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# EDUCATIONAL INNOVATIONS: CONCEPTS, CLASSIFICATION, ANALYSIS

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## Abstract

**Introduction.** The necessity of development and introduction of innovations in educational sphere is stipulated, first of all, by the need to improve quality and efficiency of education, to train qualified specialists for all branches of national economy and to increase the level of development, competitiveness, prestige of the country and its national security.

**Problem Statement.** However, the issues concerning clarification of the term "innovation in education" definition, determination of innovative activity priority in education, formation of innovations database in education and their classification, innovation management in education, their expertise and financing execution, establishment and protection of intellectual property rights on educational innovations need to be settled.

**Purpose.** The subject of the suggested study was to clarify the definition of "educational innovation", to summarize its classifications and to analyse development of education and innovative processes.

**Materials and Methods.** In the process of research, the methods of analytical processing of scientific works, as well as analysis and synthesis were used to clarify the concept of "educational innovation"; analysis of time series and ratio were used to analyse the state of educational sphere and quality of its innovative processes.

**Results.** Definition of "educational innovations" and system of their classification features were suggested. State of educational sphere and level of its innovativeness were analysed. Ways to increase efficiency of development process and introduce innovations were determined.

**Conclusions.**Major innovative developments are being carried out in educational sphere. However, in recent years this process has been slowing down for a number of reasons. Statistical reporting should be improved in order to create the database needed to conduct a detailed broad analysis of innovative processes. Improvement of educational process, also through innovation, will help to strengthen national and educational security of the country. Findings can serve as a basis for further research into educational sphere, innovation in education and educational safety.

**Keywords:** innovations, education, innovations in educational sphere, educational innovations, safety, statistical information, non-traditional methods for conducting classes.

Considering the existing definitions of innovations in education and the Law of Ukraine "On innovational activity", it is necessary to speak about "innovations in educational sphere" or "educational innovations" and to consider as such "newly created or improved competitive technologies, products or services, as well as organizational and technical decisions of administrative, educational, commercial or other in nature, which significantly improve the structure and quality of educational and pedagogical process" [1].

The main features that reflect "educational innovations" as a specific category are: purposeful changes, which new stable elements (innovations) introduce into educational sphere, that cause its transition from one quality state to another; changes in the goals and results of education (through its content) and changes in the ways of their achievement (through forms,

nature and arrangement of educational process); presence of specific features related to socio-psychological and other aspects of pedagogical activity; innovative changes can be initiated at any level of educational system; innovative changes must be carried out through activity and thinking of all participants of educational process; continuity and focus on constant improvement of the existing system; implementation of appropriate management mechanisms for education quality; effectiveness of a particular innovation implementation depends largely on the level of susceptibility to innovative changes in the system (which introduces the innovation) and availability of real possibilities for realization (implementation) of innovation (that is, itsimplementability) [2].

There are various classification systems of "educational innovations", and most of them are based on innovations classification systems and do not take into account the specifics of educational sphere.

Despite that, O. V. Melnykova identifies the following innovations in higher education: technological (which include new educational technologies, educational programs; terms of study, criteria for students admission, teaching materials, etc.); pedagogical (which include new teaching and learning methods, new forms and arrangement of training sessions); organizational (involve introduction of new organizational structures and institutional forms in educational sphere: types and kinds of educational institutions and establishments, reorganization of higher education system structure, etc.); economic (consisting of new economic mechanisms in educational sphere: diversification of educational institutions financing sources, introduction of new payment forms for educational services; development of modern mechanisms of tax and credit obligations, new mechanisms of remuneration in educational sphere, etc.) [3, p. 19-24].

V. M. Vakulenko subdivides innovations according to such criterion as a way of implementation into: changes that are made within the traditional educational system and on its basis (personnel, material provision, etc.) in relation to system changes, events in society with attraction of new educational elements; changes in the traditional educational system, implemented by diffusion (adaptation) and cultural transition (transfer) of integral models of Western school pedagogy in the context of national education [4].

L.V. Burkova subdivides educational innovations by level of novelty into radical, partial novelty, local novelty; and based on the scale of novelty into new system, updated system or its structural elements, updating of system elements [5].

The most comprehensible classification of innovations was suggested by T. S. Yarovenko, who subdivided all classification features into three groups: origin factors, implementation factors and factors of impact and consequences. Accordingly, the factors of innovation origin in the group are subdivided by economic value, scale of goals and operation period, means of origin, development method, sources of origin, type of interaction of pedagogical process participants, object of orientation, sphere of origin, scientific knowledge results degree of use. In the group of implementation factors classification features are represented by funding sources, types of implementation, scale of implementation and socio-pedagogical significance, scope of implementation, duration of implementation and operation, implementation complexity, decision-making time, speed, degree and feasibility of implementation. In the group of factors of impact and consequences types of innovations are determined according to relations with other innovations, possibility to predict the consequences, significance in reproductive process, depth and extent of introduced changes, type of results, level of efficiency and effectiveness [2].

Although innovative improvements to educational process have been underway for a long time, there is not enough information needed for full analysis of this process. Yes, there is no information on the number and percentage of delivered unconventional lectures, use of interactive teaching methods, or at least the number and percentage of classes conducted using multimedia tools.

Based on the available information, it can be assumed that innovative development of educational sphere goes hand in hand with the expansion or improvement of educational activities and at the same time enhances educational security. Although some reluctance to develop when expanding educational activities can also be the case.

Thus, for the period of 2011-2018, number of general education institutions in Ukraine has decreased by 20.3%, number of students – by 8.8% and number of teachers – by 85.4%. At the same time, number of higher education institutions of III-IV accreditation levels has decreased by 17.2%, number of students studying in them – by 37.6%, and number of teachers – by 21.3% [6; 9-14].

Nevertheless, number of students per 10,000 people over the analysed period has fluctuated around the same level with number of students becoming significantly smaller (32.5%). The prestige of higher education has declined significantly in society, also due to higher

wages for working professions (Fig. 1).

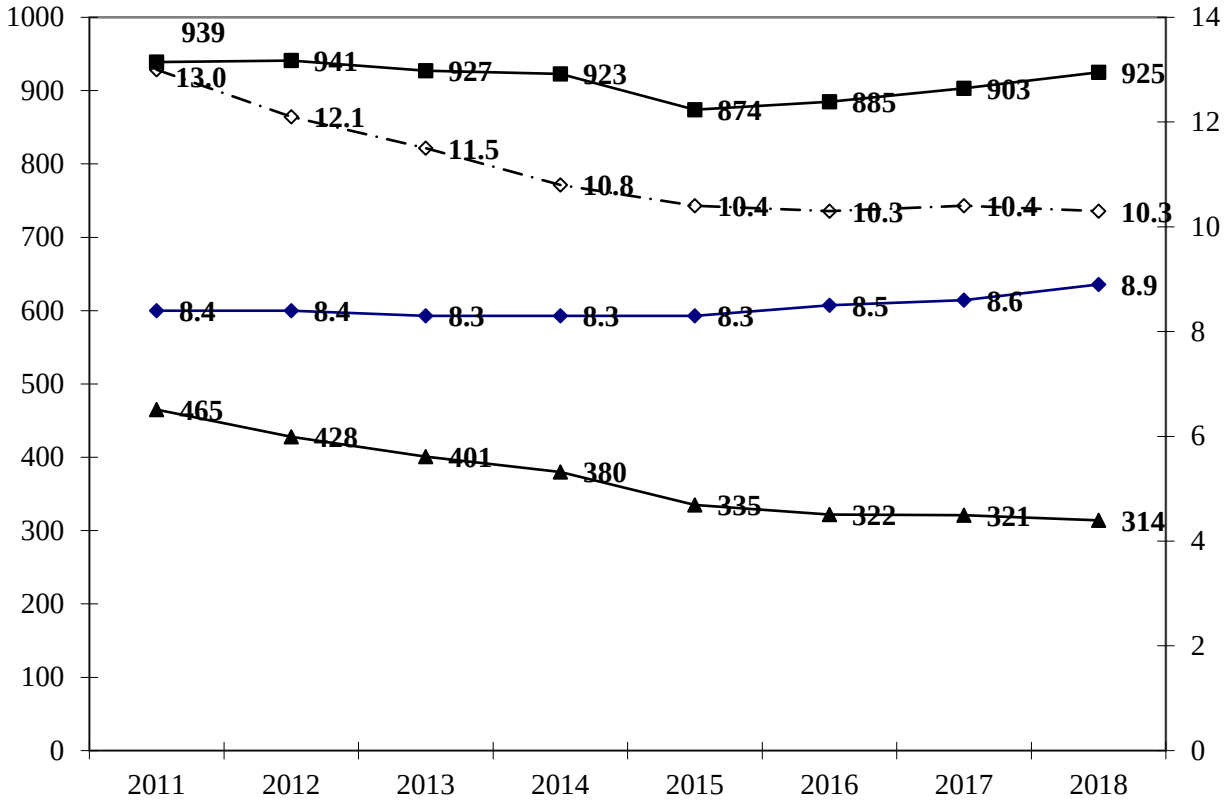


**Fig. 1. Key performance indicators in educational sphere, 2011-2018***

*Calculated and built by authors based on the sources: [6; 9-14]

Innovations in arrangement of educational process are characterized by reduction in students workload per teacher (20.8%), which contributes to better delivery of educational material to students and its easier understanding. At the same time, students workload per teacher is gradually increasing (6.0%), partly due to reluctance of young people to work in school (Fig. 1).

Ukraine has sufficient capacity for innovations implementation, also in educational sphere. For instance, in 2017, 475 institutions provided training for graduate students and 277 – for doctoral students. Moreover, number of the latter has increased by 8.6% for the period of 2010-2017. Unfortunately, only about 24% of postgraduate students and 30% of doctoral

students complete their training with thesis defence [6-14].

Professionalism of scientific and pedagogical staff is also decreasing. Thus, the share of Candidates of Sciences among scientific and pedagogical employees in higher education institutions of III-IV accreditation levels for the period of 2011-2018 has decreased by 10.0 points, the share of Doctors of Science – by 3.2 points, Associate Professors – by 7.2 points and Professors – by 2.1 points (Fig. 2). This is partly due to the decline in prestige of higher education, level of real wages, corruption etc. The role of understaffing and loss of interest in their work also play significant role, as the share of non-full-time teaching staff has increased from 14.8% in 2011 to 19.7% in 2018 [6-14].

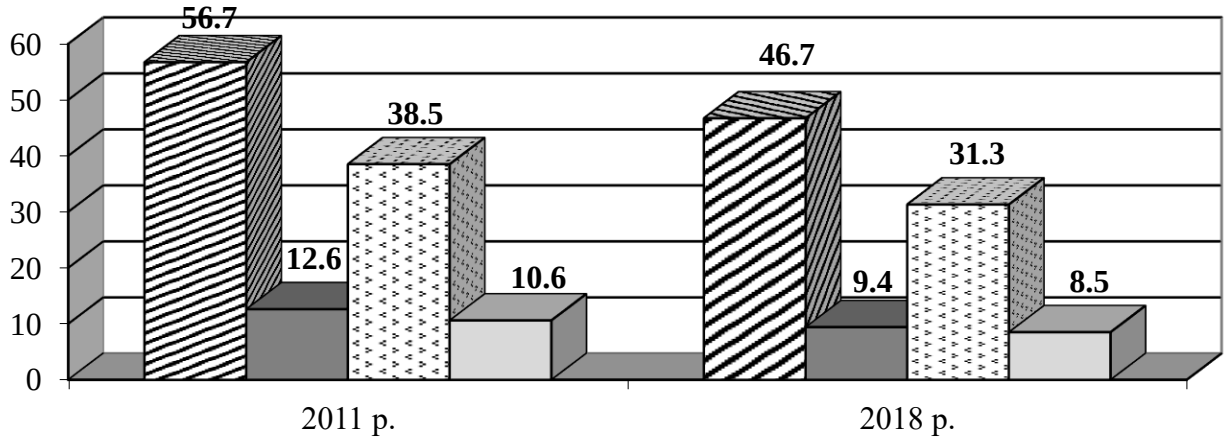


**Fig. 2. Professionalism of scientific and pedagogical staff in higher education institution of III-IV accreditation levels, %***

*Calculated and built by the authors besed on the sources: [6-14]

Since it is impossible to study this issue in detail due to the lack of necessary statistical information, there is a need for additional research and improvement of statistical reporting. However, one thing is clear: decline in teachers' professional skills means the unwillingness to improve, develop, conduct interesting classes, learn and apply something new and innovative in education.

In recent years (2010-2018), the innovation process in educational sphere has somewhat slowed down or, we can say, it remains at the same level (in terms of the share of Doctors of Sciences and Candidates of Science who carry out scientific researches and work on innovations

in educational sphere). At the same time, the share of higher education enterprises engaged in research and innovations development, which has been gradually increasing, began to decline in 2015 (Fig. 3), reflecting the previous tendencies regarding the professionalism of the teaching staff and general tendencies of educational sphere development.

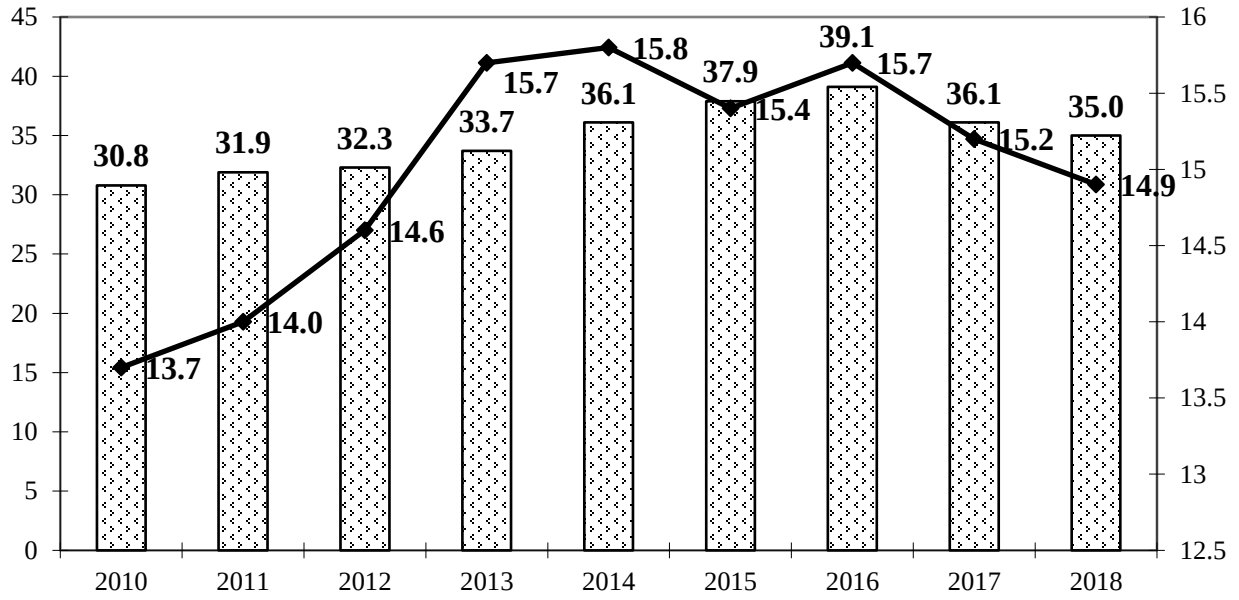


**Fig. 3. Innovations in educational sphere, 2010-2018***

*Calculated and built by the authors based on the sources [7; 8]

However, it should be noted that main innovative developments are created in educational institutions. After all, the majority of applications for inventions and utility models (more than 60%) are submitted and, accordingly, approximately 50-60% of all patents for inventions and utility models are obtained in educational sphere [13; 14].

As we can see, it is education industry that is capable of and provides the bulk of inventions. Innovations in education are slow to implement for a number of reasons that still require research. It is also necessary to improve statistical reporting, namely, to fill it with data on innovations in educational sphere of organizational, financial, methodological, etc. nature. Together, these activities will contribute to successful development of educational sphere, improvement of innovation process in the country and strengthening of its national and educational security.

**Conclusions.**Enterprises engaged in development and implementation of educational

innovations should remember that in order to improve the efficiency of these processes, the following steps should be adhered to: creation of innovations, which provides for analysis of educational activities and identification of problems, designing, testing and examinaion of innovations); dissemination of innovations (preparatory stage, information campaign, support for innovations implementation, marketing analysis of the market and results of innovations implementation); assimilation of innovations (analysis of educational system and search for bottlenecks, search for innovations, alternative analysis of existing innovations, designing of promising educational activities, implementation of innovations, evaluation of changes results, institutionalization of innovations); educational and pedagogical process.

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