Supporting Workplace Learning in Small Enterprises by Personal Learning Environments

Miloš Kravčík, Kateryna Neulinger, Ralf Klamma

Advanced Community Information Systems (ACIS), Informatik 5,
RWTH Aachen University, Germany
{kravcik, neulinger, klamma}@dbis.rwth-aachen.de

Abstract Small and micro enterprises have a decreasing participation in vocational education and training. There is a real need to engage them in developing a positive attitude towards training. The BOOST (Business perfOrmance imprOvement through individual employee Skills Training) project will integrate outcomes from two previous projects (BECOME and ROLE), in order to develop associated methodologies and tools. These will enable enterprises with less than 20 employees to identify their critical business needs and then also to find appropriate and customized learning resources to meet these needs. Our solution provides predefined Personal Learning Environments for 3 different roles. These environments are customizable and should be further developed towards personalization and adaptivity.

Keywords: Workplace Learning, Personal Learning Environments.

1 Introduction

In the BOOST project [1] we are aiming at facilitating informal learning at the workplace in small enterprises (up to 20 employees) by means of modern information and communication technologies. The project attempts to create a cross-border and cross-cultural approach to increase participation of micro and small enterprises (MSEs) in vocational education and training (VET). The aim is the transfer and integration of methodologies and tools from the previous BECOME [2] and ROLE [3] projects. The innovative methodologies identify the Business Goals (Business Critical Needs) of a MSE as well as the associated Learning Indicators. The Responsive Open Learning Environments provide customized learning and training solutions that enable to meet the specified Learning Indicators. The result will contribute towards increased engagement of MSEs in VET across the EU.

BOOST has the potential to address the clear needs of MSEs in terms of both the methodologies for engagement developed under BECOME, focusing on the real business needs and linking this seamlessly to learning solutions by using the ROLE platform and tools. It exploits tested but innovative solutions which already exist in other sectors of the economy. It is designed to raise competence levels in at risk sectors by providing responsive, flexible, comprehensive, inexpensive and `light' (Web. 2.0) e-Learning technologies.

The most important results will be the technical prototype and platform, which are based on an innovative methodology. At least 15 case studies are planned, in order to evaluate the prototype. More than 40 small enterprises will be involved and over 100 individual employees will test the tools, which will enable to identify their skill gaps and fulfill the business critical demands. At the end of the project (in September 2015) a conference for training providers, business networks, and policy makers will take place in Aachen. A suitable sustainability strategy for project outcomes will be developed too.

The developed system will integrate assessment of business critical needs with provision of training and learning solutions. The needs will be identified by methodologies from the BeCome project. The customized learning solutions will be provided via the ROLE project platform and tools. This project will take the key features and benefits of both and integrate them to meet the market need. The aim is to support employees in training activities and to facilitate their personal development.

2 Expected Impact on the VET System

In Germany a major aim is to increase the number of people who participate in lifelong learning (LLL). A new education policy target has been proposed by experts: increasing the participation of people between the ages of 25 and 64 in lifelong learning to 80% by 2015. Our solutions should support especially management of personal competence development.

As mostly small enterprises are unable to provide training, we are focusing on them. Our approach aims at integrating learning in their work processes, providing them with suitable instruments for business analytics and development of human resources. Our experience from previous projects has shown that in a business context, there are complex requirements and restrictions, like the contrasts between openness versus data security, different targets (the company versus the individual), or the implementation strategy. Nonetheless, the feedback from the evaluation remains very positive.

The German economy is based on skilled work, so companies require well qualified workers. But demographic change is leading to a shortage of these people, including scientific and engineering occupations. Therefore our target group consists of small IT firms, which can benefit from the proposed e-learning solutions. In addition, they should be able to overcome usual initial resistance and adopt new software systems more easily, as it is quite natural for them.

This proposal is a unique chance to disseminate the outcomes of recently successful projects and customize them for the special requirements of small enterprises. The provided solutions support personal competence development at the workplace in all phases, i.e. planning, learning, ad reflecting. They help to identify business critical needs and skill gaps of the employee. Then they can recommend learning resources from existing repositories as well as suitable peers in communities of practice. In addition, these tools also monitor progress and visualize relevant performance indicators, supporting self-reflection.

3 BOOST Technical Prototype

Our technical prototype should provide the following functionality:

1. Identification of the main challenges (competence gaps) for training (learning) in the company
2. Planning of training (learning) for individual employees (setting up learning objectives)
3. Providing suitable training (learning) opportunities for employees
4. Monitoring of (competence development) progress of the company and of individual employees

Based on the outcomes of previous projects, we have identified quite clearly the functional requirements for competence management:

1. Specification of relevant Business Goals (BGs – high level competences) and their priorities
2. Assignment of Learning Indicators (LIs – concrete competences) to each BG
3. Assignment of Learning Resources (LRs – e.g. documents, tools, peers) to LIs (facilitated by search functionality)
4. Assignment of relevant BGs and LIs to employees
5. Setting up target LI (proficiency) levels for the employee, considering also time scales
6. Assessment of the start and current LI (proficiency) levels for the employee
7. Monitoring the training progress in the company and also of each employee (considering also time scales)

On the other hand, the functional requirements for the learning support are still relatively vague, as they will be more domain dependent:

1. Community support – sharing experience, communication, collaboration
2. Domain specific support – training (learning) and assessment
3. Annotation (ranking) of learning resources assigned to LIs
4. Considering learning styles of individuals

These functional requirements imply a hierarchical data model consisting of:

1. Business Goals
2. Learning Indicators
3. Learning Resources

We distinguish 3 different user roles that have different characteristics and requirements: Manager (e.g. business manager, business advisor or consultant), Trainer (e.g. training manager, learning facilitator) and Employee.

Manager specifies BGs for the company, decides which BGs are urgent and which of them are relevant for which employee. Moreover, this role can also assess employees and monitors their learning progress.

Trainer describes LIs for selected BGs and the relevancy of LIs for individual employees, recommends LRs for the LIs, and chooses relevant Learning Repositories, where additional LRs can be found.

Employee gets an overview of BGs and LIs assigned to her, together with the recommended LRs. According to the descriptions of LIs she can search for additional LRs in the predefined Learning Repositories and add them to her portfolio. She can also access the selected LRs in order to learn. Finally, she can monitor her learning progress.

4 Conclusion and Future Work

The BOOST project started in October 2013 and in the first months the consortium tried to identify the common understanding of our requirements and propose a solution we want to realize. We have specified the first version of the technical prototype as described in this paper and implemented it. In the next phase we plan to select and interview several stakeholders, in order to find out the strengths and weaknesses of the current version. The outcomes of these interviews will be considered in the development of the next version of the technical prototype.

One of the requirements we already know about is the privacy. The current version is suitable for companies with open environments, where employees do not mind seeing each other's competences and learning progress. We believe this is a healthy environment. But not all companies want to follow this way and some of them emphasize more privacy. For them another version of the learning environment will be prepared, where each employee can see just her data. We are curious to see which of these 2 alternatives will prevail.

In additional, we intend to develop our prototype also towards personalized and adaptive learning. Our project partners have suggested learning styles as one type of user preference that might be considered. Here we want to benefit from our former projects, like WINDS [4], RAFT [5], PROLEARN [6], and TENCompetence [7].

Acknowledgments. The research work described in this paper is partially funded by the German National Agency BiBB within the Lifelong Learning Programme Leaonardo da Vinci: "Business PerfOrmance imprOvement through individual employee Skills Training" (project no: DE/13/LLP-LdV/TOI/147655).

References

[1] http://www.boost-project.eu

[2] http://become.dedi.velay.greta.fr

[3] http://www.role-project.eu/

[4] Kravcik, M. & Specht, M. (2005). Experience with WINDS Virtual University. In P. Kommers & G. Richards (Eds.), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications* (pp. 642-649). Chesapeake, VA: AACE.

[5] Kravcik, M., Kaibel, A., Specht, M., & Terrenghi, L. (2004). Mobile collector for field trips. *Educational Technology & Society*, *7*(2), 25-33.

[6] Arroyo, L., Dolog, P., Houben, G. J., Kravcik, M., Naeve, A., Nilsson, M., & Wild, F. (2006). Interoperability in Personalized Adaptive Learning. *Journal of Educational Technology & Society*, *9*(2).

[7] Kravcik, M., Koper, R., & Kluijfhout, E. (2007). TENCompetence Training Approach. In A. Szucs & I. Bo (Eds.), Proceedings of EDEN 2007 Annual Conference, June 13-16, (pp. 105). Budapest: European Distance and E-Learning Network.