

# IMPROVING PARTICIPATION AND COLLABORATION IN BUSINESS-ORIENTED e-LEARNING FOR SME'S

Ileana Hamburg, Steffi Engert, Herbert ten Thij

*Institut Arbeit und Technik, FH Gelsenkirchen, Germany*  
*E-Competence Agentur im IKM Bereich, Universität Duisburg-Essen, Germany*  
*I.E.R. – International Excellence Reserve, Eindhoven, the Netherlands*  
*hamburg@iatge.de, steffi.engert@uni-due.de, board@ier-nl.net*

**Abstract:** Research carried out in different European and national projects shows that there is not that much e-Learning applied in small and medium sized companies (SME's) and that most of the few activities undertaken are of rather poor quality. One possible solution is to involve SME's into sharing knowledge and collaboration by building communities of practice and to develop business-oriented models of training to meet their needs. In this paper, the authors put forward a short analysis of training needs of European SME's and the use of e-Learning and present communities of practice and business-oriented e-Learning models for SME's which are going to be developed using the LMS Moodle within a current European project.

Copyright © 2007 IFAC

**Keywords:** Business process, Learning Systems, e-Learning, Models, Training, Work organisation.

## 1. INTRODUCTION

Some years ago, the introduction and use of e-Learning (e-Learning Framework Technical White Paper 2003) in small and medium sized companies (SME's) has been seen as unproblematic and, in fact, as a "royal path" to answering training needs in SME's. It was assumed that managers of SME's would immediately recognize that the problem of meeting adequately the continuous training needs of their staff for innovation and the updating of professional knowledge and skills could be solved by e-Learning, as it supports cheap, just in time training taking place on-line and/or at the working place.

Research carried out in different European and national projects, such as ARIEL, coordinated by the first mentioned author (see [www.ariel-eu.net](http://www.ariel-eu.net)) shows that e-Learning is used ever since mainly in big companies and that, except the IT- and some few other sectors, there is not much e-Learning applied in SME's and that most of the few activities are of rather poor quality (Attwell, 2003; Hamburg, et al., 2004, 2005; Beer, et al., 2006) so far.

The European Commission and almost all European Member States provide support in some form or other to the fostering of e-Learning in SME's, but in many countries education and training are fragmented with responsibilities in different policy areas and agencies. Often some agencies are only responsible for providing business support and consultancies for SME's while others deal exclusively with the development of education and training. As a result there is a lack of integrated support services for SME's in which learning, and in particular e-Learning, is a key component in the portfolio.

Another problem is the poor quality of the e-Learning, practiced in SME's. On the one hand, learning contents are mostly standardised courses without much interactivity and engagement of the learners. On the other hand, most e-Learning developments have been focussing on the technologies of Learning Management Systems (LMS) and Virtual Learning Environments (VLE), which are in the way they have been developed usually inadequate for small organisations. Commercial LMS are costly, difficult to handle and to maintain; they have made little impact within SME's and are not sustainable.

One possible solution is to involve SME's into sharing knowledge and collaboration by building communities of practice (Wenger, et al., 2002) and to develop business-oriented models of training for their needs.

A suitable virtual open source learning environment like Moodle that is built on a social constructivist approach - according to Martin Dougiamas, the developer of the system - can support the development of communities of practice (Dougiamas, 2006).

In the first part of this paper, a short analysis of the training needs of European SME's and how they use e-Learning are presented. In the second part, the authors present communities of practice and business-oriented e-Learning models for SME's which are going to be developed by using the LMS Moodle in the current European project SIMPEL, that the authors coordinate and participate in.

## 2. TRAINING NEEDS OF EUROPEAN SMEs: THE USE OF e-LEARNING

Significant international social and economic changes that affect the situation of SME's are globalisation, market competition, technological innovation and, particularly for European companies, the enlargement of the European Union. One of the basic factors for the development of SME's are activities in production. Another aspect is their export-strategies which do not seem to be adequate anymore in order to stay competitive in international markets (Gregori, 2006).

Moreover, European SME's have:

- difficulties to manage knowledge acquisition and maintenance,
- insufficient knowledge about European rules and regulations (particularly in the new member states),
- no knowledge of policies of communication and cooperation.

Also the use of new information and communication technologies (ICT) for sharing and creating non-competitive professional knowledge and for developing (updating) innovative skills is unsatisfactory. All these aspects require suitable and sustainable training policies and measures for their improvement. Scenarios and training models based on electronic media like e-Learning will allow SME's to meet adequately their needs. They can be oriented to their specific business and are easy to integrate into their work processes.

Additionally, the growing economic dynamics leading to a reduction in the life cycle of acquired knowledge and competencies requires to pay more attention to the concept of life long learning and especially to solutions that are provided by learning using new technologies.

How SME's use the Internet (Fig. 1) and some advantages of e-Learning for SME's (Fig. 2) were identified in analyses carried out in European projects like ARIEL, coordinated by the first two mentioned authors (www.ariel-eu.net, Hamburg, et al., 2006) and also by surveys for CEDEFOP i.e. in Austria and in Italy (Anee and Assinform, 2006).

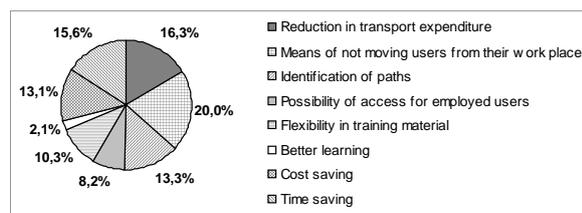


Fig. 1. Percentage distribution of the use of the Internet among the activities of a company (Gregori, 2006).

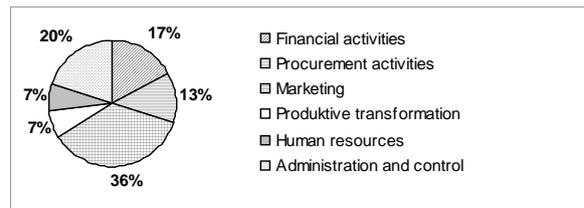


Fig. 2. The main advantages that organisations had from e-Learning (Anee and Assinform, 2005).

It can be observed that the Internet is used in SME's predominantly for advertising of their products (particularly through web sites) and only 7 % for human resources.

These studies show also that the low use of the Internet (including e-Learning) in European companies is mainly due to:

- the lack of knowledge about the learning needs of their staff,
- the widespread idea that heavy financial investments in training are required, but will not bring adequate added value,
- the main learning strategy in SME's which is based on "learning by doing" combined with face-to-face meetings,
- lack of knowledge/competence to select the right ICT-based learning solutions or contents,
- inadequacy of existing training offers in supporting specific business needs of SME's.

Often SME's are unable to define and articulate their learning needs and so they can not be included in suitable training programmes for them.

Many managers think that their staff can complete their training informally and by experience only and that on the contrary e-Learning might, at best, have a role in improving the educational system, i.e. schools and universities rather than as a tool to enhance the competencies in their enterprise. SME managers are interested in e-Learning strategies only, if they offer real advantages for the business processes of their companies and for surviving in the market in a quick and informal way.

A lot of European SME's, particularly in the new member states lack organisational and spatial prerequisites for e-Learning, because these are too expensive for them, as well as the technical know-how and basic e-competence. 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.

At present most European SME's act alone in facing their training problems. For future development it is necessary to strengthen cooperation with other SME's, with large enterprises, with training provid-

ers and public institutions (e.g. Chambers of Commerce). One suitable solution for SME's is to build communities of practice to share uncompetitive knowledge, to apply best practices in technology-enhanced learning and to develop business-oriented models of e-Learning for them. Such forms of co-operation could stimulate new experiments, new actions and new directions for learning.

### 3. COMMUNITIES OF PRACTICE – THE ROLE OF NETWORKED TECHNOLOGIES AND TECHNOLOGY-BASED REMOTE COLLABORATION

“Communities of practice are formed by people who engage in a process of collective learning in a shared domain of human endeavour.” (Wenger, 2004)

They trace their roots to constructivism (Palloff, et al., 1999) involving open-ended questions, learning in social and physical contexts of real-world problems, using collaboration. and cognitive tools.

A community of practice is characterised by:

- a shared domain of interest of its members, their commitment to this domain and a shared competence that distinguishes members from other people,
- common actions and ideas,
- practice because members of a community are practitioners with different levels of expertise and they develop a shared repertoire of resources.

A growing number of associations are seeking such ways to focus on learning through reflection on practice because they need to offer high-value learning activities.

Communities of practice are voluntary and so they have to create interactions that make them alive, attractive and engaging for members. New technologies like the Internet extend the interactions within communities of practices beyond geographical limitations and make possible the building of virtual ones.

There are several good reasons to look closer at suitable open source software like Moodle and the possibility for adaptation of it to support communities of practice. “Moodle is a software package for producing internet-based courses. It's an ongoing development project designed to support a social constructionist framework of education” says its developer Martin Dougiamas (2006). Tools accessible in the system like forums, chat rooms, a dialogue tool, polls, wikis, glossaries, quizzes a workshop tool etc. aim at supporting collaboration, activities and social construction of knowledge. The current Web-based technology (Web 2.0) which is not only a technical revolution but first of all a social one, has a vast potential to create prospering environments for emerging communities of practice. Social software lends itself

very well for support of activities within a community and for staff of SME's to collaborate. It is based on the idea of distributed networks of people, content and services that are adaptable and responsive to specific needs and goals of SME's.

The lack of face-to-face contact within a community of practice can be often an advantage, because it helps to suppress traditional group norm behaviour. On the other hand, it remains open if a community of practice where face-to-face contact is entirely excluded can be sustained over a long period. In our project we are going to support both virtual and face-to-face contacts within the communities of practice to be developed.

Despite the great potential, there are also limitations of current technologies in relation to virtual communities of practice: because virtual community infrastructure can be set up across cultures via www, these cultural and language differences can hinder the desired fluidity of activities in communities of practice (Johnson, 2001).

In the following we present our current European project, where communities of practice and business-oriented models of e-Learning are under development.

### 4. SIMPEL–SME's: IMPROVING PRACTICES OF e-LEARNING

SIMPEL is a current European project financed under the European e-Learning initiative. In seminars with managers of SME's in all project partner countries (Germany, the Netherlands, Hungary, Ireland, Italy) we will build a community of practice.

The objective of this community is to promote models of good practice and to attract staff who are engaged in support, training, design/development, use, consulting and policy formulation concerning e-Learning in SME's in the European Union, starting with the countries, where SIMPEL partners are active (<http://www.simpel-net.eu>).

The community will provide professional support for SME's in using e-Learning and e-competence development. There will be continuous efforts to disseminate the results of SIMPEL to other European Member States that are currently not a project partner.

One aspect which we consider of key importance is to put a premium on the didactic value of the e-Learning selected be used by SME's. It is no longer acceptable to bore learners with Power Point presentations or digital versions of print materials. It is important to engage learners, to provide learning in interactive “live formats” and to put an emphasis on discussion and collaboration.

Interactive scenarios (Schoemaker, 1991) that were successful in other projects (i.e. in Ariel) will help to develop models of communities of practice and business-oriented models of training. Scenario planning is a powerful tool to aid people, or groups of people and organisations in decision-making, even in conditions of uncertainty and supplements traditional prognosis methods. A growing number of corporate executives are using scenario planning in this manner. Scenario planning derives from the observation that, given the impossibility of knowing precisely how the future will develop, a good decision or strategy to adopt is one, that plays out well across several possible future developments.

Another important aspect of implementing e-Learning and its acceptance by employees is its integration in a wider strategy of developing e-competence, provision of sufficient support and technical know-how and relating e-learning to existing competences and required competences (e-portfolios) (Engert, et al., 2005; Hamburg, et al., 2007).

Models of training developed by the project team together with managers of SME's and experts by using these methods and approaches will be discussed in extended workshops with staff of SME's in all partner countries. As a result from these processes, validated models of e-Learning and guidelines for their implementation will be advocated throughout Europe by working with relevant networks, associations, consultants, policy-makers etc.

In looking for a suitable platform to foster the building of our community of practice and to facilitate the processes of scenario- and model-building, the SIMPEL consortium decided on Moodle. The reason for this decision is that Moodle has been developed with the explicit intention to support a social constructionist framework of education. Pedagogical and didactic considerations led the technological development and not – as in the case of the majority of learning platforms – the other way round. Consistent with this approach, the system includes a multitude of collaborative tools, such as forums, chat rooms, polls, wikis, workshops with peer-to-peer assessments, collaborative books and many more.

Moodle encourages collaborative work also by providing a differentiated group mode and the ability to network course leaders/trainers. In addition, the platform is extremely flexible and easy to use for beginners. At the same time, it is “scalable” to accommodate complex learning and teaching scenarios. The market is paying its tribute to these advantages: Moodle is presently the fastest growing openSource LMS worldwide and it even has found entry in the world of SME's (Busse, et al., 2007; Scherkl, 2005).

Examples of using include: Moodle in the Makeup Industry:

<http://learningenvironment.alteredperceptions.org.uk/>;

Moodle courses for the cleaning business:

<http://www.hma-university.com/>;

Moodle in the training hotel owners/managers:

<http://pce-savignac.com/moodle/index.php>;

IT and marketing courses: <http://formazione.netcomsrl.com/moodle/>



Fig. 3. The Use of Moodle in the Project SIMPEL

## 5. CONCLUSIONS

In order to work efficiently in new upcoming contexts like European integration, SME's are required to improve themselves. Human resources and training for achieving business competence, particularly e-competence represent factors on which competitive advantages are going to be built. E-Learning can further contribute to the achievement of such competences and at the same time can meet the pronounced needs for flexibility in SME's. It is important, however, to design effective models and lines of intervention to help SME's to build participative suitable models of training i.e. within communities of practice.

#### REFERENCES:

- Anee and Assinform (2005): Osservatorio sull'e-learning, rapporti annuali 2002-2005.
- Attwell, G., Dirckinck-Holmfeld, L., Fabian, P., Kárpáti, A. and Littig, P. (2003): E-learning in Europe – Results and Recommendations. Thematic Monitoring under the LEONARDO DA VINCI Programme. Report. *Impuls 010*. Bonn.
- Beer, D., Busse, T., Hamburg, I. Mill, U. and Paul, H. (2006): e-learning in European SMEs: observations, analyses & forecasting Münster, Waxmann ISBN 3-8309-1631-0.
- Busse, T., Hamburg, I. and Engert, S. (2007): Improving collaboration and participation in E-Learning for SMEs by suitable models supported by virtual learning environments, presentation at the "Moodle 2007", 28-29 March 2007, University of Duisburg-Essen.
- Dougiamas, M., Interview Oct. 2006, <http://www.stevehargadon.com/2006/10/interview-with-martin-dougiamas.html>.
- E-Learning Framework Technical White Paper February (2003): Introduction [http://www.sun.com/products-n\\_solutions/edu/whitepapers/pdf/framework.pdf](http://www.sun.com/products-n_solutions/edu/whitepapers/pdf/framework.pdf).
- Engert, S., Hennecke, B., Schulte, O. A., Traxel, O. and Danwitz, F. von (2005): The Duisburg-Essen Model of E-Competence Transfer, [http://www.uni-due.de/imperia/md/content/e\\_comp/transferthesen\\_eng\\_2.pdf](http://www.uni-due.de/imperia/md/content/e_comp/transferthesen_eng_2.pdf).
- Gregori, G. L. (2006): Imprese calzaturiere e competitivita: le nuove frontiere. Giappichelli Editore, Torino.
- Haag, S., Cummings, M., McCubbrey, D., Pinsonneault, A. and Donovan, R. (2006): Management Information Systems for the Information Age. Building an E-portfolio (XLM-J). Toronto, McGraw-Hill. ISBN 0-07-095569-7.
- Hamburg, I. and Lindecke, Ch. (2004): E-Learning für kleine und mittlere Unternehmen: eine Untersuchung europäischer Projekte. In: Pangalos, J., Knutzen, S. and Howe, F. (Hrsg.), Informatisierung von Arbeit, Technik und Bildung: Kurzfassung der Konferenzbeiträge; GTW-Herbstkonferenz, 04./05. Okt. 2004. Hamburg: Techn. University, pp. 159-162.
- Hamburg, I. and Lindecke, Ch. (2005): Lifelong learning, e-learning and business development in small and medium enterprises. In: Szücs, A./Bo, I. (eds.), Lifelong e-learning: bringing e-learning close to lifelong learning and working life; a new period of uptake: proceedings of THE EDEN 2005 Annual Conference, 20-23 June, pp. 79-84.
- Hamburg, I. and Engert, S. (2007): Competency-based Training in SMEs: The Role of E-Learning and E-Competence. In: Proceedings of the 6th IASTED International Conference "Web-based Education", March 14-16, 2007, Chamonix, France. Anaheim: Acta Press, pp. 189-193.
- Johnson, C.M. (2001). A Survey of Current Research on Online Communities of Practice. *Internet and Higher Education*, 4, pp. 45-60.
- Scherkl, Ch. (2006): Moodle in einem Call Center? In: Hilgenstock, R. and Jirmann, R.,(eds.) Moodle@Work – gemeinsam online lernen, Bonn: Dialoge GmbH.
- Schoemaker, P.J.H. (1991): When and how to use scenario planning: A Heuristic Approach with Illustration. *Journal of forecasting* 10, pp. 594-564.
- Palloff, R.M. and Pratt, K. (1999): Building Learning Communities in Cyberspace: Effective Strategies for the Online Classroom. Jossey-Bass Publishers, San Francisco.
- Wenger, E., McDermott, R. and Sydner, W. (2002): Cultivating communities of practice: a guide to managing knowledge, Harvard Business School Press, Boston.
- Wenger, E. (2004): Learning for a small planet: a research agenda [www.ewenger.com/research](http://www.ewenger.com/research).