

ACS 2022 Surgeons and Engineers: A Dialogue on Surgical Simulation Meeting

Challenges in Surgical Education

Education Led Technology Versus Technology Led Education

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Background: Educational technology (ET) has offered significant educational tools for surgery. Procedure based education and training have used technology considerably. The common example is simulation. Technology of simulation and the practice of simulation have been advancing continuously and providing increasingly important and broader training. However, there is a common practice of using technology where it fits in education rather than where it is needed and for specific educational goals.

Current Challenges: ET has been implemented in fields of education with limited background and experience in the educational principles and learning theories. Many applications of technology took the form of mere tools for education such as delivering information or communicating. A common example is transforming books into digital formats or video recording educational events. While these applications are advantageous, they represent a narrow spectrum of the advantages that technology can offer to education. The main reason for this limited use is the scarcity of experience in ED among educational practitioners and the insufficiency in using learning theories to implement technology in education.

Need of Innovation: ED can be used efficiently to teach at a large scale, teach in unusual circumstances (such as the current pandemic), adapt to continuous educational demands, and achieve educational goals that cannot be met with the traditional educational approach. The application of ET must be carefully selected and designed for educationally effective use. We recommend parameters that can be used to evaluate how effective the use of technology will be. These parameters include focusing on the learning process rather than materials, meeting specific educational needs, performing complex task precisely, achieving automaticity, and using hybrid learning. Ultimately, the value of ET is determined by how well it informs and facilitates learning and clinical expertise development.