

## Educational and scientific potential of the XXI century. Challenges and prospects

### Potencial educativo y científico del siglo XXI. Retos y perspectivas

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## Abstract

The article deals with the influence of globalization on the educational and scientific processes. The tendencies of education in globalization are determined. The peculiarities of globalization of education are considered. The article investigates the main aspects of the educational and scientific prospects of the XXI century. XXI century - this is the time of transition to a high-tech information society, in which the quality of human potential, the level of education, and culture of the entire population acquires a decisive value for the country's economic and social progress. Integration and globalization of social, economic and cultural processes that are taking place in the world, prospects for the development of the Ukrainian state for the next two decades require a deep update of the education system, leads to its advanced character. The main tendencies in the modernization of education are recognized: democratization of the entire system of training and education; increase in the fundamentality of education; Humanization and humanitarianization of education, use of the latest technologies of training; Integration of various forms and education systems both at the national and world levels.

**Keywords:** Education. Globalization. Globalization of education. Social integration. Individualization.

## Resumen

El artículo considera el impacto de la globalización en el proceso educativo y científico. Se identifican las tendencias en el desarrollo de la educación en el contexto de la globalización. Se consideran las características de la globalización de la educación. En el artículo se investigan los principales aspectos de las perspectivas educativas y científicas del siglo XXI. siglo XXI. - este es el momento de transición hacia una sociedad de la información de alta tecnología, en la que la calidad del potencial humano, el nivel de educación y la cultura de toda la población son cruciales para el progreso económico y social del país. La integración y globalización de los procesos sociales, económicos y culturales que tienen lugar en el mundo, las perspectivas de desarrollo del estado ucraniano para las próximas dos décadas requieren una profunda renovación del sistema educativo, determinan su carácter avanzado. Las principales tendencias en la modernización de la educación son: democratización de todo el sistema de educación y formación; aumentar los fundamentos de la educación; humanización y humanización de la educación, uso de las últimas tecnologías de aprendizaje; integración de diversas formas y sistemas de educación tanto a nivel nacional como mundial.

**Palabras clave:** Educación. globalización. Globalización de la educación. Integración social. Individualización.

## 1. Introduction

The XXI century is a period of development of a globalized society, filled with rapid change. Globalization has affected all spheres of society and acts as a catalyst for

educational reforms, in particular the transformation of higher education. The development of information technologies gradually creates a unified educational space, and the global market of educational services is growing. This requires rapid adaptation of national systems of higher education, coordination, and strategic focus on integration in the international educational space.

The globalization of education is a collective concept covering the processes, phenomena, trends, and regularities of education at the global level. This is an objective irreversible process, which is the result of the socio-economic, political, and cultural convergence of countries and nations. Globalization of education shapes the worldview, morals, and values of students. Globalization is an objective process of integration of educational systems, promoting interpenetration of cultures, exchange of information and experience, scientific and academic mobility, and leading to the possibility of using and assimilating a variety of pedagogical concepts and methods (Gomes & Tavares, 2020; Dzvinchuk & Ozmiska, 2020). Innovative and technological advances are constantly changing how we communicate, they work and exist together, and the educational systems that reflect these dynamics are changing, they are most capable of responding to the current and variable needs of youth, society, and the labor market.

At the current stage of society's development, new requirements and guidelines are being formed in the education system. Post-industrialization and global informatization have led to a change in the values of society and a change in the educational paradigm from the acquisition of knowledge, skills and standard skills to development and self-development. Reforming education of the XXI century. radically changes the content and structure of education. Radical restructuring of the existing education system is urgent because it no longer meets modern requirements and cannot provide timely training of people to solve new global problems.

Qualitatively new challenges facing society and the modern education system require its serious institutional modernization, changes in content and strategic target orientation.

Education of the XXI century. should offer such ways of responding to such challenges that would take into account all the diversity of worldview approaches and alternative systems of knowledge, as well as use new opportunities in the field of science and technology, including achievements in the field of neuroscience and digital technologies. Rethinking the purpose of education and the organization of training acquires special relevance in this context.

Before the education of the XXI century. new tasks arise that require a revision of the content of education, forms, methods and techniques of education. One of the challenges of education in the XXI century is the COVID-19 pandemic, which has led to the fact that educational institutions around the world are forced to urgently study and start using available technological tools to create content for distance learning in all fields.

## 2. Literature review

The theoretical substantiation of the educational-scientific potential of the XXI century is reflected in the works of scientists Knack (2017), Costa (2019), Fontinelli et al. (2020), Marín (2014). It should be noted that recent studies devoted to the study of distance learning prospects have appeared. Namely, the structure of current research areas of distance vocational education problems; the process of education reform in the context of transition to innovative information technologies; trends of distance education development in the context of global education (Rahmilevitz et al., 2019). Education of the XXI century is characterized as a transition to individual and consultative education, which involves the development of individual training programs using interactive technologies, which involves the development of innovative activities in educational institutions (Culp, 2020).

Dzvinchuk D. and Ozminská I. in a scientific article «Educational trends of the XXI Century» highlights the key challenges of education in the XXI century, concluding that the educational demands of society are based on the individualization and continuity of education, the qualitative improvement of the technology and efficiency of the work of educational institutions in the world (Dzvinchuk & Ozminská, 2020).

In their scientific articles, the researchers Costa A. (Costa, 2019), Mendes V. A. (Mendes & Souza, 2020), Fontinelli N. (Fontinelli et al, 2020) came to the conclusion that the global trends in the field of education of the XXI century include continuous access to Internet resources, the growth of distance learning, and the transfer of education to virtual space. Due to the change in the educational paradigm of the XXI century, there is a shortage of specialists with technical, managerial, economic competences, as well as competences related to the possession of information technologies.

Savenko O. in his scientific article «The influence of globalization processes on the development of the adult education system» considers the impact of globalization processes on the development of the adult education system, notes that the educational challenges of modern society require the development of creative potential, creative abilities of a person as a condition for a successful professional career. Universal management skills are of great importance - the ability to work within the framework of a project approach, create a team, be a leader, search and analyze information, which will allow an adult to be much more mobile in the labor market, to move from one area to another (Savenko, 2021).

## 3. Material and methods

The following methods and approaches were used to achieve the goal of the study:

Theoretical methods:

- Analysis of scientific literature on the subject, which clarified the features of education XXI century, as well as the study of psychological and pedagogical and scientific-methodological works on the problem of research, the regulatory framework in the field of education;
- Generalization and systematization of scientific ideas of domestic and foreign scientists, which allowed to formulate the paradigm of the XXI century;
- Modeling - a new conceptual model was built, which served as the basis for the design of the educational process in educational institutions in the meta-disciplinary direction;

Special importance for the disclosure of the topic is the application of the analytical method, which is used to determine the conceptual foundations of the challenges of education XXI century. The theoretical basis of the work is based on the approaches that focus on the change of educational paradigm, analyzing the prospects and challenges of education of the XXI century.

#### 4. Results and Discussion

Education of the twenty-first century is intended to be “education for all” and accessible regardless of social status and age. The consequence of the further advancement of our civilization has been that people without education are increasingly pushed beyond the conditions of a life worthy of human dignity. Other excessive restrictions on the right to education lead to a deterioration of intellectual and cultural unity that is incompatible with balanced development (Araújo, 2021).

Characteristic features of education in the XXI century:

- The moral dominant of education in the XXI century must be the sensory core of education. It is not only about the need to educate a new generation in a spirit of peace, understanding, and tolerance. No less important imperative in the XXI century. is environmental education, and even more broadly, the formation of global ethics of every person and global responsibility as principles of a new humanism for a new unified and holistic world.
- Education in the XXI century is creative and innovative. In a world where variability is based on the characteristics of civilizational development and technological progress, the masses of educational institutions need to pay attention to the problems of the new generation (Alfredo, 2019).
- Education of the XXI century is based on science-based knowledge, it can form a future personality with knowledge, capable of theoretical and critical thinking. Education, where science is subordinated to ideology, manipulative pedagogical technology, and narrow pragmatism seriously, threatens to deform the individual into an irresponsible person with no critical thinking.
- Education is characterized by diversity, adequate to the cultural and ethical level of humanity, satisfying comprehensive social needs - professional and confessional groups, as well as individual spiritual needs (Savenko, 2021).

At the present stage of society's development, the latest requirements and guidelines are being formed in the education system. Post-industrialization and global informatization have led to a change in the values of society and a change in the educational paradigm from the acquisition of knowledge, skills, and standard skills to development and self-development.

### The Challenges of Modernity in Education in the XXI Century:

- The era of high-speed communication, the unification of the world economy, increased competition;
- Population aging, an increasing number of low-skilled workers;
- Changing methods of work, merging large and small joint ventures;
- Discovering the brain's amazing potential;
- Growth of educational services;
- A new boom in self-education, a triumph of personality

A feature challenge for the education of the XXI century is the change of educational programs, adaptation for Generation Z. The education of the XXI century is facing new challenges that require the revision of the content of education, forms, methods, and techniques of learning.

Generation Z is characterized by insularity and the inability to express one's own thoughts. Therefore, there is a change in educational programs and the transition to interactive learning technologies, which, in turn, has become a challenge for educators. But the introduction of interactive learning technologies is not a fast enough process, because educators do not have the appropriate skills. The transition to interactive learning technologies involves advanced training in interactive technology for employees of educational institutions.

One of the challenges of XXI century education is the COVID-19 pandemic, which has forced educational institutions around the world to urgently explore and begin using available technological tools to create content for distance learning for students in all fields.

### The negative impact of the COVID-19 pandemic on XXI century education:

- Outdated material base;
- Unpreparedness for the transition to distance learning, lack of technical support;
- Unpreparedness of educational staff to use information technology;
- Lack of live communication between students, which is very important for Generation Z and Alpha;
- Constant stay on the computer, which leads to a deterioration of psychological and emotional state;
- Loss of authority of the teacher/professor for students/students;

- Lack of independent task completion by students due to free access to the Internet.

But, in turn, the COVID-19 pandemic is also having a positive impact on XXI century education. Educators around the world are getting new opportunities, learning how to do things differently and with more flexibility, the result of which is a potential advantage in access to education for students. The COVID-19 pandemic has provided teachers around the world with new experiences and new opportunities to develop their own potential.

Positive effects of the COVID-19 pandemic on education:

- The use of interactive learning technologies;
- Accessibility to information;
- Ability to organize the educational process;
- The desire for self-education.

And, most importantly, for Generation Z, Alpha and future generations this experience of isolation and distant learning apart from their peers, teachers will be a careful reminder of the importance of our human need for direct communication in real life. Nowadays society needs not only highly qualified specialists in the field of education, culture but also people with high responsibility, initiative, able to express their point of view, to argue it, to find optimal solutions to various problems, with the skills of tolerance communication.

Prospects for XXI century education:

- Access for everyone to lifelong learning for the continuous formation of competencies that meet the demands of a globalized knowledge society;
- Ensuring sustainable economic development through improved employment and entrepreneurship;
- Strengthening social inclusion and cohesion through active involvement in social activities;
- Individualization of higher education;  
The use of interactive technologies of learning;  
Distance learning.

The impact of XXI century educational development on students:

- the ability to plan the final result of the work and present it in verbal form and, as a consequence, the ability to defend their own project in a public defense;
- the ability to plan actions (manage time, budget, own resources);
- the ability to think critically and make adjustments to earlier decisions;
- the ability to constructively discuss results and accept criticism;
- the ability to evaluate the projects or tasks of others.

Education of the XXI century is characterized as "lifelong learning". Such education activates the productive activity of a person at any age, provides him with a reserve of vitality, contributes to a better arrangement in life, the achievement of material, social and spiritual well-being. Such education is the key to a new life, helps to solve life and professional problems, improve personal, family, professional, public life.

A major trend in modern education is the transition to individualized education, which includes the development of individualized curricula, taking into account the needs and special interests of students.

Individual education involves working with small groups (3 to 6 people), as well as the following forms of education as training, tutoring classes, tutoring classes, internships under the guidance of a teacher-mentor role-playing.

The use of such forms in the educational process of higher education allows to prepare a specialist for a particular professional activity, the mastery of practical skills, finding solutions in problem situations (Savenko, 2021).

One of the prospects of education in the XXI century is the use of interactive technology. The introduction of interactive forms of learning is one of the most important directions of improving the training of students. Interactive learning is a special form of organizing cognitive activity. It implies quite concrete and predictable goals. One of such goals is to create a comfortable learning environment in which the student feels his success, his intellectual ability, which makes the learning process productive.

The use of the interactive model includes simulation of life situations, role-play and problem-solving, taking an individual approach. The learning process is based on the application of theoretical knowledge in practice, namely, simulation of life situations.

The educational process based on the use of interactive teaching methods is organized with the inclusion of all students without exception in the learning process. Joint activity means that everyone makes a special personal contribution and there is an exchange of knowledge, ideas, and methods of activity in the course of the work. Individual, pair, and group work are organized, project work, role-playing games, work with documents, and information sources are used. Interactive methods are based on the principles of interaction, student activity, reliance on group experience, obligatory feedback.

Creating an environment of educational communication, characterized by openness, the interaction of participants, the equality of their arguments, the accumulation of common knowledge, with the possibility of mutual evaluation and control.

Thus, under conditions of educational communication, there is an increase in accuracy of perception, the effectiveness of memory increases, more intensively developed intellectual and emotional properties of personality as stability of attention, the ability to

distribute it, the observation of perception, the ability to analyze the activities of a partner, to see his motives, purpose.

Also characteristic of the prospects of education in the XXI century is distance learning, which is associated with access to education and the introduction of interactive teaching methods (Mendes & Souza, 2020). Distance learning performs the function of mobile exchange of educational resources, stimulates the export and import of education, uniting the creative, intellectual, informational, and scientific potential of the world. At the beginning of the XXI century, virtual (electronic) universities are in great demand.

With the use of Internet technologies, it became possible to obtain educational information from any library using a computer. Learning has become interactive, the level of independent work has increased, and the intensity of the learning process has increased. These advantages have intensified the work of the teams of many educational institutions to introduce information technology into the traditional model of the educational process, covering the necessary organizational, technical, human, and technological prerequisites (Carmo & Carmo, 2020). With distance learning, students can overcome psychological barriers associated with communication skills through teamwork and public speaking. Distance learning increases a student's potential, creativity, self-organization, ability to independently master information technology and make responsible decisions.

Indeed, the quality of distance education is not inferior to the ideal quality of the full-time form of education, but it requires the teacher to better coordinate the learning process, to constantly improve their courses, to increase their creativity and qualifications by innovations, to use in the learning process constantly updated educational and methodical publications.

The number of interactions between students increases, and the teacher acts as an equal partner. Counseling in distance learning is one of the forms of managing students' work and providing them with assistance in independent study of the discipline. In distance learning justified itself test control, because the tests are well suited for self-monitoring and are very useful for individual studies. Distance learning plays a particularly important role in helping to prepare high school graduates for independent testing (Monteiro de Barros, 2015). The result, obtained through months of observation, was a conclusion that allows us to clearly identify the pros and cons of the proposed system of education (Charczuk & Aragón, 2014). Entering the fourth industrial revolution, marked by the knowledge economy, involves the rise of scientific activity at the highest levels of the educational space. Universities and science are symbioses that guarantees the development of all spheres of life in any society. Undoubtedly, the demand for highly qualified scientific and pedagogical personnel and talented researchers and students engaged in research, inventive activity has always been great.

## 5. Conclusion

Changes in socio-economic conditions in modern society have significantly increased the requirements for the level and quality of education in the XXI century, which is characterized by focusing on the personality of the student, the processes of his development and formation.

Prospects for XXI education: access for every person to lifelong learning for the continuous formation of competencies that meet the requirements of a globalized knowledge society; ensuring sustainable economic development through better employment and entrepreneurship; strengthening social integration and cohesion through active involvement in social activities; individualization of higher education; use of interactive learning technologies; distance learning.

The priority tasks of XXI century education in today's conditions are the formation of a culture of social and ecological thinking, understanding the problems of global interdependence, formation of new values and ideas about true citizenship in an increasingly globally interdependent and complex world.

Effective development of education is possible only on the condition of modernization of all components of pedagogical systems, including information and educational environments of educational institutions, based on the implementation of human-centered paradigms and equal access to quality education. Among the important directions of development and improvement of the education system, the problems of informatization of the educational process are of particular importance, which allows expanding and deepening the theoretical knowledge base and creating effective computer-oriented methodological systems of education.

The educational process is based on individual work. This is one of the main ways to improve education, improve the quality of training because it teaches to replenish knowledge, to navigate the flow of scientific information. The main methodological innovations are related to the use of interactive teaching methods.

Before the education of the XXI century, there are the latest challenges that require the revision of the content of education, forms, methods, and techniques of learning. One of the challenges of education in the XXI century is the COVID-19 pandemic, which has led to the fact that educational institutions around the world are forced to urgently study and begin to use the available technological tools to create content for distance learning in all fields.

For modern education of the XXI century, educational programs that are economically centric and narrowly technical in nature are unacceptable. Its sociocultural, worldview function requires active, conscious, responsible educational and cognitive activity that would stimulate intelligence, citizenship, and a high culture of moral self-awareness of the individual.

## 6. Bibliographic references

- Alfredo, D.D.G. (2019). O ENSINO A DISTÂNCIA EM ANGOLA. *Revista Internacional de Ciências, Tecnologia e Sociedade*, 2(4), 41-48. <https://doi.org/10.37334/ricts.v2i4.20>
- Araújo, A. S. d. (2021). Sobre globalização, educação, inclusão. Possibilidades? *Revista Mosaico - Revista de História*, 14(2), 101. <https://doi.org/10.18224/mos.v14i2.8801>
- Carmo, C. R. S., & Carmo, R. D. O. S. (2020). Tecnologias de informação e comunicação na educação a distância e no ensino remoto emergencial. *Conhecimento & Diversidade*, 12(28), 24. <https://doi.org/10.18316/rcd.v12i28.7152>
- Charczuk, S. B., & Aragón, R. (2014). Interdisciplinaridade na Educação a Distância: Schème. *Revista Eletrônica de Psicologia e Epistemologia Genéticas*, 5(2), 103–129. <https://doi.org/10.36311/1984-1655.2013.v5n2.p103-129>
- Costa, A. R. F. d. (2019). Fundamentos Teóricos da Educação a Distância. In Industrialização do ensino e política de educação a distância (pp. 37–100). EDUEPB. <https://doi.org/10.7476/9788578793500.0003>
- Culp, J. (2020). Educação cidadã, consciência democrática e globalização. *Revista Perspectiva Filosófica*, 45(2). <https://doi.org/10.51359/2357-9986.2018.245840>
- Dzvinchuk, D., & Ozminská, I. (2020). Educational trends of the XXI Century. *Educational Discourse: collection of scientific papers*, (21(3)), 7–19. [https://doi.org/10.33930/ed.2019.5007.21\(3\)-1](https://doi.org/10.33930/ed.2019.5007.21(3)-1)
- Fontinelli, N. D. S., Silva, M. E. D., & Zucolotto, M. P. D. R. (2020). Desafios Do Ensino Remoto E Reinvenções Em Situação Pandêmica: Experiência De Observação Em Psicologia. In XXIV Simpósio de Ensino, Pesquisa e Extensão - SEPE. sepebr. <https://doi.org/10.48195/sepe2020-114>
- Gomes, A. D., & Tavares, C. M. d. M. (2020). Saúde emocional dos estudantes do ensino médio em distanciamento social decorrente da pandemia por COVID-19. *Revista Pró-UniverSUS*, 11(2), 192–194. <https://doi.org/10.21727/rpu.v11i2.2560>
- Knack, C. (2017). A passagem do aluno do Ensino Médio ao Superior e seus efeitos no discurso: uma análise enunciativa. *Domínios de Lingu@gem*, 11(4), 1262. <https://doi.org/10.14393/dl31-v11n4a2017-9>
- Marín, J. (2014). Globalização, educação e diversidade cultural. *Tellus*, 35–60. <https://doi.org/10.20435/tellus.v0i11.104>
- Mendes, V. A. C., & Souza, K. R. (2020). Tecnologias da informação e comunicação no ensino a distância para a capacitação de servidores públicos. *DOXA: Revista Brasileira de Psicologia e Educação*, 442–455. <https://doi.org/10.30715/doxa.v22i2.14242>
- Monteiro de Barros, F. B. (2015). Problematización y valores humanos en entornos virtuales de aprendizaje. *Revista Eduweb*, 9(2), 73–83. Recuperado a partir de <https://revistaeduweb.org/index.php/eduweb/article/view/118>
- Rahmileyitz, G., Felipe Petriete, J., & Álvaro De Assis Moura, A. (2019). Bases teóricas para ead em instituições de ensino superior. In 25º CIAED Congresso

- Internacional ABED de Educação a Distância. Associação Brasileira de Educação a Distância -  
ABED. <http://www.abed.org.br/congresso2019/anais/trabalhos/30070.pdf>
- Savenko, O. (2021). The influence of globalization processes on the development of the adult education system. *Problems of Education*, (2(95)), 25-39. <https://doi.org/10.52256/2710-3986.2-95.2021.02>