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EDUCATION AND PRACTICAL KNOWLEDGE FOR PROJECT AND RISK MANAGEMENT IN ICT AREA[1]

PLENARY REPORT SUMMARY

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Abstract: The report discus and makes insight in the current efforts of the universities to deliver and perform practical knowledge to the students in the era of new economy and project environment they are working after graduation. The education should follow the changes in the business of new millennia and its' orientation towards projects with various types, sizes and categories. This challenge, especially in the ICT area, the universities and professors are faced with, needs their creative and unique approach in delivering practical knowledge and skills to the young professionals that will be needed in their workplace.

Key words: Education, ICT projects, Project management, Project Based Learning management.

1. INTRODUCTION

The acceleration we live is becoming faster and faster and the business and as the result of IC technologies working environment in general is dynamically change. Consequently, education is oriented towards meeting demands of such society's new economy and new project environment in terms of: new and professional knowledge, wide range of business and project management skills and higher level of competence to deal with challenging and new technological developments. However, the nowadays students' needs for successful professional carrier is dramatically

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different from the end of 20-th and beginning of 21-th century. Especially engineering education is faced with challenges that need new approach in organizing the companies, running a business and creating the everyday working habits in a new project and risk management environment. A certain surveys [1] worldwide highlighted this phenomena indicated that top two skills desired from new hires are project management and business process management. In addition in Europe a survey for appointment data [2], found that while there was a modest increase in overall IT recruitment, the need for IT management positions with project management skills grew faster. This trend was attributed to increased levels of confidence, leading to the implementation of the new projects requiring management professionals, while lower-lever technical tasks were frequently outsourced.

2. INSIGHT IN THE MAIN ISSUES

2.1. Project environment and New Economy

Projects complement regular business processes and are often the main vehicle for strategy implementation in an organization. The processes are how work gets done on a daily operational basis, projects are important efforts to meet the organization's strategic objectives and to implement changes. However, as projects take a more crucial role in organizations, project management discipline has become a leadership competence. In today's workplace there could be hardly found managers who just "do their job". Especially in engineering environment managing projects alongside one's regular function is a daily reality, and project success has become an important factor in any manager's performance evaluation. The number of engineering jobs has increased and engineering positions are more varied, while greater job mobility has reduced the opportunity for engineers to take advantage of longer on-the-job training periods [3]. As a consequence, engineering educators are been challenged to look at their curricula and retool coursework to incorporate non-traditional information and subject matter. Students' need for theory understanding to enable engineering problem solving remains a top priority, but today's graduates could not enter the workforce *only with technical skills*. Engineering specialties have become varied and diverse, and therefore industry is demanding new "rounded" engineers whose initial skills stretches beyond technical competency having supporting work skills. In addition, the New Economy of 21 century is more concurrent and global, and therefore with lower money to share, so this trend and new project environment that the business is running make a totally different philosophy for education the young professionals.

2.2. Student' needs and Engineering curriculum

Engineering education in ICT and student' needs are identified in a number of studies and research [4], [5], [6]. Summarizing these needs of the interested stakeholders in educational processes are linked and identified and could be listed as follow:

Student Needs: Strong theory foundation; engaging. real-world application work; creativity/problem solving skills; critical work skills; risk analysis.

Industry Needs: Technical competency; communication skills (written, verbal, presentation); leadership and teamwork skills; enthusiasm and personal drive (a sense of a mission); intuitiveness; integrity; other supporting work skills.

Curriculum Needs: Theory; hands-on trough lab work and practical examples; more intense hands-on applications work using industry-based scenarios and problems; opportunities to develop basic yet critical supporting work skills.

Based on these considerations, the education of specialists in the field of ICT must be divided in 2 categories [7]:

- *education of ICT developers (experts)*
- *education of ICT managers*

For the students in the field of computer sciences, who is assumed to be future developers, the universities provide very comprehensive and high ranked curricula that prepare and armed the students with a well recognized and acknowledged knowledge.

For the future ICT managers: the example curriculum in the specifics of tools should be shorter, but subjects in the ICT services and ICT management must be included as: E-commerce, E-banking, marketing, business innovation, project and risk management, creativity and ethics.

Technologies
Internet Technology
Data Communication and Networks
Security Management and Technology
Industrial Automation
Software engineering
Mathematics
Services
E- Business Innovation (E-Commerce)
Entrepreneurship
Knowledge Management
IS Development
Management
Project Management
Business and ICT Strategy

Business Process Management
Business Intelligence
Financial Management of ICT
Social and Legal aspects of ICT

2.3. Project Based Learning

The young professionals and university graduates may initially be hired primarily for their technical skills while *long-term career success* is more dependent on *non-technical skills*. However, these skills should be integrated throughout the curriculum, rather than be taught later in some isolated activities of the person. That is a way the students will receive a full-picture view of real world of the business, projects and for sure the practice of engineering. The professors in engineering and especially in emerging and fast changing technology, such as ICT, should seeking ways to introduce more workplace related experience earlier in the curriculum and to incorporate "supporting work skills" such as: communication and time management skills, project planning and execution, project manager duties and responsibilities, teamwork leadership, risk management, decision making and ethics. However, to teach the undergraduate students project management theory and practice is complex, since there is a lot necessary and preparatory business things to be learnt. In that sense, curriculum has to follow the underway trends in project management and deliver the knowledge and skills that will prepare the engineers for project management profession. There are discussions and studies [5,8,9,10] that reflect this issue and that could be easy checked-out among companies and young professionals. In our case – Faculty of El. Engineering, UKIM Skopje, introducing Project management curricula was not easy task. On post graduated studies it was much more easier, and we have had a great success with enrolling students and their ambition to obtain such knowledge. The practical examples of real projects, seminars, planning tools and case studies that we are teaching students from our personal experience are very helpful to the students to understand their role in business and company itself. University and Industry should work together (that is their common interest) to provide such knowledge and training.

Therefore, the guiding equation of Project Management for Education could be:

PM (Project Management) + PBL (Project Based Learning) = Deeper Learning for Career, Community and Life

2.4. Project management trends

The University should be aware that it is now a project based world. An optimal way to prepare young people is to ensure they have access to high-quality project-based learning (PBL). In that sense, some of the issues could be listed:

- Professors and educators should communicate the practice for project-based learning (PBL), and empower possibilities offered by their management to make sure students have support and tools for high-quality PBL professional practice.
- Professors should be involved in real project activities to share that experience and to construct high quality learning methodology.
- Industry and business leaders should advocate for community connected PBL and contribute in efforts to support, mentoring and train PBL in their professional communities.
- There should be a wide range of learning opportunities for the students. They should experience success! It will enable their self-esteem and encourage them to experience innovation and new approaches and way of creative reasoning. They should learn to experience and overcome mistake that could occur in their efforts for success in competitive world.
- The students should have a good basic knowledge in Project management and to investigate and experiment in Risk management being creative in order to be helpful for organization for better ROI and good reference among clients. So, it is a trend that Risk management in international ICT project management has a growing concern these days.

The selected modern trends in project management are listed as follow:

- Agile will gain more popularity in IT projects and continue to be accepted in wide range of industry projects.
- Risk management will be an incredibly popular topic for project managers to be learnt and applied.
- PMP certification will become more popular, but changes are needed.
- The Need and project requirements – not organizational chart will create project team.
- Remote teams will become normal.
- The rise of BYOD will cause project management software to have more ticketing options. BYOD ("Bring Your Own Device").
- Emotional intelligence will be most desired skill for new project managers.

3. CONCLUSION

Since the education is a life-long process, introducing project management to meet the needs of the students and industry (and not to forget the entrepreneurs) is a challenging mission. It is no doubt that our industry, companies and organizations will embrace, value and utilize project management and attribute their success to it. However, the efforts that are making both University and industry working together, a common engineering education in project management will find the way to ensure that our graduates and master degree students have all of the tools they need to

succeed and continue to contribute in economic and technological growth. The Engineering universities and faculties especially in ICT, in their curriculum have to be up-front in the following, understanding and applying new trends in project management. It is a very complex task the professors are faced with and their mission is challenging that ever before.

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