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## POPULARIZATION OF SCIENTIFIC KNOWLEDGE WITH USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES

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**Abstract.** The influence of information and communication technologies on the level of education in contemporary society is studied.

**Keywords:** quality of professional training, high education, data communication technologies, professional education.

## РОЛЬ ИКТ ТЕХНОЛОГИЙ В ПОПУЛЯРИЗАЦИИ НАУЧНЫХ ЗНАНИЙ

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**Аннотация.** Анализируется влияние информационно-коммуникационных технологий на уровень образования современного общества.

**Ключевые слова:** качество образования, высшее образование, информационно-коммуникационные технологии.

**Introduction.** In 60-th years XX century, modern humanity reached the maximum of its scientific and technological strength, driven by the development of a nuclear-missile race. The consequence of the new technologies development, as well as the significant result of which, was the introduction to space exploration. At this time, respect for science and scientists peaked. It was learned at that time a scientist exactly was the standard of character, able to perform any feat in the name of humanity. It is obvious, that for the emergence of a thinker of genius is necessary to prepare a huge mass of well-educated scientific manpower. Due to the fact, that it was considered fashionable to be smart, it was able to maintain young people's interest in science. Youth imitated a famous scientist in the style of speech and manners of clothing, was interested in the opinion of scientists and tried to get to the core of scientific research. Most of the surveyed respondents on the street could easily name all the astronauts have flown in space, and to retell their detailed biographies. There was a huge demand for engineers of different specializations, physicists and mathematicians were needed. Mass media, which popularized and fueled (warmed up) interest in the latest scientific knowledge, were playing enormous role in the popularization of scientific knowledge, as well as the interest of the youth in this. Popular science films were created, popular science publications were printed, TV and radio debates of scientific orientation were held. And all this was done at a high level with the obligatory references to reliable sources of information.

In 70-th of XX century, with the decline of world tension, interest in scientific knowledge gradually reduced. Fashion on science, on the natural and technical knowledge, on the scientific way of thinking gradually passed. Most often, science is not capable of developing on its own basis, from itself. It is always tasked from the outside, in most cases these are tasks of improving military equipment. This time coincided with the time of satisfying the basic everyday needs of modern society. For the first time in a very long period, ordinary citizens of many countries have received housing with home appliances, were satisfied with the nominal demand for food. Thus, the model of development of a society based on the satisfaction of normal needs, has exhausted itself. Neither growth of requirements, no growth of cash savings was foreseen. Business can develop only with the growth of the population, but the population growth rate in developed countries, on the contrary, decreased.

As a way for the system to get out of a crisis, it was decided to create new needs. The solution turned out to be extremely successful, so pharmaceutical companies have created the need to consume constantly different drugs, cloth-



ing manufacturers - need to change clothes by season and more often, manufacturers of communication systems - the need to use these techniques almost continuously, and much more. Nowadays, more and more often the method it is used for creating new dangers and sales of security facilities from them. To implement the new requirements in the minds of consumers, new technologies and marketing plans have been developed. To intensify the process, it was necessary to eliminate rational, critical and scientific thinking, prevalent among the masses. As an ideal model of the consumer to take a person, devoid of rational consciousness and scientific knowledge about the world, as well as living elementary emotions and lust for novelty [1].

**Purpose of the work.** The work analyzes the impact of information and communication technologies in the dissemination of scientific knowledge in society, as well as the ability to use technology to enhance the level of education of the general public.

**Material and results of the research.** Over the past 20 years, amplification of differentiation in the availability of different levels of education took place, as well as the level and quality of education received. It continues to increase inter-regional differentiation between urban and rural areas, as well as differentiation of opportunities for quality education for children from families with different income levels. The ideological ground for these processes was the concept of liberalization of education, including the decentralization of management, expand the variety of legal forms of educational institutions, the freedom of choice of forms and types of education. As a result of the digital "revolution" of recent decades [2], as well as higher education reforming, specialists began to receive in the learning process differentiated knowledge specifically required in their future profession. Certain sections of the population lost the opportunity to receive education due to its inaccessibility, certain ones got it, but it has ceased to meet the contemporary needs of society and the state, industry and other consumers of educational services. There were generations of highly specialized skilled professionals in their field, but which didn't have knowledge in the most seemingly basic areas of knowledge of the school curriculum. It is becoming increasingly clear that the substantive component of modern education, reducible to standardized information and mastery of known knowledge, skills and abilities, does not meet the expectations of society [3].

Lack of knowledge is replenished by the most effective means of popularization - the mass media, because, in most cases, when you hear something many times, you start to treat it with confidence. Thanks to many-millioned readers, listeners and viewers, that the mass media machine broadcasts, penetrates deeply into the minds of the broad masses.

After analyzing, during the period of 50 years, a trend of presentation of scientific data in the scientific and popular publications and movies, as well as in science-fiction and the most common materials, public and the most popular among young people, a disappointing conclusion can be made about the sharp decline in the quality and scientific validity of data included in the works of the present. Thus, in the classic of science fiction – TV series "Star Trek" (1966-1969) demonstrated the work of scientists in the study of the space, and scientists are shown as heroes able to solve any problems through scientific knowledge, competent statement of the problem and work in well coordinated team. In the same series, "Star Trek", but shot already, for example, in the 2000s, the scientific theme goes far into the background, giving way to plots about thirst for lucre and intrigue as the most noteworthy values of modernity. And thanks to the most of modern science fiction movies the word "crazy" has become synonymous with the word "scientist". Most of the main characters of contemporary works are muscular jockstraps with an iron chin, from which the bullets bounce. And as often as not these characters are not burdened with intelligence and destroy everything in their path, and all in order to gain victory, often all their actions are spontaneous and ill-conceived. But the main negative characters, on the contrary, are pedantic and consistent in their actions, they constantly plan every step and work in teams.

Most today's popular science films are based on unproven and sometimes false theories. And usually scientific basis in such films is replaced by clever play on the feelings and emotions of a person. Deliberately false or incorrect theories are generally put in most fiction or science fiction films.

Thanks to fiction films, number of ideas, not always, to put it mildly, having a firm scientific basis, captured not only the broad masses, but also the scientific community. For example, distortions and omissions in the data about the following: the idea that the brain is used only for 10%, despite the fact that we know what is not being used – it atrophies and degenerates; the idea about non-renewable brain cells; the idea of the need for consumption of 2 liters of water per day [4]; the idea of the omnivorous human [4]; global warming [5]; the origin of species from the simple to the complex [5]; theory of the origin of the Universe, in which the systems of complex equations replace the logic and common sense; and much more.

Thus, we see a tendency, thanks to the mass media, to spread among the public at large and professionals pseudoscientific myths that often have a little in common with reality.

According to the results of a nation-wide poll in the United States in 1989, the scientist took the second place after the doctor in the list of the most prestigious professions [6]. And in 2005, 16 years later, this figure remained in the

United States at the same level. A similar public-opinion poll was conducted in 2001 in the EU. Here are the results: doctors - 71%; scientists - 45%; engineers - 30%. In the USSR in the 70-80-ies of the last century, the number of scientific workers was around 1.5 million people, but only in the sphere of science and scientific services 4.5 million people were employed, i.e. almost 4% of all employed in the national economy. The scientific work began to turn into one of the most popular professions. In this situation, no one could come up with the question of what profession is more prestigious - a scientist or an accountant.

Fundamentally different picture is observed in modern Ukraine. According to sociological research, scientist profession is not included on the prestige even in the top ten.

In some countries, according to UNESCO's bulletin on education, today a large number of children remain in the re-education or leaves the school before the end of the elementary education, in the best case, lower secondary education, which is an acute problem requiring urgent solution [7].

An international human development analysis program UNDP provides also ambiguous data [8]. Each year the staff of this program makes a series of reports on the development of countries of the world by various parameters. Ukraine is on the 80th position on these indicators. Data ambiguity is related primarily with the formal approach to the issue. Index of the country's human potential development operates with dependencies of number of graduates of different kind in the country to economic indicators, to the indicators of the length and quality of life, as well as to many other things. But it does not take into account the quality of graduates, their level of knowledge about the world, as well as the integrity of the individual and presence of ideological concept as a whole.

In modern conditions – century of market relations and stiff competition – as the leading factors of the development are suggested advanced storage and reproduction not only of material goods and services, but also the accumulation of knowledge, experience and skills. Human potential of any country is its main competitive advantage. That it makes it possible to adapt to the conditions of the globalization of the modern world, to attainments of competitiveness, it is an important condition for strengthening the economic power of the country, improving the welfare of its population. The human potential of the country is determined by the education provided by the education system, as well as largely by the information received from the mass media. Analysis of the information disseminated by these media over the past decades, shows a tendency to impose material: deliberately false or incorrect; advocating ethnic strife; undermining the foundations of the family institution; advertising a destructive way of thinking, as well as popularizing many immoral "universal values" and "freedom". [9].



The high level of education and usually accompanying it the high level of scientific development throughout human civilization have been an important engine of social, technical and economic progress of the state. In the context of globalization, the quality of knowledge obtained by the broad masses of the country is a factor in the survival and maintenance of economic and political independence of the state. Literate people are bearers of positive values, without which to build a politically mature state is impossible. Formation of civil society, development of democratic principles and freedom is impossible without competent, educated population. Only an educated person is able to see the prospects of the country and to participate with civil liability in the construction of its future.

Ignorance (unconscious and conscious) in conjunction with the passivity and laziness is the strongest threat to the existence of any modern society. Both types of ignorance are fed by the mass media – the main instruments of politicians and corporations.

During the years of relative stability ignorance is growing, and the importance and necessity of education are less obvious. The younger generation, using the benefits of the system, which was built by their ancestors, gradually forgets how and why the system was built. In the end, the incompetent people get power with the support of the majority, thereby endangering the foundations of the system itself.

**Summary.** 1. After analyzing the impact of information and communication technologies used in the mass media, it can be concluded about the tremendous progress in the possibilities of bringing necessary information to the general public. These technologies rightfully occupy a leading position by the opportunity to popularize scientific knowledge.

2. Due to the rapid development of various fields of scientific knowledge, as well as the introduction of a huge number of specialized terms, scientific language ceased to be comprehensible to the masses. Thus the process of bringing of knowledge to the masses has become very difficult. As a way out of this situation is possible and necessary to use information and communication technologies in the educational process for bringing visualized and clear information to students. With the ability to provide scientific knowledge in a visual and accessible form for the masses of people who do not have specialized knowledge in the various fields of knowledge, the use of these technologies in the mass media has established itself as an indispensable.

3. The popularization of scientific knowledge among the broad masses of the population, the promotion of constructive and creative way of thinking and life - is necessary for the formation of youth as an active civil layer of its state

and of all the planet as a whole. It means that everyone should be able to communicate with a representative of any other country, to understand him, to accept for who he really is. Only the high quality of received education gives a person the opportunity to learn to know a multipolar world, to act and to coexist in it without conflicts and together with other people [10].

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## ФУНКЦИЯ ХИММЕЛЬБЛАУ, КАК УНИВЕРСАЛЬНАЯ ТЕСТОВАЯ МУЛЬТИМОДАЛЬНАЯ ФУНКЦИЯ ПРЯМЫХ МЕТОДОВ ОПТИМИЗАЦИИ

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**Аннотация.** Дан обобщенный подход и алгоритм решения оптимизационных задач рудоподготовки, интегральных характеристик загрузки мельниц, логистического управления запасами, проектирования планетарных редукторов. Их построение основано на

