

## MaxSIMhealth Collaborative: Interdisciplinary network catalyzing design, research and implementation of disruptive simulation for training health professionals.

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## Abstract

**Background:** Simulation is the replication of a task or an even for the purpose of training and assessment. It can be virtual, physical or hybrid, and needs to be contextually accurate to be functional. Therefore, when designing simulation experiences, a single profession (e.g. computer science) does not hold the answer, but instead several professions need to work together. To address this need, we have developed maxSIMhealth (MSH).

**Innovation:** MSH is a multidisciplinary collaborative of manufacturing, design, and simulation labs at Ontario Tech University. It combines expertise in Health Sciences, Business and IT, Engineering, Education, and Social Science as well as build community partnerships (Lakeridge Hospital) in order to advance simulation training in Ontario and across the country. With its foundation in technology, sciences and professional practice, MSH's vision is to advance the discovery and application of knowledge that revolutionizes health by providing innovative solutions for simulation training and clinical application. It acts as a collaborative system, connecting and cross-pollinating multiple professions and expertise areas for the purpose of discovering existing simulation gaps, providing innovative solutions that change systems, and lead to improved health care outcomes. Specifically, we utilize disruptive technologies such as 3D printing, gaming, and extended reality as innovative solutions that would allow for cost-effective, portable, and realistic simulation, thus providing health professionals with the accessibility to simulation that is lacking and equip each member of the healthcare team in every point of care setting. Our work spans a broad spectrum of scholarship from mapping existing gaps, to changing education systems, to improving learning and performance outcomes. We have established research partnerships with hospitals, professional societies, governing bodies and simulation industry. To ensure timely and meaningful knowledge translation, we have also established an institutional channel with the Cureus Journal for Medical Sciences where our work is freely disseminated as peer-reviewed, PubMed indexed publications.

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Conclusions: MSH is a novel collaborative innovation at Ontario Tech, straddling many professions and settings that collectively aim to develop future cohorts of scholars who will have strong competencies, ranging from technology application, to working with others in new environments, to communicating professionally and problem-solving. It is anticipated that our work will successfully transform current health professional education landscape by providing novel, flexible, and inexpensive simulation experiences.

**MaxSIMhealth Collaborative: Interdisciplinary network catalyzing design, research and implementation of disruptive simulation for training health professionals.**

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**BACKGROUND**  
 Simulation (noun): the virtual, physical, or hybrid replication of a task/event for the purpose of training and assessment and must be contextually accurate to be functional.  
 MaxSIMhealth (MSH) is a synergistic collaborative in which a single profession within the collaborative does not suffice when designing simulation experiences, but instead several professions must work together. By utilizing this strategy, we are able to support networking amongst and enhance the wellbeing of healthcare providers, educators, researchers and leaders.



**VISION**  
 MSH revolutionizes health for simulation training and clinical application by offering disruptive solutions such as 3D printing, gaming and XR. As a result, MSH delivers cost-effective, portable, and realistic simulation, a current lack seen today. Our work ranges from mapping existing gaps, to changing education systems, to improving learning and performance outcomes.



**IMPLEMENTATION & METHOD**  
 MSH was implemented as a multidisciplinary collaborative of manufacturing, design, and simulation labs at Ontario Tech University as well as a satellite lab at Lakeridge Health to combine expertise in Health Sciences, Business and IT, Engineering, and more to advance simulation training. Through this network, MSH can take ideas, transform them into existence, and disseminate the final product via partnerships with the Cureus Journal of Medical Science and PolyUnity.

**CONCLUSION**  
 MSH is a novel collaborative innovation at Ontario Tech University, straddling many professions and settings. Keeping the goals of public health in mind, we collectively aim to develop future cohorts of scholars who will have strong competencies, ranging from technology application, to working with others in new environments, to communicating professionally and problem-solving. It is anticipated that our work will successfully transform current health professional education landscape by providing novel, flexible, and inexpensive simulation experiences.

