

Technology Challenges in Integration

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The field of health care is vast and ever developing; the need for current, effective instructional methods is always present. The growth mindset inherent in medicine is conducive to integration of innovation; for example, several of the earliest computer applications of the 1960s were implemented in medicine (Reiser & Dempsey, 2018). However, technology integration in health care is not without its hurdles.

One barrier to integration is an outgrowth of this scientific mindset – practitioners are “unlikely to accept changes in education without evidence” (Reiser & Dempsey, 2018, p.171). In a rapidly evolving world, gathering sufficient data to support implementation in a timely fashion may prove daunting. Practitioners are tasked with supporting human survival – rash technology implementation could have life-threatening consequences. The scientific process can be sluggish in the face of technology, but safety demands patience.

As Reiser and Dempsey (2018) report, simulations support health science teaching in a wide variety of ways. Case-based problem solving, mannequins, and persons trained to act as standardized patients support critical thinking and problem-based learning. These dramatized experiences fall into the third of eleven hierarchical categories in Dale’s Cone of Experience, which are categorized based on how close the learning experience is to reality (Growth Engineering, 2021). Dramatized simulations provide the opportunity for active participation in a safe environment. This form of instruction, however, demands conscious and time-consuming creation. The process of crafting and preparing these simulations to accurately represent scenarios can be demanding. Mistakes in medicine can have life-threatening consequences; the same is true for the education provided to train practitioners. With the supreme goals of content accuracy and effective training methods, health care training simulation implementation may be beleaguered by adherence to protocols.

The trend in clinical education has been toward problem-based learning (Reiser & Dempsey, 2018). This emphasis lends itself well to integration of gamification practices, like simulations, which have been shown to maximize learning (Gonzalez-Fernandez et al., 2022). However, effective implementation requires willing participants and a gamified design that avoids arbitrariness. Medical team members come from a wide range of backgrounds and technology comfort levels. In addition to the barriers posed by conscientious creation, it is not difficult to imagine reluctant technology-novice team members being unwilling to devote already limited time to learning the nuances of new technologies. Small frustrations with tools under construction could lead to altogether rejection of a technology with potential.

Research reflects the critical importance of teachers’ pedagogical beliefs in determining whether available technology will be implemented in classrooms. Ertmer (2005) asserts that teachers require authoritative experiences to build skills and beliefs that enable them to reach their full potential. Reiser and Dempsey (2018) state that, of all the barriers to technology integration, teachers report that beliefs about technology have the greatest impact. The wisdom that addressing the beliefs a person tasked with integrating technology holds is critical maps to all educational spheres. Leading technology educator Sasha Barab reports that learning sciences findings reflect a need for active participation. New products cannot simply be disseminated; ecosystems must be empowered to leverage technology in learning and innovations must be

placed in the hands of those that will use them during development (American Educational Research Association, 2016). Widespread dissemination of such technology can be limited by the resources of time and money. While teaching hospitals support integration of innovation, even these oft well-funded institutions employ overtaxed providers with little time to devote to change. Widely held beliefs that utilization of known tools to achieve health goals is most efficient may be a challenge to surmount. Finding ways to include health care providers in the creation and optimization of tools whenever possible has the potential to address this barrier.

The limitation of the resources of cost and time plague medical care. Provider-to-patient ratios and the pressure to reduce costs can place practitioners in the position of spending “less time teaching and more time seeing patients” (Reiser & Dempsey, 2018, p.172). With limited time to educate themselves and their patients, valuable tools may go unused. However, if the time to effectively familiarize themselves with devices, software, equipment, etc. is prioritized, efficiency in learning and practice have the potential to be maximized. Sacrifices on the front-end, however, are necessary. Convincing administrative personnel and general staff to allot precious time and resources may prove challenging but has the potential to optimize the health of patients and the experience of staff members.

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