

## Review and discussion: E-learning for academia and industry

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### ABSTRACT

This paper presents a high level review and discussion about e-learning and proposes the use of interactive learning as a recommended method for staff training in industry and academia. Interactive learning is focused on the integrated e-learning and face-to-face learning to ensure that the process of learning can stimulate learners' interests, report their progress and have tutors to provide their feedback and guide learners to the expected targets. Learning activities and varieties have been illustrated with discussion about how industry and academia can use interactive learning. Five successful examples of interactive learning to demonstrate the effectiveness of interactive learning. Positive impacts have been reported in RBS, SMEs using SAP, University of Cambridge, University of Greenwich and Leeds Beckett University to support the positive outcomes for learners and trainers. Future directions have been discussed, particularly the use of emerging services can enhance the learning experience and satisfaction for learners and trainers.

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### 1. Introduction

Investment in human resources is essential to the development of human capitals, whereby countries and organizations that have invested in human capitals are in a better position to acquire long-term benefits (Schultz, 1961; Reynolds, Caley, & Mason, 2002). This is also relevant to industry, since employees need to keep their skills and knowledge up-to-date. A moving organization is the one that invests in people and ensure that all employees' skills are up-to-date to stay competitive (Bahrami, 1996; Reynold et al., 2002; Gould, 2009). By offering staff training, benefits for organizations are as follows. First, employees can complete their tasks quickly and efficiently without making mistakes that can cost the organizational reputation and financial loss (Sveiby, 1997). Second, products and services can be enhanced since the team for research and development, sales, marketing and operations have better competency, skills and knowledge to ensure that products and services are continuously improved (Day, 1994). Third, the organization can design and develop better strategies, new products and services as a result of the improved level of overall competency and collaboration (Gould, 2009). An organization can become a learning organization since the employees can learn from their previous errors, accelerate their progress and improve on their work performance as individuals and units. More time and effort can be used on devel-

opment of the forward-thinking plans to reduce costs, errors and improve on collaboration, team work and market strategies (Treacy & Wiersema, 1997). In this way, it offers a greater level of competitiveness over their rivals. Human capital can include knowledge, skills, competencies, relationships and creativity implicit in an organization's workforce (Reynolds et al., 2002).

To facilitate better learning and training activities, the use of online resources have been blended successfully with education. One of these areas is known as e-learning, which offers the online delivery of information, communication, education and training (Sloman, 2001). Using electronically-based approaches, learning and training can be conducted at anywhere and anytime. It can save operational costs including costs for accommodation, travel and booking of physical classrooms that require all the employees to attend physically. Some forms of learning activities can be completed offline, such as watching the training videos, completing assignments and rehearsing skills that were acquired at the training workshops. The e-learning education can be improved significantly with the systematic approach to ensure that learners' progress can be reviewed at check points and demonstrate that there is an improvement on the learners' competency of knowledge and skills (Rothwell & Kazanas, 2011). One of such approaches is the use of blended learning to combine the use of classroom teaching and online learning activities together to produce a greater impact (Graham, 2006). Classroom-based teaching can allow learners to focus on consolidating their core skills and knowledge. Online learning resources and activities can ensure that learners can revise their work, discuss with their peers in online discussion and be

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involved in any quizzes or tutorials that can be rehearsed several times outside the classroom. The role of the tutor is crucial in the development in the blended learning. The tutor is a teacher in the classroom, the motivator in both the online and classroom environment and an advisor on the online forum and learning activities. The research work conducted by [Chang and Wills \(2013\)](#) show that there is a 15% improvement on learner's satisfaction and performance of using the blended learning approach than using the classroom teaching approach.

The breakdown of this paper is as follows. Section 2 presents the related work and literature to e-learning. While acknowledging there is a need to improve the delivery of e-learning for staff training, interactive learning, the combination of online e-learning and face-to-face staff training, is proposed to be a better alternative than adopting e-learning alone. Section 3 presents how interactive learning can be conducted for industry and academia with five case studies to support. Section 4 sums up the paper with the plan for future work.

## 2. Related work

This section describes the related work to e-learning review. This e-learning review consists of seven key areas that are presented as follows.

- 1) Emerging technologies: e-learning is considered as an emerging technology that makes impact on the workforce.
- 2) Continuing professional development (CPD): e-learning is used in continuous professional development, of which staff training and executive education are principal components.
- 3) The impacts on training: e-learning brings new concepts and implementations for training.
- 4) Effective team management and motivation: the purpose of training is to improve e-learning implementations, in which effective team management and motivation are important factors.
- 5) Factors for using e-learning technology in learning: Bate's model and Alexander's model of e-learning are used to explain this. An industrial example is described to demonstrate both models.
- 6) Advantages and disadvantages of e-learning: The advantages and disadvantages of e-learning over traditional learning are described to highlight e-learning's strengths and weaknesses.
- 7) Interactive learning: both face-to-face learning and e-learning have their strengths and weaknesses. This leads to the proposal to combine both face-to-face learning and e-learning with their positive effects on the employees and the organizations. The difference between interactive and blended learning is that interactive learning is focused on the dynamic interactions with the learners. Teaching can be tailored to different needs and different groups. Learners progress can be checked and monitored ([Sloman, 2001](#); [Lundvall, 2010](#); [Chang, 2003, 2015](#)). Blended learning is more focused on the mechanism and a variety of learning techniques that learning should be taken place ([Garrison & Kanuka, 2004](#); [Graham, 2006](#)).

### 2.1. Emerging technologies

Emerging technologies are technologies that create new industries and transform existing ones ([Day, Schoemaker, & Gunther, 2004](#)). E-learning is an emerging technology that makes impact on the workforce and reshapes the relationship between employees and organizations. This concept has been elaborated by [Bell, Lee, and Yeung, \(2006\)](#), who highlight a set of significant and common challenges to both organizations and employees. These challenges

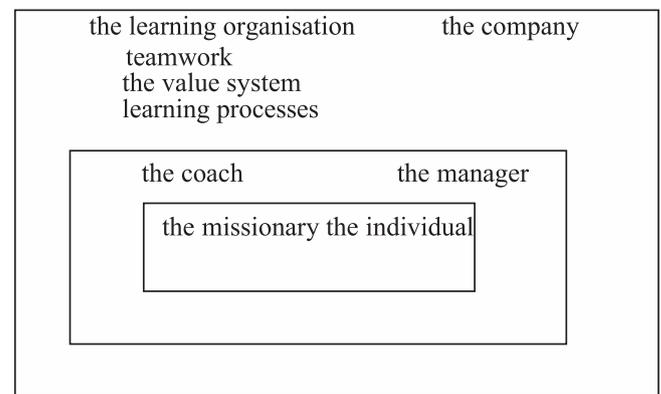


Fig. 1. Lorriman's Windows.

are considered as human resource challenges that are driven by interaction between factors:

- The properties of emerging technologies.
- Changing character of people (employees and customers) and what they are seeking.
- The changing character of organizations and how they are approaching their human capital.

Interactions driving human resource challenges ([Day et al., 2004](#)) represents the relationship between emerging technologies, organizations and people. organizations play a central role because organizations should be aware of the impacts due to the changes in people (employees and customers) and emerging technologies. organizations provide training for office-workers, so that they can get familiar with organizations' emerging technologies to improve their efficiency. Thus, people and emerging technologies are linked together through organizations. E-learning can provide assistance for these interactions because it provides rapid communications between colleagues and improves the quality of the work. The process of improving the quality of the staff in order to set a better quality of work is called continuing professional development (CPD).

### 2.2. Continuing professional development

The Engineering Council (US) defines continuous professional development (CPD) as "The systematic maintenance, improvement and broadening of knowledge and skill, and the development of personal qualities necessary for the execution of professional and technical duties throughout the practitioner's working life" ([Friedman & Phillips, 2004](#)). CPD, being essential for the organizations, includes executive education and staff training. [Fig. 1](#) illustrates the concept of CPD.

[Lorriman's Windows \(1997\)](#) explains the three key elements in CPD. First, there must be a mission by each individual for their self-improvement. Each member of staff should understand their key competencies and all learning should maximise the speed to develop these competencies. Secondly, organizations should redefine the role of their managers, so that coaching and developing of staff become a highly important activity. Thirdly, the organizations should provide a learning environment and maximise learning processes. How can we achieve these three elements? Training, especially training by e-learning, is a key solution used by many organizations. Lorriman's theory can be presented in [Fig. 1](#).

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