers when the training methods and content are well established, they are not necessarily inclined to, or experienced with, pedagogic innovation. Even if they are, the task of innovation is not in the purview of any one individual working in a large healthcare system. This underscores the need for institutions to form VC advisory committees to discern the most efficient and educationally enriching VC practices and procedures. As the authors indicate, educators should certainly be informed by research, but must balance that with organizational constraints and the needs of practitioners in their home institution.

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