Higher Engineering Education in Ukraine and How to Solve Them

Abstract

The authors analyze the problems in Ukrainian higher educational institutions development and the reasons for their current inefficiency. The synthesis of teaching methods with information technologies and the introduction of reengineering into the educational process are considered to be effective in elimination of the drawbacks. It also leads to the development of the reengineering methods which are used as the system to support and enhance the educational processes on the basis of engineering solutions, i.e. on the basis of information and communication technologies.

Keywords: higher education, institution, efficiency, engineering methods

Key terms: reengineering, information and communication technology, knowledge-based society

1 Introduction: Problem Topicality and Research Aims

The question, how to make the system of higher education in Ukraine more efficient, is one of the XXI century challenges that makes a lot of scholars work hard to find the solution. The crisis in education is caused by a number of factors and one of the most influential of them is the global revolution in the spheres of information and communication.

Nowadays, the scope of information that has to be collected, stored, transmitted and transformed for educational needs is increasing drastically but, on the other hand, the high dynamics of the development of software, information and communication tools allows solving the listed problems. However, the practice of teaching shows that there are a lot of difficulties in the effective application of these means in the higher education.

The analysis of Ukrainian higher education institutions functioning shows [3] that there are several significant and related reasons for drawbacks in the effective development of the higher education in Ukraine, which are shown in Figure 1.

This work is aimed to develop the scientifically proved proposals to improve the efficiency of higher educational institutions functioning through the use of engineering methods, first of all, at the university departments as they are the main units providing educational services.

To achieve this goal, we use the methods of the system theory and system, functional analysis, scientific generalization, and the reengineering methods proposed by Michael Hammer and James Campy [1]. At present, there are a lot of interpretations of the term “engineering” depending on which domain it is used in. In the case of providing educational services in higher education, the term “engineering” will be understood as the process of teaching and learning on the basis of engineering solutions and information technologies.
2 Methods of Reengineering in the University Efficiency Improvement

Firstly, the imperfection of the legislative framework balks the progress of higher education [2]. Secondly, there is different dynamics in the development of methods of teaching and education management and information systems and technologies [5,6]. Thirdly, while the standardization of educational processes is taking place, the information and communication tools used in higher education are not standardized. Therefore, the urgent task is to increase their effectiveness through the systematic and consistent application of engineering methods and procedures.

The faculty of our universities uses the methods of reengineering to improve the efficiency of their departments. To implement the methods of reengineering at the department, the System of Educational Processes Support (SEPS) was created. The paper [4] outlines the tasks and hypotheses for improving the efficiency of the department through its reengineering.

The implementation of reengineering methods has demonstrated that the use of tools based on intelligent information technology contributes to the increase of reliability, accuracy and productivity of the decision-making process at the department. It is important to note that the tools of SEPS [7] are used not only for information and management functions, but also are experimental instruments for the research of a variety of processes and phenomena related to the education, training and upbringing of students.

3 Conclusions and Future Work

Based on the results of the analysis of the phenomena and processes occurring in the system of higher education in Ukraine, the following scientific generalizations are made. The problem of application of engineering methods in educational systems in Ukraine can be solved as follows:

1. introducing appropriate amendments to the Law on Higher Education of Ukraine, which would reflect the connection between the processes of functioning of higher education institutions with the information and communication component of a knowledge-based society;
2. the full-scale introduction of intellectual information technologies into the processes of organization and functioning of higher education institutions;
3. modernization of educational standards, taking into account the standardization of not only the forms of the educational process, but also intellectual and information tools and technologies that ensure the presentation of knowledge and effective communication between scientific and pedagogical personnel and students;

4. the results of experiments should be used as the basis for successful education and training.

**References**


8. The site of the department http://kaf-gis.kh.ua/

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