

# Strengthening Clinical Skills with Augmented Reality

Northern Light Eastern Maine Medical Center has launched a groundbreaking project to revolutionize nursing education and health care delivery, addressing health care challenges identified in the 2019 and 2022 Community Health Needs Assessments for the Penquis Health District (Penobscot and Piscataquis counties in Maine). Focusing on augmented reality simulation (AR Sim), the initiative aims to address the ongoing nursing shortage and disparities in health care access and outcomes among underrepresented populations.



*Photo courtesy of Northern Light Eastern Maine Medical Center.*

Maine faces a projected shortage of 1,450 registered nurses by 2025, particularly in its rural areas. These regions struggle with health care workforce sustainability, exasperated by the COVID-19 pandemic and an aging population. The disparities in health care outcomes are stark with higher rates of hospitalizations and mortality for chronic conditions among people who are part of the black, indigenous, and people of color communities compared to other racial communities.

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Federal funds dedicated to addressing gaps in the public health system that contributed to health inequities and disparities uncovered by the COVID-19 pandemic became available from the Maine Center for Disease Control and Prevention.

With support from those funds, the project uses immersive AR technology and equipment to create customizable, virtual patient simulation scenarios, allowing nursing students and professionals to practice and refine their skills in a diverse range of clinical situations.

This innovative approach prepares the workforce to meet the unique needs of Maine's rural and indigenous communities while addressing various barriers to health care access across socioeconomic, geographic, and demographic lines.



Photo courtesy of Northern Light Eastern Maine Medical Center.

By imitating real-life scenarios, simulation training helps develop learners' clinical reasoning, situational awareness, and self-confidence. Studies show that AR Sim learners are more focused, train faster, and feel more confident in applying their skills compared to traditional methods. This technology supports health equity by enabling practice with patients of varying backgrounds, enhancing cultural competency, and promoting empathy and understanding.

The project is aimed at four nursing education groups: externship student nurses, recent nursing school graduates, internationally educated nurses, and nurse preceptors, with a goal of training approximately 270 nurses each year. It offers identical, replicable clinical experiences to all learners while accommodating different learning styles.

The project's outcomes are expected to improve equity of experience, enhance ability to respond to critical situations, and increase critical thinking and cultural competency as well as greater preparedness for public health crises. It represents a significant step forward in addressing the nursing shortage and advancing health care equity in Maine.

This initiative is a testament to the power of technology in transforming health care education and delivery. "Simulation is an important component to any nursing program," said Amanda L. Savage, DNP, M.Ed., RN, assistant professor at the University of Maine School of Nursing. "Immersive virtual [and augmented] simulation provides the students with a safe, controlled environment where feedback is provided while enhancing knowledge and improving clinical judgment, prioritization, communication, teamwork, and safe patient care."

Through innovative use of AR technology and building the capacity of the simulation lab overall, this project aims to enhance the capacity of Maine's nursing workforce, address significant health care disparities, and ensure equitable access to quality care for all residents. It is a beacon of progress, demonstrating how technology can bridge gaps in health care education and delivery and, ultimately, contributing to a healthier, more equitable society.

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