



Action Project for Innovation

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Abstract

This paper deals with innovation in education and education in innovation management (IM). The new methodology and new curriculum for the 6 ECTS MSc course in *IM* were developed under the Erasmus+ project 2014-1-BG01-KA203-001561 APInno and now will be a basis to be upgraded and further developed under the Erasmus+ project 2016-1-BG01-KA201-023657 DigiThink. The main learning methodology is flipped learning for the theory. The master students work on a real business problem, divided in groups and led through the process by mentors, representatives of the business. The course methodology combines *knowledge and understanding, cognitive skills, and soft skills*. The IM competencies are developed in three parts:

First – ice breaking – the students play games in groups that are formed randomly. The games are selected in a way to help the mentors and the professors to identify the students' profiles as well as to get to know each other, going through the Bruce Tuckman's "Forming, Storming, Norming, and Performing model" [7]. There is a special session focused on the MBTI typology tests the students make, and group discussion on valuing the differences [4, 5]. At the end of the first part the new groups are created according to the students' profiles.

The second part of the course is for the theory – understanding, analysing the main terms and processes of the IM. At the end of this section, students receive the business case descriptions.

Third part – solution – MSc students work with mentors under the case. During this period the students have at least one meeting with the business owner (CEO or CFO) to pinpoint the decision direction.

The students' attitude is significant for the course. The learning process is monitored. Students thoroughly examine the task and have fun, learning by doing and exploring new opportunities.

There are two pilot courses in Bulgaria at the project coordinator – University of Library Studies and Information Technologies (ULSIT) and at one of the project partners - Middlesex University, UK.

Currently the course in IM is implemented in both universities.

Introduction

The concept of IM is still a key challenge. Although taken serious initiatives in this direction over the past few years, the new group management standards of innovation CEN TS 16555, IMP3rove, certification within ECQA - it still remains insufficient imposed in Europe. Therefore, within the EU program to support training, education, youth and sport Erasmus+ since the beginning of 2015 the project is implemented *APInno: Action project for Innovation* (Contract № 2014-1-BG01-KA203-001561) with focusing on the creation and testing of methods and materials in the field of IM . The project coordinator is ULSIT with partners from Bulgaria, Great Britain, Spain and Italy.

The objectives of the project are: enhancing the effectiveness of cooperation industry triangle - higher education - research (knowledge transfer); improving competence of students by acquiring new knowledge and skills such as innovation and creativity; Corporate entrepreneurship; team training; critical thinking, etc .; increasing the capacity of academic institutions to integrate innovative practices and approaches as a key element in their curriculum and awareness of the need to manage innovation in SMEs as a key factor for growth and economic success. At the beginning of the project it was disseminated a poll elaborated by the partners that seeks to obtain updated information on the attitude of students and businesses representatives to learn and share experience and knowledge in the field of IM.

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1. Scope of the study

During the APIInno project preparation were reviewed the existing analyses of entrepreneurship education in the European Union at tertiary level, the most recent data in publications from 2008 and 2012.: *Entrepreneurship in higher education; especially within non-business studies (2008)*; *Entrepreneurship in higher education; especially in non-business studies (2008)*; *Effects and impact of entrepreneurship programmes in higher education (2012)*, which are publications of the Education, Audiovisual and Culture EACEA of the European Commission [1]. A new edition shows data on secondary education (Figure 1), but, in overall, in European Union there are almost no specific national strategies in support of our common goal to create innovative Union: *Innovation Union is the European Union strategy to create an innovation-friendly environment that makes it easier for great ideas to be turned into products and services that will bring our economy growth and jobs* [2].

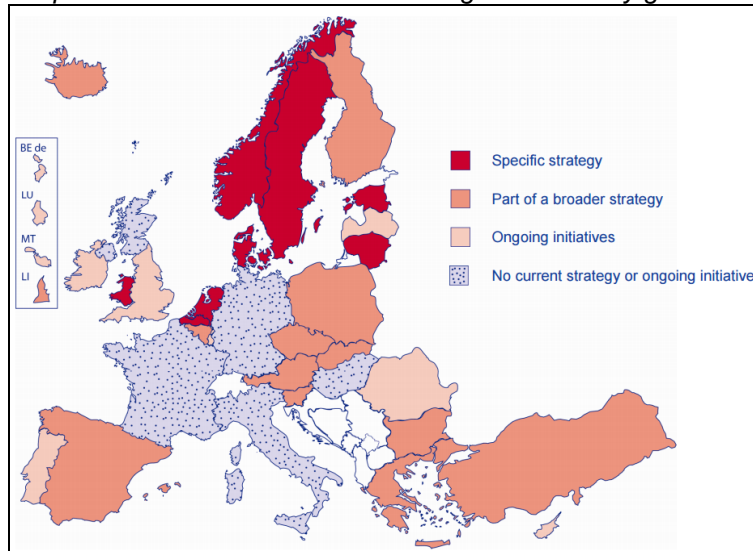


Figure 1 Entrepreneurship Education at School in Europe Source Eurydice, (ISCED 1-3); 2011/12 [1]

In order to meet the real business needs of specialised personnel in the IM and the students' need of interesting and challenging career in this field, the APIInno consortium developed two questionnaires for both target groups. The online questionnaires were distributed among universities and professional networks of the APIInno partners, through social and professional networks and business representatives.

1.1 Analysis of responses – students' survey

Scope of the Survey:

- meaning/importance of IM
- previous experience and intentions to learn in real working conditions
- role of the collaboration with mentor/business owner in the learning process

In the study were involved 223 students aged between 18 and 41 years, including 90 men and 133 women - citizens of 35 countries from 5 continents: Asia, Africa, Europe, North and South America.

Half of the surveyed students have an idea of what IM is and nearly 80% believe that the study will help their career. In terms of teaching methods, over 80% believe that learning by doing is the better method; their opinion is supported by examples from previous experience, grouped by type:

- general training; dual training: workshops, etc .;
- training areas: accounting; arts: Computer Sciences; Medicine; Electronics; Business Cases; Project Management; etc .;
- life experience: hairdressing; driving a car; cooking; gardening, etc.

Almost 70% of respondents shared their experience and knowledge with business people.

Some students' examples of Learning by doing:

- If you want to learn to drive a bike, you must have a go at do it.
- Learn how electronic works building a drone.
- Constant interaction with teachers
- New venture creation, if you have enough skills, and good opportunity just do it.
- You must be open minded



1.2 Analysis of responses – from the companies' representatives

All participants pay attention to the:

- importance of IM
- lack of previous experience and intention to work with HEI students
- role of the collaboration with students in generation of innovation and company development

65 participants:

- CEO; Financial Analysts; Managers; Engineers; Researchers; Directors, etc.
- 17 countries of origin from Europe;
- companies based in 18 countries in Europe.

2. Methodology and Syllabus

APIInno is based on intensive cooperation between students, faculty staff, researchers, experts and managers. Its key characteristic is the strategic challenge which united all participants and engaged them by common shared values, expectations, risks and results. The direct target groups and their benefits from the project:

- HEIs: exchanged knowledge with industry and external experts, new pedagogical approach and methodology and quality of education in terms of transversal skills, job preparation.
- SMEs: creation of more sustainable business models, products and services, inspired by real needs, more original innovation that involves academic engagement.
- researchers and experts in IM: overcome the fragmentation of research activities and create a supportive business environment for new research.
- students: apply knowledge and skills and develop new ones related to IM.

APIInno provided them with a "safe environment" to test their skills. In addition, students worked in multidisciplinary teams with their peers while teachers acted as mentors that provide guidance in the working process. They developed and directly applied in practice wide range of new soft skills such as team-work, being a trusted advisor for their client companies, communication and presentation skills as well as profound research on the "field".

The development of methodology was based on Cross-Country Needs Analysis performed through desktop research, literature review, online questionnaire and interview of SMEs of various industries from the partner countries, together with academic institutions on the topic of IM. It collected and assessed existing needs, practices and based on the insights the consortium has developed the methodology. The methodology and pedagogical approach are based on modern teaching methods (problem, project and inquired based learning provided through interactive e-learning platform combining Web 2.0, Web 3.0, etc) which has been performed by a team of academics in the two partner universities. The different types of activities such as peer-evaluation, 360 degree and student – teacher evaluation were previewed to serve as tools for evaluation of students' progress in theoretical and practical part of education.

The main goal to obtain the APIInno methodology was to meet the needs of *triangle higher education, research and industry*. The three directions in the methodology followed the development of:

- Soft skills - Team work, Leadership, Project management, Presentation skills
- Cognitive skills - Researching, Identifying, Developing, Evaluating, Analysing, Implementing an innovative solution
- Knowledge and understanding - Key features of success, Theoretical perspectives, methods and techniques of IM.

The APIInno team took into account the important sequence to identify the competences during the learning process [3]:

- before training they are objectives of learning
- during learning – the activity reference
- during assessment they are indicators of learning process
- after training – the learning outcomes – the building bricks of syllabus.

The synergy among triangle elements, their competencies and implementation provide the syllabus structure working on a real problems:

- ice breaking – the students play games in groups that are formed randomly. The games are selected to be identified the students' profiles as well as to get to know. At the end of first part the new groups are created according the students' profiles.
- theory – understanding, analysing the main terms and processes of the IM. At the end of this section, students receive the business case descriptions.
- solution – MSc students work with mentors under the case. During this period students have at least one meeting with the business to pinpoint the decision direction.



Considering the importance of the learning style, participants are asked to undertake psychometric assessment- Myers Briggs Typology Indicator®. This test helps identify the role students are most likely to take when working in a group and it has been selected because of its strong relationship between the Kolb's learning styles and Jung's psychological type [6]. This assessment is designed to help create balanced groups of different personalities, where each person's individual strengths can be utilized. There are a number of websites where the assessment can be performed online and for free and the test takes around 15 minutes: <http://www.truity.com/test/type-finder-research-edition>.

The APInno programme is designed to become part of any university curriculum as a course with relevant credits. Within the 180 hours of training it allows students to immerse themselves in real-world innovation projects and to get a head start on future career development before they graduate. It furthermore introduces the fundamentals needed for IM, so that in an engaging and playful way students familiarize with important theoretical concepts.

The proposed APInno methodology was tested at two Universities - The ULSIT of Sofia and at Middlesex University London.

Summary

The APInno methodology makes a triangle synergy between higher education, research and industry combining the ice breaking period with flipped learning and team working on real case.

Acknowledgement

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