Inspiring Sustainable Higher Education and Lean through a Lean Ambassadors Network

Tammi Sinha, Claire Lorrain

ABSTRACT

The chapter describes and reflects on the evolution of a Lean Ambassadors Network (LeAN 1.0) at a Higher Education Institution (HEI) in the UK. Building on a successful foundation of Business Excellence, and winning the BQF Excellence Model Award in 2016, the HEI have a strategic goal of embedding continuous improvement within the organisation. Professional Service, Academic Staff and Students were invited to participate in the network from Oct 2016 – Sept 17.

As part of the pilot, a series of three training and one celebration workshop and were held. The aims of the workshops were to introduce the concepts of Lean, identify opportunities for improvement at the institution, and to introduce the DMAIC (Define, Measure, Analyse, Improve and Control) cycle and value stream mapping (Brouwer-Hadzialic, L., & Wiegel, V. (2015) for use in subsequent continuous improvement projects.

The chapter explores the successes, barriers and key requisites for the introduction of a HEI Lean Ambassadors Network using workshops and live projects. We conclude with a summary of successes and key challenges, and summarise the next steps for the launch of LeAN 2.0 in the spirit of continuous improvement and Lean Learning.

KEY WORDS

Lean, Education, Transformation Change, Change Management,

INTRODUCTION

This chapter outlines, documents and records the benefits of a Pilot Lean Ambassadors Network, and critically reflects on the first year of running the programme. The Lean Ambassadors Network was launched in October 2016 as part a wider Continuous Improvement Agenda, led by the Continuous Improvement Unit (CIU), with the strategic objective of embedding a culture of improvement at the Institution. Lean in Higher Education has been shown to provide tangible and intangible benefits to students and colleagues in focusing on:

Respect for people, continuous improvement and the eradication of waste.
(3 tenants of lean) (Hines, Holweg and Rich, 2004)

Lean thinking is a philosophy and methodology built on the Toyota Production System, and significant research has been undertaken in the last 10 years, to identify impact (Cristina et al, 2012). Lean thinking has evolved from the foundation of continuous improvement and excellence in Manufacturing and is embedded in organisations around the globe. The concept of Lean focuses on optimising value within processes. The intention is to provide sustained value to the customer, and create a process that has zero waste.

To achieve this, lean thinking changes the focus of management from focusing on one component of a process, to reviewing a value stream in a holistic way to improve the flow. The benefits of identifying waste is that it eliminates these wastes from whole value streams, compared to other methods which have a tendency to concentrate on isolated processes. The overarching objective is to create a process that needs less human effort, less space, less capital, and with much fewer defects, compared with traditional methods.

CONTINUOUS IMPROVEMENT UNIT

The Continuous Improvement Unit (CIU) are a hub for operational excellence and improvement at the university, set up as an activity and knowledge repository for improvement, the team has a unique make up of professional services colleagues, and academics who are seconded into the team on a fractional basis, whilst remaining as academics in their chosen disciplines. The team have a participatory and inclusive approach, with the aims of embedding improvement routines into the culture of the organisation. This is done through workshops, improvement projects, papers for the Senior Management Team and through engaging colleagues and students in improvement initiatives.

Figure 1 LeAN 1.0 in action

BACKGROUND AND EVOLUTION OF LEAN IN HIGHER EDUCATION

Many Universities are focussing on becoming more effective and efficient, (@Efficiency Exchange, @LeanHE) by focusing on streamlining their processes, improving the Student (Customer) Experience, and promoting staff engagement in improvement and change initiatives. University governance and structures are at best complicated and have many processes and layers, involving multiple faculties, and professional departments, which requires co-ordination between vertical and horizontal layers. HEIs are complex, chaotic, and messy organisations, where the creation, transfer and exploration of knowledge make the sector challenging and a joy to work in. The external and internal pressures for change are immense. The marketisation of Higher Education in the UK, the chaos of Brexit, national measures (Research, Teaching, Knowledge Excellence Framework) the changes in student expectations are a heady mix for change. Within this are opportunities for the sector to further professionalise their services to students and staff, and to embrace disruptive innovation to create an even more dynamic, secure sector. Lean has a significant part to play in this.

The evolution of Lean has seen the principles and approach through manufacturing to service, to the public sector (Thirkell & Ashman, 2014) and more recently to Higher Education (Sinha & Lorrain, 2017). Over the last 5+ years, attempts have been made to embed the principles and culture of Lean in the Higher Education sector, with mixed results.

To be more effective, Lean practitioners and Lean educators benefit from being immersed in contemporary research and practice in applying Lean concepts in complex environments. It is interesting to note that ALL sectors think they are ‘unique’ when embarking on a Lean or Continuous Improvement Journey. The principles of Lean are sound and CAN be applied in

any environment. Context is of course important, the pilot LeAN tests the HEI context for lean education, learning lean AND lean learning.

In developing our Lean Ambassadors approach, we examined how Lean Principles were taught within contemporary academic syllabus, across partner HEIs and reviewed how this pedagogical approach could help embed the culture and practice of Lean within HEIs.

THEORETICAL AND EMPIRICAL FOUNDATIONS OF LEAN

Lean has been used by many HEIs, on a global and local level to pursue improvements and savings. This is in response to the changing demands on Higher Education, however when reviewing Universities use of Lean and Six Sigma, it was noticeable that Six Sigma, had not been as widely adopted, perhaps due to shortage of or reluctance to use key data sets which can be powerful drivers in improvement. The launch of the TEF (Teaching Excellence Framework) in the UK and the importance of the NSS (National Student Survey) in the UK is changing this, with HEIs focusing on these datasets, Six Sigma may become more useful and visible with a focus on data to help develop long lists for opportunities for improvement, and to provide evidence for trends and possible causes for problems.

The foundations of LeAN 1.0 are shown in Figure 2.

Figure 2 Foundations for Lean 1.0

1 'Respect for People' (Distributed leadership, Going to the Gemba, Senior Management Team visibility, Values driven improvement objectives, Nurturing talent through experiential learning and mentoring, Recognition of challenges and success, and Celebrations).

2 'Continuous Improvement' (Value stream mapping, Eradication of waste through TIMWOODS analysis, tackling Muri, Mura and Muda, The 5/6S, Visual Management, Problem solving, Cause and effect, Total Productive Maintenance, Poke yoke – error proofing, Dashboards, and a focus on Value).

3 'Strategy, Systems and Standard Work (Policy deployment / Hoshin Kanri using the A3-X templates, CATWOE and Root Definitions from Soft Systems Methodology, Process analysis through SIPOC and other approaches, Standard work, Runners Repeaters and Strangers.

4 Stability (Processes, kaizen mindset, going to the gemba, and high performing teams)

5 Lean Ambassadors Network (Building capability across the university for colleagues and students, foundations of university values, respect for people, continuous improvement and the eradication of waste)

These foundations were crucial in developing the workshops for LeAN 1.0. Staff and students were invited to participate, with the opportunity to take a lean on line qualification at the conclusion of workshop 3.

EMBEDDING CONTINUOUS IMPROVEMENT AND SERVICE EXCELLENCE WITHIN AN HEI

A two-pronged approach is used to improve University processes, environments and ways of working: the strategic top down and incremental bottom up approach. The top down approach used the European Foundation for Quality Management (EFQM) Business Excellence Model, as the driver for improvement across the 9 key areas used in the EFQM model.

The Excellence model is an industry standard, focusing on enablers for improvement which include leadership, people management, policy & strategy and resources, processes, and the results. The excellence model mirrors the balanced scorecard (Kaplan and Norton, 1995) in terms of analysing results from four perspectives: people satisfaction, customer satisfaction, business results and societal results.

The University won the British Quality Foundation Excellence award in 2016, due to the hard work completed by the CIU, faculties and professional services teams involved. The path taken by the University is shown in Figure 3.

Figure 3 – Evolution of Service Excellence at an HEI

The incremental, evolutionary bottom up approach to continuous improvement has provided a platform for colleagues and students to voluntarily participate in lean workshops and projects. Invitations were sent via the staff and student portal, inviting colleagues and students to participate in 3 workshops, providing the foundations of lean, principles, and tools to enable improvement projects to be run.

These workshops started in October / November 2016 and the first wave of workshops were completed in February 2017. Lean Ambassadors were then invited to start improvement projects, supported by the CIU team for coaching and mentoring. Lean big breakfasts and ad hoc mentoring sessions were scheduled to provide a rhythm to coaching and mentoring, with ad hoc meetings arranged in addition.

LEAN 2.0 was launched with the workshops accredited by LCS (Lean Competency System) to become lean foundations and lean practitioner professional qualifications. Plans include cycles of workshops to match the rhythm of the academic year (LeAN 2.0) and to hold celebration events every 6 months to showcase colleague and student projects. To date (Sept 18) 70 students and 45 colleagues have participated in the programme, leading to lean and continuous improvement projects and action.

WORKSHOP DEVELOPMENT AND DELIVERY

LeAN 1.0 workshops were developed using Lean principles, Game-storming, Systems theory, and Change Management principles. The aim of the workshops were to introduce participants to lean principles, to enthuse them in the opportunities for bringing about positive change in their HEI, and to build capability as an organisation in Lean and Continuous Improvement.

Participants were to be drawn from professional services, students and academics in the HEI. This provided challenges and potential for transformational learning across stakeholders, and a unique opportunity for academics and professional services colleagues to work together on improvement, with the voice of the student as a key partner in the process. The initial structure of the workshops are shown in figure 5.:

Figure 4 – Initial structure of LeAN 1.0

Workshop 1 – LeAN Foundations

The purpose of the workshop was to introduce colleagues and students to the fundamental of lean, to explore lean ideas and apply lean principles in a fun and experiential way. The structure was as follows:

- Introduction and Course Overview
- Leaders and Followers
  A brief introduction to the importance of the 'first followers' in any change initiatives
- An overview of Continuous Improvement at the University so far
- Appreciative Enquiry exercise –
  Identify what is going well as the basis for thinking about ways to make positive change in the future
- Introduction to Lean and Continuous Improvement
  Lean Principles and their meanings
  Lean Origins
- Finding opportunities for improvements
  Going to the GEMBA – using a Lego game to create a real scenario and looking for improvements
  Discussion of TIMWOODS, Classic and Service wastes giving University examples
  Introduction of 5S as an improvement tool and 5S exercises
- Next steps
  How participants can use tools in their own sphere of influence
  5s challenge
  The next workshops

Figure 5 – Structure of Workshop 1 LeAN 1.0

Overall the workshop was designed to give participants a high level understanding of Lean and Continuous Improvement, but also to engage participants through demonstrating how they as Lean ambassadors could help to make change happen in their own sphere of influence. The

focus was on the importance of smaller scale initiatives and really engaging participants in Lean ways for thinking. The use of simulations and games was effective in breaking the ice but also to help participants see the large impact small scale changes can have. The games and simulations we kept simple so only minimal resources were required.

Workshop 2 – Opportunities for Improvement

Purpose of workshop: to build on workshop 1 and to explore further ways of identifying opportunities for improvement. The structure was as follows:

- De-brief from Workshop1
  5s challenge – what went well, what were the challenges
- Introduction the University Process Library
- Cause and effect
  Fishbone diagram brainstorm exercise around current causes of excellent student and staff feedback
  Go the Gemba – observe an area of the University in action
  Add to Fishbone diagram exercise what are the current causes of poor student and staff feedback
  Creation of 'long-list' of opportunities for improvement
- Further consideration of 'long-list' thinking about value and waste
- Prioritising Matrix
  Using impact and effort matrix to prioritise from the 'long list'
- Next Steps
  Encourage participants to go and observe own work area and prioritise opportunities for improvement. Bring opportunities to next session.

Figure 6 – Structure of Workshop 2 LeAN 2.0

Overall the aim of the workshop was to equip participants with further skills needed to identify and prioritise opportunities for improvement. There was also however a careful emphasis on participants thinking about their own sphere of influence and the consideration of effort in any improvement initiative. The intention of this was to maximise the chances of success of any initiatives they may later take forward.

Workshop 3 – Lets get started

Workshop 3 introduced colleagues and students to the DMAIC cycle, a cycle commonly used in lean to guide teams through a problem identification, solving and implementation process. Following a recap of lean principles, DMAIC was introduced step by step, with a worked through example of 'journeys to work'. The workshop ended with opportunities for projects discussed and expectations set.

Structure of Workshop 3

- Recap of lean principles
- Opportunities
- Our approach
- DMAIC
    - Define
    - Measure
    - Analyse
    - Improve
    - Control
- Next steps

Figure 7 – Fundamentals of Lean

The participants were led through a worked example, and then provided with the scenario of 'your journey to work / university' using DMAIC to work through problem definition, measuring key aspects, analysing the data, identifying improvements and identifying how these could be implemented and reinforced.

The next steps were for participants to identify projects and work with the CIU as mentors, on small projects, bounded within their sphere of influence.

WORKSHOP DATA

STAFF – 32 members of staff expressed interest in engaging with the LeAN 1.0. A mixture of professional services and academics signed up. 24 colleagues engaged in the first series of workshops (workshop 1 was run 3 times to enable colleagues and students to attend. It was voluntary to participate, and colleagues who attended were on the whole, enthusiastic and positive with the ethos and purpose of LeAN 1.0. 6 colleagues attended workshop 2, and 9 workshop 3. The reduction in numbers was disappointing, and feedback indicated the point in the academic calendar was a key issue with timing.

STUDENTS – 29 students signed up for the network, this was a promising start, however only 10 participated in workshop 1, 1 in workshop 2 and 6 in workshop 3.

	Signed up	**WS1**	**WS2**	**WS3**
Staff	**32**	**24**	**6**	**9**
Students	**29**	**10**	**1**	**6**

Figure 8 – Engagement data

56 colleagues and students took part in the LeAN 1.0 pilot, 5 projects were launched as a result of the pilot.

The data provides evidence of the challenges faced with improvement initiatives in HEIs, the premise of a network of people engaged and passionate about change was received positively, however the mechanics of inviting and persuading people to fully commit and engage to this activity was difficult. Lessons were learnt from the pilot and the second phase of the Lean Ambassadors network began to take shape. The addition of a professional qualification linked to employability and the Higher Education Achievement Record, has provided an added benefit for students and colleagues.

REVIEW OF PILOT HEI LEAN AMBASSADORS NETWORK (LeAN 1.0)

The chapter set out to explore the fundamental successes, barriers and key requisites for the introduction of a HEI Lean Ambassadors Network using workshops and live projects,

Successes: The workshops provided the opportunity to build on the success of the BQF Excellence award, and to seek to involve a greater variety of colleagues and students in improvement at the university. The initial workshops were well attended, and the possible causes for this are timing, the appeal was evident, the intended outcomes were to enthuse and energise. Colleagues and students who attended the subsequent workshops and initiated projects, were highly motivated and clearly wanted to be involved. In some ways this acted as a natural filter, those who did not participate after the initial workshop indicated that it was difficult to attend the subsequent ones for a variety of reasons. 5 projects were initiated as a result of these workshops, and are ongoing at the time of writing.

Barriers: Many lessons have been learned from the pilot launch of LeAN 1.0, these have included:

- Communication of the network, workshops and benefits to participation need to be improved.
- The timings and attention paid to overloading and overburden (muri and mura) may have had a negative effect on participation.
- A clearer indication of the commitment expected and needed to sustain a lean ambassadors network.
- Reinforcement of the opportunity to take a lean online accredited qualification.
- Clear time table for workshops and expectations for projects.
- Vocal support from SMT (senior management team) that this initiative supports university values

Key requisites for launching a Lean Ambassadors Network in Higher Education:

Following on from the successes and challenges of the pilot LeAN 1.0, LeAN 2.0 has provided additional opportunities for embedding lean and continuous improvement across the institution. A timetable for launch is being closely aligned to the academic year, bearing in

mind the challenges that professional services, academics and students have at different points of the academic cycle.

A lean for leaders focus is also helping teams work together using a common language for problem solving, lean and improvement. Colleagues engaging in the Vice Chancellors Futures Programme participate in sessions providing the core principles of lean and the DMAIC cycle.

Colleagues will have an element of continuous improvement element as part of their annual staff development review / appraisal.

Workshops are now interspersed with 'fieldwork' enabling participants to build up their confidence, capability and experience in applying lean principles in their sphere of influence, and gaining their Lean foundation and practitioner qualifications.

The chapter explored the successes, barriers and key requisites for the introduction of a HEI Lean Ambassadors Network using workshops and live projects. We concluded with a summary of successes and key challenges, and showing the evolution of LeAN 2.0 in the spirit of continuous improvement and Lean Learning.

REFERENCES

Cristina, D., & Felicia, S. (2012). Implementing lean in a higher education university. *Universitatii Maritime Constanta. Analele*, *13*(18), 279.

Emma Thirkell* and Ian Ashman (2014) Lean towards learning: connecting Lean Thinking and human resource management in UK higher education The International Journal of Human Resource Management, Vol. 25, No. 21, 2957–2977, http://dx.doi.org/10.1080/09585192.2014.948901:

Kaplan, R. S., & Norton, D. P. (1995). Putting the balanced scorecard to work. *Performance measurement, management, and appraisal sourcebook*, *66*, 17511.

Matthias Holweg, Nick Rich, (2004) "Learning to evolve: A review of contemporary lean thinking", International Journal of Operations & Production Management, Vol. 24 Issue: 10, pp.994-1011

Thirkell, E., & Ashman, I. (2014). Lean towards learning: connecting Lean Thinking and human resource management in UK higher education. *The International Journal of Human Resource Management*, *25*(21), 2957-2977.

Wiegel, V., & Brouwer-Hadzialic, L. (2015). Lessons from higher education: adapting lean six sigma to account for structural differences in application domains. *International Journal of Six Sigma and Competitive Advantage*, *9*(1), 72-85.