

The Lean Methodology Course: Transformational Learning

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ABSTRACT

Today's graduate students need scientific problem-solving skills to be competent and competitive in an evolving global work environment. Lean Methodology is a rigorous improvement system designed to transform waste into value from the customer's perspective, providing students with problem solving principles and tools. The Lean Methodology course, taught at a school of nursing located in the southeast, is designed to push the boundaries of traditional disciplinary academic education and provide practical, philosophical, scientific underpinnings for graduate learning. This course provides the next generation of improvement scientists with Lean tools, strategies, and principles that bring value to everyday work processes. This course is also a scientific, experiential, transformational approach to learning that ensures sustainability of work processes into the future and creates lifelong value for the graduate student.

Keywords: experiential learning, improvement, Lean, students, transformational learning

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Advanced practice nursing (APN) students, including nurse practitioners, clinical nurse specialists, and graduate health care management students, need scientific problem-solving skills to be competent and competitive in an evolving, global work environment. However, that need is not always met by traditional disciplinary academic education, which creates a knowledge gap for the graduate student. To fill the gap, the Lean Methodology in Healthcare course is designed to push the boundaries of traditional disciplinary academic education and provide practical, philosophical, scientific underpinnings for graduate learning. Lean Methodology is a rigorous improvement system designed to transform the 8 types of waste (waiting, transporting, motion, excessive inventory, defects, overproduction, overprocessing, and confusion) into value from the customer's perspective.¹ The course provides the next generation of improvement scientists, the students, with a set of Lean tools, strategies, and principles, to enhance everyday work processes. The scientific, experiential, and transformational approach to learning ensures sustainability of work processes and lifelong value for the students.

The Lean Methodology in Healthcare course is offered through a school of nursing located in the

southeastern United States as an elective for academic credit to doctoral students. This is an online elective experience with practical application to the student's work and personal life. Currently, the Lean course is only offered twice a year and, to date, 28 students have successfully completed the Lean course. Conducted through a series of self-directed work process activities utilizing didactic material and real-life application of Lean Methodology, the course content builds on Deming's Plan-Do-Study-Act model.² There is a focus on knowledge-sharing among the students, creating a vibrant community of learning. The course is a learning investment that expands the student's profound knowledge (deep insight into the interplay of the theories of knowledge, systems, variation, and psychology that offers how to make changes that result in improvement)² of improvement science while preparing the student to succeed as a global leader in the ever-evolving modern world. Our aim in this article is to describe the development and implementation of an online practical application of a transformational learning course.

BACKGROUND

A rapidly changing health care landscape, shifting student and patient demographics, an explosion of

technology, and the globalization of health care create challenges for health professions educators.³ To meet current and future workforce demands there must be an understanding of the drivers that affect the provision of health professions education and the delivery of health care. Partnership between health professions educators and health care organizations is critical to meet challenges and demands, sustain high-performing, quality health care systems, and exceed the expectations of health care consumers. Students are attracted to transformational, career-focused, innovative curricula and courses that meet graduate education drivers, provide real-life experiences, produce positive results, and can be applied to their personal and work lives.⁴ The school of nursing, under the leadership of 2 faculty members with Lean credentials and substantial experience in the implementation of the Lean approach, along with understanding the demand for graduates with problem-solving skills, approved the new elective Lean Methodology in Healthcare course in 2013.

Lean Methodology

Lean Methodology is a philosophy and improvement system to transform waste into value from the customer perspective with the potential to transform the way we think about and do work of any sort, and is especially useful when applied to health care.^{1,5} World markets are expanding, rapid technological change affects organization agility and health care must be willing to change and improve.⁶ Under the current economic conditions, patients, who are the customers of health care, demand high-quality products and services at lower cost, and are no longer willing to wait for them. Lean Methodology offers value in providing tools to improve the workplace environment, reduce turnover, lower costs, and improve health outcomes for patients. In addition, the team approach may improve communication, collaboration, and the willingness to evaluate and reinvent how work is organized and accomplished.⁵

Transformational Learning

Active learning requires students to engage in problem-solving, reading, writing, and discussing in practical ways, with faculty guidance to maximize achievement in knowledge, attitude, and skill development.⁷⁻⁹

Problem-solving involves higher order cognitive strategies, such as analysis, synthesis, and evaluation. In addition, when problem-solving is enacted in pairs or groups, the peer interaction necessitates consideration of multiple perspectives and articulation of logic.¹⁰ Use of initiative, analytical ability, and problem-solving skills are necessary to function in health care today¹¹ and are “among the top 10 desired skills for recruiters of graduates.”¹¹ Individuals who will “take personal responsibility to make sure targets are met; who can see that there might be a better way of doing something, and who are prepared to research and implement change; people who don’t panic or give up when things go wrong but who will seek a way around the problem”¹¹ are the essential leaders for a dynamic and complex health care environment.

COURSE GOALS

The goals of the Lean Methodology in Healthcare course are reflected in Bloom’s Taxonomy of Educational Objectives. The course objectives are:

- *Knowledge-based*—Provide doctoral-level students a systematic, scientific approach to critical thinking skills needed for advanced-problem solving in health care settings.
- *Skills-based*—Provide students with the tools they need to participate and/or lead quality improvement initiatives to ensure an effective, efficient, reliable, and safe health care system through the application of Lean tools.
- *Affective-based*—Provide students the opportunity to experience the application of Lean Methodology principals in a workplace setting and the opportunity to share their Lean experiences/projects with other health care leaders in an effort to disseminate information that can be used to improve process and clinical outcomes.

The course goals are met through didactic and experiential learning activities. These course goals also encourage students to share Lean experiences with their classmates and leaders in their organizations (see [Supplementary Figure](#), available online at <http://www.npjjournal.org/>).

COURSE DESIGN

Course design reflects the inclusion of quality improvement as an essential competency for health

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