A Blended Learning Approach to Lean Six Sigma Green Belt Education for European Students

Mikko Rajala, Henri Jarrett, and Jukka-Matti Turtiainen
Mikko Rajala, Lean Six Sigma Black Belt, MSc. Student, Industrial Engineering and Management, Aalto University
Henri Jarrett, MSc. Student, Industrial Engineering and Management, Aalto University
Jukka-Matti Turtiainen, Lean Six Sigma Black Belt, Student, Industrial Management, Lappeenranta University of Technology

ABSTRACT

The European Students of Industrial Engineering and Management (ESTIEM) have developed a blended learning approach for teaching Lean Six Sigma to students in European universities. This case study will describe how three different pedagogical methods – offline, blended and online – are integrated for teaching this course at a Green Belt level of competence.

This paper describes alternative different teaching methods and the rational for integrating both online and offline teaching which have their unique benefits. Whereas online content is highly scalable and consistent, offline teaching enables efficient contact sessions, reflection and practical assignments. Combining these introduces additional benefits in the learning process outcomes.

The benefits of the blended learning model are described through lessons learned in the Lean Six Sigma Green Belt course developed for ESTIEM. This course was developed under the mentoring of ESTIEM Summer Academy Professor Gregory H. Watson and it applies a five-step learning model for teaching the methods and tools, and establishing linkages between the tools. The theory was taught in 13-hours of video material supported by an online learning experience including quizzes, games, and take-home exercises. The tools were applied in practical group discussion sessions. Finally the case study, focused on challenging participants to choose the right tools to answer high-level questions.

Findings from this development project suggest that the best student performance results are achieved by using a mixture of offline and online learning methods. Some of the theoretical parts are best taught in a fully online format – it is both scalable, and provides the opportunity for customizing the individual learning experiences. While the theory of the tools can be taught in the online format – learning the tools and the linkages to other tools often require doing practical exercises which are difficult to replicate online. Teaching the tools effectively requires that instructors develop deeper understanding of the advantages of mixing online and offline teaching methods. Based on the findings from this paper, the blended method has the potential be able to reach almost the same efficiency as the traditional face-to-face learning while enabling broad scaling for dissemination with fewer committed resources.