Empowering Learners for Lifelong Competence Development: Pedagogical, Organizational and Technological Issues

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Abstract—**This guest editorial introduces the TEN-Competence project in the framework of which eleven papers are published in this issue of iJET. The core concepts of competence and of lifelong competence development are elaborated. A short introduction to the papers is given.**

Index Terms—**Lifelong competence development, integrated architecture, pilots and practices, group learning and interaction, assessment.**

I. INTRODUCTION

Early April 2008 an Open Workshop was organized by the EU 6th Framework Integrated Project TENCompetence [1]. The objective of the workshop was to identify and analyze current research and technologies in the fields that provide design guidelines and evidence for powerful interfaces, interaction and navigation support, in relationship to competence development opportunities for individual learners, teams and organizations. The focus was especially on open source infrastructures that contain the services to (further) develop competences.

For the workshop short papers were invited and accepted after a peer review process. About half of these papers were written on the basis of work in progress within the TENCompetence project, the other half reported on other research, trends and practical experiences in this rapidly growing field of support for lifelong learning.

As a follow-up to the workshop the presenters were invited to submit full papers that underwent a more rigorous review process. The result can be found in this issue of the International Journal of Emerging Technologies in Learning.

II. TENCOMPETENCE

The European Network for Lifelong Competence Development (TENCompetence) is a four-year integrated project (2005-2009) that is co-funded by the European Commission in the framework of the Information Society Technologies program. The project aims at the development of a technical, educational and organizational infrastructure for lifelong competence development. This infrastructure is composed of open-source, standards-based, sustainable and innovative technology. Through the infrastructure resources for learning become available, varying in scope, size and complexity, in combination with access to learning communities of actors. With this freely available infrastructure the European Union aims to boost the European ambitions of the Knowledge Society, by providing all European citizens, small and medium enterprises and other organizations easy access to facilities that enable the lifelong development of competencies and expertise in the various occupations and fields of knowledge.

TENCompetence is a research and technology development project. More specific it deals with RTD on innovative models, methods and technologies for the creation, storage, use, and exchange of:

- knowledge resources;
- learning activities and units of learning;
- competence development programs; and
- networks for lifelong competence development.

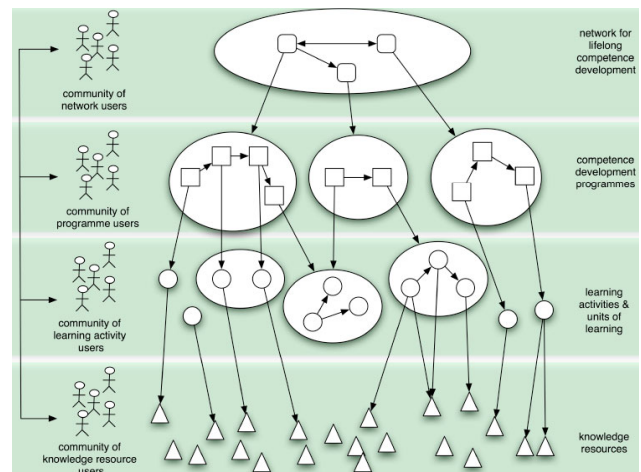The relationship between the four areas is depicted in Figure 1.

Figure 1. Areas of RTD

The integration of these activities is done by specifying requirements and analyzing the integrated system, by the technical design and implementation of the infrastructure, and evidently by research pilots in which the integrated system is validated in real-life contexts. Valorization takes place through training and through dissemination and exploitation.

The whole project is guided by core concepts on competence and lifelong competence development from which the course of the different RTD activities is derived.

III. LIFELONG COMPETENCE DEVELOPMENT

In this section the reader of this special issue is introduced to the core concepts: competence and lifelong competence development. The TENCompetence project is directed at the development of personal abilities or competences to support employability and personal growth in our modern knowledge society. The trend in our society is that jobs change very fast, with an effect on employability of people. Multiple jobs, functions and roles demand flexibility. In addition many different real or virtual social communities exist and emerge, necessitating persons to have multiple roles and identities. The increased complexity of tasks demands expertise at a higher level and skills to work in multidisciplinary teams for the accomplishment of tasks. The expertise will have to be adaptable instead of routine based [2]. Persons should be able to take up new tasks or roles and to adapt as quickly as possible to new situations, and thus to keep on learning.

All of the above forms a challenge for the organization of our educational infrastructure. More and more learning during life is of an informal or non-formal nature [3]. Also, a modern society needs to provide their citizens with high quality jobs and sufficient free time to develop personal skills and social relationships that are not work related, but of importance for the quality of life.

There are at least two key issues to be taken up in order to facilitate lifelong competence development.

First of all, we should overcome the barriers to lifelong learning. Longworth [4] summarizes the barriers to lifelong learning as follows:

1. Poor family culture of learning, low aspiration, low self-esteem, bad childhood experience of learning (mental barriers).
2. Lack of finance to participate and lack of study facilities at home (financial barriers).
3. Distance to educational provision for a large number of students (access barriers).
4. Learning provision which is not geared to the needs and characteristics of lifelong learners and does not sufficiently take into account the individual differences and circumstances of learners during life (learning design barriers).
5. Learning providers who supply information which is inadequate in attracting people to learning and fail to ensure that people have access to good-quality advice about learning opportunities throughout their lives (information barriers).

A second issue is that we should stimulate the exchange of knowledge and experience in (the by nature distributed) professional communities. There are still many professional areas that do not have the means for more informal knowledge exchange, and, like modern guilds, help novices to become experts by natural, contextualized means of guidance at the workplace. Professional communities should be stimulated to give access to information, discussions and actual work in virtual communities open to interested parties. In addition to this informal knowledge exchange, also offerings of courses and events that match the needs of the knowledge worker should be realized.

As a consequence of these two issues we need to revise the structures we provide for learning and assessment. It also changes our perception towards learning fundamentally. In the traditional view, learning is separated from working and living. Learning is perceived as something that you do in schools or universities. A teacher is leading you into learning. This leads to the provision of standard career facilities in our society: a person starts to follow primary, secondary, post-secondary education. When a professional starting qualification is attained one starts to work, build a career and sometimes some training courses are followed. This model should be revised fundamentally to keep up with the current developments in learning technologies and the demands of our society. We need a vision of learning, where learning is back where it should be: as an integral part of our whole life, just like eating, drinking and breathing. We cannot stop learning and due to the ever changing job demands, the new people we meet, the new technologies and products that are introduced, and the availability of a huge amount of open content, we are heading into the direction that second and third career paths are developing, comparable with the self-made man in the past. However, in the past these self-made men and women were rare, only with a strong motivation and devotion they were able to attain good careers. To facilitate the knowledge society we should provide services for everyone to become a self-made human. Examples of these services are:

- Assessment services that are able to assess prior informal learning and experience (APL).
- Tools like ePortfolios that provide a basis for self-reflection and the generation of CVs.
- Services that help you with the creation of feasible and efficient personal development plans.
- Services that help communities to exchange knowledge and experience and to work and learn together
- Services that provide support during learning.

All these services should be available through Internet and/or mobile devices to allow integrating them in the context of use.

This special issue addresses research into many of these different aspects: means to setup communities, new ways of assessment, flexible training of professionals, adaptive learning designs and the exchange of multimedia knowledge resources.

IV. THE PAPERS IN THIS ISSUE

In this section we will shortly introduce the eleven papers of this special issue. Six papers report on the work in progress within the TENCompetence project, five describe work done elsewhere. Altogether they form a mix of research papers, descriptions of practical experiences and trends, and more technical papers. The papers are ordered as follows. First four papers describe the development of integrated architectures, then two papers deal with group learning and group interaction. The third section contains three papers in which pilots and practices are central. Finally two papers address the issue of assessment.

A. The Integrated Architecture

The paper of Holtham & Rich provides an architecture for a large scale informal e-learning network. They conclude that it became clear that besides informal learning such a network should combine informal learning with formal learning elements.

The paper of Masson, MacNeill, Murphy and Ross provides a method to make teachers more aware of the learn-

ers' perspective and to provide a structured way to articulate, design, evaluate and share learning designs. The model uses the 8 Learning Events Model as it is developed in Liege. The paper provides an evaluation of the approach.

The paper of Marenzi et al analysis the possibility to integrate social software into the TENCompetence infrastructure and identifies challenges involved.

The paper of Berlanga et al introduces the design of a ePortfolio system that can interact with the TENCompetence Personal Competence Manager.

B. Group learning and group interaction

The paper of Angehrn and Maxwell describes the design of the TENTube tool that is used for connections within a social networks based on shared videos. The underlying hypothesis is that a higher connectedness of people to other people and to relevant assets will motivate them to participate more actively and increase system usage.

The paper of Pérez-Sanagustín et al presents an IMS Learning Design based template to support dialogic learning, an approach that can be used in lifelong learning with adults. The template has been tested by two designers/practitioners who have created dialogic learning based learning events with it.

C. Pilots and practices

The paper of Stefanov, Nikolova, Ilieva and Stefanova describes a first experiment that has been performed with the Personal Competence Manager as it is developed in the TENCompetence project. It concentrated on the upgrading of the ICT skills of teacher trainers. The evaluation showed that the approach was successful and highly appreciated by the learners.

The paper of Schoonenboom et al builds further on the Stefanov et al paper: it provides an experiment to explore the effects of the Personal Competence Manager in practice. Five hypotheses were tested with 44 teachers in two conditions. The results showed that in the experimental condition more people passed the final competence assessment test.

The paper from Reynolds and Heller concentrates on a pilot course in the public health sector that is aimed at building competences in the public health sector in developing countries. The course is delivered through the People's Open Access Educational Initiative in order to test whether it is feasible to provide an online accredited diploma through the network.

D. Assessment

The paper of Elliot discusses alternative ways of assessment needed for lifelong learning, informal learning and learning in the Web 2.0 arena. It compares the assessment 1.0 approach with the assessment 2.0 approach.

The next paper of Wills et al is more technical in nature. It is focused on a delivery engine (ASDEL) for assessments that are modeled to the open standards IMS QTI. The paper concludes with a load testing of the system.

E. Conclusion

The papers thus sketch various pedagogical, organizational and technological issues related to one of society's most profound challenges: to keep on educating young and adult persons for competent participation in an ever changing society.

V. REVIEWERS OF THIS SPECIAL ISSUE

We like to thank the reviewers of the papers that appear in this special issue. They had to look to the papers with a different perspective than a mere research perspective as papers also reported on work in progress, practical experiences and on trends, this in line with the character of iJET. Evidently papers based on the work within TENCompetence have been reviewed by reviewers external to the project, and vice versa. So here is the list of reviewers:

Wilfried Admiraal, University of Amsterdam, the Netherlands
Josep Blat, Universitat Pompeu Fabra, Spain
Jacqueline Bourdeau, Télé-Université, Canada
Christophe Choquet, University of Maine, France
Noor Christoph, Elsevier, the Netherlands
Maartje van Daalen, University of Amsterdam, the Netherlands
Wolfgang Greller, Open University Netherlands
Dai Griffiths, University of Bolton, United Kingdom
Henry Hermans, Open University Netherlands
Ulrich Hoppe, University of Duisburg-Essen, Germany
José Janssen, Open University Netherlands
Ruud Lemmers, Logica Maastricht B.V., the Netherlands
Oleg Liber, University of Bolton, United Kingdom
Jocelyn Manderveld, SURF Foundation, the Netherlands
Nils Malzahn, University of Duisburg-Essen, Germany
Joost Meijer, University of Amsterdam, the Netherlands
Agathe Merceron, University of Applied Sciences Berlin, Germany
Wolfgang Nejdl, University of Hannover, Germany
Griff Richards, Athabasca University, Canada
Nadira Saab, Leiden University, the Netherlands
Judith Schoonenboom, University of Amsterdam, the Netherlands
Patrick Sins, Utrecht University, the Netherlands
Peter Sloep, Open University Netherlands
Krassen Stefanov Stefanov, University of Sofia "St. Kliment Ohridski", Bulgaria
Martin Valcke, Ghent University, Belgium
Sam Zeini, University of Duisburg-Essen, Germany

We hope you will enjoy yourselves reading the papers.

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