



E-Learning as Revolution or Evolution?

The contribution of e-learning to workplace training and learning and its effectiveness

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Organisations are more than meets the eye. Obvious things such as organisational charts, processes, reporting lines and IT-systems are embedded in a complex and dynamic network of communication, organizational culture, power and politics. CQ Research conducts studies and analysis that unveil those hidden elements of organisations. Based on a rigorous scientific foundation, those studies act as valuable starting point for improvement intervention strategies and Team Consulting & Learning groups.

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1. INTRODUCTION

Based on recent academic literature, this report will argue that contemporary trends in e-learning respond, mostly, to an evolutionary process occurring in organisational Learning and Development. This relatively new methodology of training seems to have emerged from the need of finding cost-effective practices informed by cognitive theories that may offered reassurance for their return of investment. When compared to other alternative teaching modalities, it becomes evident that e-learning principles have strong similarities with programmed learning, especially that which advocated the use of machines for delivering instructional content. As a result, increasingly complex applications of new technology which incorporated mobile and even virtual devices seem to have produced a fully functional customisable training tool capable of operating just-in-time around the world. In this coming-of-age, the literature around e-learning appears to have generated new definitions for L&D theory and practice, consequently shifting organisational expectations of what instructional design should achieve when addressing knowledge, attitudes and skills required at the workplace.

2. E-LEARNING: ONE MORE PIECE OF THE LEARNING PUZZLE

The evidence presented here suggest that e-learning can enhance the overall learner experience while making substantial contributions to the workplace through converging technologies married to broader cognitive learning paradigms. Despite initial employee rejection, onerous up-front costs and a dependency for regular access to a technology not always available to the workforce, many publications argue that improvements have been and still can be made in the development of better end-user designs and more effective institutional deployments, to the further exploration of blended approaches involving cutting-edge technologies. Altogether, it seems appropriate to believe that most types of organizations have already embraced a learner-centered approach trusting that e-learning would promote amicable collaboration and the share of best-practice in interactive digital communities. This rather efficient optimistic view, however, have also implied the deep scrutiny of the L&D professional role which, possibly threatened by the use of easily accessible, commonly applied and reliable pre-packed digital training solutions designed to meet most legal and other compliance requirements. Albeit attractive in easiness and costs, this report will argue that improper use of these quick solutions can seriously undermine the importance of developing a professionally designed, implemented and maintained strategic learning culture.

3. PROGRAMMED LEARNING – THE START OF E-LEARNING

Research has shown that learning paradigm shifts appears inevitable after the postwar era (Sparks, 1994; Kochman, 1996) when behavioural dominating theories searched for better and more effective alternatives to traditional teaching methods in the classroom. Facing this

challenge, Skinner (1965) designed and promoted the use of teaching machines affirming that “a teaching machine is simply any device which arranges contingencies of reinforcement” (Skinner, 1965, p.430). Faithful to his behaviourist background, the author explained that understanding these contingencies was essential for the effective design, delivery and evaluation of successful programmed learning interventions. Skinner strongly believed in freeing the teacher from the repetitive and daunting task of delivering the same content over and over. Instead, employing teaching machines could save valuable time used for more productive activities, such as formative discussions. Firmly convinced of the detrimental impact of individual differences in the classroom, best demonstrated by struggling slow performers, Skinner envisioned a future in which teaching machines would allow all students to learn at their own pace. Specially gifted students who would move quicker to higher and more demanding academic levels, eliminating unnecessary boredom in the classroom. Although Skinner’s teaching machines have not survived as such (Benjamin, 1988), most principles of programmed learning still remain today (Lokaiczyk et al., 2007).

4. E-LEARNING AS MEANS TO INCREASE LEARNING TRANSFER

The idea of gaining meaningful knowledge away from the classroom was never too new. Moore et al. (2010) explored three different modalities in depth: e-learning, online learning and distance learning. The authors found that labelling affected perception and expectations in learners who are for these modalities, physically and, more than often, timely separated from teachers and facilitators. Also, exploring this, King et al. (2001) suggested that distance learning should be consider an ability (of the learner) rather than an alternative of presencial teaching. Furthermore, both pieces seemed to agree, even published almost a decade apart,

that the literature have found difficult to deliver a clear-cut common definition of e-learning. Instead, defining the subject seems dependent of its underlying agenda. In support of an evolutive argument, this report will adhere to the ideas proposed by Nichols (2003) in defining e-learning. Nichols stressed that e-learning can only be delivered through the use of electronic equipment capable of reproducing multimedia which, necessarily, was generated remotely. Far from the traditional picture of people sitting passively in front of gleaming screens, this report also acknowledges that e-learning methods can go as far as introducing virtual reality technology for the training of health professionals (Karunasekera, 2011).

4.1 Decreased cognitive load with e-learning: Leveraging multiple channels

Because an interaction with multimedia machines is essential in e-learning, this work would argue that Sweller's highly influential and still evolving Cognitive Load Theory (Sweller, 2004) sits at the core of e-learning methods, impacting past and current development (Van Merriënboer & Ayres, 2005). Sweller's ideas about the inner mechanisms of working memory, such as functioning with a limited capacity, were initially based on the pioneering work of Skinner's contemporary psychologist G. Miller who provided important clues for the understanding of cognitive functions (Miller, 1956). Essentially, Miller's theory affirmed that short-term memory is limited to a number of elements or slots capable of simultaneously receive, process, or remember information. Miller, however, did not explain the nature nor the amount of information which can be held on each slot, leaving it to future research. Later cognitive theories (Anderson, 1984) then argued that mental representations of new and old concepts, ideas, or combinations of them, occupy these slots while interacting with existing memories creating new or modifying existing schema. Based on this, early designs of e-learning interventions relied on Multimedia Learning Theory (Mayer and Moreno., 1998)

which affirms that content delivered to more than one channel (i.e. audio-visual materials) enhances the learning experience by creating more meaningful and long-lasting connections in memory. Since the content being perceived by the individual can theoretically overload the limited capacity working memory, cognitive load theory literature argues that efficient delivery of novel content needs to follow an appropriate framing conveying only the right amount of information at one time (Van Merriënboer & Ayres, 2005). Moreover, the theory affirms that, if content is delivered efficiently, an easier assimilation of the new data with existing knowledge should follow suit making organisational e-learning capable of altering existing behaviours through modifying trainees' mental schemata. As a consequence, in terms of evaluating effectiveness, the observation and measurement of newly acquired behaviours product of an effective transfer of training, provides the information necessary to appropriately calculate efficacy of the method and even return of investment (Phillips, 2010).

4.2 Increased cost efficiency with e-learning: Removing time and space limitations

Besides highly accurate investment calculations, Anderson (2011) suggest that organisations should see easily the benefits of investing in e-learning in savings related to other traditional training methods: travel and transport, teaching materials, additional equipment, food and accommodation, and the other many expenses involved in disturbing and mobilising workforces. Even more significant than cost, Anderson highlights that training provided through e-learning can become continuous rather than restricted to a single opportunity in time and space, aware that learners' individual differences need to be considered to avoid detrimental effects on motivation.

4.3 Increased flexibility with e-learning: Taking the learner seriously

In this line of thought, Kim et al. (2013) found that fully adaptable e-learning systems which were capable of considering personality traits in delivering personalized learning experiences, shown positive effects on the amount of information retained post-training, supporting a correlation between personality type and learning experience satisfaction. When addressing contextual effects, Cheng et al. (2010) found that the role of trainee expectations and social influences were crucial for creating the conditions for a wider acceptance of e-learning. Their results showed that differences in perception of on-the-job, managerial and organizational support, mediated Chinese employees' perception of the usefulness of e-learning impacting its use and further acceptance. In terms of reception, Batalla-Busquets and Pacheco-Bernal (2013) revealed that Spanish workers perceived e-learning as being more flexible and up-to-date than traditional face-to-face training. In their mix, some interviewees shown poor adaptability and fear of new training requirements while others self-identified with the knowledge society. As Anderson (2011) theorised, the organization which was the setting for this survey had no trouble identifying the benefits of e-learning but its workers, however, showed marked differences in the use of virtual methods due to inner-beliefs regarding the use of contemporary technology. DeRouin et al. (2005) argued that, in order to fully develop the capacity for improving the learning experience, e-learning should be perceived at the top as a valid strategic ally that provides essential training in knowledge, skills, and attitudes required by the organisation. Satisfactory results, however, are highly dependent on efficient designs, adequate delivery methods, and relevant evaluations. For the authors, additional theory needs to be develop to guide the efficient implementation of e-learning programmes, this based on research focused on the learner rather than on the

technology and assessed at the workplace involving real-life situations. Summarising and further expanding these recommendations, Daneshgar et al. (2008) affirmed that strategic deployment of organisational e-learning should include: an effective approach to individual differences that generate adequate motivation, the awareness of possible information overloading, training that relates to real life, an active encouragement of social interactions and hands-on activities, and lastly, the need for e-learning to inspire learners reflective practice. In other words, e-learning would overcome organisational, structural, and cultural issues that may block its wider acceptance only after implementing appropriately designed and relevant interventions.

5. E-LEARNING IS A MEANS TO AN END

Even when evolving technology rest at the core of e-learning methods, Rosenberg (2005) criticised a market over-focus on technology that made e-learning the objective rather than medium. For the author, it is essential to consider e-learning as emerging from 'smart enterprise' frameworks making it useful for delivering certain but not all types of content. Strong governance and sponsorship from decision makers seem rather essential for integrating e-learning to more traditional formats which involving formal and informal learning. For Rosenberg, most of the learning takes place on-the-job therefore it is radically important that fear of technology is dispelled accordingly so target strategic training required for performance is conducted. This is an issue that also concerned Brown and Charlier (2012) who suggested that, while e-learning can provide consistency and control of learning, it can also sometimes generate confusion over what constitute the training required. Some employees, i.e. those who historically shown resistance to change, would be more likely to

resist new methods of training. For addressing this, the authors propose that learning materials are delivered timely and, containing clear explanations of the workings and benefits of the new modality. This simple practice should persuade resisting staff while inviting them to move forward to more advanced stages of behavioural change. Just like in other studies, Brown and Charlier found that employee perception of easier access to technology, perceived usefulness and the provision of supportive environments expand the chances of e-learning being accepted more broadly. In the same fashion, Bowman and Kearns (2007) demystified age as a factor of resistance to the use of e-learning. Additionally, finding that first time encounters with e-learning were highly relevant for both the young and the more mature workforce. Same was for Lewis (2009) who also recommended considering mature-aged learners more likely to have work and family commitments that can impact on their chances of successfully completing e-learning courses.

6. E-LEARNING AND TECHNOLOGY GOES HAND IN HAND

Dedicated to the evaluation of e-learning fitness for purpose, Cheng et al. (2014) reviewed the literature between 2000 and 2012 highlighting the most common uses of e-learning in the workplace: lifelong education, extending professional development, addressing organizational needs and, more recently, the inclusion in social media for knowledge management. The authors found, more specifically, that involvement in social media aimed at promoting interactions that support knowledge creation and share between peers. However successful in theory, these initiatives seem to not have fulfilled entirely the challenge of connecting problem solving to knowledge construction, which constitutes an essential requirement for more complex and intellectually demanding organizational settings. As for

digital environments specifically, London and Hall (2011) described how Web 2.0 technologies arrived, not without challenges, for engaging employees learning through live demonstrations, games, and real-time interactions with peers and experts. More importantly, this new technology supports both adaptive or generative learning, the first focusing on classic memorisation of knowledge, the second promoting peer-2-peer engagement within digital communities leading to collaborative problem solving. With software capable of tracking learning progress in real time, Web 2.0 applications appear attractive to those concerned with evaluating in detail e-learning effectiveness and return of investment. The technology also allows for simultaneous blending of learning during work hours, which can contribute to eliminate cross-functional and cross-cultural differences product of globalised environments. Aimed at the sustainability of e-learning programmes, in organisations which already established learner-centered approaches, the authors argue that continuous experimentation with new methods seem essential for avoiding the risk of depending on large vendors that only interested in offering pre-packaged solutions. On this particular note, Winter (2006) advocated for the importance of choosing rightly the supporting platform for e-learning systems. Winter found that centralised organisational L&D departments may choose mostly between Blackboard, which boasts more security together with onerous license fees, or the open source Moodle, which appears more engaging and supportive of a wider range of interactions at a lower cost of implementation. Just like Rosenberg (2005) and Brown and Charlier (2012), Attwell and Harris (2007) work promote the idea of employees of small and medium enterprises receiving basic knowledge about the systems and technologies they are required to engage with in e-learning before training is delivered. Despite an ongoing endorsement of the literature about the many advantages of providing relevant tailored

organisational materials at all skill levels, Atwell and Harris found that some vendors may insist on the virtues of generic pre-packaged as opposed to customised solutions. Possibly responding to a cost-effective strategy, Little (2006) also found that blended learning conversations appeared dominated by jargon used in sales pitches by companies interested in marketing their digital products and services. As a response to this, Harris (2009) found that small and medium business often chosen universities for developing their e-learning materials, mostly, due to the pressure technology businesses exerted on them for purchasing already packed materials. More recently, Teasdale (2013) also pleaded organisations to choose carefully their learning management systems, and to device policies that involve suppliers and consultants in building internal networks able to generate new initiatives and, more importantly, support unexpected eventualities.

7. THE ROLE OF L&D PROFESSIONALS CHANGES IN E-LEARNING

As part of this evolving process in organisational learning, the traditional role of L&D professionals seem also required to change. Sloman (2010) reviewed CIPD reports from 2001 to 2008 highlighting a decreasing resistance in trainees but also in trainers to e-learning. More specifically, the Annual Survey Report (CIPD, 2008) indicated that, by the year of publication, very little time was spent by L&D personnel in designing and implementing e-learning. A year later, Pitt and Heyes (2009) analysed e-learning implementation at one of Australia's major Banks finding that L&D professionals roles needed shifting from mere broadcasters and conveyors of information to much more needed champions of assessment and monitoring as well as advisors and consultants for the business. For Taylor (2008) it was essential that organisations establish first how e-learning can provide necessary data to

support L&D strategies through In-house exploiting of e-learning capacity of producing useful data, such as identifying in real time skill gaps. Venkatraman (2011) reported the move from external to internal content development through the use of social media and accessible web-based authoring tools, directly leading the integration of social networking, mobile learning, games, and simulations into organisational platforms. Venkatraman argues that continuous demand for engaging and inexpensive learning content, capable of being delivered in small components across all platforms, can bring dramatic changes to the L&D role. For the author, so-called quick solutions are often used by businesses in compliance training as well as in other process and procedures, demanding from internal L&D teams more content with less money. Just as Loon (2014) proposed, being savvy and knowledgeable seems the only way forward for L&D professionals and departments developing training programmes.

8. CONCLUSION

In conclusion, this report set out with the premise of demonstrating, based on a small but comprehensive selection of articles in the literature, that e-learning methods respond to an evolution in the processes of organisational learning. The chosen literature showed that, in all modalities, e-learning relevance and success, besides its cost-saving features, is tied to the ability to meet organisational training needs. This is mostly based on the fact that training at work is usually offered to overcome strategic knowledge and skills gaps. For this training to impact effectively, it seems essential that adequate periodic evaluation is conducted, not only of organisational training requirements but also of the tools and the people involved in developing e-learning training interventions. This process, albeit costly and laborious, seems capable of informing the business about decisions that may affect positively the value of e-

learning among the workforce. Since “the availability of a e-learning resource does not ensure its use, let alone its effectiveness as a tool to change employee behavior” (Brown and Charlier, 2012, p.1), for effective change to happen, top-down strategic driven initiatives seem essential for boosting e-learning employee acceptance, improve delivery methods that reflect in positive post-training assessments. Other former reviews have shown that, in a relative short time, many authors have strive for putting forward ideas that overcome the challenges associated with establishing e-learning as a valid organisational learning tool used beyond the need of meeting compliance requirements. Although there is evidence of past resistance in L&D traditional environments, the arrival of new technologies have projected organisational learning to new dimensions involving peer collaboration and shared knowledge production. This may represent a true opportunity for L&D professionals of becoming the future architects, advisors and consultants of purposely designed organisational learning cultures.

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