

Project Integrated Learning in Higher Education and Business

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Abstract

Aspects of ICT based collaboration and specific technical and organisational skills are only little taken into account in current project management trainings and curricula, but they are strongly required in business practice as a recent survey with international organisations, undertaken by the POOL2Business project consortium, proves. According to this survey, unstructured [intercultural and online] communication (43.5%) and diverse goal conflicts (28.2%) are crucial shortcomings in international project management due to this lack of training. POOL2Business - a 2-year Leonardo da Vinci project - aims to answer to these shortcomings and elaborates a curriculum and project management training that develops virtual collaboration and communication skills together with project management techniques. Its objective is to apply training methodologies that transfer practical knowledge and experience, strongly involving technology based learning and online concepts, as well as to provide certification processes that respond to the needs of a standardised project management training and practice.

POOL2Business applies a comprehensive approach to instruction. Project integrated learning, this is the embedding of knowledge acquisition in real [online] project management processes. The innovation of the training and difference to traditional learning lies in its media: online technology and media is exploited to stimulate real scenarios and requirements of online project management (OPM) in learning situations as well as to encourage learning motives and outcomes. POOL2Business is based on skills acquisition rather than enforced learning. Learning is integrated in real-life situations in which learners can acquire the skills. They collaborate in projects (or simulations of projects) and develop their intercultural and interpersonal, project management and online collaboration skills through practice and additional learning support (e.g. web based trainings). The combination of knowledge & practice becomes the means of learning.

The first part of this paper evaluates OPM requirements & practical problems reported from businesses taking active roles in international project management, e.g. goal conflicts and prevention in virtual project organisation, appropriate communication tools & strategies for the online project, etc. It is followed by the reflection of a training approach that enables OPM skills acquisition through concepts of ICT based learning and project management training. It discusses principles applied in the training and reflected on projects completed with engineering students and industries. The paper concludes with findings and conclusions that can be drawn for training and business practice.

Keywords: competencies and learning outcomes; virtual collaboration; teaching practice; Online Project Management; ICT based learning; innovation in education

1. PROBLEM DESCRIPTION

The rapid development and change of technology over the last decade has had a resounding impact on project management. As more and more project managers begin moving online for much of their work, project managers require new technical and organisational skills in [online] projects. The training market demands for new training modalities around the issue of Project Management (PM). A variety of technology (coupled with the explosion of knowledge transfer in the global business) has led to the emergence of new training modalities, including online, collaborative learning, and blended learning. The intention of the POOL2Business training approach is to exploit such modalities and to provide Project Management training in online environments as well as to stimulate settings of real online projects in the training process. Practical skills are what project managers in business environments require most.

For this purpose, POOL2Business has cooperated with international companies to develop a training curriculum for Online Project Management based on the practical experience and requirements of these companies, as well as to develop a training approach that develops the required competencies. The target group of this survey and the related training approach are adult **learners**, both of higher education and business environments, who

- require know-how about specific concepts and practices of online project management,
- need practical training and expert knowledge in project collaboration through online processes,
- provide a minimum knowledge or experience in managing projects (in theory and practice),
- and are strongly self-directed, open to online learning, and accumulated project life experiences.

A strong focus has been put on the requirements and shortcomings detected by an in-depth qualitative and quantitative research that had been undertaken by the POOL2Business project team. In a thorough analysis with small and mid-sized organisations of various European countries, the project identified the following shortcomings and/or **lessons learned** of real business practices:

- Unstructured, bad communication is the biggest weakness in international project management.
- Virtual project organisation leads to goal conflicts between different locations.
- Simple collaboration technology (e-Mails, file repository, intranet and project portals) is pre-dominant in practice. Usability, safety and technical availability are most important.
- Know-how is the key aspect for staffing decisions; cost arguments are secondary.
- Rough planning (on a milestone level) is preferred to detailed work break down structures.
- PM practice uses existing standards (e.g. IPMA, PMI) and individual company principles (30%).
- Controlling is limited to oral or written reports, containing key facts and figures only.
- English is the pre-dominant language in international projects (75%).
- Insufficient language skills and inconsistent terminology are typical obstacles in communication.
- Face to face kick-offs, clear agreements, and clean communication are crucial to prevent failure.
- Basic PM principles also apply to OPM. Differences appear across branches and cultures.

Deriving from these findings as well as the results of the research undertaken in a previous research project (POOL), the project identified general and problem centred **training issues** to develop the required competences:

- Fundamentals of Online Projects and International Teams
- Virtual Communication & Collaboration in Online Projects
- Project Planning, Time Management and Risk Management in Online Projects
- Soft Skills, Intercultural Communication, and Documentation Standards in Online Projects

- Dealing with Goal Conflicts in Virtual Project Organisation
- Making Team Work Efficient in Distributed Projects
- Appropriate Communication Tools & Strategies for the Online Project
- Improving Performance through Distributed Planning Techniques

Specific training programmes have been developed based on these findings, as explained in the following.

2. PRACTICAL OUTCOMES FOR THE TRAINING

Some of the outcomes of the research done is demonstrated based on the example of the *POOL2Business Advanced Course*. In this training course, POOL2Business provides a blend of conventional and online training methods. A majority of the training takes place online, highly participatively and interactively, encouraging learners to collaborate. It utilises both online, offline and collaborative scenarios to their full potentials and provides the most effective form of teaching and learning.

The **POOL2Business Advanced Course** strongly focuses on the development of practical skills that are required in online projects. It explains best management practices, tools and techniques that learners can apply in their own projects. In practical (simulation) projects, learners collaborate in groups and develop practical skills related to managing projects online. It has the following structure:

Stage 1 (Self-study Period) – During the first period of the training, learners elaborate a project assignment (in a short self-study period) to prepare for their study project and to develop an understanding of the idea of the project. They also work through an introductory e-Learning module which reflects on key aspects of Online Project Management and provides practical tips for the study project. To deepen their understanding, learners can additionally make use of the existing POOL2Business training network and the POOL2Business e-Learning modules of the basic level.



Illustration 1. POOL2Business e-Learning Modules

Stage 2 (Practical Training, Independent Learning, Instructional Training, Networking) – In the second training period, learners start to work in simulated online projects (practical training) where they are part of an online team. In a kick-off meeting (preferably residential) the learners meet the other team members (learners) of their study project. This meeting is important so as to form the team, develop the guidelines for the project, start with the planning, and to discuss important aspects of the project. A trainer / tutor provides additional guidance. In the kick-off meeting learners receive additional input and guidance from experts in the field of Online Project Management (instructional training). After this meeting, learners work on their study projects, strongly collaborating with the distributed team. At this stage, learners learn how to use the collaborative and communicative technology framework to manage their projects. Specific e-Learning modules (mainly based on open educational resources) be available throughout the practical training to deepen the learners' knowledge on important practical aspects of Online Project Management (independent learning). They shall help to prevent or overcome problems in real projects by referring to typical problems and shortcomings of Online Project Management (e.g. problems that had been identified

by industries) and presenting possible solutions to these problems. In regular intervals, learners can additionally attend online coaching sessions in which they receive practical tips and help from experts and guidance in case of difficulties. Throughout the whole training process, learners have various opportunities to discuss their study projects with a trainer or tutor (coach). The coach provides support through expert knowledge or individual feedback to exercises and assessments (e.g. every learner has to solve a planning task and has to submit the solution for feedback).

Stage 3 (Assessment) – In a final project presentation, learners present their project and reflect on the lessons learned throughout their practical training. The results are evaluated by the tutors / trainers who have been playing the role of the online coach in the online sessions.

Training Methodology

The programme puts a strong focus on the practical training (based on a study project) and networking, where trainees receive guidance and sufficient feedback from experts. It also provides e-Learning modules and online sessions to deepen the learners’ knowledge through independent learning and instructional teaching. The programme concludes with the assessment and presentation of the project that had been elaborated, where learners work under supervision and assess their practical skills.

The following blend of learning methods is applied to instruction:



Illustration 2. POOL2Business Training Approach

Recommended Modules

Here is an example of the structure of course topics that have been prepared for this course (course outline):

| Recommended Course Topics | Training Concept | Study Time |
|--|------------------------|------------|
| Online Project Management from a Practical Perspective | Self-Study Period | 2 hrs |
| Project Assignment / Case | Practical Training | 5 hrs |
| POOL2Business Conference / Project Kick-Off | Event / Conference | 2 days |
| Study Project | Practical Training | 40 hrs |
| Networking | Networking | 5 hrs |
| Specific Aspects of OPM (various e-Learning modules) | Self-Study Period | 15 hrs |
| Project Coaching | Instructional Training | 10 hrs |
| Final Project Presentation | Assessment | 5 hrs |

TABLE 1. Module Structure of the POOL2Business Advanced Course

3. FINDINGS & CONCLUSIONS FROM THE IMPLEMENTATION

The outcomes of the POOL2Business approach can be viewed in various aspects.

POOL2Business is based on self-directed knowledge acquisition and collaborative skills development rather than enforced learning. Learning is seen in real-life situations in which learners can acquire the skills they need for their work. Knowledge & practice becomes the means of learning. The collaborative nature of these processes as well as realistic learning scenarios and practical requirements ensures

business relevance of the training and, most important, increases practical achievements and learning outcomes.

The blended POOL2Business training approach performs effectively within distributed (training and work) environments while addressing the individual needs of the learners. The training programme follows a strong interdisciplinary approach of theory and practice training, which uses merely online learning to provide a thorough understanding of important online concepts in distributed work and learning situations, and collaborative project scenarios (simulations) to enable practical training and skills acquisition embedded in real projects. The intention is to ensure that knowledge is acquired and applied in real online processes rather than to explain them in theory.

Here are some general conclusions that can be drawn from this project:

- **Knowledge acquisition through a blended learning approach**

A blend of learning methods enables the highest flexibility in developing an understanding of the basic concepts of OPM. The difference to traditional learning lies in the diversity and interactivity of media: the exploitation of online technology and multi media in the learning process enables learners to learn independently from others, strongly self-directed, and in a flexible way. It encourages different learning styles and motives of heterogeneous groups of learners (who have different cultural, educational and professional values and beliefs and varying learning preferences). Appropriate selection of learning material, effective instructional design, powerful multi media components and appropriate use of e-Learning materials in the learning process are the characteristics of this concept.

Learners acquire important OPM knowledge and concepts and they develop their self-directed work abilities by working through web based training materials, such as e-Learning modules, online tutorials, exercises, case studies and assignments by themselves. A key aim is to provide opportunities for learners to provide flexibility in study patterns as well as to fit study around their other work and personal commitments. The POOL2Business e-Learning approach presents an opportunity to harness the flexibility of the training, tailoring it to learners' needs, styles, and preferences.

- **Skills Development through practical work experience**

Project integrated learning, that is the embedding of learning processes in simulated or real (online) projects, increases the practical character and practical outcomes of the training. Learners participate in projects and practice in an interdisciplinary array of competencies, reaching from intercultural and interpersonal skills, project management and technology related skills, to organisational skills. The collaborative nature of these processes and the realistic project scenarios ensure highest business relevance of the training and, most important, increase practical learning outcomes and sustainability.

Learners strongly develop their online collaboration skills and stimulate real project scenarios and problem solutions. A Project Integrated Learning approach strengthens the awareness and skills of relevant collaboration and communication processes within the project (through increased communication, collaboration and knowledge transfer).

- **Problem Centred Instruction Design**

In the course modules there is a great demand for course material that can be easily related to practical work and which is not primarily based on theory (problem centred approach). In building the course modules the project provides practical examples and case studies that can be applied to a specific situation of the study project and/or to the learners' day-to-day work. Based on our experience, such 'put-into-practice' approaches help learners adopt new techniques and develop skills more easily.

- **Harmonisation of theory and practice**

The POOL2Business model measures training activities on practical aspects and therefore sets realistic targets in the development of training programs. A continuous process of feedback also allows for a better harmonization of practical activities and the theoretical background in the curriculum. Training activities and outcomes are based on practical aspects and requirements of a real and concrete project. This strengthens the awareness of the learning outcomes and benefits, both to the learners and lecturers.

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References

- [1] Molenda, M., Pershing, J., & Reigeluth, C. (1996). *Designing Instructional Systems*. In R. Craig (Ed.), *The ASTD Training and Development Handbook* 4th ed. (pp. 266-293). New York: McGraw-Hill
- [2] Cronenbroeck W. (2004). *Internationales Projektmanagement – Handbuch*, Cornelsen Verlag Scriptor gmbh & Co KG, Berlin
- [3] Dittler, U. (2002). *E-Learning: Erfolgsfaktoren und Einsatzkonzepte mit interaktiven Medien*, 1. Auflage, Oldenbourg Verlag.
- [4] Babic, S., Ruzicka, M., Ruzicka, H. (2009). *International Project Management, Virtual Collaboration Beyond National Boundaries (International Survey)* – a Leonardo da Vinci Life Long Learning Program Project (2009).
- [5] P2B – a Leonardo da Vinci Life Long Learning Program Project (2009). P2B – Pool to Business.