

MODERN APPROACHES TO QUALITY EDUCATIONAL PROGRAMMES DESIGN

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SUMMARY

Reserves for improvement of university graduates training quality are presented in the recommendations which had been introduced in Europe in the frames of the Bologna Process development. Academic quality of education depends on quality of staff activities and quality of educational programs. Tambov State Technical University in the consortium with partner universities from Italy, Spain, Slovak Republic and Udmurt Republic in 2008 has realized the TEMPUS project where had been used modern approaches and technologies of “Master in Environmental Law and Policies in the Russian Federation” program design: competence model of graduate, three-dimensional model of content organization, credit system of program evaluation, training orientation to the sustainable development, etc. The paper includes the analysis of all above mentioned components contribution to the final result - masters training quality.

Key words: Bologna process, quality of training, TEMPUS program

1. INTRODUCTION

National higher education system has been developing according to the global processes, tendencies and demands of the world labour market. Solving the problems of reforming higher education institutions in Russia it has become impossible to take into account only the national level criteria. Today universities should be able to prepare qualified specialists meeting the requirements of the modern society and to provide the stable development of the country. Fundamental changes which happened in all spheres of the society life-economic, political, social – determine changes in the higher education system.

The quality enhancement of university graduates training is the actual problem for all international educational environment and all the stakeholders including employers and students are interested in this process development. According to the UNESCO document “Policy Paper for Change and Development in Higher Education” accepted in 1995, there are

three main criteria of educational activity: staff quality, educational programme quality and quality of infrastructure embracing its functions [1].

Staff qualification and educational programmes quality combined with scientific research determine academic education quality. Higher education quality assurance recommendations adopted by the European Parliament and European Council in 1998 exhort EU countries to introduce quality assurance systems according to the standards and recommendations developed in the frames of the Bologna process (“European Standards and Guidelines for Quality Assurance in Higher Education” 2005). Obviously, quality is a key to the European higher education area.

2. EDUCATION QUALITY CONTROL IN RUSSIA

Education quality control in Russia is carried out by the following processes:

- licensing – assessment of conformity of the conditions of implementation of educational process with the state and local requirements regarding norms and rules, sanitary and hygienic norms, health protection of learners, the equipment of educational premises, equipment of educational process, the educational qualification of pedagogical staff, etc.;
- certification – assessment of conformity of the content, a level and quality of training of graduates to requirements of the state educational standard;
- public accreditation – establishment of the state status of the educational institution;
- development, implementation and certification of university quality management system according to the standards ISO 9000: 2000 (GOST R ISO 2000-2001).

There are some problems which should be solved by the universities immediately. They are: development of two-level programs (Bachelor and Master) harmonized with those of European education and having the substantial quality, as Russia signed the Bologna Declaration in 2003. The experience of such programs development can be acquired as a result of universities international cooperation.

Such cooperation is presented in this article. In 2005-2008 Tambov State Technical University (TSTU) was realizing TEMPUS-TACIS project “Master in Environmental Law and Policy in Russian Federation” in cooperation with the University of Genoa (Italy), University of Alicante (Spain), Slovak University of Technology in Bratislava and Udmurt State University. This project was financed by European Commission.[2]

The objectives of this project were: developing a new Master program in the international consortium of universities, applying EU standards to teaching Environmental Law and Policies in the RF universities, setting up a documentation centre for training new Masters for the sustainable development of nature and society. The program development was based on four approaches: legal, political, economic and social (Fig. 1).

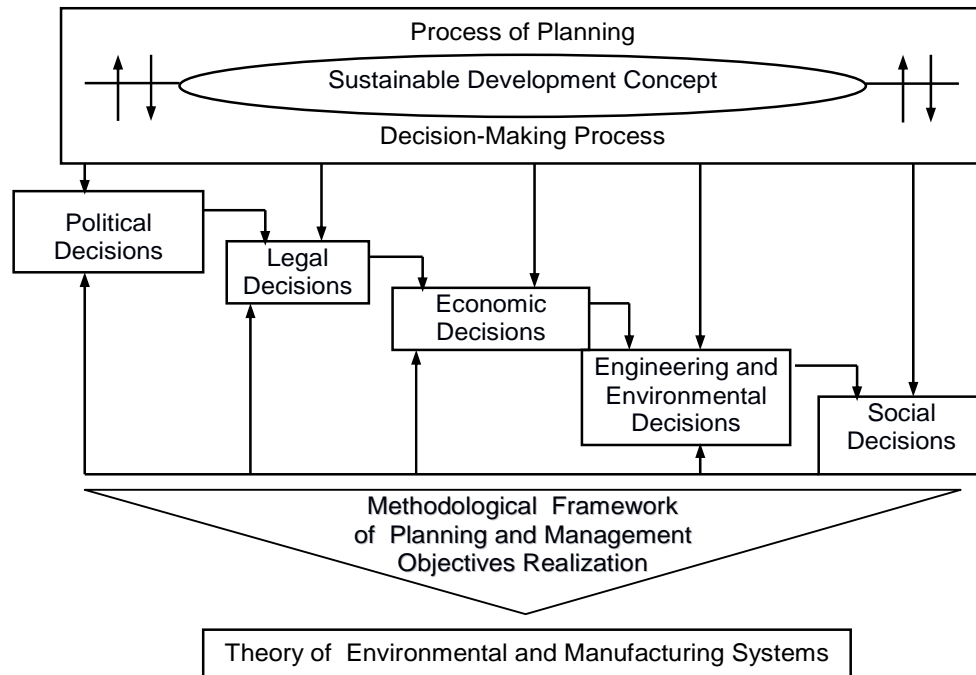


Figure 1. Integrated Educational Program Structure

This education programme can be considered an innovative and problem-oriented because it is connected with the sustainable development concept (RIO-92). It is based on the following Bologna declaration main points:

- adoption of a system of easily readable and comparable degrees;
- adoption of a system with two main cycles (undergraduate/graduate);
- establishment of a system of credits (such as ECTS);
- promotion of mobility by overcoming obstacles;
- promotion of European cooperation in quality assurance;
- promotion of European dimensions in higher education.

The external experts of the project are representatives of Ministry of Natural Resources and Ecology of RF, Department of Nature Management and Environment Protection of the Tambov Region and Federal Service for Education and Research Supervision.

Business circles were presented by ARPA Piemonte, (Piemont Regional Agency for Environmental Protection, Italy, (Turin) and Association "Europa Liguria Mediterraneo", Italy (Genoa). They acted in the field of programme evaluation and monitoring, gave recommendations in programme contents, determined the admission criteria, assessed quality of the training programme, evaluated dissertation theses.

During the project activities the technology of programme development was defined:

1. Programme mission determination.
2. Labour market analysis and competences definition.
3. Curriculum making.
4. Modules development and textbooks writing.
5. Documentation centre establishment as a resource for teaching process.
6. Exchange of ideas with other universities and scientists with the help of INTERNET technologies.
7. Transfer of theoretical knowledge to practical skills.
8. Vision of the programme.

It was settled to determine the educational programme not only as teaching materials, timetable and textbooks but also the technology of teaching students and methods of quality assurance (Fig.2).

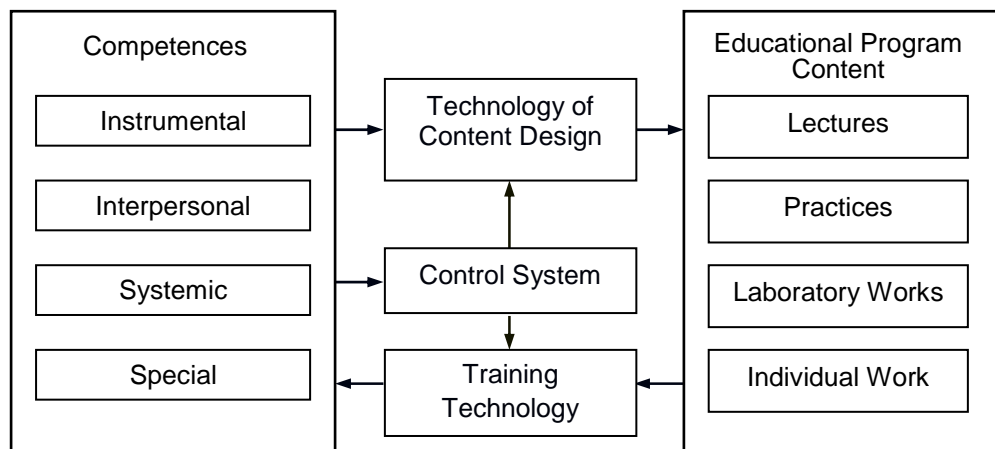


Figure 2. Educational Programme Content

The specific features of the programme are:

- student – centered approach using;
- subject choice opportunity and individual programme making due to electives.

The student centered approach means that the key knowledge and skills that a student needs to achieve during the learning process determine the content of the study programme. This approach was used in combination with G. Polya theory [3], which determines 4 phases cognitive activity: mobilization, organization, isolation, combination. . All of them are described in the table below.

| Polya model elements | Student activity | Teacher activity |
|-----------------------------|--|--|
| Mobilization | Goals, volume and information character definition to remember | Requirements to activity determined by education standard. |
| Organization | Definition of the core notions and their connection with previous information. | Teaching students to work with matrix and graph models. |
| Isolation | Limits to glossary to understand. Definition of working phases, choice of goal achieving algorithm. | Teaching general and subject skills, self-assessment. |
| Combination | Receiving new knowledge in discipline; own cognitive possibilities; reasons of problems. | Teaching to analyze own learning activity, reflection. |

The project work is structured on Figure 3.

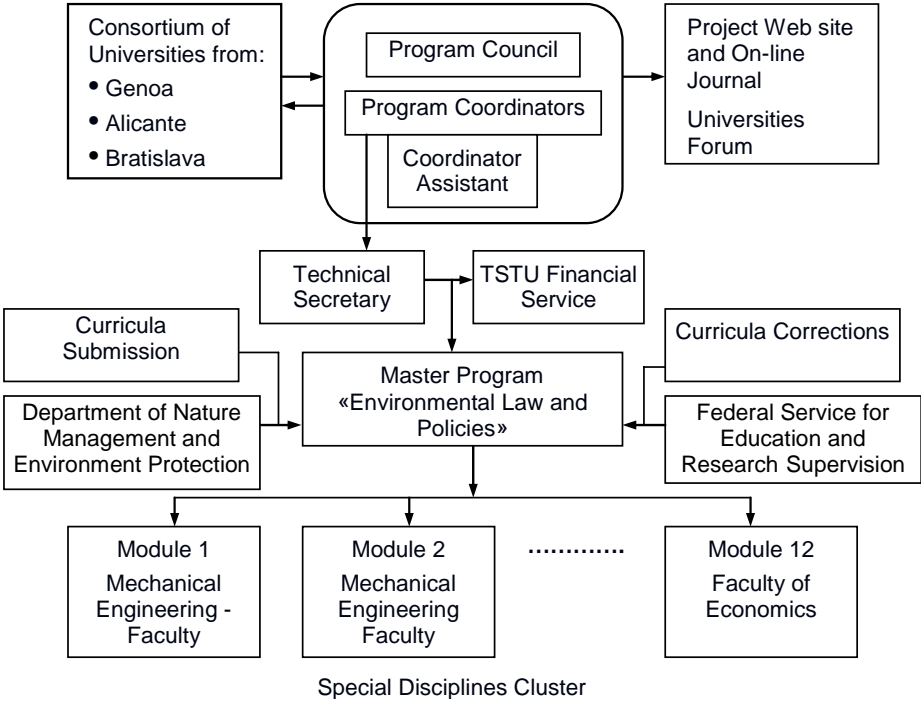


Figure 3. Scheme of Project Work

Competence model of master student in environmental law and policy was developed according to requirements of the Russian labour market and international consortium teachers' experience. Taking into account the materials of the project “Tuning Educational Structures in Europe” [4] four competence groups were formed: instrumental, interpersonal, systemic and special. The teaching methods were determined as well as the control tools. In the course of this activity the algorithm of academic workload calculation was introduced (Fig.4) with the quantitative characteristics of the educational program: the program took 2 years, 4 semesters, weeks in 1st and 3rd semesters – 18, in 2nd and 4th semesters – 22 weeks. Academic year included 40 weeks. Week workload was 45 hours, semester workload – 1800 hours corresponded to 60 ECTS (1 ECTS=30 hours).

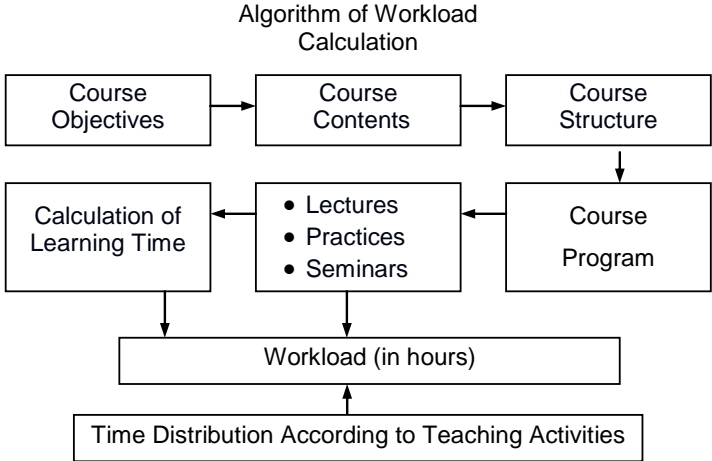


Figure 4. Algorithm of Workload Calculation

Competence model of Master reflected the disciplines contents. The following first year modules were introduced:

1. Economics of sustainable development.
2. Environment quality evaluation and control.
3. Environmental governance.
4. European environmental law.
5. Administrative law and regulatory agencies on environmental issues.
6. Ecology and environmental sciences.

Modules of the second year:

1. Module. Comparative economics of environmental welfare.
2. Module. Comparative politics of environmental government.
3. Module. Environmental policy processes.
4. Module. Comparative environmental law and law making.
5. Module. Quality of legislative systems on environmental issues.
6. Module. Watershed management and protection.

The module format of Master programme allows organizing flexible learning in consequential and parallel modes depending on student requirements (study abroad, distance learning, etc.).

Textbooks contents were developed based on three-dimensional model (T-model) of Reigeluth C.M. and Curtis R.V. [5]. All in all twelve textbooks were written, six of them were published.

The new Master programme started in TSTU in 2006. The group of 15 students was enrolled on a competitive basis, most of them with the Bachelor diploma in “Engineering Protection of Environment”. 13 students successfully defended their Master theses on topics connected with the sustainable development of economic development of the region.

The implementation of the programme was very successful. All the programme graduates found their jobs. The university had a positive feedback from employers. External experts noted the fruitful cooperation in the frames of university consortium. Now TSTU is intended to transfer its experience of Master programme design to other universities.

3. REFERENCES

- [1] World Declaration on Higher Education for the Twenty-First Century: Vision and Action. World conference on higher education, Paris, October 9, 1998.
- [2] <http://frelp.web.tstu.ru>
- [3] “Tuning Educational Structures in Europe. Universities contribution to the Bologna process.” Final Report. Publication of the University Deusto, 2005.
- [4] Polya G.. Mathematical Discovery. M, Nauka, 1970 – 452 p.
- [5] Reigeluth C.M., Curtis R.V. Learning Situations and Instructional Models. In: Gagne R.M. (Ed), Instructional Technology: Foundations. Hillsdale, New Jersey, London: Lawrence Erlbaum Associates Publishers, p.175-205 (1987).