APInno
Innovation management
METHODOLOGY

Contents

1   Course Overview

This training is developed under the project *APInno: Action Project for Innovation* Erasmus+ Project № 2014-1-BG01-KA203-001561.

APInno aims at fostering the collaboration between business and universities as one key issue to be targeted by developing an innovative approach and methodology for teaching one of the under-exploited concepts - Innovation Management (IM).

The 180 hours training course is organised in six training modules.

The course content is practical and grounded in the real world, not just academic theory. The program focuses on what happens before, during, and after delivering training, and what to do if training is not the right solution. The course is designed taking into account the high value of student engagement, expert facilitation, and application of new methods and techniques. The training course is aligned with the competencies required by the most successful practitioners.

Innovation and Innovation Management are related but distinct. This course focuses specifically on the concept of innovation management and in developing the skills and abilities of the participants around acting innovatively to solve problems within businesses. The aim is to explore and evaluate, across a range of contexts, innovation. To achieve these aims you will consider the application of theories, models, tools and techniques for engaging in innovation; conceptualize the processes and impact of innovation on a business and society level.

APInno is structured around practice-focused workshops, small group discussions, and self-directed learning. This will provide academic knowledge and practical skills that will equip students to evaluate and manage their own understanding of innovation as well as develop abilities to engage in behaviours that embrace innovation. This module requires a clear commitment from participation in classes, to work in collaboration with others, and to take the initiative with their learning. If students adopt this attitude, they should draw a great benefit from the content of the modules.

1.1   Areas of learning

The training will include the following areas of learning:

- Providing background knowledge relevant for the understanding of the innovation management.

- Gain a foundation in conducting the trends analysis.

- Applying knowledge and skills to develop and prioritise the business concepts.

- Learning to comprehend the market, offering, delivery, production and business model.

- Identify a range of innovation concepts that focus on opportunity and review the synthesised Business Opportunity Map;

1.2 Learning Process

The APInno aims at fostering the collaboration between business and universities as one key issue to be targeted by developing an innovative approach and methodology for teaching one of the under-exploited concepts - Innovation Management. The course does this by integrating theory and practice through a series of workshops. As participants develop their theoretical understanding of Innovation Management, they work on a real problem for a local business. While working on that problem they are supported by experienced business mentors.

The 180 hours training course is organised in six training modules. It is anticipated that this consists of 7 to 8 face to face sessions on 4 to 5 hours depending on the level of the participants and 145 and 152 hours of self-directed learning by the participants.

The course content is practical and grounded in the real world, not just academic theory. The program focuses on what happens before, during, and after delivering training, and what to do if training is not the right solution. The course is designed taking into account the high value of student engagement, expert facilitation, and application of new methods and techniques. The training course is aligned with the competencies required by the most successful practitioners.

While innovation and Innovation Management are related, they are distinct. The focus of this programme is on Innovation Management that is the enactment of activities that develop innovative solutions to problems.

- The learning process in these areas will be:

  o *Interactive*: involving the participants actively

  o *Practical*: applying theory to concrete situations, either through cases, role plays and exercises, or through analysing the processes within the group

- o *Participatory*: making the group itself a learning body and mobilising its self-organising capacities

- o *Elicitive*: drawing from the experience, knowledge and personal resources of participants

1.3 Training Methods

The traditional trainer-centred didactic approach was re-designed from a student-centred learning perspective which stresses on active, project-driven and project-based learning. The whole course and the modules have a flexible structure. The Web-based learning materials allow access to all modules, for reviewing some parts, to additional literature sources, examples etc. A flexible feedback is provided, in compliance of the planned - on the assignments and in group discussions, when learners need support they can send a request for feedback and when the tutor is available s/he can answer the learner question, council, help to solve problems etc. by e-mail. If an on-line support is needed the tutor determine an 'appointment' for distant discussion. Tutors (trainers) are supported by mentors who provide business point of view, external to the academic environment.

In the individual tasks learners receive instructions to follow an action sequence or solve a problem/challenge provided by existing business or another organisation. The problem definition gives the learner high degree of freedom. It is used to exercise or assess the learner's knowledge. It has greater practical value if the learner is monitored during execution of the task (by tutor, peer or computer system). This monitoring allows for feedback and guidance in problem or special situations. Thus the learner is guided through the problem, given appraisal and/or critics or misconceptions are clarified. In the course modules the problem tasks refer to the analysis of simulation results and making decisions.

- Teaching strategy

    - o Games, energisers, ice-breakers
    - o Workshops
    - o Self-directed learning
    - o Individual work and group discussions
    - o Personal and group reflection, sharing of experiences
    - o Cases
    - o Role plays exercises

- Learning strategy

- o Flap learning
- o Learning by doing:
  - problem-based learning
  - inquired-based learning
  - competence-based learning
- o Self-directed learning
- o Experiential and action learning

1.3.1 Project-driven team learning

The approach adopted here sought to enhance the role of project-driven learning. The innovation here is that besides the traditional individual project work, collaborative learning is introduced for students to tackle complex problems in groups rather than individually. Developments in innovation have shown that projects in the field are so complex that team work is essential.

With the planned team work on the projects an attempt to design a group centered learning is made. It focuses on joint responsibility, information sharing and discussion.

The learning situation is based upon giving the teams extended tasks to work on. Each team consists of four persons as a minimum lead by a team leader. This organization is aimed at improvement of communication and interpersonal skills of students. The teams will be provided with the information needed in multiple forms: 1) Moodle platform 2) workbooks, 3) internet and 4) videos and other supporting materials. The learning contexts and organizational settings within the learning environment provides opportunities for:

- small groups executing a specific task as a workshop, assignment, project

- discussion groups with peer students

- tele-assistance of the tutor during task execution and/or exploration

- detailed advice by contacting the experts – mentors and the challenger.

1.3.2 Media choice

Based on the analysis so far and on the hybrid model of the course organisation, at the first choice of media could be proposed:

- computer and telecommunication software

- web-based multimedia learning materials

- video

- print

- visuals (schematics, graphics, charts, diagrams)
- "offsite expeditions"- visits to challenger's premises (office)

1.3.3   Planning the project

Human and material resources necessary for the course modules development are defined in the project documents. Considering the project Inception report and the instructional design results the following resources could be defined:

- learning activities: self-learning, group-discussions, lectures and practice, group projects development;
- instructors: lecturer and mentor;
- space/rooms for games and group work
- media as defined in the previous section;
- written materials;
- Moodle platform with the respective materials for each training module and stage
- development time: two months.

Running a programme like this requires a lot of effort, time and resources. The key preparatory actions are related to the recruitment of the key participants in the programme:

- Recruiting Participants
- Recruiting Mentors
- Recruiting Business Owners/Managers - Challengers

1.4   Course objectives

The overall objectives of this training are:

- to define the innovation management
- to develop student capability to identify business concepts
- to analyse the business trends
- to create the Business opportunity map

The specific objectives of the course are to enable students to:

- work in team on the certain case

- clear presentation of the business idea as short as possible

1.5   Target Group

The course is oriented to the Bachelor (in last level) or Master students.

1.6   Course Outcome

Upon completion of the course, trainees will be prepared to manage the business innovation process:

- Strategy and Goals
- Business Opportunity Map
- Business concepts
- Business model

At the conclusion of this training, the student should have:

- Working understanding of innovation management concepts
- In-depth understanding of innovation processes and available models
- Knowledge of available tools, techniques, document templates and approaches to innovation management

Figure 1 APInno collaboration model

APInno objectives -> How to Achieve
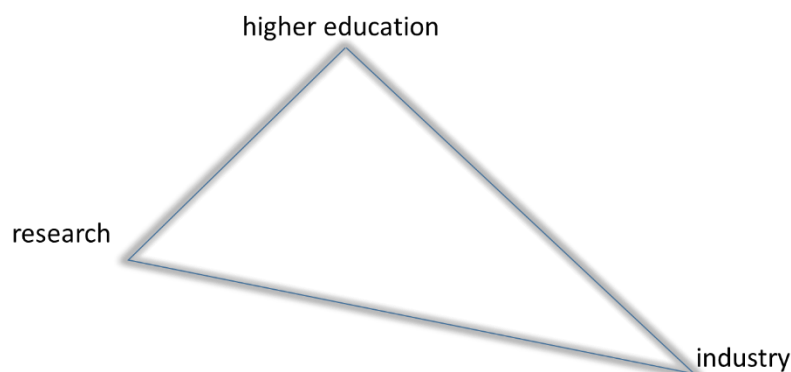
One key aspect of APInno and achieving its objectives is the triple helix collaboration – Higher Education Institutions (HEIs), research organisations, business.

The overall strategy is student centred built around the needs of various businesses. A series of workshops provide students with a framework of theories, ideas, notions and concepts to build understanding. The students then interact with businesses to develop new ways of doing things within that business that are theoretically sound. In the process students are expected to question the veracity and value of the theories as they try to put them into practice.

Three key roles are involved in the process - trainer, mentor (external non-academic expert), business representative - challenger. Thus, there are four groups of people each with a different role who participate in and contribute to the programme:

- *Trainer:* The trainer facilities the learning around the various theories, concepts and notions that are Innovation Management

- *Participants:* The participants engage in the learning processes with the intention of developing their Innovation Management skills

- *Mentors:* The mentors provide support to the participants and reinforce the theoretical learning in practice as the participants seek to solve a business problem

- *Business owners:* The business owners are local business owners who have an unsolved real problem within their business and are looking or a solution.

1.7 Teaching and Learning Strategy

The overall strategy is student centred built around the needs of various businesses. A series of workshops provide students with a framework of theories, ideas, notions and concepts to build understanding. The students then interact with businesses to develop new ways of doing things within that business that are theoretically sound. In the process students are expected to question the veracity and value of the theories as they try to put them into practice.

Figure 2 *Teaching and learning strategy*

Expertise

Theory

Practise

Figure 3 APInno methodology
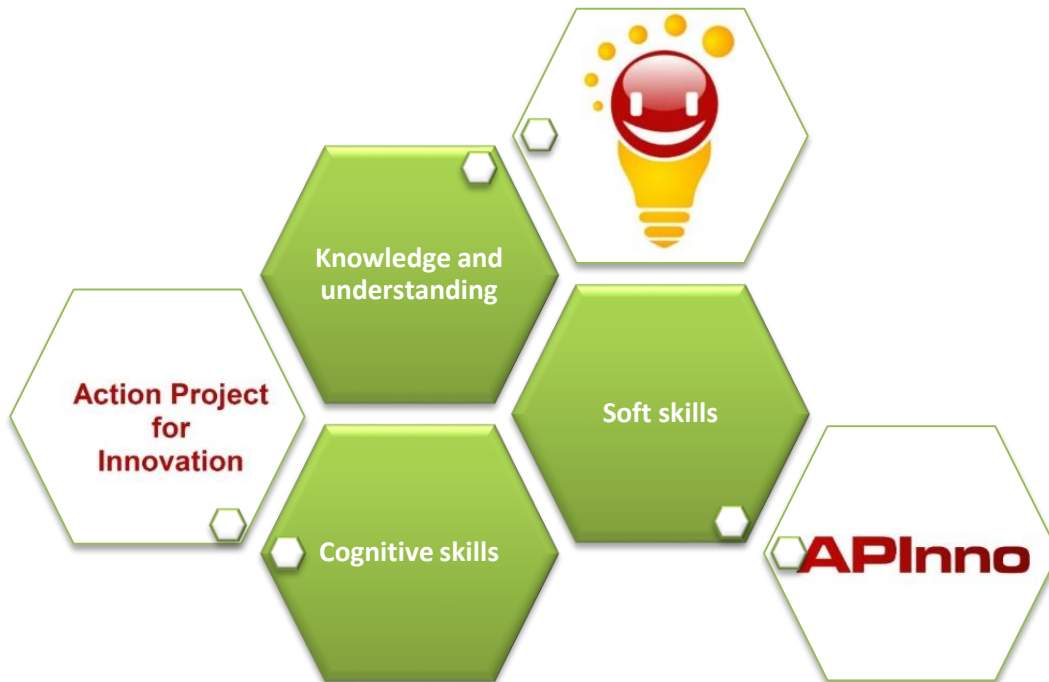
- Knowledge and understanding of:
 - Theoretical perspectives, methods and techniques of innovation management;
  - Key features of success when developing an innovation strategy;
  - Financial and risk assessments of an innovation strategy;

- Cognitive skills in being able to:
  - Researching and developing an innovative solution to a problem;
  - Evaluate the relevant skills needed to manage innovation at a variety of levels;
  - Identify and evaluate elements of an innovation strategy;
  - Analyse and synthesis information from multiple sources to reach justifiable conclusions;
  - Use conceptual skills to create and implement decisions;

- Soft skills
  - Project management;
  - Critical components of the process;
  - Preparing a basic project management chart;
  - Leading a project that develops innovative solutions to problems;

o Leadership;
o Team work;
o Communicating with others;
o Negotiating and Conflict resolution in a team setting while under pressure.

Figure 4 APInno methodology
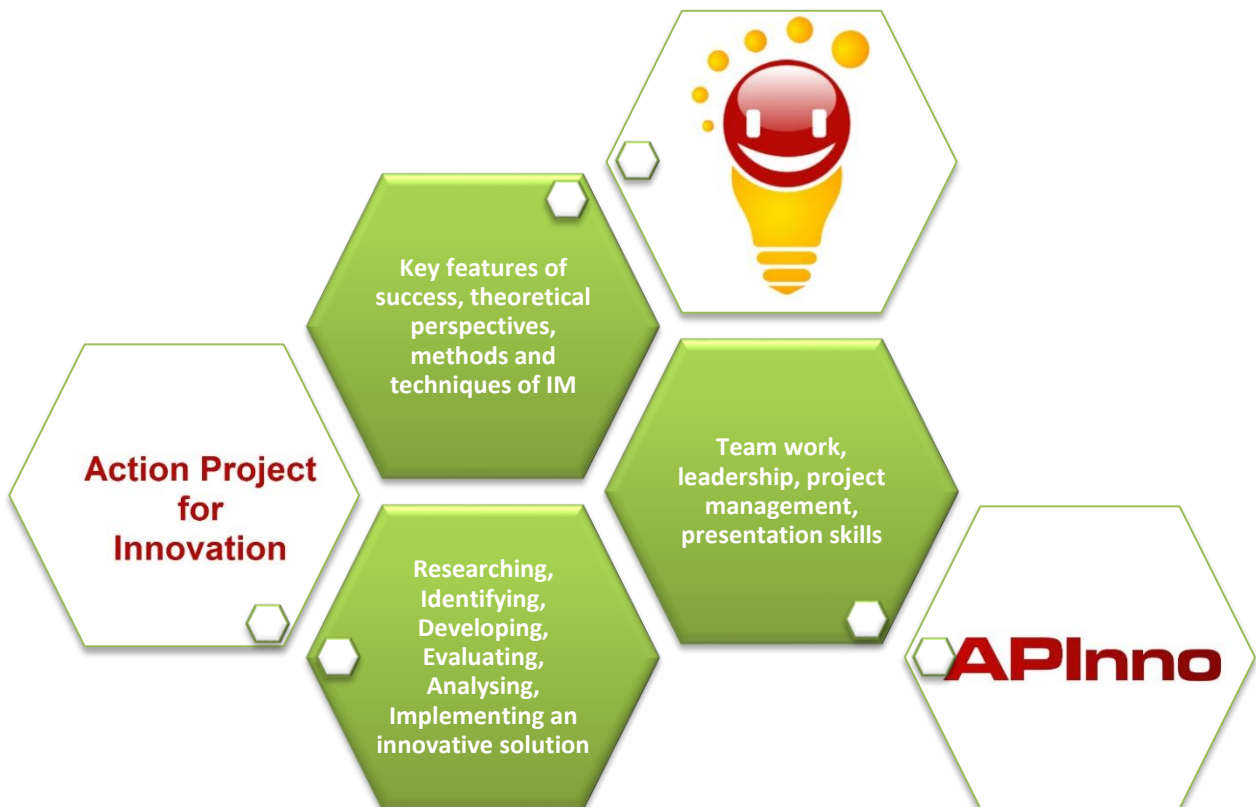
1.8 Learning Outcomes

Knowledge (K)

On completion of this module the successful student will be able to:

1. Demonstrate an understanding of the complexity of innovation and the links between a business strategy and the development of new products, services or processes;
2. Evaluate the factors that facilitate and add or hinder value creation and value appropriation from innovation;
3. Assess and critically evaluate current trends in implementing an innovation strategy within a business

Skills (S)

This course will call for the successful student to:

4. Exercise reasonable judgement in using the appropriate analytical tools to solve innovation related problems for a small business;
5. Synthesis information from different sources to make informed innovation related decisions within a business;

Employability

This course provides students with the skills and knowledge to apply theory in a practical situation. Most of the workshop content gives the understanding of factors involved in developing businesses. The activities and exercises will give an understanding of the need to solve problems and the cost of not solving those problems. Students interact with each other and this will improve their communication skills and ability to work with others while under pressure. As many of the activities require solving problems students will develop critical thinking skills. All of the employability outcomes meet recognised employability skills – analytical skills, critical thinking, creativity, etc.

Top 10 skills

in 2020	in 2015
1. Complex Problem Solving	1. Complex Problem Solving
2. Critical Thinking	2. Coordinating with Others
3. Creativity	3. People Management
4. People Management	4. Critical Thinking
5. Coordinating with Others	5. Negotiation
6. Emotional Intelligence	6. Quality Control
7. Judgment and Decision Making	7. Service Orientation
8. Service Orientation	8. Judgment and Decision Making
9. Negotiation	9. Active Listening
10. Cognitive Flexibility	10. Creativity
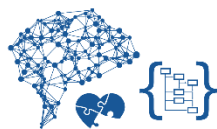
1.9 Course topics (modules):

The key elements of content in this course will include but not be limited to the following content:

- Innovation significance and definitions

- Innovation process

- Innovation culture and discipline

- Problem solving tools

- Innovation capabilities

- Implementing innovation

- Soft skills such as working in groups and making presentations

The course modules have been arranged as follows:

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[1]The Future of jobs, World Economic Forum report, http://reports.weforum.org/future-of-jobs-2016/

Figure 6 APInno course structure

READY...	STEADY...		INNOVATE!
Break the ice / Introduction	Preparation / Ideation	Consolidation	Implementation
Games Exercises Case studies	Theory Case studies Exercises Templates		Business model Action plan

Stage 1 READY

Module1: Break the ice

Module 2: Introduction

Stage 2 STEADY

Module 3: Preparation

Module 4: Ideation

Module 5: Consolidation

Stage 3 INNOVATE

Module 6: Implementation

By the end of this course the student should demonstrate the ability to:

Objectives (SKILLS)	Teaching method or student activity	Evaluation or feedback
1. Apply the systematic approach in the project design	Assigned reading, group discussions, projects	Feedback by other students and tutors, informative assessment of the project report and informative comment on performance in the presentations
2. Select and use a set of tools and techniques for the development and management of the innovation project	Individual and group projects	Informative comment on performance in real environement, informative assessment of the project
3. Provide a path for the	Study of both good	Feedback by other students and tutors in

Objectives (SKILLS)	Teaching method or student activity	Evaluation or feedback
individual to seek self-improvement in her/his experience	and poor performance (through recognising where mistakes were made and avoiding these in future) in group discussions, practicals and collaborative projects	group discussions and collaborative projects, informative comment on performance
4. Plan and perform presentations in real business environment	Individual and group work, practicals, simulations	Feedback on performance and practicals, informative assessment of project reports
5. Analyse the collected data and analyse to generate insights and results using various techniques and tools	Individual and group projects, practicals, simulations	Feedback on performance and practicals, informative assessment of project reports
6. Express clearly and persuasively, make independent judgments	Effective argument in discussion groups and collaborative projects	Feedback by other students and tutors, 'compare and contrast' questions in examinations; evaluation of arguments
7. Demonstrate ability of keeping up to time limitations and within the project scope	Regular meetings and planning activities to monitor progress. The team leader is key player in this process. S/he works closely with the team mentor.	Informative comment on performance presented in the final evaluation report of the course
8. Collaborate effectively with others in a team	Joint projects, role-playing, group discussion to give insight into interactions, group experiments	Evaluation of students behaviours in a group by tutors and other students

1.10 Assessment

At the end of the training course the participants receive a certificate ("has successfully participated"). Monitoring and evaluation of the course is organised in the following way:

- Regular assessment by trainer/training team and participants during and at the end of each training module/training day

- Written evaluation by the participants at the end of the course.

Assessment is done three-fold:

- By mentors – 60%

- By the company representative – 25%

- By peers – 15%

1.11 Delivery method

The training course is organized as a face-to-face on-site workshop combined with e-learning support (option). The training course combines face-to-face- training sessions with on-line knowledge building and assessments, self-help and guided study. Blended learning is ideal for learners who need greater flexibility in their studies. It combines the convenience of home study with the ability to learn directly from trainers and interact with peers.

2 Short description of each module

2.1 Module 1: Ice breaking

Learning objectives

- to introduce the students
- to identify student profile

2.2 Module 2: Introduction

Learning objectives

- define the main terms related to the Innovation management

2.3 Module 3: Preparation

Learning objectives

- Coordinate where it should or should not innovate
- Define growth goals
- Determine the extent and type of innovation – innovation portfolio
- Determine the investment profile - the risk level and the time interval

2.4 Module 4: Ideation

Learning objectives

- create a field for idea generation - by using the innovation imperative
- consider the ideas from different perspectives
- analyse potential problems and offer creative solutions
- create Business Opportunity Map (BOM)

2.5 Module 5: Consolidation

Learning objectives

- generate range of business concepts

- prioritise and select the best concepts to recommend

- conduct some initial due diligence to validate the priority concept

2.6 Module 6: Implementation

Learning objectives

- create a business model and plan which clearly summarises the business concept

- propose an Action Plan for the concept implementation

- propose alternative solutions

- conduct further research

- prepare innovation pipeline with alternative solutions

***Figure 7** Relationship objectives-outcomes*

Learning Objectives -> Learning Outcomes
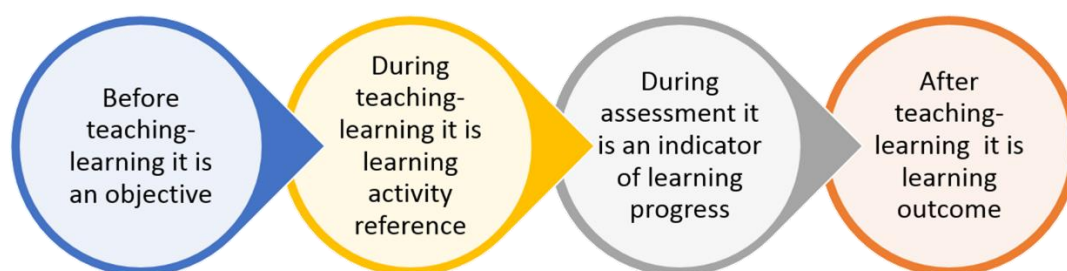
3 Learning methodology

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". There is a special session focused on the MBTI typology tests the students make, and group discussion on valuing the differences. 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* –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.

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

- **Ready** – "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.

- **Steady** – understanding, analysing the main terms and processes of the IM. At the end of this section, students receive the business case descriptions.

- **Innovate** – finding solutions to real innovation cases – 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.

4 Organisation and instructional strategies

The course design is done taking into consideration the solutions suggested in the needs analysis and following tasks analysis:

- Project-driven learning with real work on existing business challenge and simulations in a virtual environment with professional tools to fill in certain 'gaps' in from the high level of abstraction in the learning content;

- Multimedia and digital tools as the most appropriate tool for increased motivation and efficiency of learning.

A systematic approach to course design in terms of setting educational aims and objectives, selecting content, learning methods and media, and implementing assessment procedures was adopted and used.

The re-design of the learning process was a key element for implementing the change from trainer-centred to student-centred perspective and a good opportunity for smooth introduction of the advanced learning technologies.

The concept of usability is especially important for new models and methodologies for education and training. In this respect, new element could be the feedback and evaluation of the course in terms of usability and including some activities with the involvement of students as well. These activities are: direct and distance (through application sharing) observation, interviews with the learners and tutors, questionnaire on usability and learners' attitudes, knowledge tests and learners' performance on projects development assessment (small group test).

- accuracy of content

- proper sequence regarding prerequisites

- current, up-to-date information

- appropriate use of media

- effectiveness of visuals

- gamification

- students-business interactions

- tutors' role of "supporter" and facilitator.

5 Instructional management plan

All learners work in groups of three to five people and each module is based on the development of a real solution to existing business problem in the field of growth and innovation.

The course is 180 learning hours. It consists of web-based tutorial materials, including glossary, remote access to the Moodle platform, which provides the distance course delivery environment. By the end of each module the teams should present the results of their work on the assignments and the intermediate results to their trainers and mentors. One mentor supervises one group of learners. The main trainer (tutor) teaches all groups in common sessions. All groups compete with the others, starting in module 3 Preparation. The total 180 hours are divided as follows: 60 hours theory, 120 hours practical work. It is anticipated that this consists of 7 to 8 face to face sessions on 4 to 5 hours depending on the level of the participants and 145 and 152 hours of self-directed learning by the participants.

The first two modules require more intensive interactions and sessions together with the trainer. In the first module "Break the ice" the groups are formed. Two trainers could split the work and teach the course depending on the entry level of learner's knowledge and experience. The course is designed to provide flexibility and interchangeability in the teaching process.

The "work" in the online systems is learning. Learning requires cognitive processing, and any cognitive processing that must be devoted to learning or remembering the user interface for a interactive multimedia product decreases the amount of cognitive processing available for learning the knowledge, skills and attitudes encompassed in the product[2].

The teacher is "used" as the primary method for delivery of instruction in both, the lecture and practice but his role in the latter is more managing and monitoring the learning (practice) process. The role of the instructor in APInno is to organize the practice, monitor the performance and provide feed-back, and demonstration, if needed.

We recommend a minimum of 12 participants. This will enable to have at least 3 groups of 4 participants to work on producing a solution to the business problem. We would expect a maximum of 32 participants to form 8 groups of 4. You can vary the size of the groups, but ideally they should be between 4 and 5.

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[2] Collis B., "Tele-learning in a Digital World. The future of Distance learning", International Tomson Computer Press, London, U.K, 1996

The final results could be kept in electronic portfolio (each group of student works on their own directory).

Problems concerning learning style, equipment or instruction should be discussed immediately in the teaching team.

6 Assessment plan

Assessment of this programme is formative and you may apply to one of the providers to discuss the possibility of the programme being credited for your participants. It could be provided either as 180-hour, 6 ECTS credits or alternative you can use the materials and adjust them to meet your organisations accreditation process and provide respective credit to the participants. You should provide the participants with a "Certificate of Participation" on completion of the programme. We recommend that you only award this certificate to participants who have an attendance record of 80% and have completed all the formative assessments.

Specific formative assessments are built into the learning process and are explained in the chapters on the content. There is a final formative assessment which takes the form of a presentation to the business owner. All the formative assessments can be adapted as summative assessments. It is also a good idea to assess the level of interest from mentors and business owners (managers) as they also play a significant role in the programme. This can be done by sending out a request for expression of interest, or approach local business owners to see if they are willing to participate.