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STANDARDIZATION METHODS AND PRINCIPLES IN THE HIGHER EDUCATION INSTITUTIONS' EDUCATIONAL PROCESS

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Abstract. *The article defines the methods and principles of standardization in higher education system with the assessment of their use current state in higher education. The effectiveness of education standardization issues solving methods is revealed through the use of total quality management (TQM) ideology and ISO DSTU 9001 standard; exposed are the results of comparative analysis as to the global trends in education system development based onto TQM principles.*
Keywords*: standardization of education, total quality management, methods and principles of education system standardization, higher education.*

Introduction. This study urgency is determined by the fact that the modern higher education standard serves as a social guarantee of competitiveness in the domestic and world labor markets thus should meet the society members' personal needs. Therefore, it should be the only one for all regions and subjects, suitable for students both in terms of content and volume, rely on real resources in society (never going beyond really possible at the current stage of society development), and be compatible with foreign educational standards. Undoubtedly, one of the important functions of the state standard in higher professional education is to create the conditions for free functioning of the continuing education system in the state. In this regard, the educational standards at all parts of the continuing education system of should be as below exposed, providing a reliable interaction in related fields.

A brief overview of publications on the topic. The intensification of globalization changes in the Ukrainian education system as well as its current reforms require a deeper study of foreign experience as to the higher education formation and development, in particular its standardization. Researchers (N. Abashkina, G. Aleksevych, S. Goncharenko, A. Oleksiuk, G. Yegorov, O. Kovyazina, L. Latun, B. Melnychenko, E. Moskalenko, O. Ovcharuk, O. Rybak, G.

Stepenko, I.Taranenko, T. Yarkina et al.) [3] argue that the current higher education system requires new educational standards based on general scientific, pedagogical principles and practices, and compliance with generally accepted principles and practices of standardization.

Study objective: Investigating features of standardization methods and principles in the higher education process, effecting a comparative analysis of world trends in education using TQM principles.

Materials and methods. The standardization results are estimated by the changes in both society economic situation and social & educational activities. In order to get positive changes' results, that is to ensure an effective standardization, while that process carrying out, required is an adherence to certain principles; below we shall characterize the main ones.

1. Purposefulness and techno-economic feasibility mean that the work on standardization, the development of any standard should be substantiated (needs of the manufacturer, the consumer, the expected technical and economic effect, etc.) and aimed onto solving specific problems at the appropriate production and management levels; in the field of education, such a justification is determined by the needs of the University teaching & learning process and its effectiveness depends onto the level of students' education and professional competence.

2. Scientific approach with the use of best practices in higher education standardization prove that the characteristics and requirements included in the standard must be in line with the advanced level of science and technology, based on the research work results. Therefore, the standards development should be conducted taking into account and using scientific advances in the relevant fields.

3. The standard's progressiveness and optimality do stem from the very essence of standardization, the new standards in education should not only meet current needs, but also take into account the higher education trends.

4. The need for standards' interconnection is implied by the main goals and objectives of standardization. Indicators, norms, specifications, and requirements established in the standards should also be in line with international standards and take into account the international organizations recommendations.

5. The standardization complexity is one of the main principles. The practice of standardization gave rise to two directions of its development: from partial to whole; from whole to partial.

6. The systematic principle defines the standard as an element making part to the system and provides the establishment of standards systems, mutually linked by the standardization specific objects' essence. The systemicity is one of requirements applied to activities in both standardization and didactics, and therefore it is a guiding principle of higher education and its standardization, which ensures mutual coherence, consistency, unification and elimination of standards requirements'

duplication.

7. The repetition principle thus defining the range of objects, which include objects, processes, relationships, having one common property: the repetition in time or space.

8. The variability principle in standardization refers to the rational diversity creation (ensuring a minimum of rational varieties) as to the standard elements of the educational process, included in the standardized object [1].

9. Principles of ranking: taking into account ranking goals and objectives; development of indicators and their values; collecting and processing data, ensuring the transparency of methodology used in determining the rating position; presentation of ranking results.

Methods of standardization: these are a single or a set of techniques, through which the standardization goals are achieved. The standardization is based on general scientific and specific field-related methods. General scientific methods include the ordering of standardization objects and parametric standardization. Arranging the standardization objects embodies a universal method in the field of products, processes and services standardization. Arranging in a given order as diversity management is associated, first of all, with the diversity reduction. The result of ordering in higher education embodies, for example, restrictive lists of documents and standards that govern the higher education [1].

The parametric standardization is based on the standardization objects ordering by drawing up parametric series of characteristics applied to products, processes, classifiers, etc. Among the main specific standardization methods are: the unification, aggregation, complex and advanced standardization.

Due to our research specifics, we will not dwell on the specific standardization methods consideration, since the standardization methods, such as systematization, classification, parametric standardization, typing and optimization, are traditionally and successfully applied in education. However, such standardization methods as unification, aggregation, comprehensive and advanced standardization, still do not have positive results in the field of higher education standardization of. For example, the notion of unification with regard to education gets a negative color and is an undesirable trend in higher education development, since "unification" is the activity aimed onto the rational reduction in the types number as to the components, actions and processes of the same functional purpose. It is based on the classification, ranking, typification and optimization of finished products. That is, in terms of education, the "unification" term refers to the simplification and variability reduction, that effects we try to avoid.

The well-known Ukrainian scientist V. Baidenko substantiated the position that the standardization process has a legal basis, since the standard is: a method of society's reflection on the renewed role of education as a modern socio-cultural project and social technology; a factor in the dynamic growth of people's

education at all levels of education; a means of the national educational product predictive design; the direction of democratization in the educational policy and in the fight against discrimination in education by supporting the educational diversity, diverse and diversifying educational practices; the key to solving problems of objectivization of control over the educational systems performance and the education quality, etc. [6].

Results and discussion. In our opinion, one of the effective methods to solving the education standardization issues is the use of total quality management (TQM) ideology and ISO DSTU 9001 standard. One of the outstanding TQM concept theorists, A. Feigenbaum noted that the education quality is a key factor in the competition between countries, as the products and services quality is determined by the way the managers, teachers, engineers and economists do think, act and make decisions regarding quality. Since the early 90^{s} of the XX century this methodology has begun to be applied in the higher education field. The analysis of higher education as a system confirms its complexity in comparison with production field. At the same time, the TQM "values" are more compatible with higher education than many other management systems.

The world trends in education development with TQM principles comparative analysis results are presented in Table 1.

Table 1. World trends in education development with TQM principles comparative analysis results

Modern higher education specific characteristics	Modern higher education principles content	TQM strategy elements	TQM principles
High quality	Training a specialist capable of ensuring hiw development and needs, as well as the needs of society.	Total products and services quality management . Policy and strategy in the field of quality professionals. Process approach.	High quality of training a specialist through the stable quality of higher educational institutions key processes
Accessibility	Ability to get higher education regardless of place of residence, social status, etc	Focus on consumer services at universities. Use of the students' potential.	Satisfying the higher education needs for all those who wish to study.
Continuity	Ability to study throughout one's life.	Maintenance of customer loyalty in higher education	Creating conditions for enabling continuous

		institutions.	education from an applicant to a graduate student in the same university.
Innovability	Training of specialists capable of innovation, able to make the right decisions in difficult situations.	Decision making based on facts.	Using scientifically grounded methods on the basis of statistical analysis tools.
Advancement	Ability to predict and meet the future needs of society.	Analysis of needs and expectations of all interested parties in the learning outcomes.	Prediction of the individual and society.needs and expectations
Adaptivity	Timely response to inquiries and needs of the individual and society.	Continuous improvement.	Improvement of key processes at higher education.
Fundamentality	. Formation of a holistic system of knowledge about the world.	System approach.	Managing the higher education on the basis of a systematic approach.
Humanity-orientation	Decision-making based on the priority of ethical and environmental principles over purely economic calculations.	Impact of higher education intuitions on the society	Close connection with the system of environmental management and corporate responsibility to society.
Partenerial	Forming a new system of relations between a student and a teacher	Establishing mutually beneficial partnerships with all parties involved in the specialists training.	New methods of teaching using the team formation methodology
Influencing the pre- and post-diploma education	Creating a single learning chain from school to postgraduate	Establishing mutually beneficial partnerships.	Formation of agreed and interconnected training plans and

development	education.		programs of preparation as an integral system
Globalization	Formaing the uniform requirements to training level within the framework of unified world educational space.	Standardization of TQM principles at international standards ISO 9000.	Use of TQM universal criteria, international standards ISO Series 9000, criteria of business perfection models
Education-oriented	Formation of personality, worthy member of society, citizen and patriot.	Motivation of university staff and students.	Stimulation for self-development and improvement.
Oriented to the continued self-improvement	Search and approbation of new methods for reaching the higher education key goals.	Continuous improvement.	Improvement of key business processes.
Based onto modern information & communication technologies	Implementation of distance education system, group learning forms, electronic textbooks, Internet facilities	Rational use of university resources.	Use of information technologies for collecting and analyzing the quality system data, creating document management systems, databases, knowledge bases.

As revealed, the modern TQM concept is based on principles such as: both senior management and all personnel involvement in quality activities, customer orientation, process and system approaches, quality continuous improvement, decision-making on the facts basis, establishing partnerships with suppliers. At the same time, it should be noted that with the adoption in 2000 of the third ISO 9001 standard version there began a more active process of its implementation in the field of higher education. First of all, that is due to its greater adaptability to the educational services specifics, as well as more flexible and less severe requirements regarding the scope of mandatory documentation and the orientation towards institutional business processes management as the main component contributing to a stable quality of performance.

Conclusions. To achieve the higher education key goal, namely to create conditions for personal development and creative self-realization of a potential specialist, it is expedient to apply the TQM principles and elements as well as the DSTU ISO 9001standard requirements. The effected study results and their phased implementation allowed forming requirements for a typical process-oriented model of the university activities, built on TQM ideology and basic principles of DSTU ISO 9001 standard. It includes three levels, such as: key processes, management processes, support processes. At the same time, each of these processes can be evaluated using special mechanisms and tools such as: monitoring, scientific and technical forecasting methods, ratings, audits, etc.

The algorithm for introducing a typical quality higher education system consists of the following main modules: 1) training senior management and personnel responsible for the processes; 2) development of the necessary documentation (maps, procedures, methods); 3) audit and certification; 4) processes monitoring, evaluating their effectiveness and efficiency, continuous improvement through the development of preventive and corrective actions.

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