

TEMPUS CASA PROJECT – A SUSTAINABLE TOOL FOR KNOWLEDGE AND INNOVATION TRANSFER IN ANIMAL SCIENCES

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Abstract

Although regulated by law and other policies knowledge transfer in animal sciences (zootechnics) is rather limited after students' graduation from the Faculty of Agriculture. There is a lack of courses for professional development of teachers from agricultural middle schools, including those teaching subjects in animal sciences. There is as well a need of permanent improvement and upgrading of courses and trainings created for advisors in agricultural advisory services. The TEMPUS CaSA project objective is to contribute to the improvement of agricultural education to meet the needs of Serbian society. CaSA foresees: upgrading quality and availability of vocational agricultural education by strengthening professional and pedagogical competences of educators (University teachers, secondary school teachers, advisors) and creation of the repository for courses and additional contents important for agricultural education. Improvement of agricultural education will be achieved by introducing trainings in active teaching learning (ATL), communication skills, e-learning, together with newest knowledge emerging from research activities incorporated in vocational courses. Creation of the National Repository for Agricultural Education (NaRA), will enable networking of all stakeholders in agricultural education and assure sustainability. In addition, among 13 project partners, the Ministry of education is a compulsory partner for Structural Measures TEMPUS projects. This is important for recognition of the National repository by relevant state authorities. Online courses and teaching material, live stream trainings, results from the research projects, and different data bases will be available in NaRA after project life-time.

Key words: *EU TEMPUS project, agricultural knowledge transfer, innovation, NaRA*

Introduction

Most of the jobs in modern agricultural production permanently need acquiring additional knowledge regardless of the period passed from graduation. Besides research carried out in scientific institutions (Universities, research institutes) occupations that need constant knowledge update are primarily teaching and advising. University teachers, together with teachers in middle agricultural schools and advisors employed in extension (advisory) services are the fundament of agricultural education in all areas of Serbian agriculture, including animal sciences. Knowledge upgrade is compulsory for all the three pillars of Serbian agricultural education: university teachers, secondary school teachers, and advisors. They are thus part of the lifelong learning (LLL) process.

Continuous professional development of agricultural middle school (AMS) teachers is defined by the “Law on basis of education system”, article 129 (Official Gazette of the Republic of Serbia, no. 55/2013). According to the law, continuous professional education of teachers is compulsory. It can be provided by different organizations: NGOs, schools, faculties, registered agencies, and Centers for professional development established by local authorities; financed by the Ministry of Education and/or projects funded by EU or other international organization (Popovic, 2013). However, the choice of programs for continuous professional development is made rather inconsistently than according to the established education policy; it is based on the offer of courses, not on the need analysis (Pesikan et al., 2010a). In addition, there is discrepancy between programs and practices in a sense of huge differences between courses in: training type, trainers’ competences, training duration, content, and evaluation, as well as monitoring of training effects in classes (Pesikan et al., 2010b).

Knowledge upgrade in advisory service seems better organized: agricultural Farm Advisory System (FAS) in Serbia is entrusted to the Institute for Science Application in Agriculture, Belgrade. The Institute is a coordinating institution in charge of Education of advisors. The legal basis for advisory system is “Law on performing advisory and expert operations in agriculture” (Official Gazette of Republic of Serbia No. 30/10 from 7.5.2010). The Ministry of Agriculture, Forestry and Water Management (MAFWM) issue a Decree on Determining Annual Program on Advisory work Development in Agriculture, for the current year and announces a Competition for the 31 centers (funded by the Government) and 3 private advisory services to apply for the funds provided by the Ministry. According to law provisions MAFWM is in charge for FAS organization, work and performance.

When animal sciences are considered, as an example the accredited Zootechnics curriculum of the University of Belgrade completely lacks pedagogical courses and has only one course for development of some academic skills such as writing and presentation of papers. Also, there is an absolute lack of courses for knowledge refreshment of teachers of middle agricultural schools teaching subjects linked to animal sciences. Table 1 represents an overview of accredited courses for AMS teachers since 2006/07. In the newly published Catalogue for 2014/2015 and 2015/2016 courses offered to teachers of middle agricultural schools are extremely rare: only 3 courses, out of 868 accredited courses could be connected with agricultural practice. In the earlier catalogues from the total number of 1002 courses accredited for professional development of teachers only 12 courses offered were somehow linked to agriculture (7/12 for AMS teachers), while not a single one was devoted to zootechnics, except “Animal welfare and us” a course given by an NGO for animal protection. Among these courses that could be taken by agricultural middle school professors, only 1/12 is offered by the Faculty of Agriculture University of Novi Sad (<http://katalog.zuov.rs/>).

This actual situation clearly indicates that courses for teachers of secondary school level are an absolute necessity and that animal science professionals must urgently find a way to support people working outside the University, educated by the University, to ensure LLL possibilities to our colleagues responsible for the education of agricultural animal producers and teachers in secondary education level.

When it comes to advisors, in Serbia, from 2010, every year all advisors have education in three areas: knowledge widening, knowledge upgrade, and knowledge application. In addition, specific workshops are organized in all areas of agriculture during the Annual seminar.

Table 1. Accredited courses for teachers of AMS from 2006/07 to 2014/16

School year	Number of courses available to AMS teachers	Number of courses available to teachers of zootechnics courses	Accredited courses offered by faculties of Agriculture
2006/07	0	0	0
2007/08	0	0	0
2008/09	15	3	0
2009/10	4	1	1
2010/11	7	2	1
2011/12	6	0	1
2012/14	7	1*	1
2014/16	3	0	0

* part of 1 course

The aim of this contribution is to describe the obtained TEMPUS project and its role in reinforcing knowledge transfers in agricultural, including animal sciences.

Needs of Serbian society - the idea of the TEMPUS project

Starting from the idea that 3 basic pillars of agricultural education: Universities, secondary agricultural schools and advisory services, need mechanisms of LLL implemented, and that such mechanisms are not fully established in Serbia, the Faculty of Agriculture University of Belgrade and the Faculty of Agriculture University of Novi Sad have decided to prepare a TEMPUS project, in the frame of the TEMPUS action HE and society. These two faculties together were participants in a number of previous TEMPUS projects; first was a project that facilitated the reform process according to the principles of Bologna declaration, and their common efforts contributed to reformed agricultural curricula (Poleksic et al., 2004; 2006). During project preparations following challenges for the Serbian agricultural education were identified: a lack of pedagogical education for students of faculties of agriculture during their graduate courses Students that continue their carrier in education, as teachers in secondary schools or university teachers, lack any formal pedagogical education; there is also a need for young university teachers to learn academic skills such as writing project proposals, preparing project budget, presenting project results, writing scientific papers, etc; secondary school teachers and agronomy experts from advisory services need in-service training. In addition, advisors working directly with farmers need some skills development such as modern means of communication and preparing project proposals to be able to apply for funds available for Serbian producers and companies. In conclusion, all the mentioned holders of agricultural education have an obligation to upgrade their professional knowledge, but they also need development of skills their profession requires.

The project idea originated from a general need of the Serbian Society to reinforce agricultural practice, to apply newly generated scientific knowledge, and modern production and processing practices. In addition, agricultural education has to inform and educate the public including raising public awareness about agricultural development, issues such as ecological agriculture, organic production, GMO, and other important issues. The project proposal fits into the Strategy for Education Development of the Republic of Serbia until 2020 (Strategy of Education Development in Serbia to 2020+, 2012). Teachers' education and teachers as key factor of education development are particularly addressed in the Strategy. These should be achieved by: development of in-

service teachers training to improve teachers' competences for encouraging students' creativity, innovation and entrepreneurship; training of all teachers to use ICT in teaching; and implementation of methods of ATL.

Areas of specific interest: development of LLL in the society at large, cooperation with other education levels and development of human resources are national priorities defined that the CaSA project proposal intended to deal with.

The proposal was successful, and a project "Building capacity of Serbian Agricultural Education to link with Society, CaSA" 544072-TEMPUS-1-2013-1-RS-TEMPUS-SMHES officially started in January 2014.

CaSA outline

Building capacity of Serbian Agricultural Education to link with Society is a 3 year (December 2013 – November 2016) national project. CaSA belongs to the TEMPUS sub-program Structural measures and the Action Higher education and society. Its objectives are: to improve quality and availability of vocational agricultural education; to strengthen competences of educators; to create a National Repository for Agricultural Education (NaRA).

Partners contributing to the project are the main national "players" in agricultural education. There are 10 Serbian and 3 EU partner institutions: 5 Agricultural faculties from: Universities of Belgrade, Novi Sad, Kragujevac, State University of Novi Pazar, and private University EDUCONS; Association of Agricultural Middle School in the area of agriculture, food processing and food production; Institute for Science Application in Agriculture responsible for in-service training of agricultural advisors; two NGO training organization (Education Forum and Balkan Security Network); and the Ministry of Education, Science and Technological Development of the Republic of Serbia, compulsory partner for Structural measures projects. According to TEMPUS rules, three EU partner Universities have to be members of the consortium: Banat University of Agricultural Sciences and Veterinary Medicine, Timisoara, Romania; University of Maribor, Slovenia and University Foggia, Italia.

All CaSA project activities are grouped into 11 work packages:

1. Creation of the Repository,
2. Assuring infrastructural support for NaRA functioning /Development of resources,
3. Improvement of competences of university teachers,
4. Modernization of teaching contents,
5. Improvement of competences of Agricultural Middle Schools teachers,
6. Improvement of competences of experts in extension services,
7. Pilot implementation of vocational courses,
8. Quality assurance control of project activities,
9. Dissemination of project results,
10. Exploitation of project results, and
11. Project Management.

Creation of NaRA, National Repository for Agricultural Education will be one of the principal achievements of the project. NaRA will be available as an electronic platform. It

should enable sustainability of the project and association of stakeholders involved in agricultural education and training in Serbia. It is planned that the repository will consist of the following elements: both online courses and information necessary for teaching traditional courses for professional development of agricultural middle schools and experts in extension services; databases of results obtained from research; selected and recorded classes of interactive teaching; selected parts of courses created and/or developed within the project, prepared in the form of online video tutorials and posted together with additional teaching contents; and other relevant contents added to the repository based on authorized decisions of the NaRA Advisory Board. All project participants have jointly prepared and signed the Constituent agreement on project implementation and NaRA management (Poleksic et al., 2014).

CaSA project and knowledge transfer in animal sciences

Similar to other agricultural areas, animal sciences are represented in CaSA primarily by an important number of university teachers that are trained in the frame of the project. From the total number of 60 teachers foreseen to be trained, 15 belong to the area of animal sciences and veterinary medicine, majority of them (12/15) are employed at the faculties in Belgrade and Novi Sad. These young teachers together with the others will create both online and face-to-face courses that, when accredited, will be available from NaRA. These courses will be a valuable addition to the existing selection of courses for in-service training of advisors in animal sciences, and will represent the first officially recognized courses for knowledge improvement in zootechnics for middle school teachers.

So far in CaSA all university teachers were trained in active teaching learning and academic skills. E-learning is foreseen for end 2014, so that in 2015 courses are created, and upon accreditation, implemented in 2016 and further available in the national repository. A NaRA internet domain has been registered, and the Advisory board of the national repository will be established. Parallel with this, a training need analysis (TNA) is on-going, and with the help of EU partners the TNA questionnaire is prepared. Tender procedure for equipment purchase is still ongoing. Dissemination activities (TV, presentations at meetings, discussions, leaflets and posters) are numerous from the beginning of the project as well as regular and extraordinary management activities.

In conclusion, we strongly believe that with the presence of the Ministry of Education and Science as project partner, during project lifetime NaRA will be officially recognized by the two ministries (of education and of agriculture). This will strengthen the position of agriculture and therefore of zootechnics in Serbia and contribute to acknowledgment of modern agricultural practices and knowledge available to all professionals, advisers, teachers, and students. By efficient means of knowledge and innovation transfer, agricultural production and processing, including zootechnics, will be able to play the important role agriculture has to play in Serbian future.

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