Enhancing Medical Student Education Through Technology and Innovation

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Background/Purpose

Question: How can we better prepare our medical students and faculty to innovate in their future careers and revolutionize the healthcare of tomorrow?

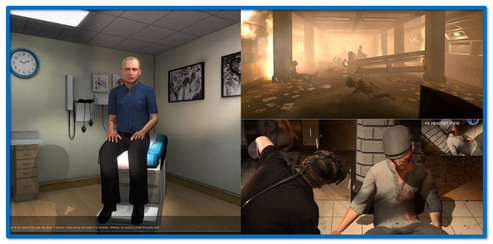
Current medical education focuses on evidence based practice, with emphasis on successful modern and historical therapies and little attention to developing and future aspects of practice. However, physicians and other health professions have historically been the progenitors of innovation and change in practice as we directly interface with inefficiencies of the health system in routine practice. Substantial gaps exist in preparing current medical students for this role, from knowledge of the innovation process from ideation and concept design to regulatory approval and implementation. Implementation of innovative curricula at the medical student and resident level alike are challenged by limited evidence basis for future changes[1], providing significant barriers to addressing this concern.

In a world where medical knowledge doubles every 73 days[2] and new devices/procedures/research findings are made every single day, preparing students for a career of innovation is essential.. The purpose of this project is to bring ground breaking devices and ideas to the medical students at Ohio State to better prepare them for a career in a medical field that is constantly adapting to new technologies. By doing this, we hope to educate our students on the process of innovation, how to create new technology, and how to bring an idea to reality.

Methods

To improve our student education, we propose to set up a multitude of educational events, simulations, and biotechnology workshops throughout the year:

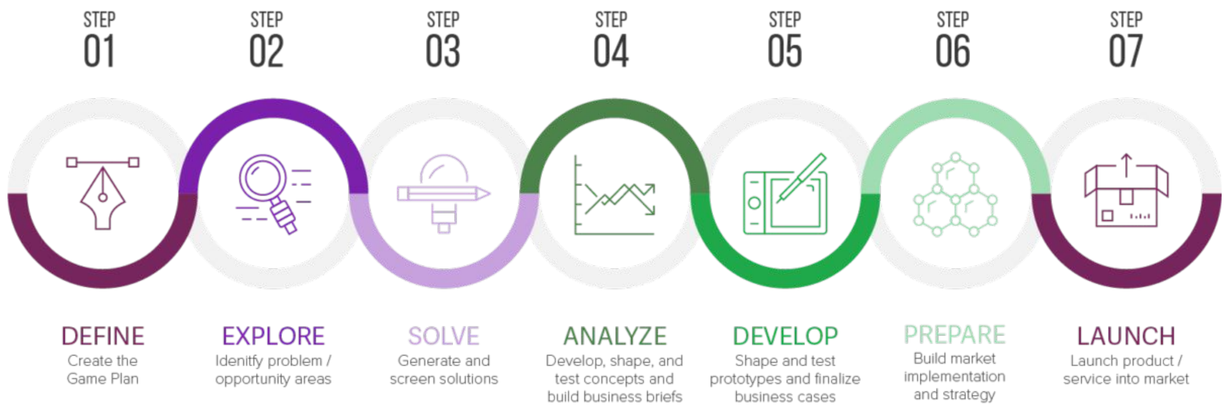
- Impact of virtual reality in medical education,
- 3D printing of heart valves and other therapeutics
- lectures on device patenting/investment/production from biotech companies
- Pharmaceutical production lecture and tour
- Artificial intelligence in medicine
- Robotics in patient management
- Telemedicine
- Ethics talks on dangers of clinical trials and biomedical device failures.



1. Ohio State University College of Medicine Virtual Reality in Medical Education (VRiME) Program

Figure 2. Innovation Process

Adapted from Kuczmarski innovation



The long-term goals of this project are threefold: mentorship, collaboration, and inspiration. Through mentorship of individuals primarily in STEM fields with interests in healthcare, we hope to facilitate understanding of health fields and recruitment of students from these disciplines. Through collaboration with current graduate and undergraduate students with experience and interest in medical innovation, we can support interdisciplinary work towards more efficacious care in all health fields. Through inspiration by exposure to ongoing changes in medical practice, development, and education, we hope to encourage current students to question and work to improve current practices during and following completion of their formal medical education. We hope to continue development in these three areas via closer working relationships with affiliated departments and organizations, longitudinal experiences in medical innovation, and introduction of ongoing innovation in healthcare through seminars.

Projected Results

The long-term result of this project is to mentor future leaders in healthcare innovation, collaborate with current innovators to help bring their ideas to reality, and inspire students in health professions to engage in emerging technologies and innovation relevant to their future practice.

References

1. Asch, David A., and Debra F. Weinstein. 2014. “Innovation in Medical Education.” *New England Journal of Medicine* 371(9): 794–95.
2. Densen, Peter. 2011. “Challenges and Opportunities Facing Medical Education.” *Transactions of the American Clinical and Climatological Association* 122: 48–58.