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Ole Rokkjaer
Aalborg University

Bente Norgaard
Aalborg University

Anne Murphy
Technological University Dublin, anne.murphy@tudublin.ie

Lisbeth Skytte
VIA University College

Niels Hannemose
VIA University College

See next page for additional authors

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Authors

Ole Rokkjaer, Bente Norgaard, Anne Murphy, Lisbeth Skytte, Niels Hannemose, Isabel Tort Ausina, Israel Quintanilla Garcia, and Patricio Montesinos

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Dissipation of the FWBL methodology to innovative continuing professional development

Ole Rokkjær, CPD-aalborg, Aalborg University, Denmark, oro@cpd.aau.dk
Bente Nørgaard, CPD-aalborg, Aalborg University, Denmark, bente@cpd.aau.dk
Anne Murphy, Dublin Institute of Technology, Ireland, anne.murphy@dit.ie
Lisbeth Skytte, VIA University College, Horsens, Denmark, lisk@viauc.dk
Niels Hannemose, VIA University College, Horsens, Denmark, niha@viauc.dk
Isabel Tort Ausina, Valencia University of Technology, Spain, isatort@upvnet.upv.es
Israel Quintanilla Garcia, Valencia University of Technology, Spain, iquinta@cgf.upv.es
Patricio Montesinos, Valencia University of Technology, Spain, pmontesi@cfp.upv.es

1. Project presentation

The European Council in 2000 concluded that it is a strategic goal for the European Union (EU) to be the most competitive and dynamic knowledge-based economy in the world. To fulfill this strategy education and continuing education (lifelong learning) has a very high priority.

In the enlarged European Union there are 23 million small and medium-sized enterprises (SMEs) representing 99% of all EU enterprises and employing more than 75 million people, according to 'The New SME Definition – User Guide and Model Declaration', 2005.

The importance of SMEs in the European economy is enormous and in an extremely competitive global market the continuous exploitation of knowledge will have a significant impact on the prosperity of the member states and the European Union. Therefore it is reasonable to focus on how society and the educational sector can support SMEs in developing the skills and competences that are needed now and in the future.

The need for continuing education is still increasing – but time made available by SMEs on the other hand is limited. Integration of continuing education into the everyday working task might be an answer to that problem, as tailor-made continuing professional development (CPD) activities match the needs of the SME to a much larger extent than traditional courses. By integrating the learning processes in the daily work, a much more effective continuing education will take place.

The EU Leonardo da Vinci programme is addressing lifelong learning measures with regards to the sector of vocational education and training (VET). The Leonardo programme has run for some years and has now reached a point where measures to transfer innovations arising from previous projects can be funded. The FACILICODE project – 'Dissipation of the FWBL Methodology to Innovative Continuing Professional Development' – is funded by the Transfer of Innovation sub-programme for this purpose and is aiming to transfer the methodology 'Facilitated Work Based

Learning' (FWBL) which is developed for, and tested in, continuing engineering education collaboration between universities and engineers in IT SMEs and other more generic engineering companies.

Main purpose

The FWBL methodology in the FACILICODE project is located in the departments for CPD in universities in Spain and Ireland, and in a university college in Denmark. By means of developing and testing a Teacher Training Programme (TTP) in facilitated work-based learning teachers/academics will be prepared for negotiating and utilising individual and tailor-made continuing education in their local engineering industries.

The TTP was developed to meet the needs of the teachers/academics to be able to teach through FWBL – to act as a learning facilitator. A teacher in FWBL needs basic skills and knowledge of SMEs (how to interact with SMEs, the industrial context, etc.) and a thorough knowledge of the pedagogic methodology of FWBL.

Teachers at the VET and higher education institutions (HEI) are the key persons who keep the close cooperation between SME and educational institution, cooperation which is essential when CPD is to be integrated into the working life of the SME. Teaching CPD is very different from teaching a homogenous group of young full-time students: it is a shift in paradigm to turn pedagogical and didactical practice into a needs-oriented and enterprise-oriented tailor-made learning course. To be involved as teachers or facilitators in tailor-made CPD, the teacher must acquire new knowledge in addition to the standard academic knowledge. The teacher must possess knowledge about the learning context, understand the SME organisation and activities, and be able to communicate with, and have a general understanding of, the industrial partner.

In addition to teaching and testing FWBL, an aim of the FACILICODE Project is to improve the FWBL methodology by integrating experience with Recognition of Prior Learning (RPL) and experience with Quality Assurance Systems – both of which are policy strands in the EU in relation to training and education at the interface between workplaces and academia.

Partners in FACILICODE

The partners in the project are Aalborg University Denmark, VIA University College Denmark, Dublin Institute of Technology and Valencia University of Technology Spain.

Aalborg University (AAU) was inaugurated in 1974 and is a young and modern university which has grown to become a large, well-established research and teaching institution in Denmark offering a range of educational programmes and research in the fields of Humanities, Social Sciences, Natural Sciences and Engineering. New opportunities for cooperation between the various academic fields, both in research and teaching, are continuously developed. Aalborg University has a focus on interdisciplinary, inter-faculty studies, and an experimental curriculum with a pedagogical structure based on problem-centred, real-life projects of educational and research relevance. Aalborg University has 14,000 students and 2,300 staff employees.

CPD-aalborg is the competence development centre at Aalborg University and focuses on competence development within the disciplines of the Faculties of Engineering, Science and Medicine at the university. CPD-aalborg offers traditional courses and customised education activities and arranges individually tailored competence development activities related to the tasks and projects of the enterprise.

Role in the project
CPD-aalborg is the project manager, and will play the leading role in development of the TTP. Furthermore CPD-aalborg will act as supervisor for the teachers going through the TTP, and facilitating the implementation of the FWBL methodology in the three countries.

VIA University College is a merger of five distinguished University Colleges in central Jutland, Denmark. The merger legally took place on 1 January 2008. VIA University College has become the third largest educational institution in Denmark within higher education hosting around 16,000 students spread across seven campuses in central Jutland. The University College is organised into four faculties and two divisions.

Role in the project
Teachers from VIA UC will participate in the TTP and will be responsible for implementing the FWBL methodology as cases in local SMEs.

Dublin Institute of Technology, *Ireland (DIT)* is one of Ireland's largest third level educational institutions, with 21,000 full-time and part-time students. The Institute comprises six faculties: Engineering, Science, Business, Built Environment, Applied Arts, and Tourism and Food. Located on several distributed campuses in the City of Dublin, the Institute has embarked on a major new campus development at Grangegorman near the city centre, which will cater for all faculties and institute activities. Staff and students are expected to relocate in 2012/13. The DIT strategic plan (2010–15) aims for a multi-level learning centre environment, with strong postgraduate and research arms, closely aligned and responsive to industry, with a reputation for excellence, with flexible and leading edge capabilities, a supportive and caring ethos, and an entrepreneurial ethos.

Role in the project
DIT is working as a coordinator on a range of tools for RPL in the TTP course, including self-assessment tools for worker-learners to identify their prior learning in relation to national frameworks of qualifications, tools for trainers to facilitate RPL and tools for SMEs to raise awareness among workers about the possibilities of RPL for professional development plans. The applicability of the TTP course to different tailor-made learning situations will be tested.

Valencia University of Technology (Universidad Politécnica de Valencia) *Spain* is a young institution. Its history goes back only 30 years, even though some of its schools have existed for more than a century, such as the School of Design Engineering (former Technical School of Industrial Engineering), the Higher Polytechnic School of Alcoy and the Faculty of Fine Arts.

Valencia University of Technology is a dynamic, innovative public institution, dedicated to research and teaching that keeps strong bonds with the social environment in which its activities are

performed and, simultaneously has an important presence abroad. The university is formed of three Faculties, 10 Schools, 2 Higher Polytechnic Schools in Gandia and Alcoy and 42 Institutes of research that permit a complete system of education that provides them with technological knowledge, humanistic formation and culture. In addition, Valencia University of Technology's teaching and administration staff make a constant effort to offer their students the highest academic standards to achieve the highest level of quality education, as well as providing the appropriate aid to achieve this end. The university has important partnerships with foreign institutions working together to exchange knowledge and good practice in proactive actions.

Role in the project
Valencia University of Technology is responsible for the Quality Assurance System that is to be developed for CPD in this project, and CPD in general in the longer term. The university will also have teachers participating in the TTP and will be responsible for running two cases to test the outcome of TTP.

Facilitated Work Based Learning

A methodology for transfer of knowledge to SMEs was developed and tested in an earlier Leonardo da Vinci pilot project (CEE as WBL 2003-DK/03/B/F/PP-145311). The methodology of Facilitated Work Based Learning very well targets the success factors for learning in the workplace that Ellström and Høyrup identify in their recent report to the Nordic Council (Ellström and Høyrup 2007). The FWBL model has been disseminated at several conferences and workshops, always with great interest from both SMEs and educational institutions. This significant interest in the FWBL methodology is the core basis for this current project under 'Transfer of Innovation' – essentially, to test the methodology in different contexts and cultures.

FWBL can be described as a lifelong learning method based on a partnership between educational institutions and enterprises with the purpose of knowledge transfer as an integral part of everyday work. Teaching staff facilitate learning processes and competence development among employees as an integrated part of their problem-oriented professional work.

Together the enterprise, the educational institution and the employees define the competence needs and learning objectives on the basis of the competence strategy for the enterprise, but at the same time the learning course is tailored to the individual employee or to a team of employees. The learning process is supervised or facilitated by academic teaching staff from the educational institution and the learning process is based on the learning team's professional tasks.

The process of FWBL does not follow a rigid scheme such as a standard five-day course. The FWBL course will normally run for more than half a year and often longer depending on the extent and depth of the learning objectives and the timeframe of the project in which the FWBL is incorporated. The FWBL course will be less intensive, and the learning will be integrated directly in the employees' work tasks. FWBL can be described in five continuing phases. However the content of each phase is not unambiguous for all FWBL courses as the distinctive marks of FWBL are precisely their individualities. The five phases of FWBL are as follows:

1. contact phase
2. specifying learning objectives
3. preparing the learning contract, including RPL
4. implementation of FWBL
5. evaluation.

The five phases of FWBL are described in 'The Methodology of Facilitated Work Based Learning' (Fink and Nørgaard 2006). This article takes the reader through the five phases of FWBL and provides discussion on the more challenging areas of the methodology, such as preparing the learning contact as a flexible tool and how to define and specify learning objectives. Guidelines on how to specify learning objectives are studied in 'Defining and Specifying Competence Needs in Tailor-Made Continuing Education' (Nørgaard 2009).

2. Elements and activities

The timeline for the two-year FACILICODE Project is detailed in Figure 1.

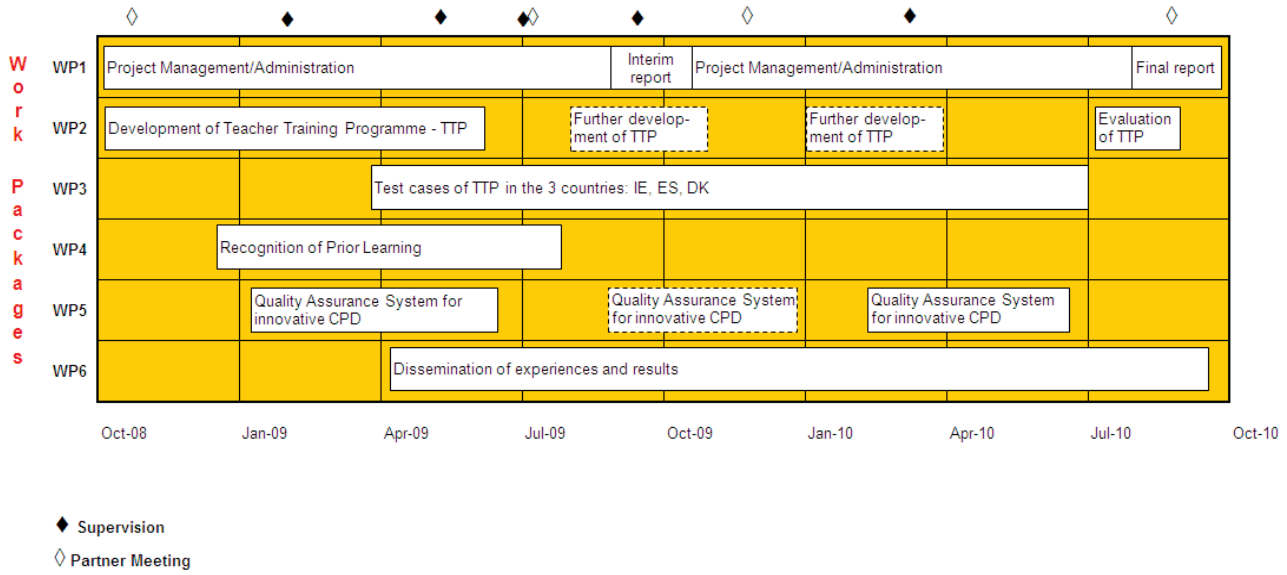

Figure 1 Project plan

The FWBL Teacher Training Programme

FWBL is different to traditional CPD courses in the sense that the first and foremost aim is to match the CPD course content to the present and future competence development needs of the company and the employees. The second difference from traditional CPD is that FWBL aims at transfer of knowledge as a condition for competence development which is normally taking place at the company and integrated into daily work activities. The third difference from traditional courses is that FWBL is closely related to a project-based organisation of work which characterises development of business and products in modern companies.

It is one thing for higher education providers to have a useful method of work-based learning. It is, however, another to have the trained staff to meet the companies and to supervise the employees to develop their competences. Most academic teaching staff are mainly concerned with teaching the

formal education curriculum at their institution and concerned with their own research. In CPD delivery, however, academic and pedagogical skills are not enough. A thorough knowledge of how businesses work and are organised in real life are the minimum requirements for teachers who are going to be frontrunners in CPD activities. Few younger academics now have experience from work outside of the educational institution, and since it is not a common requirement for teaching staff to have pedagogical courses concerning CPD, the FACILICODE Project concluded that it was desirable, and perhaps essential, to develop a Teacher Training Programme for CPD teachers which included the model of facilitated work-based learning.

The CPD teachers in the FACILICODE project are piloting the FWBL model with partner SMEs having been exposed to case studies of planning, design and implementation of tailor-made learning courses during their two-day training course in Aalborg. The pilots will primarily be focused on the effectiveness of the Teacher Training Programme and the participating teachers' ability to run a tailor-made course after going through the training.

The TTP was developed to introduce CPD teachers to the following:

- Facilitated Work Based Learning – What is that?
  The core of the TTP was a thorough exposition of FWBL. Starting out by placing FWBL in relation to relevant subjects as PBL, WBL, WPL etc., and describing the 5 phases' process related to various cases and overall practical experiences.
- Similarities between Problem and Project Based Learning and Work Based Learning
  - The Aalborg Model examples on projects
  - The Maastricht Model
  - PBL – learning principles
  - Why does this work?
- Role of the teachers in Problem and Project Based Learning and similarities to FWBL
- Organisational Learning and learning in companies
  - How to adjust to a company culture
- Essentials of Recognition of Prior Learning in SME contexts
- Experiences from FWBL courses
  - Teacher experiences
  - Participant experiences.
- Tools for designing a FWBL course
  - Learning readiness
  - Knowledge absorptive capacity
  - Dialogue process for specifying learning objectives
  - Three-part contract.

The Teacher Training Programme was held as a 2-day course, the intention being to have an exemplary session where the participants should develop and design their own learning process as a FWBL course. The course was extended with on-line sessions and supervision from CPD-aalborg in the actual implementation of FWBL in the respective countries.

The learning outcomes of the course were articulated as follows.

After having participated in the 2 day course in Aalborg the participants should be able to

- collaborate with companies on specifying learning objectives in relation to the company's competence strategy
- teach the FWBL course
- prepare a three-part learning contract
- plan and perform the evaluation of learning objectives
- use RPL as an element in a training plan.

Recognition of Prior Learning

RPL was considered an important element of FWBL because there is considerable informal and non-formal learning in enterprises and manufacturing companies as part of normal activities. RPL is essentially the process of giving value to an individual's past learning for a number of possible purposes including the following:

a. to formalise learning from work and life experiences in relation to standards of knowledge for occupational/professional qualifications
b. to measure an individual's past learning in relation to national or international frameworks of qualifications based on knowledge, skills and competences
c. to enable an individual to progress their training and education by gaining access to higher or different awards and qualifications
d. to enable an individual to enter a programme of study through assessment of experiential and work-based learning where certificates are not available
e. to enable an individual to accumulate credits for non-formal and informal learning towards a related award
f. to enable a worker to be more mobile across an occupational sector or across regions
g. to enable occupational sectors to adapt their training and education more quickly and to respond to technological change, labour market needs, or regulatory requirements.

As national and EU training and education systems move towards harmonised qualifications frameworks through the European Qualifications Framework, the Bologna European Higher Education Area and through the European Credit for Vocational Education and Training (ECVET), employers and workers should expect these developments to work to their advantage.

RPL within credit and qualifications frameworks operates around three principal processes as follows:

1. recognition of learning, whether formal, informal or non-formal, in relation to generally agreed standards of knowledge, skills and competence
2. recognition of learning in relation to agreed levels and learning outcomes rather than in relation to years spent in learning or inputs to learners
3. allocation of credit value at a particular level of learning using the European Credit Transfer System in higher education, and using ECVET in vocational training.

At the micro level of the individual engineer or employee in an engineering company, regardless of the size of the company, there is informal RPL used to identify training needs and targets. At the macro level of the national state and at the level of the EU, RPL is scaled up from the individual to

identify the training needs of sectors of the labour market and the regulated professions. Strategies are devised to meet the training needs identified and funding is generally allocated to achieve them. Increasingly RPL is an element of these strategies where the main aim is to up-skill or re-skill sectors of the workforce and to make it possible for them to be mobile across the labour market and across borders. This macro view of RPL is now clearly evident in EU and OECD policy document with sectoral qualifications becoming increasingly significant. Research and development funding is increasingly available to ensure the quality of RPL and to maintain credibility and trust in its application.

Where does RPL fit into FWBL?

The FACILICODE project is working specifically with engineering companies in relation to their own identified education, training and staff development needs. It is likely that staff in the pilot companies have a range of prior qualifications across VET and higher education. It is also likely that they have engaged in formal and informal training on-the-job in companies and in the industrial sector generally. Invariably staff in engineering companies are members of professional bodies and are regulated by them. Normally engineers engage in significant informal learning on work teams, through management and problem solving. Most are likely to have professional development plans and career pathways negotiated within companies. *So what is new in FWBL?*

The FACILICODE project offers RPL as an element of its work-based learning model, principally to build the capacity of staff in the pilot companies in relation to their future training needs while at the same time enhancing the capacity of the company to build on existing knowledge, to generate new knowledge and solve future problems. The FWBL model does not necessarily focus on qualifications, education and training awards, but is can do so without loosing the added value of working directly with staff in companies. In particular the FWBL model encourages the competences of understanding, insight and problem-solving. Collaborative learning among staff in the company through FWBL encourages confidence in individual progression as well as adding to the general capacity of the company. FWBL contains a practical example of EU buzz-words about RPL such as responsiveness, tailor-made solutions, transferability and valorisation. RPL adds an extra dimension of valuing what is already learned and using it to move forward.

Quality Assurance of CPD

Although the FACILICODE project is mostly concerned with tailor-made CPD learning courses with all its different approaches and issues, it is becoming more and more obvious that the quality of any continuing education can be regarded as an important parameter when companies are considering investments in CPD, and that quality assurance will also be an important parameter for comparison between CPD providers. With many years of experience in developing quality assurance systems, Valencia University of Technology is developing a set of tools for quality control to assist the people performing the different phases of a FWBL CPD learning course. The quality focus is set on evaluation of the whole FWBL process. The most obvious issue to measure is whether the objectives of the competence development course have been reached; however, to evaluate the whole process all the phases must be evaluated and analysed from a quality perspective.

To do that, the following tools have been defined:

- Checklist for teachers
- Questionnaire to evaluate the learning objectives
- Questionnaire to evaluate the design and the implementation of the process
- Questionnaire to evaluate the effects of the training experience in the company (to be filled after the training period)

Table 1 shows the main characteristics of each one of these tools.

Table 1 Evaluation tools for FWBL

Evaluation tools	**For**	**Objective**	**When**
Checklist	Teacher/Academic	Analyse and improve the process	Before the contact phase and as a guide throughout the whole process
Questionnaire Learning	Worker (student)	Evaluate the methodology and whether learning objectives have been reached	At the end of the training process
Questionnaire Process	Teacher and company	Evaluate the design and the effectiveness of the project as well as the implementation	At the end of the training process
Questionnaire after training	Company	Evaluate whether learning objectives have been reached and whether the detected lacks of knowledge have been minimised	Six months after the end of the training process

3. Status

At this midway stage of the project the Teacher Training Programme has been developed and was held in March 2009. CPD units in Valencia, Dublin and Horsens are now cooperating with local companies to establish their recent needs for new competences.

The professional areas are quite different, from pure technical and technological topics to sales and management issues. Below are four examples reported as to how the FWBL methodology serves as a framework for a university–company cooperation on competence development.

1 An energy advising company has since April 2009 been taught training in sales. Ten consultants have been trained in planning, implementation and follow-up on sales activities.

There have also been workshops with the management focusing on the management's role in strengthening empowerment and self-management amongst the employees, and the change of role for the management. This has set up a basis for a strategic development project where the FWBL methodology is utilised in the direction of change management and value-based management.

2 A combined architect and engineering company has been running a project on development of collaboration. There have been meetings with the management and individual interviews of ten employees to identify the focus areas which are relevant concerning communication and collaboration. A training course has been held with focus on behaviour and communication, followed by individual coaching sessions.

3 A lean management development project is started in a contractor company. A workshop with 25 employees has been held and is going to be supplemented by further common and individual competence development.

4 A section manager of projects from an environment department of a city community is responsible for projects drafting, proposals of contracting and project management of natural spaces projects in general. The needs analysis exercise has identified a need for updates on operations tools like graphical information systems (GIS), global positioning systems (GPS), cartography, remote sensing and hydrology. The main purpose is to provide new visions to the management of natural resources.

4. Conclusion

There is no doubt that CPD is carried out quite differently in the participating countries. Cultural diversity and tradition are of course playing an important role when a framework like FWBL is utilised in different sectors and countries. That is the whole point in projects like FACILICODE. To find out how a new innovative method like FWBL will apply in other contexts, cultures, countries and sectors, and by the use of cases and pilots to report back to the innovators – maybe for development of a Version 2 or for initiation of common discussions about advantages and disadvantages of the method with reference to the national tradition and culture respectively.

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