Information Society: Educational Trends and Technical Aspects of Formation (EU Experience)

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The purpose of the article is to analyze educational trends and technical aspects of information society development; to investigate the modern education digitization through the prism of global transformations of human society and its opportunities. In the article next theoretical research methods were used: analysis, synthesis, deduction, and induction. The results reveal the modern mutual influences between education and the "knowledge society", the role, place and significance of information competence for modern educational processes. In the conclusions one emphasizes that important aspects of education development will be the acquisition of additional digital competencies, essential measures of which are value-motivational, cognitive, technological, communicative, reflective components.

Keywords: information society, digitalization, education, development trends

INTRODUCTION

The modern society's significant characteristics are the extraordinary influence of informatization, which since the end of the XX century has become quotidian and global, and the penetration of digital information technology in all spheres of social life. Under the influence of these factors, there have been radical changes in all areas of human cultural, scientific, artistic, political, economic, educational activities. Such transformations have left so noticeable and such profound and widespread consequences and influenced so tangibly that the gradual conviction of the new stage of civilization's development has become quite well-founded. Powerful opportunities to manage information flows using informative and

communicative technologies have made it possible to assert the reality of an "information explosion". At the same time, the scientific potential growth, the production processes robotization, the information infrastructure improvement, and the rapid increase in the volume of information that is spread around the world have not been the reasons for a qualitatively new social structure. The new stage of civilizational development, first of all, should be associated with the growth of intellectual potential, changes in worldview and transformations of mental constructions, renewal of socio-cultural, industrial-production, moral-cultural postulates, etc. The human development new paradigms formation actualizes the need for the formation of educational elements, the use, and adaptation of modern technologies for the needs of learning. In recent years of the decade, the concept of the information society (IS) has brought together various lines of research related to the diffusion and use of information and communication technologies (ICTs) and their importance in economic, social, educational human development. Jurado-González & Gómez-Barroso (2022) believe that there are research directions that have recently begun to study the phenomenon of information society through the lens of economic transformation. The authors identified the mutual influence of information change and economic growth. Naichuk et al. (2022) characterized the development of the information society in the context of sustainable transformation based on philosophical analysis. The researchers point out that the key civilizational trends that influenced this transformation are the desire to form a global social development; humanity's acquiring the skills to escape from difficult situations, the transition from the industrial to the scientific-information stage of development. These aspects had a direct impact on the emergence of the information society. According to Naichuk et al (2022), the term informationism should be understood as a strategy to emphasize the information technology spread, the creation of various methods and means of accumulating knowledge, and the formation of basic conditions for complex information processing. Despite this, according to Safonov et al. (2022), the education system within the framework of new transformations should function as a generator of new social realities, directly affecting social change. Stephanidis & Antona (2022) in "Universal Access in the Information Society (2001-2021): Knowledge, Experience, Challenges, and New Perspectives" characterized the role of digital information in the information society. The authors point out that such humanity in the information-digital space must use monitoring and reasoning capabilities for the purpose of informational adaptation and maintaining the possibility of contact with other people. In addition, Stephanidis & Antona (2022) described the need to integrate artificial intelligence capabilities into supportive information-intelligence environments. At the same time, Shevchenko et al. (2022) investigated the main digital trends in the development system of a sustainable information society. Features of information and digital competence formation are reflected in Rani et al. (2022). The authors also identified the main challenges and threats of digitalization. Rak-Młynarska (2022) analyzed the main trends and approaches to the formation of the educational environment of the future. At the same time, Muchacki (2022) described the key aspects of becoming a future specialist through the development of information and communication technologies and the reform of the educational sector. Bashynska et al (2022) described the features of SMART-education implementation. The researcher believes that joint activities and cooperation of educational institutions, employers, academic institutions, and governments can not only improve the quality of educational services but also provide the market with a professional workforce. However, some aspects of the functioning of information and communication technologies in education remain understudied, given the current paradigms of active development of a globalized information society.

The article aims to analyze educational trends and technical aspects formation in the information society, to investigate the modern digitalization of education through the prism of global transformations of human society and its possibilities.

METHODOLOGY

In the achievement of the goals was implied the use of analysis and synthesis. Due to the analysis it was possible to divide the studied phenomenon of the information society into several sections: characterizing the mutual influence of education and knowledge, covering the main educational trends of

the informatized society, analyzing the meaning of information competence. Through the use of synthesis, certain parts are combined and their own conclusions are formed. As a result of the deductive approach use, it was possible to move from general theses to the formation of our own conclusions about the further development of education through the prism of the transformation of the information society. Based on forecasting, the actual directions of transformations in the field of education have been identified. Note that using the dialectical method, the phenomenon of "knowledge society" formation has been considered as actively changing.

RESEARCH RESULTS

Education and the "Knowledge Society": The Modern Relationship Through the Prism of Formation

The modern scientific and methodological understanding of information revolution processes began with the post-industrialism theories of illumination. In particular, the definition of "post-industrial society" was proposed to scientific consumption by D. Riesman back in 1958. In the following 1959 D. Bell defined post-industrial society as one where the main production capacities would become knowledge-intensive technologies and their potential could be measured by the volume of information use. The researcher noted that computers would become the tools of mass society management because they act as mechanisms for social records processing. Its vast volume is growing at a galloping pace due to the increase in the number of social connections (Spash, 2015). In 1973, in his next book, he justified an updated principle of social and technological organization. According to his work the main influence on decision-making in the economic, political, and sociocultural sectors would be the new technologies of the time and the not-yet-fully formed layer of specialist intellectuals. The social development perceptions together with the information and communication technologies growth (programming capabilities and technical support) led to the beginning of scientific active discussions. These disscutions concerned the informological approach and the future fate of humanity in the information period.

In 1976, P. Drucker was the first to use the concept of "knowledge society". It was a try to characterize a renewed type of economic relations. According to them knowledge would play a leading role, and its production and use would become sources of human development. In addition, the social value will not be the information itself as a certain object, but the ability to manage it using the necessary and meaningful qualifications, skills, talents, and competencies (Spash, 2015). The growth of the share of information in the course of professional or other activities will lead to a postal decrease in the role of material activities. An important expression of the new era, its leading characteristic will be the increasing weight of information and scientific knowledge as economic objects. According to this trend, the labor market will also undergo fundamental changes.

Consequently, the information society has become a certain stage of transition from a definite social situation to new, perspective states of socio-economic, scientific, and technical development, i.e. - to "knowledge society" (Naichuk et al., 2022). Accordingly, the main sources of functioning and social evolution and the progressive manifestation of global transformations are knowledge. And it speaks both of the scientific reference points already obtained, but also of the perspectives that will open up as a result of the continued accumulation of knowledge in the future (Bashynska et al., 2021). In the context of further development, improving the level of human capital will be a prerequisite. Researchers note the importance of this aspect because even with the full digitalization of production processes and the provision of appropriate computer equipment, the proper functioning of the digital communication system, the adoption and implementation of an advanced and progressive legislative framework in the field of digitalization, without the necessary training of users to establish a normal standard of living in information will not be possible (Rak-Młynarska, 2022). For this reason, there is an obvious need to further development of human potential, in order to improve its quality, first of all, by increasing the level of education, professional competence of future workers, their ability to act creatively in atypical situations, etc. The achievement of such results requires radical, updated approaches to the essence and structure of all stages of the educational system.

Trends in the Formation of a New Type of "Information Human"

For a successful socialization, in terms of globalization and further development of the knowledge society, there is a need for a permanent increase in personal level of informatization and necessary competencies. For this reason, one of the most important trends in the existence of education in the systems of the "knowledge society" will be the spread of a system of continuous learning. This type of learning organization should not be formal and mechanical, and the goal is a practical direction, taking into account all the current requirements for certain professions, focusing on the most relevant achievements of scientific and technological development (especially - modern information technology). The dominance of this approach will have a positive impact and will help to overcome the discrepancy between the vigorous rate of information flows increase and the modest human capacity to assimilate them within a limited period of learning activities (Jurado-González & Gómez-Barroso, 2022).

This implementation will take place through educational content transformations: teachers in educational institutions should not provide ready-made knowledge but create independent skills for learning, the ability to find the right information in the right quantities, to quickly analyze it and make appropriate to the situation decisions (Rak-Młynarska, 2022). The digitalization of the educational process will transform educators from users of authoritarian teaching methods into trusted advisors who will point out methods and directions for independent information research and learning (van der Merwe & Pedro, 2022). The newly created learning model should also include the development of entrepreneurial ability and readiness to function in a market economy (Rak-Młynarska, 2022). Thanks to the penetration of information technology in all areas of human life, classical paradigms of educational values are also being transformed and opportunities for mastering new challenges associated with acquiring the necessary level of computer literacy are opening up.

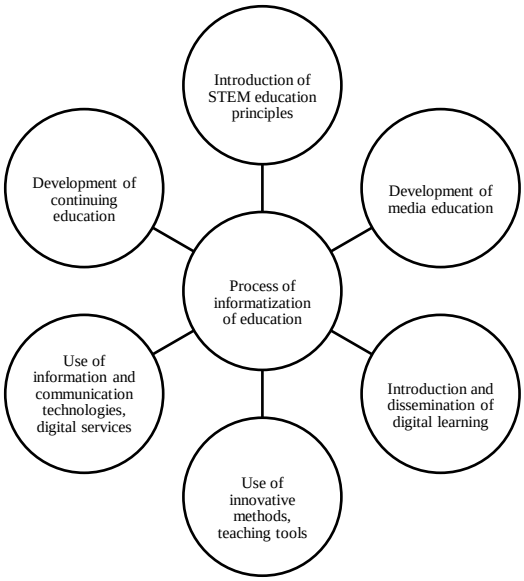
Together with such a society development, the informatization of education is now an absolute and obligatory element in the formation of the intellectual basis of the information society. Among the negative manifestations of the COVID-19 pandemic, positive elements should be identified. First of all, the use of distance technologies has demonstrated their effectiveness, despite skeptical assessments (Bakhmat et al., 2022). This has accelerated the accumulation of relevant scientific methodological materials, human and production capacity, digital working methods, and resources. Consequently, the trends in the formation of a new informatized education can be attributed to the large-scale distribution and implementation of digital learning, services, and tools not only for teachers but also for students and parents for the cooperation of the mentioned participants in the educational process (Rak-Młynarska, 2022). Despite this, another trend in the informatized education formation is the use of STEM-education principles aimed at personal development through the formation of competencies, attitudes, and life values through the use of transdisciplinary approaches to learning. One believes that the use of the key principle of STEM-education integration contributes to the implementation of modernization of methodological foundations, the content of educational material. Moreover, an important direction of the informatization of education is the use of cloud technology, which is a radically new service that allows you to implement the use of data processing and storage tools. At the same time, given the active globalization changes in the process of becoming a computerized person, an important role will be played by media education, which will affect the formation of critical thinking, skills of processing, interpretation, and use of informative materials. (See Figure 1).

At the same time, certain elements also attract attention; accordingly the presence of all the positive manifestations of the information society provokes a consumer attitude toward the world around us and other persons. A side phenomenon of the information society is the evaluation of any phenomena solely on the side of utilitarianism, the usefulness of the obtained knowledge, which, above all, leads to an increased danger of dependence on information, the formation of one-dimensionality in information consumption. In addition, the environment of knowledge created by the information society can turn for some carriers into a certain virtual reality, which often becomes more important than physical reality. Therefore, the acquisition of the necessary human cultural development for the effective use of all the achievements and prospects of the "knowledge society" remains relevant.

In addition, the educational process transformation will require advanced training and retraining of teachers. This thesis should be explained, given the main informational advantages of the concept of

knowledge. Individuals who possess the information and find and process it faster than others can actively compete in many social spheres. Consequently, a separate trend of the information society is the constant development of individuals, updating their knowledge, acquiring new skills.

FIGURE 1
THE MAIN TRENDS IN THE FORMATION OF THE INFORMATION MAN



*Authors' development

Information Competence - The Basis of the Information Society

Society's transformation through the prism of digital processes affects the formation of new challenges that require in time responses. It is about a huge increase in information resources, their quality, and reliability. For this reason, it becomes important to orient in a complex set of information, in order to check its reliability (fact-checking skills), to be able to interpret the received information appropriately, to be critical when analyzing a variety of information resources (Liubarets et al., 2022). The important skills for working with information sources have become an important subject for detailed research.

At the same time, one of the strategic tasks of education is to form a high level of professional competence of the future specialist, adaptation of social and economic conditions, which are actively developing and changing. The key importance in solving these tasks belongs to the formation of information competence (Safonov, Usyk & Bazhenkov, 2022). Note that many European educational standards reflect the importance of information literacy, which is part of general cultural and professional competence and affects the successful implementation of professional activities in general.

Nowadays the development of information literacy among students and teachers is an important part of education (Rani, Kaur & Sharma, 2022). In general, information competence contributes to the effective use of information technology and an integrative approach in teaching. They can make learning more interesting by keeping up with current educational trends, providing the right information at the right time. At the same time, with the help of information and communication technologies, teachers were able to implement a person-centered approach to each student.

The information competence is a multifaceted phenomenon, it includes several, in particular a set of professionally oriented skills in order to implement various types of information activities, attitude towards information activities as a value, critical processing of information, skills of using, interpretation of information material (Bondar et al., 2020). At the same time, in education, information competence affects the implementation of information activities and information interaction between the participants of the educational process within the framework of using the potential of a distributed information resource,

organization of content, and methodological quality assessment of electronic publications of educational purpose, electronic educational tools and educational and methodological complexes, automation of search, collection, processing, interpretation, formation, the transmission of educational information. For this reason, one can point out the following general structure of informational competence (See Table 1).

TABLE 1
THE INFORMATION COMPETENCE STRUCTURE

Components	Explanation
Value-motivational component	Understanding the importance of information retrieval for learning objectives.
Cognitive component	The ability to independently search for and interpret information materials in order to solve certain learning tasks through the use of critical analysis, synthesis, generalization, and comparison, etc.
Technological component	It is about the awareness of teachers and students of the basic principles of technical and informational devices, search systems, information and computer technologies, the significance of their application in practical educational activities.
Communicative component	The ability of students and teachers to interact in an information-digital environment, to possess the skills of cooperation, flexibility.
Reflexive component	Adequate self-assessment of the level of proficiency in information technology.

Article authors' development

Consequently, one believes that a clear definition of the structure of information competence allows us to create the necessary basic conditions for the formation of the learning process in order to develop all the above components comprehensively and systematically.

There are some problems for the wide implementation of information competence in the learning system (Bondar et al., 2021). First of all, it is said that the process of modern educational process transformation in accordance with informatization trends depends on the development of teachers themselves (Bezlutska et al., 2021). The latter should focus on the use of modern information and digital technologies, electronic media resources, the ability to clearly understand the goals and objectives of their lectures and seminars. Teachers of educational institutions themselves should be fully information literate and media-competent, which is not an easy task in today's rapidly changing information environment. This problem is especially important for developing countries. Indeed, the professional training of teachers should necessarily include the development of information and digital competence. At the same time, the practice of courses to improve these competencies through participation in various training seminars, conferences, internships, and professional development courses is important. The experience acquired will allow teachers to effectively implement the learning process through the use of information and communication technologies.

DISCUSSION

Real models of education functioning in the conditions of a "knowledge society" are much more complicated, because the system of post-industrial society itself aims to use primarily the positive characteristics of previous models of social development, which in practice leads to the theoretical justification of unequal rights of different states because post-industrial trends cannot affect the past stages of state development and do not cancel their consequences.

Consequently, one should agree with researchers opinion that further digitalization of educational processes can benefit states and populations of states with the largest shares of the post-industrial economy, primarily those individuals who will have reserves and opportunities for high levels of education, creative use of acquired knowledge and skills, and the flexible transformation of their own competencies (Muchacki, 2022). Obtaining clear advances to take advantage of the development of post-industrial society in many aspects will rely on the extent to which societies remain advanced in the fields of information, computer technology, robotics, etc. This trend may not depend on the level of development of computerization of society as a whole but concerns primarily the educational and production spheres - the extent to which digitalization will cover these areas of work (Rak-Młynarska, 2022). This universal model of modern social development dictates the rule that the information society through the dimensions of national infrastructures is a society in which educational institutions and teachers are accessible to all students, and this does not depend on geography, distance, resources, and their capacity to work (Bogossian, 2022).

Researchers have correctly observed that the most important discoveries in the XXI century. will be carried out not only due to a fundamentally new degree of development of science and technology but primarily for the reason that a new definition of the term "human" will receive, which will determine the following transformations of the environment, including the digital one (Shevchenko et al., 2022). For this reason, professions without appropriate material compensation are becoming increasingly popular in modern societies of developed democracies. In place of the traditional life path of an individual, another one is gradually beginning to take shape, which includes a variety of professions and occupations that eliminate the former tendency to a narrow profile of study within the framework of obtaining a certain individual specialization. A dynamic society needs to establish the functioning of dynamic education, which should become a continuum. This proposal is supported by many other scholars.

Europe and America's educational systems in modern democratic countries are characterized by current trends towards the synthesis of scientific, educational, and industrial formations, called technopolises. To create such technopolises (technoparks) it is important to use the capabilities of higher education institutions, digital infrastructure, etc. For example, in Japan, more than half of all scientists and scientific workers (more than 80 research and educational and research institutions belong here), who train hundreds of thousands of students from almost 50 countries, are concentrated and work in such technoparks. Due to the presence of production facilities, private companies, and enterprises in technology parks, educational and research institutions can provide excellent practical training in conducting basic and applied research. Some European countries (e.g., France) also use similar models of training development, especially in the professional direction of applicants.

At the same time, this experience is only beginning to be integrated in the countries of Central and Eastern Europe. Turning to the comparative analysis, one can trace a current trend: the public perceptions of the population in the states of the former communist camp are at a noticeable distance from understanding the essence and meaning of the concept of post-industrial society of knowledge. Objective reasons for this state of affairs are a considerable gap in understanding the main challenges of modernity between representatives of the older and younger generations, degradation and regression of previously functioning axiological guidelines and lack of new paradigms for development, limited understanding due to the lack of private initiatives to make independent decisions. Overcoming these problems and getting out of this situation requires the use of learning paradigms that would facilitate transformational changes in the mental structures of each individual and society as a whole, which would ensure the embodiment of fundamental and underlying attitudinal changes in behavior and understanding of the importance of learning. Also relevant to overcoming the consequences of the past (as far as possible) are the development of communicative qualities and the acquisition of relevant competencies. Much less research attention has been devoted to this aspect (Stephanidis & Antona, 2022), but communication with others acts as a powerful way of self-actualization and self-improvement, which are important for the development of modern educational space. For this reason, informatization processes in education constitute an opportunity for the necessary development of individuals' communicative abilities, their formation as social subjects in the information space, and learning according to the requirements and needs of the modern globalized community.

CONCLUSIONS

Thus, modern concepts of understanding the information society, or "knowledge society", are quite new in legal terms and require further consideration from the perspective of educational environment transformation illumination. Important contexts of such transformations are the appeal to new paradigms of social development, providing for a significant digitalization of the educational process. The main sources of work and subsequent social functioning should be knowledge, both already obtained and acquired in the future, which in general will further increase the level of human capital. An important trend in the further development of education will be the overcoming of socialization problems and globalization challenges, the subsequent evolution of the knowledge society, and the continuous increase in the personal level of informatization and the acquisition of the necessary competencies for this. In these terms, one of the most important trends in the existence of "knowledge society" systems of education will be the spread of a system of continuous education. The application of such a model of education will require fundamental changes, which are already partly taking place. For example, there is a need to refuse to provide applicants for education with ready-made knowledge but to actualize their own searching and investigative qualities. Thanks to this, future specialists will have the ability to find much-needed information in the right quantities, quickly make decisions that meet today's important challenges, etc. Academic educators will also change their teaching systems from authoritarian to more liberal, aimed at helping applicants rather than punitive methods. As it was possible to establish the important areas of updating the content, education will be the use of princes STEM-education, media-education.

Important aspects of education development will be the acquisition of additional digital competence, parts of which will be a value-motivational component, a cognitive component, a technological component, a communicative component, a reflexive component. A clear definition of the structure of information competence will create the necessary main conditions for the formation of educational processes in order to develop all the above components in an integrated and systematic way.

The negative consequences of the formation of information society, in particular the possible aspects of deepening inequality in educational opportunities, remain debatable. At the same time, the use of modern teaching methods and organizational and educational solutions (for example, the formation of technoparks) will be a promising area for further research, actualizing the need to assess their effectiveness.

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