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**EDUCATIONAL LOGISTICS AS ONE OF METHODS OF TECHNOLOGY  
TEACHERS' MASTERY INCREASING IN POSTGRADUATE EDUCATION**

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In the article the essence of teaching logistics as one of the methods for improving the skills of teachers school subject "Technology" general education zakladivu current conditions; are prerequisites for their formation; The features of the flow of knowledge and its accumulation on a global scale; The features of logistics as a science of planning, organization, management, control and regulation of the movement of material and information flows in space and time from their primary source to the end user; and singled out approaches to improve the quality control of acquired knowledge. The article shows that logistics offers process control spending, namely by determining the initial, intermediate and final level of knowledge of testing after studying each section surveys the classroom, conducting monitoring studies, surveys and diagnostics. Outlined the specific teaching methods and tools of logistics, which allows to open the way for creative self-realization and effective pedagogical activity of teachers of secondary schools.

**Key words:** technology teachers, methods, ways, knowledge stream, learning stream, equipment stream, startup, forum-conference, technology "logistics", hackathons.

***О. С. Армейський «Педагогічна логістика як один із методів підвищення майстерності вчителів навчального предмету технології в післядипломній освіті»***

У статті висвітлено суть педагогічної логістики як одного із методів підвищення майстерності вчителів навчального предмету «Технології» загальноосвітніх навчальних закладів сучасних умовах; наведено передумови їх формування; розглянуто особливості потоку знань та їх нагромадження в глобальному масштабі; визначено особливості логістики як науки про планування, організацію, управління, контроль і регулювання переміщення матеріальних та інформаційних потоків у просторі і в часі від їхнього первинного джерела до кінцевого споживача; а також виокремлено підходи щодо підвищення якості контролю набутих знань. У статті показано, які процеси контролю логістика пропонує проводити, а саме: шляхом визначення вихідного, проміжного й кінцевого рівня знань, проведення перевірки знань після вивчення кожного розділу, опитування на заняттях, проведення моніторингових досліджень, анкетування та діагностування.

Окреслено специфіку методів та інструментів педагогічної логістики, що дає можливість відкривати шляхи для творчої самореалізації та результативної педагогічної діяльності вчителів загальноосвітніх навчальних закладах.

**Ключові слова:** учителі технології, методи, засоби, потік знань, потік навчання, потік обладнання, стартап, форум-конференція, технологія «логістика», хакатони.

***О. С. Армейский «Педагогическая логистика как один из методов повышения мастерства учителей учебного предмета технологии в последипломном образовании»***

В статье отражена суть педагогической логистики как одного из методов повышения мастерства учителей учебного предмета «Технологии» общеобразовательных учебных заведений в современных условиях; приведены предпосылки их формирования; рассмотрены особенности потока знаний и их накопления в глобальном масштабе; определены особенности логистики как науки о планировании, организации, управления, контроль и регулирование перемещения материальных и информационных потоков в пространстве и во времени от их первичного источника до конечного потребителя; а также выделены подходы по повышению качества контроля приобретенных знаний. В статье

показано, какие процессы контроля логистика предлагает проводить, а именно: путем определения исходного, промежуточного и конечного уровня знаний, проведение проверки знаний после изучения каждого раздела, опрос на занятиях, проведения мониторинговых исследований, анкетирования и диагностирования.

Определены специфику методов и инструментов педагогической логистики, что позволяет открывать пути для творческой самореализации и результативной педагогической деятельности учителей общеобразовательных учебных заведений.

**Ключевые слова** учителя технологии, методы, средства, поток знаний, поток обучения, поток оборудования, стартап, форум-конференция, технология «логистика», хакатоны.

**Formulation of the problem.** The formation of the European educational space, the introduction of educational standards, informatization, computerization and so on need to bring the educational system into line with modern requirements of economy and society. Much success in reforming education is not achieved yet. The disadvantage is that the ideas are not backed by enforcement mechanisms. In the field of business and Economics such a universal mechanism is logistics.

Pedagogical logistics as a separate direction was formed at the beginning of the first decade of this century. Under this concept understand the science as for the shortest period you can perform most useful amount of work. This will give the opportunity to reduce the risks of inefficient use of the costs of education. In conditions of instability pedagogical logistics is the most appropriate way for the development of society.

Today, the problems of pedagogical logistics do many researchers, among which we must highlight Nosov A.L. [7]. Pedagogical logistics by Nosov A.L. engaged in the management of educational flows, based on the principles of "just in time". Pedagogical logistics allows for the first time to synchronize the educational system bringing its level of control to economic systems. It gives the opportunity "...to reduce the risk of inefficient use of funds for development and education, thereby, to increase the inflow of capital in this area" (CPI "Tradition"). The choice of educational systems, curricula, methods, technologies and forms of educational process, on the one hand, opens the way for creative self-realization of the teacher, and with another – demands that his educational activity was productive, was highly professional and aims to increase skills of teachers of the subject technology of secondary schools. That's why one of the principal challenges facing institutions of postgraduate pedagogical education, is to enhance the creative potential of teachers in the process of its practical activity. Request to the professionalism and creativity of the teacher, capable to work on innovative principles, actualizing in the formation of the European space. Thus, the teacher of technology (technical work), according to scientists, must possess as general so as vocational and special competences, and also has key core competences [1;5].

**Analysis of recent research and publications.** In connection with the above there is a requirement for the development of organizational and methodical approaches to improve the skills of teachers of the subject technology. Teachers of technology (technical work) in secondary schools do not always can effectively to use of modern innovative pedagogical technologies, and to develop scientific and methodological projects to update content and create new methods of training at different stages. These issues are discussed in "New Ukrainian school" project – the ideology of change in education.

The analysis of scientific literature and educational practice in the context of professional legal training of the teacher of technology showed that today the issues of increasing the professional level in the field of education lit in the pedagogical science insufficient. Various of aspects of teachers training and problems of improving skills of teachers were raised by writers such as Balonina S.V., Morozova V.S., Pevtsov Y.A., Zaporozhets A.L., Kozyubra N.I., Okamitniy V.V., Panasina S.Y. and others. Despite the importance of the research remain insufficiently developed both as methodological so as technological aspects of formation of professional competence of teachers directly the teachers of technology. The state educational standard in the

field of professional activity of the teacher of technology determines the scope of application, including secondary (complete) education. For full specialist training to work in these areas requires the development of such innovative teaching technologies, which would ensure the possibility of effective activities in each area.

Therefore, the special subject competence is the Foundation of base in the formation of professional competence of teachers of technology and improve their skills. Analysis of the state standard allows you to allocate a special competence, which should be taken by the teacher of technology in the field of educational activities: implementation of learning process of legal relations in accordance with the educational program; planning and conducting training and practical training activities [3].

Teacher of technology (technical work) should be able to use modern techniques, methods and means of teaching technologies, including technical, informational and computer technology, to be ready to organize educational process with the help of legal-reference systems and databases. [2].

Professional and legal training of teachers of technology is primarily based on the study of the theoretical foundations of disciplines, the foundations of the technology "logistics" creative ways to utilize startup and hackathons. Because of their development, they need to master the necessary volume professional knowledge in the implementation of their duties. However, it is well known that modern educational technologies include not only the transfer of information to students, how many training activities, ability to solve professional problems in practice. So, after mastering the theoretical knowledge of the specialty in the system of legal education it is advisable to conduct workshops in the form of problem-solving for formation of practical skills [7].

All this suggests that the technology of realization of the process of formation of professional competence of teachers of technology is task technology, which is based on the concept of "pedagogical task" [7]. As the analysis of studies shows of the use of pedagogical tasks undertaken by such authors as Ball G. O, Brushlinsky A.V., Fridman L.M., Leont'ev A.N., Lapico T.V., educational task is a component of the pedagogical system that arises from a problem situation and requires the subject of teaching activities the application of professional skills in terms of systems to achieve the goals that arose. In the pedagogical task, as in any other task, there is always the known and the unknown, that is the question: how? what to do? when? why? etc. the answer to the question means that the subject of pedagogical activity realized both elements of the task: given (conditions) and what you need to find to solve the problems of technological approach.

The problem of implementation of process approach as a means of modernizing the educational industry dedicated to the research of Bakhanova K., Dichkivskoy I., Selevka G., Hutors'koho A. and others, in which we are talking about the application of educational innovations in the educational process of the school and enhance the skills of teachers of secondary schools.

**The wording of Article purposes** is to reveal the modern techniques, approaches and means of teaching technologies, and to identify theoretical bases of development of professional competence of teachers of educational institutions and to show the importance of modern approaches for the development of pedagogical skills through the introduction of technology in logistics flows and formation: psychological, informational, flow equipment, and also fully utilized startups, profile, hackathons, the quest with the aim of solving problems of formation of professional competence and pedagogical skills of teachers of secondary schools.

**Materials and methods.** As noted earlier, the development of skills of teachers has an algorithm that reflects a certain level of professional competence. The development of professional skills of teachers provides for such a "measurement", as the introduction of modern technology logistics", hackathons, startup. For a civilized society is characterized by such activities which aims at improving institutions, activities contributing to the achievement of success in various sectors of the most economically and organizationally advantageous way. These are the tasks of logistics. As you know, "...any economy ultimately comes down to time savings". Logistics contributes to the fact that for a short time, you can make the most useful amount of work.

Pedagogical tasks of logistics – the management of the pedagogical flows, namely the flow of knowledge intelligence, the flow of the training and development of intelligence, psychological flow, stream health, information flow, flow neuropathology, the hardware thread.

Today, the problem of pedagogical logistics involved many researchers, among which we must highlight Nosov A.L. [7]. Pedagogical logistics by Nosov A.L. engaged in the management of educational flows, based on the principles of "just in time" principle of simplicity real systems by Eliahom and Naldrett M.G. Pedagogical logistics allows for the first time to sync educational system to bring its level of control to economic systems. This gives the opportunity "...to reduce the risk of inefficient use of funds for development and education, thereby, to increase the inflow of capital to this region" (SPE "Tradition"). Logistics is the science of planning, organization, management, control and regulation of movement of material and information flows in space and in time from their original source to the final consumer.

Logistics is the harmonization of interests of participants in the process of moving products form of optimization of market relations, means the improved management of material and associated information and financial flows in the path from the primary source of raw materials to the final consumer of finished products based on a systematic approach and economic trade-offs to obtain an energetic effect.

Logistics is the art of managing the flow of materials and products from an external source to the consumer.

Logistics is a new research direction, study of planning, management and monitoring (tracking) during the transfer of material and information flows in the industrial and energy systems.

It is a scientific theory of planning, managing and controlling the flows of materials, energy and information into the certain types of businesses.

Logistics is an interdisciplinary research area that is directly connected with the search for new opportunities to improve the efficiency of material flows. Among the many definitions of the term "logistics" is most suitable for educators, in our view, is this: "It is the science of organizing, planning, control and regulation of movement of material and information flows in space and in time from their original source to the final consumer" (Nosov A.L., 2012) [7].

According to the logistics in the educational process is distinguished by functional area - teaching process of professional education and the types of flows that are relevant to educational institutions (Nosov A.L., 2012) [7], which takes into account the leading methodology for managing information, material, personnel and other threads that shape the quality of the educational process as an object of application of logistic principles in the school and University education. Stresses the importance of logistics as an educational and formative discipline.

Educational logistics for the first time allows to sync educational system to bring its level of control to the economic system. This gives the opportunity to reduce the risk of inefficient use of funds for development and education and thereby to increase the flow of capital in this sphere. In the face of increasing uncertainty and instability educational logistics is an appropriate response to the situation that occurs in the development of mankind. There are several threads in the educational logistics [4]: the flow of knowledge and intelligence, the flow of the training and development of intelligence; psychological flow; flow neuropathology; the flow of health information flow and flow equipment. For example, Podolska E.A. [8] formulates the basic principles of quality management of higher education and education of logistics and notes that the quality of higher education is determined by the evaluation of competences of graduates in the context of market relations. In a modern world, must build new educational logistics, which usually understand a set of principles of optimization of educational processes and structures.

Modern teaching technologies aimed at forming time of the educational space joint "cultural social and Culture Info" the work of teachers and students, to ensure internal determination of activity of pupils by including them in the realization of the educational process and educational objectives, obtaining information about the subjective level of professional training, as well as subjective evaluation the goal of professional education. In this context, is the

formation of professional competence and pedagogical skill of the teacher in the system of postgraduate education [9].

The teacher of technology must develop memory, imagination and creative thinking, can find information and interpret different sources (that is, the ability to create advanced picture) [3].

**Results and discussion.** Pedagogical logistics as one of approaches of enhancing the skills of teachers of the technology as a subject, which defines the following teaching streams: the flow of knowledge the production of knowledge, removing obsolete forms of activities; the flow of learning with the main problem of creating a unified educational space, considering school and higher education. It uses most appropriate in specific settings educational technology, now pay special attention to the technology of "logistics" [4]. Need to consider consistent study of a variety of disciplines, topics, and prevent duplication; to pay special attention to the quality of teaching; the formation of threads: psychological flow, information flow, flow equipment, and fully utilized startups, profile, hackathons and quests.

Pedagogical logistics can act as a backbone structure, which is the educational process. Through the prism of the backbone structure, the teacher forms his / her professional and pedagogical horizons, creativity and personal qualities". In this pedagogical logistics, which is implemented by the teachers is the quality of not only basic knowledge but also professionally necessary.

Pedagogical logistics takes on a modern level one of the innovative lines of optimization of educational process in educational institutions based on which is an experimental work on a chosen topic. Presenting the following use of elements of logistics for optimization of the educational process: the flow of knowledge, psychological flow, information flow, flow of equipment flow of education. In addition to fulfilling the core curriculum, it is necessary to develop algorithms for learning independent work in lessons and in free time. The use of new forms of education – situational games, hackathons, start-UPS, spinoff quests, Cisco – successfully combine the development of thinking, independent work of students, control of knowledge, the use of IT.

The most important elements of the quest are the narrative and the survey of the world, and a key role in the process is played by solving puzzles and tasks, requiring the participants to creative mental efforts.

**Conclusion.** Summing up, it can be noticed that at the present stage all teachers, especially teachers of technology, requires an immediate increase in their level of skill, professional competence with the aim of lawful participation in the development of a democratic society.

One of the important solutions to this complex problem is the establishment in the system of postgraduate education such organizational-pedagogical conditions and means of stimulating the professional improvement of teachers, which would contribute to improving pedagogical skills, the awakening of needs self-actualization, self-affirmation and creativity, the desire to create their identity, independently develop: educational programs, to draw up plans and syllabus of the subjects in accordance with the standards of secondary education; to select textbooks, teaching methods and education. The whole life of new school will be organized on the model of respect for human rights, democracy, support of good ideas. The new school is to nurture the Ukrainian identity.

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