Public Abstract

First Name: Joseph
Middle Name: William
Last Name: Fitzler
Degree: M.S.
Degree Program: Industrial Engineering
Advisor's First Name: Bin
Advisor's Last Name: Wu
Co-Advisor's First Name:
Co-Advisor's Last Name:
Graduation Term: Summer
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Title: Implementing Systems Engineering Techniques into Health Care: An Investigation into Using Problem Based Learning in Medical Schools to Teach Systems Engineering

Health care delivery in the United States needs improvement. Each year, between 44,000 and 98,000 people die as a result of medical errors and the United States is outranked by ¾ of developed countries in life expectancy and infant mortality. In a recent report, The National Academy of Engineering and the Institute of Medicine and Dr. Bin Wu's paper entitled "Healthcare Systems Engineering – An Interdisciplinary Approach to Achieving Continuous Improvement" recommend that implementing systems engineering and systems engineering tools should be used in health care to improve the industry. Systems thinking is a way to gain insight into an organization by looking at the interactions of the various processes within the whole, and systems tools are the means by which the organizations are constructed and analyzed. These tools have improved other complex industries, such as manufacturing.

A unique way to implement systems thinking in health care is to educate future caregivers in systems thinking so that they can recognize problems and make improvements from within. This method reduces the need for change management within established organizations and emphasizes the importance using systems tools early in the career of a caregiver.

The implementation of systems skills into medical school curriculum was tested at the University of Missouri-Columbia School of Medicine, which has a PBL (Problem Based Learning) curriculum. The lack of a resource for medical students to research health care systems engineering prompted the creation of a handbook entitled "Handbook of Health Care Systems Engineering for Medical Students."

The students did not respond as expected to the introduction of systems engineering concepts. They need to see the terms more often to place importance on them and start to use them. However, the addition did make a positive impact on the students and repeated exposure in future cases will hopefully result in the students leaning more about health care systems engineering.