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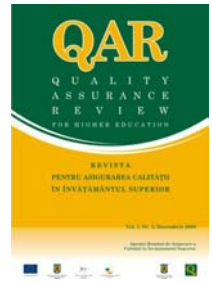

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Towards Quality Improvement in Higher Education Institutions: Sharing Experiences for Facing the Challenges

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Towards Quality Improvement in Higher Education Institutions: Sharing Experiences for Facing the Challenges

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Abstract: *Universities are facing nowadays several challenges as a result of the radical transformations in the organization of society. Sharing experiences and systematically addressing the new issues occurred, on dialog platforms, with all the actors involved – higher education institutions, students, enterprises, local/ regional/ national authorities – may represent a solution for dealing with problems. This paper presents the efforts undertaken and the results obtained by Transilvania University of Brașov in developing real cooperation with the economic and social environment. Furthermore, considering the student practical placement as one of the U-E cooperation directions, in the context of extending the transnational mobility, it is discussed the need for a general frame for quality assurance of practical stages. Some specific issues for the Romanian higher education system are also brought into attention.*

Keywords: *entrepreneurial university, university-enterprise cooperation, quality of student practical placement*

1. Present Challenges for the Higher Education Institutions

The beginning of the new century has brought radical transformations in the organization of society. These transformations reflect, in the first place, in the social institutions, among which the university represents a major exponent. But for the university, change does not seem to be something new: along the centuries it has proved to be the most flexible of the social institutions, always open for improvement in order to serve in the best way to the society. As a standing proof, nowadays it exists under various shapes, from the traditional university to the virtual one.

There are several challenges the university has to face today, and many answers to be given to questions recently occurred. At European level there are strong voices of universities associations and networks that address these problems and try to identify right solutions to problems. However, we still have to face nowadays the reality that the society's demands are sometimes sufficiently high so that the university doesn't have the capacity to respond. In addition, the public financing decline enhance the importance of accountability concept – in the sense that the universities have to justify themselves to the society. Above these, we witness major developments of knowledge that usually exceeds resources, which pushes the universities to market the knowledge they produce, by what R. B. Clark identifies as a major direction toward the entrepreneurial approach[1]: "*An extended dynamic periphery*, consisting of entrepreneurial units, that gives a diffuse character to the university space boundaries; these flexible units ensure the knowledge transfer outside the university, representing the interface between university and the external environment".

On the other hand, the labour market globalization has changed dramatically the demands for higher education graduates: besides good professional knowledge, there is the need for very good communication skills, entrepreneurial abilities, and foreign languages knowledge. The emphasis has

[1] Clark, R.B., „Crearea universităților antreprenoriale: direcții de transformare organizațională", București, Editura Paideia, 2000.

moved from the intensive knowledge oriented education to the competence based education. In consequence, in the view of quality assurance and quality improvement of the education process, the universities should develop internal instruments to assess to which extent the competences declared as being acquired by a graduate of a certain study program are actually obtained.

If we are searching through the transversal competences required by the employers, two issues usually stand out: the practical experience gained during the university studies through the practical placement activity and the international experience. Universities have tools for fulfilling both: practical stages are part of the academic curricula and international mobility through Socrates/Erasmus Programme works now for several years in Europe (including Romania). Since 2007 there is the Lifelong Learning Programme, with its practical placement component (replacing the Leonardo da Vinci mobility Programme) that joins together the above mentioned requirements and gives the possibility to the student to gain practical experience in an international environment. However, these tools need a real and strong cooperation between the university and the other actors involved in this process: students and enterprises, understanding by this terms the entire range of companies, institutions, organizations benefitting from the education provided in university through the graduates, as future employees.

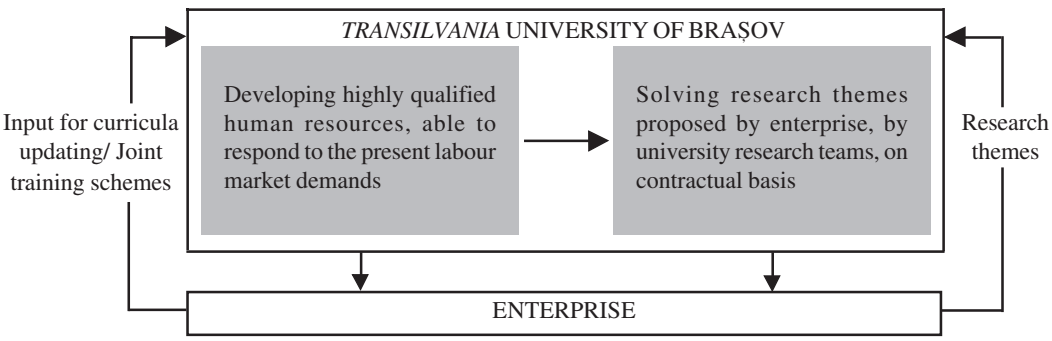
2. Achieving Real Cooperation between University and the Social-Economic Environment. The Approach of *Transilvania* University of Brașov

The preoccupation for quality improvement of education, in the sense of adapting it to the new requirements identified on the market, has been a priority for *Transilvania* University of Brașov, as well. For the last 20 years the institution passed several transformations, as the entire Romanian society, trying to remain focused on the quality of education delivered to the students. In respect to the challenges described above, the university understood, at its turn, that the cooperation with the enterprises can be efficiently developed only in a structured way. Therefore the Department of Links between the University and the Economic, Social and Cultural Environment (DESC) has been developed, aiming to be the interface between university and the extra-academic environment, regarding the cooperation on three main directions:

- Students education and training: by developing cooperation in practical placement, graduation / dissertation thesis with subjects proposed by the economic environment; identifying the needs of the economic environment and changing the academic curricula in terms of these needs;
- Research and development: scientific research and technological transfer;
- Training in alternative systems: life-long education, open distance learning, low frequency, by launching the university offer into the economic environment, on one hand, and by identification the needs of the extra-academic environment and their tuning to the university offer, on the other hand.

University – enterprise cooperation model is shown in Figure 1 and takes several forms: research support, cooperative research, knowledge transfer, technology transfer.

Figure 1. *UTBv – Enterprise Cooperation Approach*



Research Support

Research support involves contributions of both money and equipment to the university by the economic environment. This type of contribution is valuable as it provides great flexibility to upgrade laboratory and develop programs in certain areas of interest. The cooperation model under which *Transilvania* University of Braşov develops such cooperation consists in university providing spaces for companies to organize laboratories equipped with means and at standards according to their requirements. In return, the university provides following services: training the students in subjects of interest for the company, developing research project with subjects proposed by the company, working with the company as partners in national and European projects, human resources recruitment. This model has been used in several cooperation schemes with *Siemens PSE*, *Motorola, Oracle, Ina Schaeffler*, *Viessmann, Autoliv*, *LMS International.*

Cooperative Research

It is a quite new achievement that the university has developed cooperative research consortiums with companies to pursue research and development in some common areas of interest. These centres provide formal structures to advance technology through various types of cooperation between university and industrial companies, among which research contracts represent an important mean. In this respect several examples may be presented: direct cooperation with companies – through research contracts (financed by the company); cooperation with companies in the framework of national research projects – *Excellence Research Programme* (financed by the government); cooperation with industrial companies in the framework of international research and education projects – *FP5, FP6, FP7, Lifelong Learning Programme.*

Knowledge Transfer

Knowledge transfer involves many activities that include both formal and informal means of communication, interactions and personnel exchanges at student and faculty level. Involvement of the companies in the university curricula is one of the most important mechanisms for knowledge transfer. Often students work on corporate problems for their theses and dissertations, in companies such as: *Siemens PSE, Ina Schaeffler, LMS, Dacia-Renault Group*, *Continental Automotive Systems*. Cooperative education programmes, internship and job placement for students and recent graduates provide means for knowledge transfer. On European level, LLP practical placement mobility programme provides useful tools for knowledge transfer, as well. The weak points identified in relation with the practical oriented activity can be compensated by the trans-national mobility, which provides increased chances for students on the labour market, develops the innovative spirit of young people and entrepreneurship skills.

Technology Transfer

Technology transfer is generally based on the collaborative research with the industry; different models have been developed along the years: business incubators, science parks, technology parks, etc., all being created to foster entrepreneurship and business development. At Braşov, the attempts carried on in this subject have been materialized in the Innovative Technology and Business Incubator *Products and Technologies for Sustainable Energy – PRO-Energ,* developed by *Transilvania* University. It aims to promote the initiation and development of innovative companies, based on advanced technologies in the domain of sustainable energy, mainly in the following directions: energetic efficiency of the industrial processes, renewable energy systems, and energetic performances of buildings. The target groups are represented by: new companies (preferably set-up by the university graduates) able to promote the university research results and products, the innovative spirit of the academic community and the entrepreneurial experience of the economic environment; small enterprises interested in reorienting their activity in the sustainable energy domain; medium and large enterprises interested in developing innovation and technologic transfer departments on the above mentioned directions.

The efficient and synergic use of the existing and under development scientific research resources has been materialized by the major project for the Research and Development Institute *High-Tech Products for Sustainable Development – PRO-DD*, financed by the European Commission, which is presently implemented. The technology transfer at the research institute level is mainly achieved through the technology and business incubator (*PRO-Energ*) and the Centre of Technology, Innovation and Bussiness (*CTIB*). Together with the other research institutes from the region (specially the Research and Development Institute for Potatoes and Sugar Beat), *PRO-DD* is intended to become a regional structure of excellence in scientific research.

Practical Placement for Students

Returning to students and their benefit from the university-enterprise cooperation, several success stories can be presented:

Siemens PSE started the activity in Braşov in 2001, with approx. 20 employees within a location of the university, in the student Campus. From the beginning until today a fruitful cooperation has been developed mainly with the Faculty of Electrical Engineering and Computer Science and Faculty of Mathematics-Informatics. More then 50 students do the practical stage in the company each year and many of the graduates chose to join Siemens after graduation (the company has grown up to 550 employees nowadays). Besides this, there are ongoing joint European projects in education and research and several activities in the field of technology development and transfer (laboratories in the university developed with Siemens PSE support).

The relations between ***INA Schaeffler*** and Transilvania University go back to the '90th and the real cooperation at the students level began as soon as the company became operational in its new location near Braşov. The mutual trust has been built step by step and the result consists today in some facts and figures: 2 research centres, one in Mechanical Engineering and one in Technological Engineering developed in the university by INA Schaeffler; around 100 practical places offered each year for students from faculties of: Mechanical Engineering, Technological Engineering, Material Sciences, Economic Sciences, Law and Sociology; lectures and conferences presented by company specialists on subjects of interest for students. Many of the students that did the practical stages at INA Schaeffler were interested to develop their diploma thesis with subjects proposed by the company and continued to remain with the company after graduation.

Autoliv had a more custom oriented approach in the relation with the university. The two parties agreed upon developing a joint master program, "Safety Systems for Automotives", with the content oriented on the company needs. The lectures are taught by teams of specialist from Autoliv and UTBv and the students are graduates from our university employed by the company. In order to offer the training closed to its needs, the company contributed for providing proper facilities in two university rooms: one lecture room and a PC lab.

The cooperation with ***LMS International*** went very fast: the Belgian company had the first visit at the university in September 2005, in December 2005 the Romanian subsidiary became operational and in June 2006 there was inaugurated the Competence Centre in Simulation and Analysis of Engineering Systems, as a joined centre of excellence in engineering developed in partnership between LMS and *Transilvania* University. The centre organizes training programs in physical testing and simulation and develops joined R&D programs, with a focus on mechatronics engineering applications in the automotive and aerospace industries. "In one year, we have created a solid team of engineers and IT professionals in Braşov, Romania. Our Eastern European Centre in Braşov supports the steady growth of our R&D capacity in our five other development locations in Europe and the US," commented Jan Leuridan, Executive Vice-President and Chief Technical Officer. "Through our partnership with the *Transilvania* University of Braşov, we want to establish a strong commitment to the education of future engineers and develop promising R&D projects in the fields of virtual simulation and testing." "The development of the joined Competence Center for Simulation and Analysis of Engineering Systems with LMS strengthens the industry cooperation initiatives of the *Transilvania* University of Braşov and supports further developments in the field of simulation

and computation technologies," concluded Prof. Dr. Ing. Ion Visa, Rector of the *Transilvania* University of Braşov.

The collaboration with LMS International will contribute to the quality of the learning process and the span of the research and development projects at national and European level. The cooperation with LMS is also present as part of the student practical placement. There are already three years since the first Leonardo da Vinci student mobility project finalized with great success. This has encouraged the cooperation to continue and LMS provides, since then on, 10 places per year for practical stages at its company in Leuven, Belgium. Some of the students are invited, after graduation, to join LMS.

3. Quality Assurance of Student Practical Placement

3.1 Quality of Student Practical Placement - Priority Objective of EUE-Net and Q-Planet

Strengthening the cooperation between universities and enterprises has been lately referred to as an important subject by different European associations. However, the first that explicitly formulated and addressed this issue in a systematic way has been the *European University-Enterprise Cooperation Network*, *EUE-Net* (www.eue-net.org), as an initiative supported by the Erasmus Lifelong Learning Programme of the European Commission to create a European Network able to assemble and to coordinate the efforts towards a better cooperation between universities and enterprises at European level, to disseminate the cooperation models and to promote best practice in Europe. Initially started in 2004, as European University-Industry Network coordinated by *Transilvania* University of Braşov, following a series of events that took place in Romania during the previous years, it has turned out into a mature network with a strong partnership of universities, social partners and enterprises.

Among the today's EUE-Net objectives, enhancing the quality of student practical placements, by developing a quality standard for practical stages in enterprises is considered a priority that would give a common understanding of the role of practical placement in Europe, would provide a common framework for quality and would encourage student mobility for professional training.

The studies carried on within EUE-Net and disseminated on the occasion of the **3rd EUI-Net** Conference on European Models and Best Practice for Practical Placement of Student, Rome, 14-16 May 2007 and the **4th EUI-Net** Conference on Practical Placement of Students in Europe, Braşov, 7 - 8 February 2008[2] revealed a gap in the current quality systems operational in the HEIs that do not include a clear process for the practical placement of students in enterprises. Even if models and best practice exist[3], they are scattered and not adopted to a great extent, which may become a major problem in the context of internationalization of practical placement. In many European countries good practices and valuable experience in organizing this typical activity of university - enterprise cooperation can be found. These good practices usually result from the work of *regional Reference Centres for Practical Placements* that form the necessary bridge between the two sectors and make practical placements profitable for both: a quality educational stage valuable for the study programme and a small contribution to the enterprise activity. Furthermore, when speaking about trans-national mobility the identified needs are for extending at European level the following: enhancement and harmonization of the skills acquired by the students during the practical placements in enterprises; promotion of innovative schemes for organisation and quality assurance of practical placements in enterprises; promotion of the European dimension in the university curriculum by elaborating a system for practical placement of students that takes into account the possibility of students mobility at European level.

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[2] Luca, M., *"EUI-Net Tuning exercise. Preliminary results relevant for practical placement"*, Proc. of the 3rd EUI-Net Conference on European Models and Best Practice for Practical Placement of Student, Rome, Italy, 14-16 May 2007, p43-46.

[3] March, F., *"Current models for quality control of trans-national PPS"*, Proc. of the 4th EUI-Net Conference on Practical Placement of Students in Europe, Braşov, 7-8 February 2008, p109-114; Micheli, M.L., Jungman, A., Jurski, K., *"French model of cross cooperation University-Enterprise and practical experience at IUT Paris Jussieu"*, Proc. of the 3rd EUI-Net Conference on European Models and Best Practice for Practical Placement of Student, Rome, Italy, 14-16 May 2007, p47-50; Uden, L., Sunley, I., *"Models of practical placement of students in Europe"*, Proc. of the 4th EUI-Net Conference on Practical Placement of Students in Europe, Braşov, 7-8 February 2008, p15-34; Zirra, E., *"A new model for quality assurance for practical placements for students: the quality for transnational placements network (Q-PlaNet)"*, Proc. of the 4th EUI-Net Conference on Practical Placement of Students in Europe, Braşov, 7-8 February 2008, p120-126.

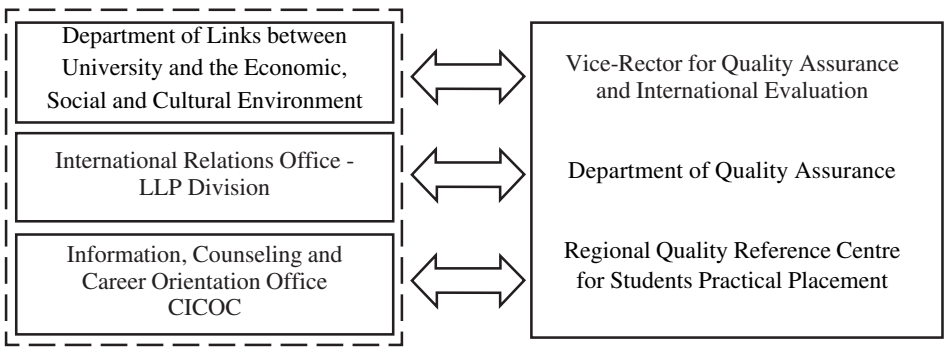
To follow these needs, the project *A model for **Q**uality of trans-national student **Pla**cemeNts in **EnT**erprises, Q-PlaNet* (www.q-planet.org) also supported by the Erasmus Lifelong Learning Programme of the European Commission, has been developed and is under implementation. It aims to set up concrete standards and structures for quality assurance in order to provide students, universities and enterprises a solid and secure basis for European wide comparable and assessed practical places. In this sense, three new experimental Quality Reference Centres for Placement of Students in two new Member states (Romania and Estonia) are set up, which will contribute to the establishment of a methodology and practice for setting up new reference centres where needed, especially in the new Member states that do not have this system for the organisation of practical placements. Finally, a European pilot network of Quality Reference Centres for Placements of Students will be established, as the first kernel to feature the functionalities desired at European level. This will facilitate analysis of the entire system operation, feedback and further improvement based on the real practice. The local networks will not be isolated anymore, but connected into an European grid, eliminating thus lack of confidence that is currently a barrier in the promotion of trans-national practical placement of students.

3.2 Implementation of the Quality Reference Centre at Transilvania University of Braşov

In Romania, the two Quality Reference Centres are set-up within the universities participating in the project, University of Bucharest and *Transilvania* University of Braşov, with the support of the existing expertise from KOOR-BEST – University of Applied Sciences of Karlsruhe, the project coordinator, and the Leonardo Office Thuringia – Technical University of Ilmenau. In Braşov we chose to approach this issue in relation to the other already existing university structures that might be involved: the Department of Quality Assurance, the Department of Links between the University and the Economic, Social and Cultural Environment, the International Relation Office – LLP division and the Information, Counseling and Career Orientation Office. The overall coordination is provided by the Vice-Rector for Quality Assurance and International Evaluation of the University, Figure 2. Preserving the existing attribution of each structure, their involvement in the Quality Reference Centre activity is presented as follows:

- Department of Links between University and the Economic, Social and Cultural Environment receives offers for practical placement at national level from: companies, faculties and/or students, submits practical places for checking to the QRC, gives feedback to the companies/ faculties/ students on the quality of practical places, organizes student practical placement at national level.
- International Relations Office - LLP division receives offers for practical placement at international level from: companies, faculties and/or students, submits practical places for checking to the QRC, gives feedback to the companies/ faculties/ students on the quality of practical places, organizes student practical placement at international level.
- Information, Counseling and Career Orientation Office disseminates the opportunities for practical placement to the students and provides information on the organization of practical placement.

***Figure 2.** The Regional Quality Reference Centre Approach at Transilvania University of Braşov*



The interface of the Regional Quality Reference Centre with the interested actors - universities, students, companies - is facilitated by a website specially designed of this activity. At this moment the QRC at Brașov, Bucharest and Tallinn are set-up and ready to test their functionality by organizing pilot practical placement for students.

3.3 Challenges Regarding the Student Practical Placement in Romanian Higher Education Institutions

When discussing about the Romanian HEIs integration into the European transnational mobility system of practical placement some specific issues occur, that prevent them from entirely complying with the general requirements.

The first important issue is related to the length of the practical placement period: even if practical training is part of the academic curriculum, its length is usually limited at 6-8 weeks, which is totally insufficient for organizing an internship. In Europe, the companies consider, to a large extent that a student placement should be at least of 6 months, while the Lifelong Learning programme sets the 3 months period as minimum for student practical stage. Therefore, the present situation makes quite difficult for a student studying in a Romanian university to take part in an international mobility for practical training. In consequence, the number of students is reduced compared to the places available; they have to put additional effort in recuperating the period spent abroad, so the system does not motivate the students to benefit from this type of experience.

The second issue draws the attention on the economic and social environment which is, in Romania, less open to receiving students for practical stages. Even if the large enterprises, most of them multinational, have the experience of organizing practical training for students, they are still not enough to ensure training for all the students involved in the educational process. There are still a large number of companies reluctant to this type of activity.

Solving these two major problems is only possible by developing a dialog platform and a real communication between all the actors involved:

- in the educational field: Ministry of Education, Research and Innovation, National Quality Agency, Universities/ Faculties;
- in the political field: ministries (others then Ministry of Education: e.g. Labor, Economy, SME development, etc.), regional and local authorities;
- in the business field: Chambers of Commerce, employer organizations, professional associations, leading enterprises.

Developing an appropriate framework at national level for student practical training would contribute to the large scale integration of the Romanian students into the transnational mobility of placements and, ultimately, to the enhancement of their employability.

Conclusions

Taking into account the present challenges higher education institutions have to face, strengthening the relations between Universities and Enterprises can represent a major direction for quality improvement of the educational process. Although it lately represents an issue addressed with strong voice at European level, the U-E cooperation still remains an open topic, which need to: rising awareness – the two parties to have a real dialogue; increasing the responsiveness of the University to the needs of the Enterprises; guaranteeing the rigour of the Enterprises in relation to their contribution at the educational process, especially through the organisation of the student practical placements – based on clear quality standards.

The task is not easy, it requires motivation on the part of students, will on the part of the company and effort on the part of the university in order to create an integrated structure able to fulfil all 'actors' interest. An efficient cooperation is based on good and real time communication, seriousness and commitment. Steps have been taken but there is still a lot to do for reaching all the goals set for the students' quality education and employability enhancement in the globalized society.

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