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INTRODUCTION

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Readers may recall the terms “digital native” and “digital immigrant” and the year(s) that they first became common vernacular. A digital native is typically one for whom technology has always existed; a digital immigrant, on the other hand, has migrated toward the use of technology out of necessity or a desire to integrate it into their lives (Prensky, 2001, p. 3). In this same way, it seems there are those of us who are simulation immigrants and others who are simulation natives. While I consider myself a native, I stop short of calling myself an expert. My background in emergency and flight nursing means that I have taken every type of certification course, many of which were “simulation based,” long before they were called that. This gave me an unexpected edge in obtaining a position in the healthcare simulation field at a time when incredible financial resources were dedicated to developing simulation labs, even though few people knew much about them.

I did not, however, have an edge in finding the educational resources I needed to build a successful team of professionals for a simulation program in a large nursing college with diverse undergraduate and graduate degrees. Nevertheless, with limited resources, I set about the task of educating myself in healthcare simulation. At first, I attended simulator training and simulation conferences, and read the few books and journals available.

After a few years of blind searching, I got smarter in my hunt for resources. Indeed, in some fields of study, simulation really has been around a very long time. I looked at how other disciplines conducted simulation-based training. This proved to be helpful in determining best practices for teaching with simulation, since

other fields, such as aviation and gaming, have overlapping characteristics with healthcare.

However, when it came to training those who had to put it all together in the healthcare simulation lab, I learned the hard way that trying to apply lessons from other fields often does not work. Never was this clearer to me than when I encountered a new employee who could not learn the role or functions of the simulation operator or technologist in the lab. With previous employees, I guess I had been lucky enough to hire people with aptitudes for the work. However, for those who were inclined in the direction of technology, there were simply no journal articles, books, or guides to assist a person who might be struggling with assimilating the knowledge needed for this type of position. When I failed to find the information I needed to help my new hire, I was sure that I must not be looking in the right places yet. I was dismayed.

While I might have been distraught then, I was simultaneously elated and depressed to find that the problem I identified with a lack of resources for training simulation operators and technical staff had been previously well-described. As early as 1985, a National Research Council (NRC) report entitled *Human Factors Aspects of Simulation* (Jones, Hennessey, & Deutsch, 1985) outlined a number of issues, including the following:

- The number of personnel required to support simulators is substantial (p. 22).
- Difficulties in design and use of simulators could be reduced with analyses of the human skills and knowledge required for their operation and maintenance (p. 45).
- The human operator of a simulator may be able to compensate for simulator shortcomings, but this may result in negative transfer in training (p. 50).
- Activities of scenario generation and simulation control need to be described to permit understanding of functional flow (p. 65).

The types of simulators discussed by these authors include those used in aviation, motor vehicles, and nuclear power, but the above list could easily be applied today to patient simulators and those that operate them. While it may be argued that healthcare simulation has existed for several decades, resources have been slow to come along, particularly in the area of healthcare simulation technology. What the NRC wrote in 1985 was true then and, as often seems to be the case, little progress has been made in resolving simulation operator and technologist training across multiple fields.

To understand why the application of work from other fields that use simulation simply does not work when it comes to healthcare simulation may be, in part, because we do not yet fully know what it means exactly to be a simulation technologist or operations specialist. The position titles for this type of work vary wildly between organizations. The work itself involves knowing how to put human patient simulators together and troubleshoot them, how to network and program them, and how to operate them. While the human-to-machine interface is similar to other fields that use

simulation, there is a difference with patient simulators that involves a relationship between living humans and patient simulators with a concurrent need for an understanding of proper patient care. In addition, simulation operations specialists (SOS), as I have come to call and know them, must also know what instructors and educators know about objectives and outcomes for varying levels and types of learners. They must know a good deal about the learners themselves and their roles; these learners may, at times, come from different disciplines and must, in the simulation lab and “in real life,” work well together. While most aspects of patient simulation technology may be taught over time, other parts are “art” and require a talent for creativity and vision. A flare for the dramatic and the ability to write a script and then improvise from it are skills not usually associated with healthcare. But a simulation lab is much more than an arena for skills training. Many days, it is more like the production of a complicated play.

In 2013, the Society for Simulation in Healthcare (SSH) leadership voted to approve the name of a new certification for those working in the simulation operations arena: Certified Healthcare Simulation Operations Specialist (CHSOS). This certification was not designed for any one type of position, but is inclusive of many of the evolving roles within healthcare simulation. For the record, the planning and outline for this book predated the CHSOS and the book should not be assumed to be a preparatory book for the exam.

Also in 2013, SSH announced that “Sim Ops” would be the theme for the annual preconference symposium. Both the certification and the symposium are evidence that simulation operations are an important area of specialization within healthcare education, training, and assessment. There are two sides to *operations* in simulation programs: administration and execution. On the *administrative* side, *operations* refer to governance of simulation programs through policy, guidelines, and financials. On the *execution* side, *operations* refers to the implementation of tasks as defined by administration and subject matter experts.

For the purposes of this book, the SOS is someone who has advanced knowledge and understanding of the many facets of day-to-day operations within a healthcare simulation lab. Because educators tend to be technologically challenged, the SOS usually has a technology background, but must also be part educator, part engineer, part director, and part artist. The resources that we have at our disposal to train SOS in any of the required realms are slim to none. The titles for the chapters in this book occurred to me over the course of an average month in the clinical simulation laboratory. For example, consider Chapter 8, which is about the fit between the employer and potential SOS. The chapter was originally entitled, “Just Call Me Gumby.” On a routine day in the simulation lab, those who bring the action to life are truly stretched into any number of positions, some flattering and others more compromising. “Sure, just call me Gumby” is the likely response to a faculty or staff question that begins with “Can’t you just.....” Typically, this blank is filled in by the requestor with something like “fix this?” or “take care of that?” or “help this student?” or “relocate that class and/or piece of equipment?”

The purpose of this book is to help people who specialize in simulation operations figure out how to get started. The book begins with chapters on the current state of

the simulation professional workforce and how it has evolved. From there the book moves through topics of interest to those in the simulation workforce related to the art, science, and innovation necessary for the role of the SOS.

Each of the chapter authors for this book was recruited not because they needed to share how to do a job, but because of the innovative work that they have done to develop the role of the SOS. There are a few “how to” simulation books already available. The focus of those has been the educator or instructor role in simulation or simulation center development and leadership. In this book, however, each author was asked to address a topic of interest, some from novice and others from expert perspectives, in which they truly are specialists of the highest degree. Each of these authors has become indispensable because they are doing groundbreaking work that perhaps no one else has even thought of, much less done. The types of simulation professionals who discuss their work in this book have become crucial to the work of healthcare educators and researchers alike.

One colleague of mine feels certain that the day is rapidly coming when those of us at the helms of simulation centers will become unnecessary and obsolete. We were the ones that got the simulators out of the boxes, got everything running, and figured out how to make it all work in the beginning. But we are not the future of healthcare simulation. Our protégés, whether they are educators, engineers, technologists, or managers, have outperformed us and taken it to another level that involves increasing amounts of technical knowledge, creativity, and innovation. They were out of the boxes before the simulators were. For those of us who helped get simulation started in healthcare, our collective job now is to help healthcare simulation progress from its current status by making sure that the next generation comes along with a bigger toolbox than we had.

REFERENCES

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