

MODERN LEARNING SYSTEM AND IMPROVED CURRICULA FOR EDUCATION MANAGEMENT IN LIFE SCIENCES, TO PROMOTE BUSINESS ENHANCEMENT

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Abstract

Due to the increasingly ageing population and the demand for improved quality of life, the life sciences sector has strong growth potential (8.3% growth in 2007), the sustainable development applications being of utmost interest. But most of the countries recently entered the European Union, with real academic base in Life Sciences, and with an important request towards business of added value, lack of competences and skills to develop innovative companies in the domain. The situation in Romania was identified by the analyses did by the Romanian Society of Bioengineering and Biotechnology and compared with other EU countries, members of the European Federation of Biotechnology. The project will develop learning curricula and contents to be delivered to target-group by blended learning in order to provide training in business enhancement in life sciences for sustainable development applications. Two products from these foreign partners will be transferred, by integrating them, but also by adapting to an economic sector of interest and by introducing modern blended learning systems, and by increasing the value with a new specific content dedicated to sustainable life sciences applications. The enterprise business in life sciences module will complementary treat the Intellectual Property issues. The impact will be on 3 levels: (1) short term: acknowledge the key competences and skills needed to develop business in sustainable development applications of life sciences and develop blended learning by testing the training on a representative selection of persons from the target group; (2) medium term: formation in the involved countries and at EU level of a general vision about the training in the field of interest as products and methodologies; (3) long term: at EU level introduction into educational and vocational systems of advanced and coherent learning tools to enhance the needed competences.

Keywords: business enhancement, life sciences, modern learning system.

INTRODUCTION

Enhancing creativity and innovation, including entrepreneurship, in education and training is a long-term objective for Education and Training 2020, the strategic framework for European cooperation. Entrepreneurship education is being increasingly promoted in EU countries, according to a new report published by the European Commission in 2012: Entrepreneurship Education at School in Europe. But a lot of work is still on demand

regarding the implementation of curricula in the education system from each EU countries entrepreneurship in practice, by means of practical projects and activities (documents 1-7 to references). Curricula for schools at all levels should explicitly include entrepreneurship as an objective of education, accompanied by implementation guidelines (documents 8-10 to references). There are many issues to be done regarding the entrepreneurship education and training. Blended learning is such an innovative issue,

which combines face-to-face interaction such as in-class discussions, active group work, and live lectures with typically web-based educational technologies such as online course. Other major limitations to be solved: (a) lack of a systemic vision needed to elaborate consistent pedagogical curricula and materials and to coherently implement them and (b) low level of financial support needed to organize practical real learning situations (learning by doing is compulsory). But if it is to ask for specific entrepreneurship education/training in such a complex and difficult economic domain (Life sciences technologies) the answer is the very rare and insufficient pedagogical initiatives and materials. Usefulness the blended learning model combining the three modes is due to the acquisition of knowledge in order to:

- 1) achievement of learning modules which students are taught to create and run businesses;
- 2) transfer learning model developed at the School of Economics in Helsinki, Finland.

MATERIALS AND METHODS

A matrix of key competences in training will be defined to be used to train young specialists in entrepreneurship in Life sciences business linked to sustainable development.

These competences formation, still a very rare training tool in an economic sector of increased complexity, will contribute to the growth of the number of innovative SMEs in the target domain.

The work program is based on several methodological approaches; c) Some of the competences can be developed based on natural aptitudes, so it is to introduce specific pedagogical methods needed to test the inborn aptitudes and further on pedagogical practical methods to enhance them. Beside the transfer of theoretical knowledge the most important principle to be applied in training will be “learning by doing”. It means that a lot of scenarios will be envisaged to increase each learner degree of autonomous thinking, initiative and participation. Such almost “real situations” will be dedicated to elaborate projects, financial plans, Business plans, to

simulate how to start a business, projects implementation, to simulate negotiation situations or partnership creation/business networking. Another pedagogical principle to be applied is to give the target group the choice between two types of learning: face to face learning with direct involvement, but also requiring more free time; e-learning system with an increase level of autonomy, when the free time is scarce and more self-learning is preferred. The pilot testing of the learning products and methodologies will integrate and apply all these principles, but evaluation by applications and measurement of satisfaction level function of tested didactical approach will guided the fine tuning decisions, meaning the final choice of methodology and the distribution / weight of each alternative procedure.

Blending learning approach on specific entrepreneurial training in life sciences bring: 1) an optional module called the "market research" which in this case translates to promote to market products /technologies from research through start-up companies or spin-off; 2) value added as blended learning modules will be modified during the project to the needs of the target group, depending on the specific issues based on knowledge and understanding of the results of the life sciences and business environment of specific elements, with direct reference to placing on the market of a result obtained in Scientific research.

The project is addressed to comprehensive target group of people in need of developing competences in Entrepreneurship for a specific, complex, and involving high scientific and technical knowledge economic sector: sustainable development applications bio economy.

The target group comprises:

- 1) young entrepreneurs involved in life sciences business and interested in promoting sustainable development applications;
- 2) scientists preparing to pass from the research field to the business sector by developing start-up companies;
- 3) educators involved in teaching entrepreneurship and sustainable development applied to life sciences.

RESULTS AND DISCUSSIONS

The focus is towards the following main competences and skills: (1) Achieving orientation determined by: Opportunity Seeking and Initiative, Risk Taking, Demand for Efficiency and Quality, Persistence, Commitment to the Work Contract. (2) Planning orientation determined by Information Seeking, Goal setting, Systematic Planning and Monitoring. (3) Power orientation determined by: Persuasion and Networking, Independence and self-confidence. The project is based upon the results and innovative content developed in 2 Leonardo da Vinci projects COMPARES and ReMark (documents 9-10 to references). The learning units to be transferred from project COMPARES are developed in accordance with the prerequisite to capitalize on the value of each experience, comparison, sharing and transfer of knowledge and good practice through training. The 4 learning units chosen for the transfer provide the necessary methodological skills to carry out activities and projects based on the idea of a network and mutual learning, as well as deepen, from an operational dimension, the methodology of networking. Besides the definition of tools and methods to enable the network, they describe the approaches, languages, business cultures of the various target group members involved. The main aim of the ReMark project was to adapt an entrepreneurship e-learning package to the needs of potential knowledge-based entrepreneurs. This e-learning package will be transferred to fill in the gap in the entrepreneurial training addressing the group of potential entrepreneurs that are likely to develop high value-added, knowledge and new technology based business. The products chosen to be transferred offer the basic formation in several directions of interest aimed for BELA project: learning content and methodologies to develop networking and partnerships beside the information regarding the community specific needs for sustainable development; e-learning package regarding entrepreneurship competences formation to pass from applied research to market; methodology to develop a e-learning platform

and to realize the virtual learning fine tuning; access to the pool of competences features from a country with well organized and numerous innovative SMEs in Life sciences (France) by comparison with the pool of competences from Lithuania, more developed in the economic sector than us; opportunity to realize a synthesis and integrated training contents and methodologies able to respond to both deeper and larger demand and adapted to a high knowledge economic sector. To realize new innovative training content and procedures the activities will be done in several directions: (1) determination of the needed competences and skills characteristic for the chosen economic sector based on elaborated survey in the involved countries; (2) analysis and synthesis of the survey results to build BELA competences matrix; (3) integration, adaptation and introduction of new specific knowledge to elaborate the proposed new curricula and contents; (4) integration of the learning methods to build a blended learning system; (5) introduction of a general vision needed to gain the European dimension. The project will bring high added value due to the following reasons: (1) the learning products are prepared for a new multidisciplinary and highly complex economic domain-Life sciences technology; (2) the learning products will have a deeper European dimension due to the choice of 3 countries with high, medium and low level of development of bio industrial SMEs; (3) there will be a learning module dedicated to sustainable development Life sciences technology, the now-a-day direction of interest; (4) the entrepreneurship competences formation will also treat the Intellectual properties issues of great importance in Life sciences business; (5) BELA will offer blended learning ready to be used by a larger group of people.

CONCLUSIONS

The implementation of the proposal at a European level brings more benefits than at national or regional levels due to the more reasons:

- the contributions of 3 on purpose chosen partners from representative European

geographical areas, if one considers the criteria imposed by the issues to be solved will give more added value than the possible contributions of regional or national partnerships;

- the realization of a matrix of competences in entrepreneurship with a larger European significance is in line with the actual EU Commission politics in this domain, based on the idea to create a common European area, where the human and economic development is well balanced.

Due to the network of stakeholders and target group people to be created to disseminate and exploit the project results and products the European dimension will increase and will contribute to enhance the quality of vocational training in the field of interest.

By using the network the idea that the general European issues need new advanced solutions will be emphasized.

The project done in a European environment will bring attention and try to demonstrate that only a general approach regarding the entrepreneurship competences formation is not enough, especially when the economic domain is complex and has big specificities, as it is the case with the bio industrial sector, more sensitive to crisis than others.

The general pool of competences is also valid in this case, but there are specific competences and the general ones have also particular importance, so the learning by doing and the case studies must be in line with this pattern.

Increased offer of learning products and methods will determine the overall improvement in the quality of vocational training system in Europe.

National education system and vocational training in this field of interest need expertise gained from the European countries with longer development paths to speed up our economic evolution.

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