

# INNOVATIVE TECHNOLOGIES IN EDUCATION AND INFORMATION PROCESS

Zinchenko V. Ph. D.

Ukraine, Kryvyi Rih, State Higher Education Institution "Kryvyi Rih National University"

DOI: [https://doi.org/10.31435/rsglobal\\_ijitss/01072018/5964](https://doi.org/10.31435/rsglobal_ijitss/01072018/5964)

---

## ARTICLE INFO

**Received:** 19 May 2018

**Accepted:** 30 June 2018

**Published:** 01 July 2018

---

## KEYWORDS

innovative technology, education and information process, development, strategies, globalization, generation.

## ABSTRACT

This article analyzes the place and role of information technology in the innovative education development. This paper defines a central term «innovative education development» and investigates the process of innovative education development itself. This research reveals the nature of the society informatization within intellectual and humanistic transformation of human life in general. In the focus of the article is also the society transformation which is based on more complete generation and information use within innovative information technologies. The essence of the information society consists of intellectual and humanistic transformation in all spheres of human life based on complete information creating and applying by means of innovative information technologies. The use of multimedia information technology in education (i.e. development of multimedia publications) has multiple advantages due to numerous analytical procedures (searching, classifying, sampling, information comparing, etc.); its open structure that allows to make any changes to the program content depending on the results of testing; its opportunities to maintain and handle large amounts of heterogeneous information (audio, graphics, text and video) and combine in a handy shape. Successful achievement of education goals with using IIT becomes possible under conditions of information and studying environment. This term should be understood as a set of conditions that contribute to the emerging and developing processes of information and studying interaction between students, teachers and facilities IIT. It also provides formation of cognitive student activity by means of filling the environment with content components of a particular subject. Information and studying environment includes means and technology of collecting, storing, transmitting, processing and distributing education information, ways of knowledge representing, which provide connections and functioning institutional structures of educational activities. The purpose of information and studying environment is in expressing, discovering and developing abilities and potential opportunities for individual creative initiative; producing the conditions for self-knowledge acquiring and its mastering; automate software processing the studying results; compensation of negative effects from student interaction with IIT means.

---

**Citation:** Zinchenko V. (2018) Innovative Technologies in Education and Information Process. *International Journal of Innovative Technologies in Social Science*. 5(9), Vol. 2. doi: 10.31435/rsglobal\_ijitss/01072018/5964

---

**Copyright:** © 2018 Zinchenko V. This is an open-access article distributed under the terms of the **Creative Commons Attribution License (CC BY)**. The use, distribution or reproduction in other forums is permitted, provided the original author(s) or licensor are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.

---

**Introduction.** This investigation is caused by different practical needs, especially by the necessity to study the nature, main streams and means of innovative education development. These processes are influenced by the radical changes of the world social and cultural dynamics, particularly due to globalization and information revolution.

Nowadays the world comes through constant global and local changes. These changes require new approaches to training person for life in general and to education methods. Traditional education, while maintaining a generally constructive content, is far away from up-to-date needs and future perspectives.

According to the analysed researching education should carry on innovative tendencies, advance modern demands and future requirements, demonstrated by our society in order to be commensurate with present-day time.

Innovative education development is a continuous activity innovation of educational institutions in the educational process. It becomes of great importance today. Without innovative approaches education process loses interrelation with life, its creativity and becomes a routine matter for the society in general and a person in particular. Modern life requires search intensifying and experimentation, introducing new technologies, using latest education means. However, implementation of these requirements can not be done randomly, haphazardly, hastily without taking into account teaching experience, which in the past led to well-known and mostly outstanding educational achievements. A number of approaches display the importance of this experience for present-day education. It is clear that education innovations should develop in the way of not ignoring but regarding the past experience. The innovative education development should be in terms of teaching in wider comprehension implicating Social and Humanity studies such as philosophy, political science, sociology, etc. within practical use in other production areas. Therefore, innovative education development is chosen as the object of profound theoretical analysis.

The relevance of our study is also determined by the intensification of basic product information revolution represented by information technology that makes the revolution in all spheres of human activity. Education is not an exception. Information technology has made a great number of innovations in the education system, so that it can be fairly viewed as the primary means of innovation development. Currently, scientists and educators discuss education informatization as the natural process of social and educational transformations related to the saturation of educational systems with information products based on microprocessor technology, means and technologies with its further implementation in educational institutions.

The content, main streams and means of «innovation education development» are revealed in research works of such scholars as: V. A. Andrushchenko, I. V. Bech, V. Bech, G. Volynka, V. Zhuravsky, I. Zyazyun, V. Kremen, V. Kurylo, V. Lugovyi, M. Myhalchenko, S. Nikolayenko, V. A. Ognevyuk, I. Prokopenko, A. Savchenko, M. Stepko and others.

**Sections and subsections of the paper.** The aim of our study is to analyze the place and role of information technology in the innovative education development on the way to European integration.

Achieving this aim requires solving the following tasks:

- determine the term «innovative education development», its mainstream and structure; justify its necessity in a globalized and dynamic information society;
- analyze the structure, the ways and the main components of the innovative education development;
- examine the place and role of information technology in the strategy of innovative education development.

The target of the study is the process of innovative education development.

The subject of this research is the place, the role and the value of innovative education development.

**Information technology in education.** The use of multimedia information technology in education (i.e. development of multimedia publications) due to the plurality of analytical procedures (information search, sort, sample, compare, etc.) and open structure that allows quick changes in the program content depending on the results of testing. It also gives opportunities to maintain and handle large amounts of heterogeneous information (audio, graphics, text and video) and combine it in a convenient form providing the following: a) disclosure, preservation and development of the students individual abilities, peculiar and unique for each person; b) the formation of students cognitive abilities, self-improvement; c) ensuring the combined studying of outer world within interrelation of humanitarian and technical sciences and the arts; d) constant dynamic updating in the content, forms and methods of educational processes.

Nowadays the intense formation of a new civilization type is observed, the information society in particular.

The inner insight of society informatization is connected first of all with intellectual and humanistic transformation of all human life and society in general. This process is based on more complete generation and information use by means of Computer Science as a major development resource in creating information society (IS).

The main features of IC education are the following: the emergence and development of the global education system; education continuity throughout life with dominating self-education; individualization of education; diversity and increasing of educational standards and disciplines; focus on the synthesis of the latest scientific knowledge and methods; training transition from formal disciplinary to problem-active type; the widespread use of innovative information technology (IIT) [6].

Successful achievement of educational goals while using IIT is possible under the list of certain conditions such as functioning information and study environment. The last should be understood as a set of conditions that provide the emergence and development of processes aimed to provide information and educational interaction between students, teachers and IIT facilities. Moreover it consequently leads to the formation of cognitive student activity in terms of filling environment components with particular subject course content.

Information and study environment contains means of knowledge representation and technologies used for collecting, storing, transmitting processing and distributing educational information, which provides interrelation and functioning of institutional structures in educational activities.

The main function of information and study environment is displayed in expressing, discovering and developing of capabilities and potential opportunities for individual creativity; creating the conditions for acquiring self-knowledge and mastering its quality; providing software automate processing of studying results; refunding negative effects of interacting students and IIT means.

Multimedia information technologies are widely used in the education process. Multimedia technology is characterized by simultaneous acting of visual and auditory perception, synthesis and synchronization of non-verbal and verbal knowledge, synchronization and integration of time-spatial and visual-spatial sources of educational information. Multimedia systems are also applied to implement e-books with colour graphics, e-teaching systems, multimedia libraries and geographical reference information systems. Using information media technology in education allows developing student's creative and intellectual potential, his ability to perceive and generate new knowledge and put it into practice. Multimedia systems give opportunity to produce in advance educational materials for various forms of educational activities such as lectures, practical classes, tests, students' individual work etc. The new optical media standard of DVD (Digital Versatile / Video Disk) can not only store large amounts of heterogeneous information (4-17 Gb), but also significantly improve its quality [4].

Multimedia electronic textbooks are currently used as much as traditional textbooks. Consequently it implies the idea of creating libraries filled with multimedia CDs devoted to subjects studied at school and other related information. Electronic textbook should become for both students and teachers the same easily accessible in use source of information, just as a traditional book.

No doubt that both of two books (traditional or electronic) as well as two approaches (traditional or alternative pedagogy) are preferred. Modern pedagogy contains a large number of teaching approaches. And this number is constantly growing. The present-day world is pluralistic, so are numerous educational approaches. Each of them requires its own software support for the implementation into the educational process [2].

**E-mail in education.** Another way to access and share information is an e-mail. E-mail is widely used in such educational programs where there is a great necessity: 1) to share with your colleagues ideas, experiences, data or results; 2) to consult with specialists, experts in various levels; 3) to exchange postal items in paperless form; 4) to communicate rapidly with people without physical movement; 5) to develop skills of teamwork.

It should be emphasized that due to email students and teachers can quickly and easily communicate, despite the existing cultural and geographical differences. Along with e-mail information access and exchange the means of teleconferencing are increasingly used, particularly within the distance learning. No wonder that distant education is presently called the way of education which destroys in future all the boundaries. Distant education offers the opportunity to learn the disabled people. Also it provides education opportunities for residents in the regions where there are no schools or teachers of certain subjects. It allows students to choose courses (you can choose different courses from various distance education) and the education rate. Teleconference allows students to organize teamwork, to apply along with traditional methods such activities as business games, brainstorming etc. It becomes possible due to implementing geographically distributed virtual teams in the teleconference.

Computer training technology with high efficiency can operate at all levels of education. Development of methods involving new information technologies should not be conducted separately but in a one unified complex of «primary – secondary – higher school». Students of the university have to acquire professional-oriented computer technology and be able to use them in future activities in the information society [1].

**Innovative education development.** Innovative development of education is fully self-contained concept, unlike the economy, where innovative development is clearly dependent on the education development. In terms of education innovation means first of all its maximum approaching to knowledge, while in terms of economy knowledge is used to be, although very important, but still assistant component. The economy does not focus on the essence of knowledge, in comparison to its full money essence motivation. For education knowledge becomes its main body, it is a kind of axis and the whole studying process revolves around it.

Among the significant factors in the innovative education development (and as a result also of the economy either) one can consider the innovation ability of high school, its ability to adjust according to a changing environment and functioning through the development and readiness to carry out its mission within creative awareness of purposes in educational activities and active usage of scientific knowledge for its development.

The overall effectiveness of the innovation process is largely determined by the way in which its main agents interact as joint system components in knowledge creation and applying. Therefore, one of the key objectives for government policy should be facing to the staff needs of the modern economy and the formation of new thinking in society on the basis of combined intellectual and material resources both in science and higher education system.

The innovative processes should be presented in all educational institutions. New types of educational institutions, control systems, updated technologies and techniques are to become a sort of manifestation

the enormous potential of innovation processes. Proper and thoughtful implementation enhances positive changes. However, the innovation accomplishment in practice ought to be associated with minimal adverse effects. Because innovation always involves a preparatory stage, including modeling, expert assessments, further modification and correlation with the latest achievements in the field of education.

Thus, the requirement of transition to innovative education is caused by the laws functioning in present-day information society. The development of telecommunication technology, due to scientific and technical progress, achieves a certain critical edge. That is why we can observe qualitative changes in the information environment. It surrounds the individual and creates qualitative changes in all spheres of life. Regarding to education, these changes are classified as basic paradigm change. Previously in studying process a teacher is considered to be the main source of information and consequently produces reproductive method of teaching as leading one. Nowadays a student meets with a lot of readily available information sources. Currently the teacher's function is different. He should teach students to focus on and get oriented in this information environment. His task is to develop students' creative and intellectual abilities, including the ability of self-education. This fact makes the use of information technology, computerization of educational process the primarily means in transiting to innovative education, indicated in a number of strategic and research documents [5].

The development of innovative education forms is only the part in the overall process of human practice innovation. Any innovation process requires possession of information resources and communication technologies. The problem is not to seize total set of technologies, but to build the right system of its applying according to the strategy of a certain development. Innovative education is a model of education focusing primarily on developing creative abilities and a strong motivation for self-development based on individual voluntarily chose of «educational course» (sphere, direction, level, consistency of education, type and style of education institution etc.) and vocational activities. XXI century is the century of education. Therefore there is an objective need to create a system of innovative education. The initial priority of such education should be the formation of a free and responsible person, capable to work constructively in problem situations, combining professional competence and civil liability. Such a person should have proper philosophical outlook and ethical consciousness. This formation is bred by person's transformative intelligence and innovation capabilities development based on the humanization of the educational process [3].

**Implementation of information education technology.** The theoretical focusing on the implementation of information education technology is supported by the direct practice of its applying into the information society forming and developing processes. Foundation and rising axiom for the modern Ukrainian society is developing this kind of education. One of the leading features of this education sort is the widespread use of new information technologies.

One of the main education objectives in the development of the information society is to teach students to use modern information and communication technologies. In this regard, there is an urgent need to speed up the training of future teachers and experts in the field of information and communication technologies, as well as to provide educational institutions with modern computers, educational software, electronic books etc. Solving these tasks affords further country's development

The information technology implementing as innovation education means contains not only positive, but also controversial (in some ways negative) sense. Although the final meaning of information technology almost always is considered in «positive» way, some definite contradictions can not be ignored. Ignoring any disagreements can lead to collapse in obtaining not only certain results, but also the entire education system.

The first and main contradiction is formed on the edge of the real opportunity and the will of the education material support agent managing the process of information technology. It goes without saying that there is an urgent need of education informatization, however, not every manager (education manager, politician, public money administrator, businessman, etc.), while having necessary investments, can find additional financial support for appropriate funding into this process [7].

Moreover some contradictions associated with information technology are connected with the problem of professional employee upgrading. A large number of well-known companies willingly try to keep in touch with education institutions, trying to promote their products to the market by providing training materials, documentation, software, product samples etc. Offering special university programs guarantees significant discounts under condition of purchasing products. Unfortunately, the opportunities for cooperation in Ukraine are not properly used. On the one hand, it prevents unlicensed software to become available. On the other hand, language and cultural barriers emerge.

In addition, the contradictions of information technology include converting benefits of information technology into its opposite. For example, hypertext facilitates the identification of the main semantic elements of the topic. It helps to find and study definitions quicker, making the establishment of meaningful interconnection easier. In the same time its features cause nonsystematic unstructured curriculum discipline studying that can be started from any page. Unlimited access to information resources for students creates temptation to «in coma» copying and rewriting essays, tests, that turns them into a kind of parasite.

**Conclusions.** Therefore, innovative technologies positively influence the process of training and education primarily due to changing the scheme of knowledge transfer and teaching methods. However, implementation of these technologies in the system of education in the information society is based on the use of computers and telecommunications, special equipment, software and hardware, data processing systems and etc.

Although modern educational technologies are based on three main factors of technical grade such as computer technology, information networks and multimedia, but they are focused on people and designed to contribute to their development. Computers help individualize studying, establish feedback for those who are taught, releasing teachers from their routine work. This technology thanks to a person becomes of the particular use. Relatively practical pedagogy has already developed both priority areas of computer application analysis as the study of computer science and computer facilities management in educational institutions as well as regional educational systems. Particular attention is paid now to the implementing information technology into the educational process, developing the education system based on the use of advanced information technologies.

## REFERENCES

1. Vashchenko L. (2002). Priorytetni napryamy realizatsiyi zavdan' innovatsiyanoi polityky stolychnoi osvity [Priority ways of implementing the tasks of innovative policy in capital city education system]. Pochatkova shkola. 11, 4–8.
2. Dyundyn V. (2006). Rehionalni problemy innovatsiyanoi rozvytku osvitnikh ustanov [Regional problems of innovative development in education institutions]. Ekonomist. 8, 74–77.
3. Yevtukh M. B. (2008). Zabezpechennya yakosti vyshchoyi osvity – vazhlyva umova innovatsiyanoi rozvytku derzhavy i suspil'stva [Higher education standards ensure as an important condition of state and society development]. Pedagogika i psykholohiya. 1, 70–74.
4. Kremen' V. (2003). Modernizatsiya systemy osvity yak vazhlyvyi chynnyk innovatsiyanoi rozvytku derzhavy [Education system upgrading as an important factor of state innovative development]. Osvita Ukrainy. 34, 2.
5. Oliynyk A. (2007). Ponyattya y realnist' protsesu innovatsiyanoi rozvytku osvity v Ukraini v konteksti Bolon'kyh deklaratsiy [The theory and practice of innovative development in Ukraine within Bologna Declaration]. Vyscha osvita Ukrainy. 1, 42–49.
6. Ostapchuk O. (2003). Innovatsiyanyi rozvytok pedahohichnykh system v umovah modernizatsiyi osvity / O. Ostapchuk [Innovative education development under the conditions of education system upgrading]. Dyrektor shkoly, litseyu, himnaziyi. 5-6, 153–161.
7. Poroh L. (2001). Shlyahy innovatsiyanoi peretvoren' u zakladah osvity [The ways of innovative transformation in education system]. Ridna shkola. 7, 10–13.