

# COMPETENCY-BASED TRAINING IN SMES: THE ROLE OF E-LEARNING AND E-COMPETENCE

Ileana Hamburg, Steffi Engert  
Institut Arbeit und Technik, Gelsenkirchen, Germany  
E-Competence Agentur im IKM Bereich, Universität Duisburg-Essen; Germany  
hamburg@iatge.de, steffi.engert@uni-due.de

## ABSTRACT

In this paper, we examine the training situation of European Small and Medium Enterprises (SMEs), especially in regard to e-learning. While e-learning has been widely presented as the solution for the training needs of SMEs, analyses of the real situation show quite another picture. Some of these analyses are results of the project ARIEL – Analyzing and Reporting the Implementation of Electronic Learning in Europe ([www.ariel-eu.net](http://www.ariel-eu.net)). ARIEL was an international joint project (2004-2005) funded by the European Commission in the framework of its e-learning Initiative. In the final section of the paper, we propose Competency-Based Training (CbT) as a systematic approach and thus as a possible solution for improving learning processes in SMEs and present conclusions on the challenges to be met in vocational and further training in SMEs.

## KEY WORDS

e-learning, SME, e-competence, Competency-based training

## 1. Introduction: Training and e-learning in SMEs

Small and Medium sized Enterprises (SMEs) are universally acknowledged as »engines of growth«. They generate most employment opportunities at the lowest cost per new employment in Europe. In the EU there are over 18 million individual enterprises, of which over 99 per cent fall within the definition of SMEs ([www.europa.eu.int/comm/enterprise/enterprise\\_policy/analysis/doc/smes\\_observatory\\_2003\\_report6\\_en.pdf](http://www.europa.eu.int/comm/enterprise/enterprise_policy/analysis/doc/smes_observatory_2003_report6_en.pdf)).

But in many countries SMEs have come under severe pressure. Quite often they lack the necessary skills and capabilities to be able to take advantage of new opportunities opening up before them as a result of the globalisation process and European integration and to remain competitive on the national/international level.

Most European companies consider that further training of their staff is important. But there are a number of

obstacles to continuing training at company level and the situation varies very much between countries across Europe. In Germany, for example, legal requirements often work as a barrier. (<http://www.lse.ac.uk/collections/ICTObservatory/docufind/reports.htm>). Company size is a key determining factor. All large companies (more than 1000 employees) provide further training, while this is the case for only 87% of the Germany SMEs with 50 to 249 employees and these figures get lower with diminishing company size [1].

In European SMEs further training is often limited to job tasks and mostly takes place during working hours. But due to low numbers of staff, this form of training is difficult to organize. Additionally, more often than large companies SMEs have to use outside training providers because they do not have the possibility to organize on-the-job training adequate to their specific needs or to employ permanent training experts.

Computer-based Training (CBT) is used in companies for training of their staff but many training courses are only text-based or PowerPoint presentations. It was recognised early on that e-learning means

“...the use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration.” (EU eLearning Action Plan–2001) and that it can improve the existing training and offers many benefits for the process of lifelong learning. Further it was assumed, this would benefit particularly SMEs with their high degree of dependence on the skills and abilities of their human resources and their permanent development, in order to survive in conditions of global and acute competition [2].

On the level of European policies, e-learning was seen as one of the prerequisites to achieve the Lisbon objectives: “by facilitating knowledge and skills acquisition, by providing flexible learning opportunities for students and citizens, personalising learning and by creating new collaborative learning opportunities. e-learning could become an efficient and cost

effective tool for fostering workforce development, it can lead to cost savings through better utilisation of a user's time, efficiencies in personnel resources in institutions providing education and training as well as reductions in physical requirements" ([www.elig.org](http://www.elig.org)).

But these expectations of the potentials of e-learning to improve training for SMEs have been only very partially met, according to recent analyses. These show that the structure of vocational training for SMEs is very heterogeneous in all European countries. Some of the member states such as Finland, Estonia, Ireland or Denmark can be considered as pioneers in the field of e-learning. But the findings of the analyses demonstrate that even in these countries e-learning has not much changed the basic asymmetrical development of training in SMEs as compared to large enterprises. The demand for e-learning courses comes mainly from big firms ([3]).

One crucial aspect in making e-learning offerings acceptable and viable in companies is the motivation of staff. A study by the Forrester group on 40 companies found, that unless forced, the majority of staff (68%) do not volunteer to sign up for online courses ([www.ebusiness-watch.org](http://www.ebusiness-watch.org)).

According to results of another study ([http://www.destinationcrm.com/km/dcrm\\_km\\_article.asp?id=170](http://www.destinationcrm.com/km/dcrm_km_article.asp?id=170)) 50% to 80% from those who do sign up the course, never finish the course.

The main reasons for this low level of motivation are that

- learners can not relate the on-line courses offered to their work tasks
- learners are not allowed to take time out on the job for e-learning
- there is insufficient support, when users are having difficulties with e-learning platforms and other required technologies.

Based on the results of a number of European and national projects, in which the authors were coordinators or partners, most specifically the ARIEL project, this paper will, firstly, highlight the general factors, critical for success or failure in the implementation of e-learning in SMEs, and secondly discuss the specific problems of training staff in SMEs via e-learning.

In the final section of the paper, we propose Competency-based Training (CbT) as a systematic approach and thus as a possible solution for improving learning processes in SMEs. Based on a deep analysis of concrete training needs, Competency-Based Training is defined according to work tasks, company objectives and competencies of staff, combining a holistic approach with precise solutions, taking into account adequate didactics and requirements of learner support.

## 2. Problems in E-Learning Design and Implementation

The following drastic summary by Bunis pinpoints clearly where e-learning often went wrong: "The landscape is littered with poor products and a lot of disillusioned learners... There are also big lessons for the software providers, who gave technology-obsessed course developers free rein to create glitzy, highly interactive, very expensive multimedia courseware that too often dazzled the eye without ever informing the mind. On the opposite end of the courseware spectrum, we find a plethora of brain-numbing online page-turners that are little more than PowerPoint presentations slapped up on the Web. They may have been cheap and easy for the vendors to produce in mass-market, but they cost the buyer far more than they were worth in employee time wasted using them. At either end of the spectrum, most of the products that failed to live up to their promise did so because they were not based on sound educational principles – they simply didn't account for how people actually learn. To add insult to injury, many of them also wrote on software platforms that did not perform well for users." [4].

Further detailed analysis of literature on why so much of e-learning failed brings up critical factors, which can be grouped as follows [5]:

- Initial Design Issues,
- Focus on technology and not on instructional design,
- Lack of understanding, that specific e-learning tasks have to correspond to the existing competencies as well as the present and future work tasks of learners,
- Issues of user-friendliness and interactivity,
- Problems with production, distribution, long term management and evaluation of e-learning courses.

## 3. Implementation and Use of E-Learning in SMEs

In addition to these considerations which apply to almost any e-learning, there are specific concerns in SMEs. In Germany, for example, SMEs are a bit skeptical about the effectiveness of "pure" e-learning. Only 5% of small companies and 24% of medium-sized companies use e-learning (results of D-ELAN research presented at Learntech 2004—[www.mmb-michel.de/2004/pages/start/home.html](http://www.mmb-michel.de/2004/pages/start/home.html)) in comparison with 46% of big companies. The major part of commercial e-learning software is modeled on the requirements of big enterprise or higher education. Software development is centered on big inclusive e-learning platforms, usually consisting of a basic product and additional modules. To select the right modules and to get the platform up and running plus their cost is way beyond most SMEs. Most of the e-learning in SMEs takes place in the Electronics and IT/Telecom sectors, followed by the car supply industry (Educa Online 2006). Much of

the e-learning is centered on product presentation, product development, IT-standard software, business and soft skills [6], [7].

SMEs have specific organisational needs and characteristics [8]: They depend on a limited number of people (often owners and managers are one and the same person) and there is almost always, a close relationship to customers and business partners. The impact on the workplace and the business, while staff is absent on training, cannot be over-stated. The delivery of skills needed for their business by using e-learning has, for SMEs, objectively many advantages over conventional training delivery techniques. Delivery costs are considerably lower and staff will not be off site while training. Downtime is minimised and productivity maintained. Training can take place at any time and can be scheduled to take place during slack times of the working day. In principle, training courses can also be provided almost on an à-la-carte basis, rather than waiting until the required number of participants has been gathered for a conventional, face to face, off-site course.

However, despite these advantages, there is very little e-learning activity going on in SMEs outside the sectors mentioned. "SMEs often agree with the need to put training in place," remarked Gordon Gough, Chair of the Institute of Business Advisers in Northern Ireland, "but they are slow to implement any training plan. On-line delivery may encourage adoption but the training providers need to get the benefits message across accurately." (Online Educa, 2005). It seems, that e-learning and SMEs is a relationship fraught with misunderstandings on both sides: On the part of the SME owners and managers there are misconceptions or prejudices based on the general suspicion of an educational process which is not teacher-driven. There are also fears of high costs and overheads for updating contents as well as doubts as to whether these new methods are really effective and useful for the purposes of the business. On an even more basic level, in many places suitable infrastructures for learning are missing. Staff will not be allowed to take time off for study when it is necessary, and very often will not be funded to undertake further training or technical equipment or staff skills are not sufficient for e-learning. Last not least, the issue of technical and didactic learner support remains largely unsolved.

Furthermore, SMEs often rightly realize that most of the e-learning products are standard products, not adapted to the specific needs and demands of SMEs. For big enterprises it is possible to use standard products for some tasks and goals while getting tailored learning products or add-ons for specific needs in-house or by the e-learning provider or developer. For SMEs this strategy is usually not feasible, because experts for developing specific learning contents are not available and external experts are too expensive. One approach to solve these problems is "mass customization". This concept is based on the

provision of modular e-learning solutions, which can be combined for customized solutions. Sometimes it is even necessary to "deconstruct" produced e-learning units and to rebuild them into modules. Another important possibility to find affordable and suitable solutions is to use a Content-Sharing-Platform" (see for example, the results of LERNET at [www.lernet.info](http://www.lernet.info)).

An obstacle in radically changing the way training is delivered often lies in the organisational culture, and hence the learning culture [9], i.e. the way in which the organisation teaches its employees to learn, which support it provides (or does not provide) for them, how learning is viewed. E-learning solutions have to take into account these cultural aspects and some of them need on occasion to be changed, to make e-learning acceptable.

Within the observatory project ARIEL with a budget of about 400.000€ and partners from research institutes, universities and e-learning development firms of five European countries, all projects from the eLearning initiative and other European education programmes (Leonardo, Minerva) as well as interesting national projects aimed at SMEs have been analysed. ARIEL was funded by the EU eLearning initiative and was focussed on training that imparts knowledge and skills to improve the competitiveness of SMEs in European market. The project analysed fields of application and factors leading to concepts about the future development of e-learning in Europe through four alternative scenarios (Figure 1). ARIEL partners also developed policies for providers of e-learning, for policy makers and for employees and managers of SMEs.

The results and scenarios developed in ARIEL will be used within the new EU-supported valorisation project SIMPEL, to provide sustainable models of e-Learning, in cooperation with SMEs and consultants, supporting the business of SMEs. They will be based on a strategic view of Competency-based Training, taking into account learning cultures of SMEs, in order to develop corresponding guidelines for implementing these models.

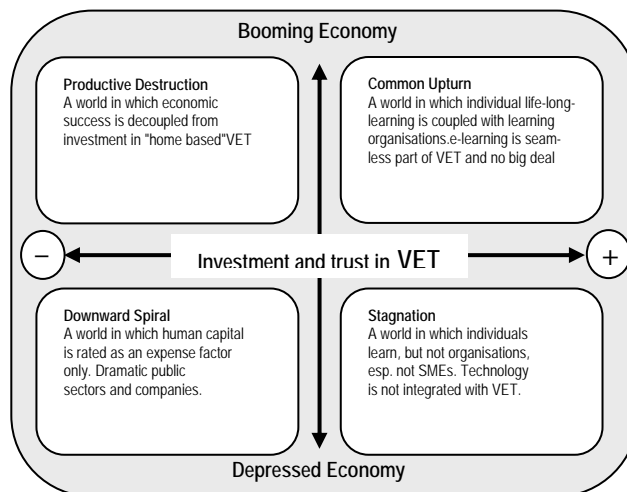


Figure 1: ARIEL scenarios

#### 4. Competency-based Training – a Solution for SMEs?

As mentioned previously, SMEs need approaches to training, providing content and methods, corresponding to existing and needed staff competencies and to the learning culture of the company. Required is, therefore, a very “holistic” approach.

In the following section we describe the characteristics of one approach which seems to be pertinent, i.e. e-learning in a framework of Competency-based Training (CbT). According to Task Trainers Inc., 2005, CbT is characterized by the following principles and methods:

- The CbT should not only identify what employees must know and do to successfully perform on the job, but also assist them in acquiring these skills,
- It is success-oriented, based on the idea that almost anyone can master almost any task, given quality instruction and sufficient time.
- Each module of a CbT should contain specific objectives and standards for successful performance.
- Learning materials used in a CbT should make clear the competencies (tasks) the learner is to learn and perform, the criteria by which the learner will be evaluated and the conditions under which evaluation will occur.
- Training activities should be learner-oriented and self-paced whenever possible, because of different individual learning rates.
- The new competencies should be gained in small steps and the learners should be provided with enough, reasonable time to master one task before moving on to the next.
- The learners should be accountable for learning and the acquisition of knowledge, for applying the knowledge learned in the work setting and for demonstrating the ability to perform a specific task on a required level.

In a CbT approach, the question of e-learning, technologies, platforms, etc., is no longer in the forefront. In that sense, it follows the insight, which has been brought to the e-learning debate mainly by didactic experts: not the “e” is the key, but the learning [10], [11]. CbT thus goes far beyond the concept of “blended learning”, i.e. the combination of online and face-to-face forms of learning. By focusing on competencies it widens the scope considerably and puts the emphasis on the real objective of the learning process: the continuum between competencies which the learners have already mastered and the competencies they want or should acquire. Here, the discussion on e-learning meets the discussion on e-competence, because in the digital age necessarily much of the required competencies are related to the mastery of digital technologies. E-competence implies not only technical understanding and the ability to “drive” the technology, but more importantly, the competence to use

and manage digital technologies and media in a knowledgeable and, if necessary, critical way [12]. The “European eCompetence-Initiative”, which recently published its findings and analyses of e-competence in Higher Education, proposed the distinction between personal and organizational e-competence [13]. This is useful also for other sectors than in Higher Education. It helps distinguish between different levels and interests of (e-)competence, at the same time it provides a “bridge”, where the training/qualification interests of employer and employee can meet. The CbT approach is, therefore, closely related to the conception of “Competency Management” [14] and the development and use of (e-)portfolios for employees. Thus e-learning and e-competence are linked directly with Human Resources Management (HRM) and Organisational Development (OD). This approach, then, puts e-learning into the very centre of company development and makes it meaningful for companies and employees. The importance of this approach is further underlined, when the efforts to standardise skills and skill assessment (“e-skills”) and to develop an “E-Competence Framework” on the level of the EU are taken into consideration ([15]). Furthermore, there is a shift underway in software development, which is recently reaching the “mainstream”, even in e-learning, namely those applications and approaches, which are labeled “Web 2.0” or “Social Software”. In the estimation of a market leader like IBM these are going to replace class-room based training, including formal course-based online learning [16]. These shifts would eliminate some of the concerns of SMEs, namely costs, but would not remove other barriers automatically. The problems of organization culture and learning culture might even become more acute.

These arguments underline the need for competence-based approaches to training and qualification, also in SMEs. Yet, while CbT and its integration with HR and OD will enhance the status of e-learning and raise awareness on its significance, it is not an immediate practical solution for SMEs, but rather an additional challenge. The very systematic approach and the emphasis on support throughout the learning process is difficult to take on by SMEs, which often do not even have a HR department or any planning on organisational development. Again, in the immediate sense, big enterprise is much better able to take up this challenge than SMEs. All the more, consultants and professional associations for SMEs are called upon to promote models and provide support, in order for SMEs to be able to take part in training based on CbT, e-learning and e-competence.

#### 5. Conclusions

The analytical findings on e-learning in SMEs show that some simple forms of CBT are used in some of the companies but expectations linked to e-learning are only very partially borne out. With the exception of IT sectors

or sectors with an affinity to IT (e.g. Call Centers) and suppliers for the car industry, there is no widespread, let alone systematic, adoption of e-learning, despite of acute training needs and pressures to economize on training expenses. The main barriers were identified as

- deficiencies in e-learning offerings: lack of adequate contents and methodologies
- acceptance problems by staff and management
- insufficient technical and organizational preconditions in the SMEs
- costs.

The most recent conceptions of e-learning especially in the workplace, put learning, the learner and the notion of collaboration at the centre, and link learning to competencies, competence portfolios and, generally, to competence management in the framework of HR and Organisational Development. New developments in software, such as Web 2.0 technologies and their use in e-learning will work in favour of these directions. Therefore, more than ever it is necessary to overcome the asymmetry between big enterprises and SMEs in training and learning. For this, comprehensive solutions are required, which involve industrial and trade associations, especially on the branch-level, training providers and experts as well as SMEs.

## References

[1] G. Attwell, L. Dirckinck-Holmfeld, P. Fabian, A. Kárpáti & P. Littig, E-learning in Europe – Results and Recommendations Thematic Monitoring under the LEONARDO DA VINCI Programme. *Report Impuls* 010. Bonn, October 2003.

[2] I.Hamburg & Ch. Lindecke, Lifelong learning, e-learning and business development in small and medium enterprises. *Proceedings of the EDEN 2005 Annual Conference, Helsinki University of Technology, Lifelong Learning Institute TKK Dipoli, Budapest, 2005, 79-84.*

[3] D. Beer, T. Busse, I. Hamburg, U. Mill & H. Paul , *e-learning in European SMEs: observations, analyses & forecasting* Münster, Waxmann, 2006.

[4] D. Bunis, *Commentary* (College and University, Fall, v.78, n.2, 2003).

[5] Al. J. Romiszowski, How's the E-learning Baby? Factors Leading to Success or Failure of an Education Technology Innovation, *Education Technology* Jan-Feb, 2004, 5-48.

[6] Hamburg & Ch. Lindecke, Blended learning – chance for vocational training in small and medium sized companies. *6th International Conference on New Educational Environments: the know-how hub for*

*blended learning and media didactics*, Neuchâtel, Switzerland, 27-30 September, 2004.

[7] Hamburg & Ch. Lindecke, E-learning für kleine und mittlere Unternehmen: eine Untersuchung europäischer Projekte. *Informatisierung von Arbeit, Technik und Bildung: Kurzfassung der Konferenzbeiträge*, GTW-Herbstkonferenz 04./05. Oktober 2004.

[8] I. Hamburg, O. Cernian, R. Ottófi & Z. Puklus, European enlargement challenges for e-learning and SMEs. *e-learning in European SMEs: observations, analyses & forecasting*, Münster, Waxmann, 2006, 85-101.

[9] R. Wade, What happens when you hear the term 'Blended Learnings'? <http://www.E-learningeuropa.info/doc.php>, 2003.

[10] E-learning Framework Technical White Paper February, *White Paper E-learning Framework on the Web sun.com Page 2. Table of Contents Introduction* <http://www.sun.com/products-n-solutions/edu/whitepapers/pdf/framework.pdf>, 2003.

[11] M. Kerres & S. Engert, eCompetence: Fostering Sustainable Use of e-learning at the University of Duisburg-Essen, in [13], <http://www.ecompetence.info/uploads/media/ch7.pdf>, 2006.

[12] S. Engert, B. Hennecke, O.A. Schulte, O. Traxel & F. Danwitz, The Duisburg-Essen Model of eCompetence Transfer. <http://www.unidue.de/ecompetence/transfer.shtml>, 2005.

[13] I. Mac Labhrainn, Ch. McDonald Legg, D. Schneckenberg & J. Wildt, The Challenge of eCompetence in Academic Staff Development, *CELT, NUI Galway Centre for Excellence in Learning and Teaching, in association with the European eCompetence Initiative*, 2006.

[14] T. Ley, *Organizational Competency Management A Competence Performance Approach. Methods Empirical Findings and Practical Implications* (Aachen: Shaker, ISBN 3832250514, 2006).

[15] European E-Skills, *Conference*, <http://eskills.cedefop.europa.eu/conference2006/agenda.asp#th1>, 2006.

[16] G. Parkin, *Parkin Space – The Future of Learning*, <http://www.trainingzone.co.uk/cgi-bin/item.cgi?id=142031>, 2006.