

DEVELOPMENT OF PROJECT MANAGEMENT AND IT COMPETENCES THROUGH INTEGRATED LEARNING

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Abstract. The present paper aims to explore the possibilities for the development of project management and IT competences through integrated learning. We examine the essence of IT skills, such as communication, time management, information handling, office and productivity tools, as well as project-specific tools etc., in correspondence with project management competences stated in IPMA International Competence Baseline.

We are going to show that there are several possibilities where obtaining IT-competences can support learning project management competences and vice versa. We assume that learning these competences separately is probably less effective than in combination. Our methodical approach is based on the constructivist learning paradigm. This paper also discusses language-related issues, mainly focusing on the necessity for cooperation on a course design and language learning.

The actuality of the topic is particularly emanating from a shift of contemporary paradigm in education – the efficiency of learning and teaching, the motivation of students (especially adult learners in part-time studies) and the decreasing share of contact hours are creating problems almost everywhere in educational institutions. Thus the integration of subjects and courses (including “modulization”) is becoming more and more important.

Introduction

The main goal of this paper is to combine project management competences with IT skills. The actuality of the topic is particularly emanating from a shift of contemporary paradigm in education – the efficiency of learning and teaching, the motivation of students and the decreasing share of contact hours are creating problems almost everywhere in educational institutions. Thus, the integration of subjects and courses is becoming more and more important and our research is analyzing the possible overlap in project management, IT and language subjects to create qualitative innovation in this area.

Our methodical approach is based on the constructivist learning paradigm. Learning is considered as an active process in which learners construct new knowledge based upon their prior knowledge. The constructivist perspective clearly diverges from the objectivist model of learning which presumes that knowledge can be put directly into the learner's head.

Definition of IT Skills

To clarify the overall meaning of IT skills we are focusing on skills needed not for IT specialists, but for ordinary, mostly business and office workers. So there will be neither discussion of IT administration and problem solving, helpdesk as described for example in EUCIP Professional Profiles (EUCIP 2011), nor discussion of specific skills needed in IT project management. Computer literacy can be defined as “having a basic understanding of what a computer is and how it can be used as a resource” (Nichols 1998 by Csapo 2002). Some universities in the United States are now requiring students to demonstrate computer literacy before graduation by taking a computer literacy exit exam. In the educational process, the high school business curriculum can best provide for computer literacy in preparing students for the global work environment. (Csapo 2002)

The best way is to take the European Computer Driving Licence (ECDL) program, introduced by CEPIS in 1995 and currently governed by the ECDL Foundation (ECDL History 2011) as a basis. The ECDL certificate proves that its recipient possesses some basic skills in using a computer and internet in main office situations. One advantage for the ECDL (ICDL in US) compared to other training and certification programs is that the ICDL is vendor-neutral and can be adapted to users of most major commercial software applications (Csapo 2002). The ECDL syllabus consists of seven modules (ECDL 2007): 1. Basic concepts of information technology; 2. Using the computer and managing files; 3. Word processing; 4. Spreadsheets; 5. Database; 6. Presentation; 7. Information and communication.

ECDL Foundation has two types of certificates: a START license (called Digital Literacy - obtained after passing the exams of ECDL modules 2, 3 and 7, we call them basic IT skills in this paper) and a FULL license (Called Digital Competence - obtained after passing the exams of all seven ECDL modules).

Calzarossa et al (2005) analyzed the implementation of the programme in Italian universities and found that there is a large variety of choices about what concerns the teaching organization, the credits awarded to the students and the type of ECDL certification required. Universities typically offer multiple ECDL courses because of the large number of students and of their different skills and background. Courses differ in terms of teaching methods, number of ECDL modules and hours taught per module. On average, each university dedicates 49 h to classroom teaching of ECDL modules.

There are additional modules 8-13 in ECDL (ECDL Programmes 2011): 8 - 2D Computer-Aided Design; 9 - Image Editing; 10 - Web Editing; 11 - Health Information Systems Usage; 12 –

IT Security; 13 - Project Planning. We only take Project Planning module from this list in consideration. As a great deal of project manager's work involves working with team members we include special skill areas from time and task management, organizing workloads, overall knowledge about Personnel Management Systems etc which are not included in ECDL module 13 (Project Planning) as specific skills about project planning software.

There are also advanced level modules for ECDL modules 3-6 (ECDL Advanced Syllabus 2008) which are more detailed and we use them to indicate advanced level IT skills in this paper. In this paper we joined ECDL modules 4 and 5 because building own databases is not the ordinary office work any more like it was in 90s, but on the other hand, there are connections to module 5 as project management needs to query some database and analyze the received data in the spreadsheet environment.

Different emphasis can be put on the ICT skill obtaining. As an example for librarians multimedia was taken as a core of ICT (Poulter et al 2004). ANA and TIGER initiatives can help nursing education reform, but they must push institutions to place greater emphasis on information and informatics literacies so students understand that informatics is more than computer skills. (Dixon 2010)

For project manager as a profession there is a need to include some business design issues that are connected to defining business needs for IT services (ITIL 2011) as project manager needs to define project environment (ICB comp. 1.10 Scope&Deliverables, 3.06 Business). It can be seen as needs for higher levels of project manager (ICB levels A and B).

CEPIS, Founder of ECDL, offers a quiz (2011) for different IT specialist professions to discover attendee's skill levels thorough ECDL modules and gives a table in the end where achieved levels can be compared with expected levels. For IS Project manager CEPIS suggests core level in ECDL main 7 modules, but advanced level in modules of word processing and spreadsheets . Additionally more special IT skills are described in EUCIP Professional IS Project Manager syllabus (EUCIP 2011) extended even more in European e-Competence Framework (<http://www.ecompetences.eu>) and Skills Framework for the Information Age (SFIA, <http://www.sfia.org.uk>) etc.

Similar testing could also be carried out in project management to encourage students to gain more knowledge in certain fields. On the other hand, it leads to an idea that such coherent matrices for IT skills and field competences may be created for any specialty.

Correlation of Project Management Competences and IT skills

We evaluated ICB competences and indicate in each ECDL skill whether it is needed or not and if it is needed, is it needed in basic, core or advanced level. See table in Appendix 1. Project Management competences are defined in IPMA Competence Baseline version 3.0 (ICB, IPMA 2005) divided into three groups – technical (20), behavioural (15) and contextual (11 competences). All the evaluations are made by analyzing ICB competence descriptions, especially in “Possible process steps”. Basic level means mostly knowledge about possibilities, as core level means a need to use this skill or knowledge in practice. Advanced level marks a specific need for a skill and tested practice in it.

Basic IT skills are needed actually in any of competences of ICB, but more skills are needed in technical competences. After basic skills we expect (especially in ICB higher levels) PM needs Core level IT knowledge and skills and in some cases there are advanced level skills needed. It is possible to make such a table for different ICB levels as there are certainly differences. And there are special skills that are needed in different types of projects, for example computer-aided design (CAD) systems in construction business etc.

Behavioural competences were analyzed and we found that these high level expectations for the PM, in our point of view, are possible to fulfill when PM feels confident in most IT skills and knowledge areas. Advanced level skills and knowledge are required about communication and security areas, but also in using PM software for monitoring and risk management. PM needs to understand the need for each skill, although he or she does not need to use every skill by him(her)self, for adequately handling every relationship with different team members. Contextual competences were also analyzed and we found that there is no need for IT skills in advanced level except using IT systems and regulations concerning permanent organization. On the other hand, there is a need for every IT skill in the context of information age we are living in and much more, if projects are important part of one organization, PM must understand and be part of developing IT systems in there, but this is another subject to study and learn.

In the end we took maximum indication for each IT skill through the ICB competences and also average importance. From that information it is clear that all 7 main ECDL modules must be obtained in core level for PM and better if most of them are obtained in advanced level. For setting up the best curricula for project management studies we also have the problem that students are in different positions of IT skills, when they start learning PM. There should be some compensative courses for those, who need to learn the basics of IT skills (using computers and files, word processing, communication as stated in ECDL start level). Although nowadays almost everybody

who comes to school is already using computers and hence should know basics, but in fact it is possible to use computers without basic IT skills. For later discussion we presume that all the students starting PM courses have obtained (in previous studies or compensative courses) basic IT skills.

We can conclude that if we expect students come to study PM having basic IT skills (ECDL modules 2, 3 and 7), they must reach core level in all ECDL main modules plus module 13 (Project planning) and some other teamwork skills. In an educational institution it must be defined in the curricula if these skills are obtained on separate courses or with PM competences.

In terms of constructivist learning paradigm on the basis of this table it would be possible to find connections for the subject content in curricula and accordingly guarantee better possibilities for students to achieve the goals of curriculum (and subjects). It would also be possible for the lecturers of specific subjects to find examples and practical tasks coherently with other subjects.

Language-related issues

Optimal combination and balancing of language-specific and content-specific teaching has been an issue of long debates since CLIL (content and language integrated learning) has been identified as a priority by the European Commission.

This new approach, which emerged as a concept in early 1990s, is characterized by language support integrated in subject studies, joint planning between teachers, and specified outcomes for both content and language. All the implications, strategies and techniques of CLIL have been researched and summarised by Coyle et al (2010). CLIL integrates language learning and content learning at cognitive and cultural levels appropriate to the learners resulting in new learning scenarios quite different from regular language or content lessons. Coyle et al (2010) suggest the 4Cs framework (content, communication, cognition, and culture) for understanding CLIL. A recent trend towards competence-based education stresses the importance of seeing competence as integration of knowledge and skills. The development of knowledge and skills are also actively promoted by 4Cs principles.

Application of CLIL principles has challenged teachers who have to reconsider their teaching practices and design purposeful learning activities for students. As motivation is the key theme for language learning, a deeper emphasis should be laid on good task and materials design, on developing students' metacognitive skills how to cooperate effectively in groups, solve problems, discuss, reflect, and discover new meanings. Another major issue arises about assessment – what do we assess – content or language and how? The practitioners have taken the position that

the content should always be the dominant element in terms of objectives and therefore they assume that it is content first and foremost that is being assessed (ibid).

It seems that up to now most of the studies on needs analysis and CLIL at the university are related to implementing this approach for the professional development of the learners. Based on research and surveys the results demonstrate that CLIL programmes are more demanding, but geared to greater achievement (Coyle et al 2010). Mehisto (2008) brings out the difficulties of cross-curricular integration based on research results of CLIL programming in Estonia – especially a lack of knowledge about CLIL-specific strategies emphasising the necessity for improved planning by teachers and government authorities. Mehisto focuses on the need to acknowledge the value of CLIL in education, teacher training, stakeholder responsibilities and professional learning communities and to increase the awareness of the change process in general.

In Pärnu College we recently made some changes in our bachelor-level curriculum „Entrepreneurship and Project Management“. The most significant change was combination of two courses – project management methods and project management software – into one course. The idea of such change was obviously to achieve better integration between content-related issues. We haven't consciously designed any courses integrating content and language learning yet, and our courses probably do not qualify as pure CLIL, but we have worked toward furthering integration of content and language learning in collaboration with the programme managers to generate the integrated curriculum content. We aim to design the courses to improve the students' productive and professional communication skills. As any learner needs a very definite connection between the learning goals and usability, the language learning module of project management for the first-year students involves a one-month „project“ for launching a new product/service on the market (also including marketing and advertising modules). For getting the first idea of project work and to ease collaboration of project teams, students use online Zohoprojects environment which also supports improvement of their relevant IT skills. The majority of the assignments may be defined as „collaborative and on-display assignments“ – they are meaningful, demanding efforts and offering problem-tackling and innovative thinking. The whole course includes a lot of content-based oral presentations with peer assessment and discussion. The evident advantage is the subsequent feedback as the oral presentations in the classroom are recorded and uploaded to the e-learning environment of the course.

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