

An eLearning framework for individual and organisational transformation: SME and large enterprise implications

Um framework de e-Learning para a transformação individual e organizacional: implicações para pequenas, médias e grandes empresas

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Resumo: A evolução do e-Learning, em relação ao número das últimas décadas levou ao surgimento de ferramentas poderosas, capazes de suportar a oferta de educação no local de trabalho. O número de estruturas que sustentam, têm sido propostos para tecnologia avançada de aprendizagem. Este artigo descreve o desenvolvimento e avaliação de um e-Learning de estrutura que permite a transformação individual levando a empresa otimizada performance. E, além disso, explora o potencial de aprendizagem tecnológica avançada como um facilitador da transformação individual e organizacional por meio do 'Lean Thinking' e, portanto, empresa de otimização de desempenho. Usando uma abordagem de investigação-ação, a proposta de framework foi instanciada e rigorosamente avaliada em duas indústrias focando programas de educação no domínio enxuto nos últimos seis anos. Os requisitos e feedback da organização de grande porte e ao sector das PME são identificados, analisados e incluídos no desenvolvimento iterativo e na avaliação do quadro.

Palavras-chave: Lean thinking, *e-Learning*, PME, educação no trabalho.

Abstract: The evolution of e-Learning, over the last number of decades has led to the emergence of powerful tools, capable of supporting the delivery of education in the workplace. A number of underpinning frameworks have been proposed for technology enhanced learning. This paper describes the development and evaluation of an e-Learning framework that enables individual transformation leading to optimised enterprise performance. It furthermore explores the potential of technology enhanced learning as an enabler of individual and organisational transformation through Lean thinking and thus enterprise performance optimisation. Using an action research approach, the proposed framework has been instantiated and rigorously evaluated in two industries focused educational programmes in the lean domain over the last six years. The requirements and feedback from the large organisation and the SME sector are identified, analysed and included in the iterative development and evaluation of the framework.

Keywords: Lean thinking, e-Learning, SME, workplace education.

1 INTRODUCTION

There is a drive in education to move from tutor centred to learner centred approaches, whilst always taking the relevant pedagogical and technological considerations into account. Technology, in particular Technology Enhanced Learning (eLearning), has evolved over the last number of decades resulting in the emergence of powerful tools, capable of effectively supporting the delivery of education in the workplace. However, it is not clear how effective eLearning programmes have been in transforming individuals and ultimately improving or optimising performance at the level of the enterprise. This paper explores these issues and proposes an eLearning framework for enterprise performance optimisation. The framework to achieve such transformative change has been developed and has been instantiated through two distinctive lean programmes. A multi-method research strategy has been adopted incorporating a number of surveys, evaluation and a set of case studies. A secondary element has been the identification and analysis of key differences in approaches to implementing such a framework, depending on the size and type of organisation.

1.1 The study

Two separate requirements analysis surveys were conducted; one for large organisations, primarily with Irish divisions of 12 multinational corporations and a second one aimed specifically at SMEs which was conducted with in excess of 100 SMEs across five European Countries: Ireland, UK, Sweden, Spain and Poland. The large organisation survey was carried out using interviews. For the SME study, it was more practical to use a combination of postal and phone surveys.

The next stage of the approach was framework design, development and testing. The framework was designed and developed to enable organisational and individual transformation, via the implementation of continuous improvement programmes based on the lean methodology. To be effective, all stakeholder requirements were taken into consideration; namely the individual, the

organisation and the educational provider. The framework must take industry requirements into account where organisational transformation is paramount, and also satisfy academia's focus on the transformation of the individual. In conjunction with the improvement of the individual's skills and knowledge, the framework must also facilitate the application of the learning in the workplace through the deployment of a workplace based project that delivers tangible benefits to the organisation.

To enable validation, the framework was instantiated in a two distinct iterations of a lean training programme. The first was a suite of standalone interactive courseware and the second was a University accredited Diploma.

The final stage of the strategy was a comprehensive evaluation of the framework through the programmes. The evaluations were conducted through a combination of methods. These included formal assessment of participants through examinations, assignments and course participation; follow up surveys and interviews with participants, both while undertaking and shortly after completing the programmes; and finally using four separate case studies, two in large organisations and two in SMEs. The case studies consisted of interviews with organizational representatives, normally the participants' supervisors to assess the effectiveness of the framework on both the participant and the organisation. The evaluations led to both the updated version and the final version of the framework

1.2 Findings

The major contribution of the work has been the development of a robust eLearning framework to support the implementation of Lean and effect transformation of both the individual and the organisation. The novel aspects of the framework include:

Support for both large enterprises and small and medium enterprises. This was achieved through the design and use of appropriate contextual content for modules, using examples

that individuals from both the large and small organisations can relate to, by utilising generic content with a balanced mix of examples from large organisations, small organisations and indeed every day life

Organisational transformation was enabled through the implementation of one, or more, individual or team *workplace based project(s)*. The workplace based project(s) resulted in real and measurable cost savings/ cost avoidance to the participants' organisations. Once one successful project was achieved, it usually paved the way for more projects to follow, all of which had a contributory effect on the transformation throughout the organisation. This was one of the most innovative aspects of the framework as it was the practical application of the learning in the workplace. This aspect of the framework was the key attraction for organisations, as the return on investment on the participant's fees was typically achieved in less than twelve months. The integration of projects into the curriculum was a key requirement from the industry stakeholders (FLIEDNER and MATHIESON, 2009). From the participant's perspective, the project was weighted equivalent to two complete modules for assessment purposes.

Individual transformation typically achieved through the implementation of the project, as outlined above, and through the imparting of information measured through a variety of *assessment techniques* that included:

- × Participation through a mandatory online discussion board, which accounted for 20% of each module's assessment.
- × Assignments that were mandatory for each module and were linked to the workplace based project. These accounted for 40% of each module's assessment.
- × Formal written examination in a designated university approved examination centre was a means of assessing the effectiveness of the participant's ability to recall information, but

more importantly, to assimilate the learning and demonstrate reflection in an examination setting. This accounted for 40% of each module assessment.

- × Informal assessment of individual transformation. This is also assessed informally, on the company side by the interactions with peers and the direct line manager and on the academic side, based on informal reviews with the academic supervisor.

The only trade off that was evident between organisational transformation and individual transformation was when there was a requirement for an operational task to be completed that was deemed more of a priority to the organisation in the immediate term. The priority of the individual was typically to complete tasks associated with their projects which tended to have more of a medium term outlook. This basically came down to resource allocation of tasks.

Integration of both academic and industrial stakeholder needs through the Academic and Industry Advisory Groups. A key imperative for the development of any successful programme of this nature was to ensure that content and context were aligned. This was achieved by using the Industry Advisory Group to ensure that the content was relevant to industrial needs; while the Academic Advisory Group ensured that academic rigour and standards were preserved, and finally the project manager who understood both the needs and language of industry and academia. Relevance of the context was ensured by using the workplace based project as an embodiment of the practical application of the learning in the workplace.

These concepts are outlined below in Figure 1, the transformational framework and figure 2, the expanded curriculum, resources, assessment methods and instruments.

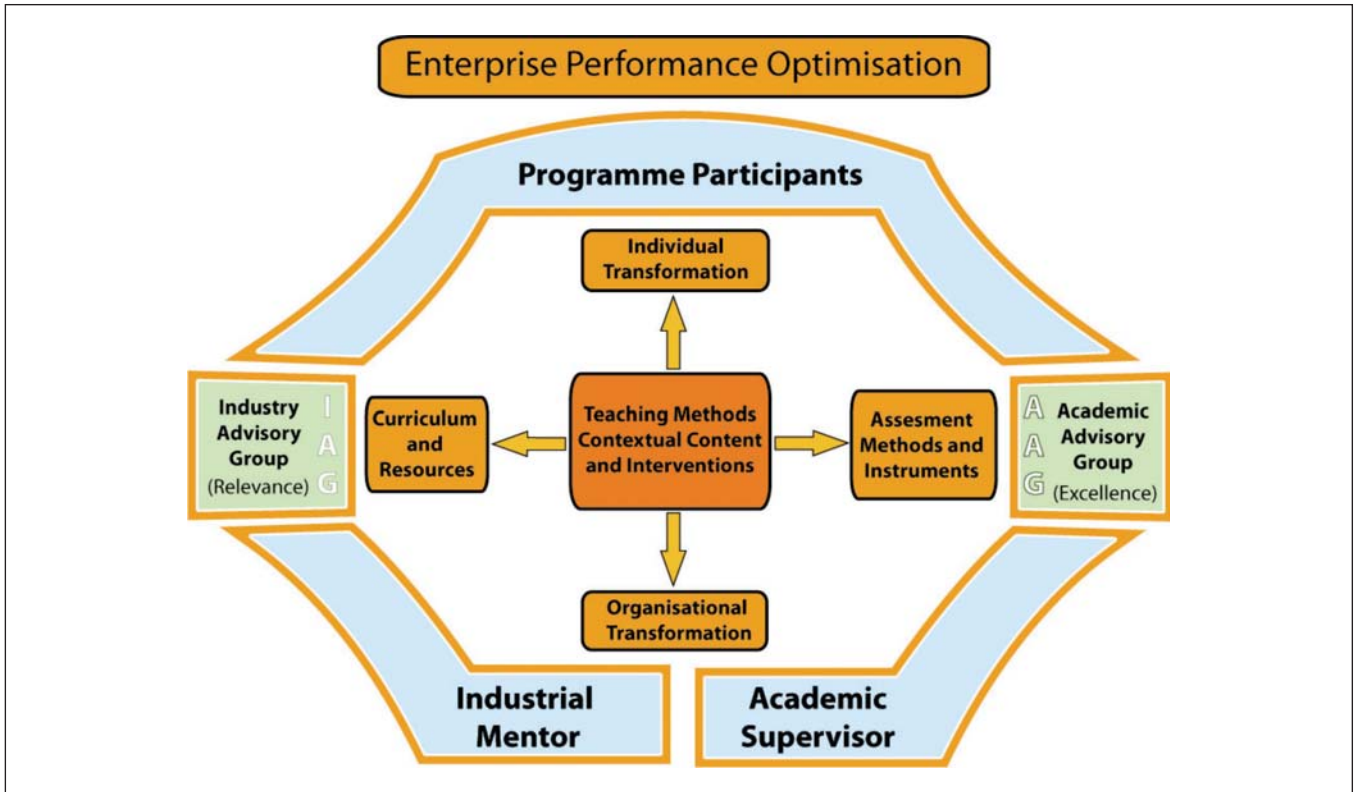


Figure 1: The Transformational Framework

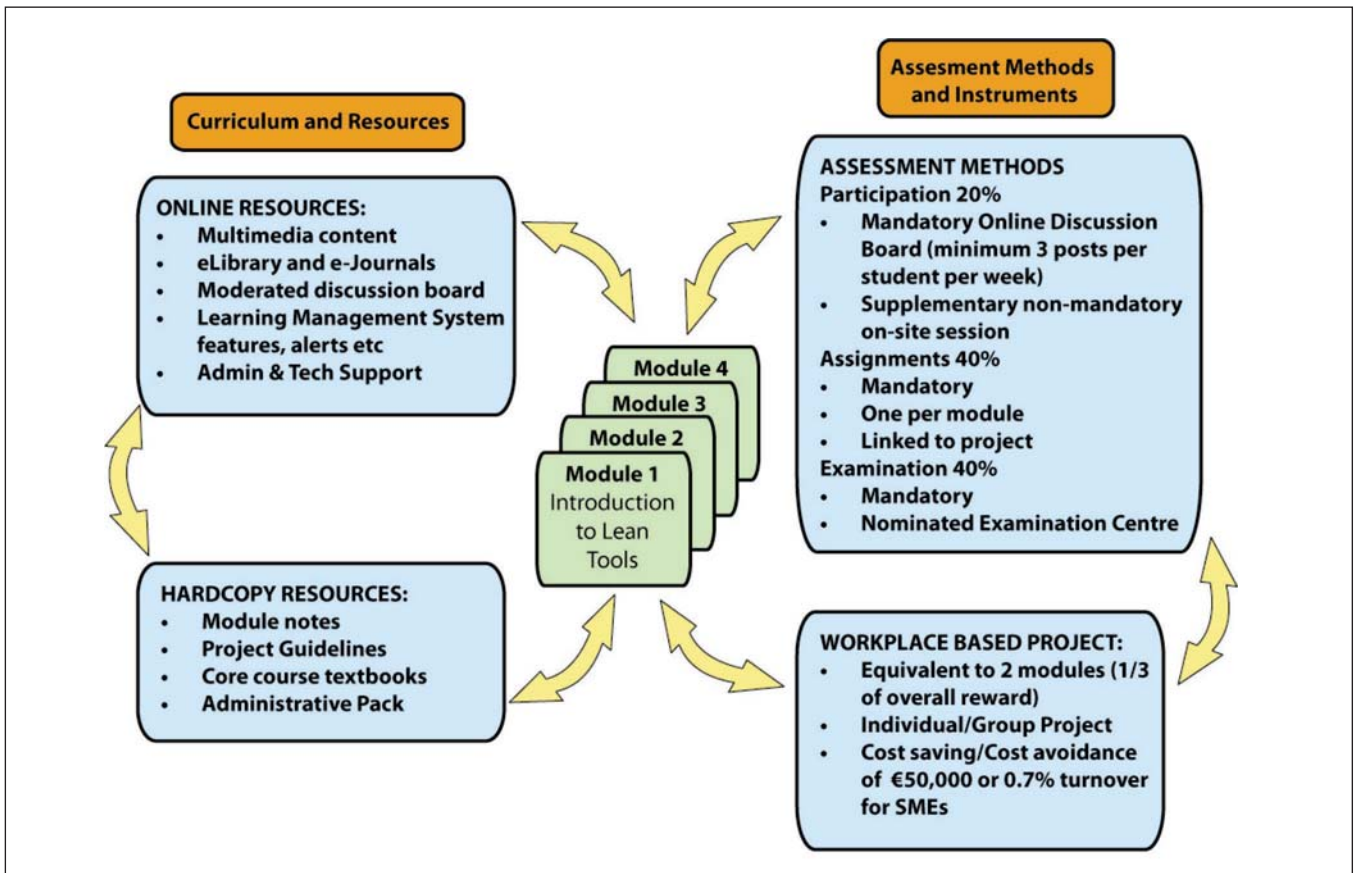


Figure 2: The expanded curriculum, resources, assessment methods and instruments

A secondary contribution has been the **comparison between Large companies and Small and Medium Enterprises**. There has been very mixed feedback on both the take up and attitude towards eLearning, with only 47% of companies positively disposed towards eLearning (BROWN, WADE et al., 2006). Although the sample was relatively small (total sample size of 112) this level of uptake and acceptance of eLearning has been borne out extensively in the literature (WEBSTER, 2002; SAMBROOK, 2003; HUNT, 2007). Primarily, this was caused by the negative experiences of companies that have undertaken poor or ineffective eLearning programmes in the past. In more recent surveys, the figure for acceptance and investment in eLearning has been closer to two thirds (BOWMAN, KEARNS et al., 2009). A third of those surveyed did not intend to increase their provision in this area. This was surprising given the growth in online learning. Moreover, the split has not changed for the last number of years, where one third of companies who expressed a view on the subject said that, for the time being, they would maintain their current level, with a very small percentage indicating that they would use eLearning less.

There were notable geographic differences in the attitude of organisations in different countries towards eLearning. For example, the uptake in Spanish SMEs was far higher than in Ireland, the UK, Spain and Poland (BROWN, WADE et al., 2006). The reason was that in more ICT enabled countries, such as Spain, and in countries where on-line learning is a necessity for geographic reasons, such as Australia and Canada, eLearning was far more accepted as a proven methodology for the delivery of educational programmes (BROWN, WADE et al., 2006).

In comparing and contrasting SMEs and large enterprises, SMEs have much more limited resources than large corporations, hence return on investment (ROI) needed careful justification. Indeed, given the economic downturn, training budgets in LEs are becoming much tighter, so a reasonable ROI is required for all organisations. For both large and small organisations, impact and results were key. Companies often preferred online, or distance learning not just because it was cheaper

than sending employees on training courses, but because it was convenient and flexible.

Ideally content should be modular in nature as it results in a more flexible offering. A key difference between the SMEs and the large companies was in the selection and implementation of projects. Primarily due to resource constraints, the SME projects tended to be individual in nature, as opposed to the large companies which tended to be split between individual projects and group projects. The SMEs in many instances, particularly the smaller SMEs or micro-enterprises, struggled to achieve projects that yielded cost savings in excess of •50,000, yet they were still engaged in valid projects that achieved cost savings/cost avoidance in the region of •20,000 to •30,000. This was addressed by changing the criteria for SMEs to •50,000, or 0.7% of turnover. For group projects, the necessary cost savings/cost avoidance attributed to individual participants by dividing the total savings/avoidance achieved by the project by the number engaged in the project; this had to be in excess of •50,000. In all cases, the financial cost savings/cost avoidance had to be verified and signed off, either by the owner manager or the finance department within the organisation.

2 CONCLUSIONS

Critical to success was to ensure that the **needs of the individual** were met. As outlined above the companies i.e. employers, were a key group of stakeholders and ultimately their needs must be effectively met. Another key group of stakeholders were the employees i.e. the Learners, for whom accreditation and career progression were paramount. Hence, it was vitally important to ensure that a university based qualification was tied to the award. The feedback from both the surveys and the testing was that purely on-line programmes were not the way forward. The lack of motivation, self-discipline and lack of tutor contact on fully on-line programmes were perceived as key disadvantages. Hence, a blended offering was warranted. It emerged from the student perspective, that the following five guidelines were deemed critical:

1. Timely feedback from support staff and lecturers/ moderators is essential to maintain student motivation and responsiveness.
2. Lecturers need to have applied (real world) experience in industry, and moderators need to have experience or training in e-moderating.
3. The nature of the content determines the frequency of face to face sessions.
4. To be both effective and utilised, activities and participation need to be mandatory and contribute towards the learners overall grade, e.g. 20% of award allocated to participation on the discussion board.
5. It is critical that content/theory is related to a practical application of learning, e.g. linking of assignments and project to workplace based application.

In summary it is imperative that the individual is not just adequately represented, but is central to the learning experience. With first time completion rates of 80%, this is an excellent indicator of the ability of the students to stay the course and finish the programme. It is also evidence of a well designed programme and an

adherence to the strict entry criteria to ensure that only students with a high likelihood of completion would be accepted on the programme. In all cases where individuals did not complete the programme, it was either down to a change in personal or professional circumstances, such as an addition to the family, or a changed role within the workplace.

Finally, from the student's perspective, the technology was irrelevant, i.e. it did not matter whether the underlying Learning Management System was *Blackboard*, *MOODLE*, *SAKAI*, or a custom built engine. Instead, pedagogy was the key to success. Whatever pedagogical approach was adopted, be it behaviourist, cognitive, cognitive constructivism, social constructivism, experiential, activity based or situated learning, it was imperative that learning was nurtured by fostering thinking and reflection, conversation, interaction, experience and activity. This was achieved in the framework by the provision of high quality content to promote thinking and reflection. The content was discussed through an interactive discussion board which promoted active conversation and interaction, and finally, the leaning was implemented through the assignments and a workplace based project.

REFERENCES

- BOWMAN, K., P. KEARNS and A. FRAMEWORK. *The impact of e-learning on employability skills development: final report*, 2009.
- BROWN, L., V. WADE and E. MURPHY. "Corporate eLearning: Human resource development implications for large and small organizations." *Human Resource Development International* 9(3): 415-427, 2006.
- FLIEDNER, G. and K. MATHIESON. "Learning Lean: A Survey of Industry Lean Needs." *The Journal of Education for Business* 84(4): 194-199, 2009.
- HUNT, I. "The graduate and the SME." *Education, Knowledge and Economy* 1(2): 199-210, 2007.
- SAMBROOK, S. "E-learning in small organisation." *Education and Training* 45(8/9): 506-516, 2003.
- WEBSTER, T. *Small Firms: The Training Imperative, Report for Small Firms Association and Skillnets* (Tansey Webster Economic Consultants), 2002.