Closing the gap: a call for a common blueprint for remote distance telesimulation

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ABSTRACT

The physical requirements mandated by the COVID-19 pandemic have presented a challenge and an opportunity for simulation educators. Although there were already examples of simulation being delivered at a distance, the pandemic forced this technique into the mainstream. With any new discipline, it is important for the community to agree on vocabulary, methods and reporting guidelines. This editorial is a call to action for the simulation community to start this process so that we can best describe and use this technique.

INTRODUCTION

The COVID-19 pandemic has brought distance learning in various forms to all levels of education. The simulation community has embraced this challenge, creating a variety of simulation experiences in the era of physical distancing, calling it distance simulation, telesimulation, remote simulation or even virtual simulation. These techniques—which we will refer to collectively as 'distance simulation'—have been in the toolbox of simulation programmes worldwide for several decades.[1–4] As distance communication technology has evolved, software such as Zoom, WebEx, Skype, Google Hangouts and Blue Jeans have become easily available. These allow programmes to provide simulation-based experiences to learners over secure internet connections to anywhere in the world at minimal cost. However, with this rampant growth in distance simulation, there is little to no clarity on what to call these interventions, how to describe them or how they should be used.

There are advantages to distance simulation experiences compared with more traditional simulation-based education. Educators can deliver simulation-based learning experiences to geographic areas that might not have easy access to simulation. This may include low-resource settings, areas without trained simulation educators or geographically isolated areas where travel to provide face-to-face learning would be challenging. Using video conference software, multiple learners or raters can observe simulation experiences live (synchronously) from all over the world. And finally, simulation facilitators can provide feedback and debriefing from any location and as their schedule allows. This is a different, perhaps *new*, delivery of simulation.

A NEW DISCIPLINE

Shneider described four stages of development of any new discipline (figure 1) or, in this case, a novel offshoot of an established discipline (simulation-based education).[5] In the first stage, there is creation of new subject matter and frameworks, characterised by a necessary uncertainty. This allows innovation as practitioners explore the boundaries of the new discipline. The second stage requires the development of new vocabulary to describe the new innovations and provide further clarity of definitions. Application of previously established research methods to understand the new discipline happens in stage 3. Finally, once a discipline has reached stage 4, there are fewer new discoveries; instead, this period of time is characterised by new applications of previously acquired knowledge. Distance simulation is on the cusp of moving to stage 2 of Shneider's framework, and it is important now to start formalising vocabulary and descriptions of this simulation technique.

The COVID-19 pandemic has dramatically accelerated the uptake of these techniques as programmes attempt to provide simulation-based education and assessment in an era of required physical distancing.[6] Even as the restrictions imposed by the pandemic are relaxed, we expect the momentum for distance simulation to continue. With these new techniques, it is time to start creating new definitions, vocabulary and applications.

As is typical for new disciplines, one of the difficulties in understanding the phenomenon at hand is the lack of consensus on the terminology being used to describe simulation experiences where the participants, operators, facilitators, and/or the manikin or the standardised patient is in different physical locations. A review of the literature has revealed that many different terms are used to describe similar processes, including distance simulation, virtual simulation (not to be confused with virtual reality) and others (see 1–4 as exemplars). This variation in terms, what they are meant to describe and the lack of clarity on what they mean have made understanding the literature challenging. Even when these types of reports are identified in the literature, it can be difficult to discern exactly what the authors did. There is a myriad of different potential combinations that can fall under the umbrella of distance simulation. For example, the learners, facilitators and simulation operators each can be local or distanced relative to one another or relative to a defined 'home location'. Were simulation participants distanced in time as well, that is, asynchronous versus synchronous learning? Was feedback provided, either as coaching throughout the simulation or as part of a more formal postsimulation debriefing session, and if so, was the debriefer local or distanced? Programmes have offered experiences with learners across the hall, across town or across the world, with a facilitator providing feedback from his or her home or office.[7] These interventions can be difficult to describe in words with the added barrier of global communication idiosyncrasies and jargon. An ongoing

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Shneider Stage	Characterization of stage	Role of Design Thinker
1. Creation of new subject matter and frameworks	*Period of necessary uncertainty and innovation of the new discipline*	Push against boundaries of the new discipline
2. Development of new vocabulary to describe the innovations	*Much of the foundational work on methodology is performed in this stage*	Provide further clarity of definitions and vocabulary
3. Application of previously established research methods	*Most actual knowledge about the discipline is gained in this stage*	Redesign subject matter using the new vocabulary developed in Stage 2 Develop offshoots of new discipline which enter stage 1
4. Consolidation of knowledge	*The discipline reaches maturity*	Make fewer new discoveries

Figure 1 Shneider's stages of a new discipline.

scoping review has looked at almost 7000 papers describing simulation and distance; it has been challenging trying to determine the details and setup of each distance simulation intervention (R Elkin, personal communication, 2020).

In addition, we suspect that many educators are using distance simulation without identifying it as such or without publishing their experiences, making it difficult to curate the current creativity in the field. This is especially true during the time of COVID-19 when the entire simulation community is experimenting every day, trying to find the best way to provide education in the era of physical distancing. Furthermore, without a standardisation of language, searches to find resources to support and inform new distance simulation methods are difficult, compelling one to recreate the wheel versus building on existing knowledge.

NEXT STEPS

We suggest that there are a few concrete steps that need to be taken to help advance the science of distance simulation and to close the gaps. With the predictable delay that occurs between project development and final publication, this editorial aims to highlight how distance simulation is described and reported. We recognise that educators and researchers are working hard to disseminate their findings in distance simulation so that there is some urgency to this process.

A clear and standardised vocabulary will help authors better present their ideas. A consistent language will help with replication and building on existing knowledge, assist in literature reviews to understand what has already been done and allow authors to clearly express their work. Until that language can be clarified, it is

Table 1 Potential variables to be reported when using distance simulation

Methods					
Communication technology used to enable distance element (ie, Zoom, WebEx, etc)					
Elements of simulation incorporating a distance element					
Prebriefing					
Simulation					
Debriefing/feedback					
Configuration of distance elements in each arm of the study					
	In-person in the centre	In-person in the centre, but physically separated	Outside the home centre (synchronous audiovisual or chat)	Outside the home centre (asynchronous)	Not applicable
Active learners					
Observers					
Facilitator					
Manikin or task trainer					
Operator					
Standardised patient					
Embedded participant					
Debriefer(s)					
Assessor					

critically important that authors describe their intervention precisely—noting what components of the simulation (learner or learner groups, facilitators, manikins, confederates, operators, assessors and/or debriefers) are in different locations, in addition to the standard simulation research reporting guidelines[8] (table 1). Given the challenges in accurately describing some of these interventions, the use of a standardised pictogram may help with effective communication of interventions. Pictograms are defined as graphic symbols depicting objects for a particular situation, in this case, who/what/where people and manikins/simulated patients are in a scenario. They also can be helpful in bridging challenges with international communication.

In addition, one must be cognisant of learner and educator acceptance of these new technologies and techniques. A commonly used model for user acceptance of technology, the Unified Theory of Acceptance and Use of Technology, describes four constructs that influence a user's acceptance of an emerging technology.[9] These include *performance expectancy*, how the technology is perceived to improve a learner's performance; *effort expectancy*, the ease of use of the technology; *social influence*, the degree to which a learner perceives that influential people believe that they should use the new technology; and *facilitating conditions*, the supports available to use the system. As new distance simulation techniques are developed, a consideration of learner and educator acceptance will be required.

CONCLUSION

Distance simulation adds a convenient option to our simulation toolbox, whether it is education, assessment or research. It allows the delivery of simulation when it is either difficult or impossible to bring learners, facilitators, operators and manikins all together in one space. As use of this new technique expands, we need to develop a common language and reporting guidelines to augment the dissemination of this work and study the implications of these techniques on simulation delivery and effectiveness.

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