

The Analysis of Educational Projects for Continuous Training of Engineers at Various Stages of the Profile Educational Environment

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Abstract

The continuity of vocational training of engineers is an effective way of professional development of future specialist. The analysis of educational projects for continuous training of engineers at various stages of the profile educational environment is presented in the article. It is cited the experience of the activity of Association «The University training complex» of Penza State University of Architecture and Construction, which realizes on the praxis the principals of the uninterrupted education.

Keywords: educational projects, continuous training of engineers, profile educational environment, technical higher education, Association «The University training complex», Penza State University of Architecture and Construction

1 Introduction

The bases for new approaches to development of the educational environment are: dynamically changing social, economic, informational and communicative conditions; the new system of the relations in educational space considering existence of the market of educational services; the increasing need for the innovative processes providing the solution of professional education problems [1]. In this context the particular interest gets the continuous profile engineering education representing qualitatively new form of development of the professional educational environment.

The system of continuous engineering education has to carry out not only generalized, but also specific functions. To generalized functions it is possible to refer functions of general and vocational training, etc. The developing function, that is the organization of professional, cultural and creative development of the personality, belongs to specific functions. The importance is got by the adaptive function connected with assistance of adaptation of engineers to the changing requirements of environment, and organizational function, which purpose is to promote rational self-organization of educational activity.

Main aim of continuous technical education is synthesis of profile vocational education, self-determination and development of the personality that promotes improvement of training quality of engineers, growth of their competitiveness, mobility and adaptation in the conditions of market economy [2].

2 Experimental study

Continuous profile education is the way of training of future engineers focused on individualization of training and socialization of students taking into account requirements of labor market, flexible system of profiles of the higher vocational school. Thus educational process needs to be built so that knowledge became the base of practical activities of students, became effective [3].

The principle of continuous training of engineers was experimentally studied by us on the basis of Association «The University training complex» of Penza State University of Architecture and Construction. The complex includes educational institutions of preschool, general and professional education. Training at all stages has a common aim: formation of the personality of future engineer [4].

The first stage is **preschool education** which includes: selection of children of 5-6 years in mini-groups with a certain direction of training and education; emphasis on social and esthetic development of the personality; ensuring the qualified pedagogical consultation of parents; development of approximate educational programs of education, training, development of children of early and preschool age according to requirements of federal components of preschool education standards; development of programs for children with limited health opportunities; selection of exceptional children on abilities with the subsequent their orientation to specialty.

After preschool education the pupil gets the main **general education** which is obligatory for all citizens (9 classes) or the full general education (11 classes). For providing quality education to pupils of 10-11 classes by teachers of university complex the following work is carried out:

- realization of profile training in the following directions: architectural, technical, construction, ecological, economic;
- improvement of quality of school students preparation for training in system of professional education [5];
- development of teaching system "Higher Education Institution ↔ School";
- development of curricula in subjects, joint with higher education institution,;
- joint participation in research work of school and university students under the leadership of university teachers;

For receiving quality **primary and secondary professional education** within the project of University Educational Complex it is carried out:

- joint development of curricula «School → College → Higher Education Institution»;
- creation of the training professional student's center;
- formation on the basis of professional educational institutions of the center «Engineering Leadership»;
- creation of labor camp with a professional engineering direction.

The higher education within University Educational Complex includes:

- adjustment of contacts with the enterprises for possible engineering training of students, creation of system of assistance to employment and adaptation to labor market of graduates of professional education system;
- creation of courses of additional education for students (Business English, Engineering English, Second Foreign Language);
- possibility of receiving second higher education in parallel with the first.

The above described continuity of various grade levels in University Educational Complex is realized within educational projects: «Integrative Continuity of the Main Stages of Professional Education» and «Complex Stage-by-stage System of Continuous Practical Training and Employment of Students of Higher Educational Institutions» [5].

We will consider the purposes, tasks and contents of these projects directed on realization of continuous professional education in more detail.

1. Social and pedagogical project «Integrative Continuity of the Main Stages of Professional Education». The realization of this project was enabled in the form of the following algorithm: Kindergarten (№15, №111) → School (№33, №50) → College (№5, №14, №17) → Penza State University of Architecture and Construction → Production.

Project purpose. Implementation of the project is directed on:

- early detection of interests and abilities of children, since preschool age;
- ensuring quality training in establishments of preschool, general and professional education of the profile educational environment;
- improvement of quality of pupils adaptation upon their transition to the following grade level in educational complex;
- development of intellectual potential of the region.

Project tasks:

- development and introduction of the regional educational standards providing high quality of engineering training;
- development and introduction of non-standard educational programs and projects in engineering training [6];
- monitoring of engineering training quality at each stage of profile education;
- development and introduction of the programs intended for work with children at early grade levels in profile educational institutions;
- development and preparation for the edition of the curricula and programs, educational and methodical grants providing continuity and integration of education.

Contents of the project.

- realization of innovative structure and content of interaction of University Educational Complex components;
- development of the strategic development plan of University Educational Complex and information infrastructure for interaction with labor market, production;
- providing participants of pedagogical process at all stages of socialization with professional information on special engineering programs of University Educational Complex. Mastering pupils a set of knowledge of social, economic and physiological conditions of profession right choice, informing on the general signs of engineering profession is provided;
- methodical and technological support of participants of pedagogical process at all stages of activity of the University Educational Complex;
- organization on the basis of computer classes of University Educational Complex of classes with pupils of profile schools in engineering graphics.

2. Social and pedagogical project «Complex Stage-by-stage System of Continuous Practical Training and Employment of Students of Higher Educational Institutions»: Kindergarten (№111) → School (№29, №58) → Engineering College → Penza State University of Architecture and Construction.

Project purpose: formations at children and youth of practical activities skills in the course of training by means of modern methodical approaches within out-of-class work parallel to a complex of theoretical training.

Project tasks:

- practical education directed on formation at students of real activity skills in the world of market economy;
- improvement of quality of practical training of specialists and, as a result, their high-quality employment and adaptation at the enterprises;
- intensive «immersion» of students in real professional engineering space;
- formation of engineering orientation of the personality;
- development in students of the leadership skills, knowledge and skills allowing to set the worthy vital purposes and successfully to build the career;

Stages of the project implementation and their contents:

1. The initial stage of implementation of the «Complex Stage-by-stage System of Continuous Practical Training and Employment of Students of Higher Educational Institutions» project is the preschool education including:

- acquaintance of children in a game form with the world of professions and their main characteristics for formation at preschool children of knowledge of the professional work;
- the qualified pedagogical consultation of children and parents by psychologists and teachers of the educational institutions which are a part of University Educational Complex for the purpose of determination of the leading interests, abilities and opportunities of preschool children;
- selection of children in mini-groups with a certain direction of training and education according to their interests and abilities;
- explanation to parents of preschool children of participation prospects in the

social and pedagogical projects realized by members of University Educational Complex, and training in the profile educational institutions which are a part of a complex.

2. The second stage of this project implementation is the general education based:
 - on carrying out professional consultations with the purpose of compliance determination of specific physiological and personal features of the student to specific requirements of the profession [7];
 - on carrying out professional selection at which, being guided by the available data (motive of a choice, aspiration, motivation), future specialty is defined for the school student;
3. The following stage of implementation of the «Complex Stage-by-stage System of Continuous Practical Training and Employment of Students of Higher Educational Institutions» project is the professional education including:
 - carrying out complex consultation of students and graduates of university during job search and on self-presentation before the employer;
 - analysis of labor market condition and on its basis development of offers for updating of training programs;
 - establishment of partnership with employers, representatives of business communities within «Strategic Partnership Program», formation and updating of vacancies databank on a part-time for students and full employment for graduates on the engineering specialties;
 - organization of cooperation on employment of young engineering specialists with the enterprises of the Belgorod region, Republic of Mordovia, Moscow region, regions of Western Siberia and Urals.

3 Conclusions

The main actions for realization in practice of the principle of continuous profile education are:

1. Restructuring of a network of continuous education establishments: forecasting of vocational employment of the Penza region population; carrying out assessment of efficiency of educational institutions loading; definition of establishments groups in a network of continuous education, which preparation and financing can bring the maximum effect (for the region).
2. Change of vocational structure of specialists training: development of the Regional list of professions or specialties; creation of effective system of assistance to employment of graduates of professional education establishments.
3. Scientific ensuring reforming of continuous education system: carrying out analytical work on identification of new professions on the basis of research of market, work and services; program for providing educational institutions with educational and methodical grants.

All actions are held on the basis of Association «The University training complex» of Penza State University of Architecture and Construction.

Thus, the University Complex represents new type of educational institutions which provides various forms of integration of diversified educational institutions of the higher, secondary and primary professional education, of the general and pre-

school education and grants to the personality the right independently and continuously to form an educational trajectory taking into account interests, bents, requirements.

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