

Directions of Regulating the Environment That Affect the Level of Development of Students' Intellectual Skills

 ¹ Firedun Ibrahimov,  ² Gülarə Abdullayeva

<https://doi.org/10.69760/aghel.0250040014>

Keywords	Abstract
intellectual skills metacognition metacognitive skills creative thinking interactive learning psychological support facilitator motivation reflection	<p>The article shows that intellectual and creative activity of everyone living in the "Techno-democratic information society" becomes a paramount requirement, and for this it is desirable for every member of this society to rise to the level of a subject of intellectual skills, they must have information culture and technological literacy. The research presents the characteristics of "Education 4.0", which provides an effective environment for the formation of intellectual skills, and the groups of intellectual skills that must be formed in this system, formulated on a certain logical basis. The article draws attention to the fact that these tasks are designed on the principle of modeling the structure of various intellectual skills. As students complete them, they acquire intellectual skills such as determining the purpose of their work, systematizing educational material from this point of view, independently collecting material, etc.</p> <p>The work focuses on the didactic principles that are necessary for selecting and systematizing tasks to be applied for the purpose of forming intellectual skills, and organizing students' activities on them.</p>

Relevance of the topic. Even at the beginning of the 21st century, the question of how to educate a person in accordance with the requirements of the era has caused global discussions. In modern times, to achieve success, it is not enough to just read and write, have knowledge of mathematics and natural sciences, and more competencies are required to be demonstrated. The characteristics of the 21st century require that a person develop the necessary qualities for creative activity

¹ Ibrahimov, F. Doktor of Pedagogical Sciences, Professor, Sheki branch of Azerbaijan State Pedagogical University. ORCID: <https://orcid.org/0000-0002-0775-1048>.

² Abdullayeva, G. Doctor of Philosophy in Philology, Associate Professor, Azerbaijan State Pedagogical University, Sheki Branch. ORCID: <https://orcid.org/0000-0003-1162-0275>.



(decision-making, problem-solving, independent learning, collaboration, teamwork, evaluating different approaches, putting forward new ideas, taking initiative, etc.) to live and progress in a rapidly changing, developing world. This creates conditions for sustainability for the future development of society. Everyone living in the “techno-democratic information society” must perform intellectual and creative activities. For this, a person must rise to the level of a subject of intellectual skills. Therefore, it is necessary to determine the optimal ways of acquiring intellectual skills and regulate the environment that includes adequate ways. The methodological system for solving the problem in question has not been developed on a sufficiently scientific basis. Therefore, we claim the relevance of the research on the topic “Directions of regulating the environment that affect the development of students' intellectual skills”.

The purpose of the study is to identify the directions of pedagogical influence aimed at the formation of students' intellectual skills in the process of implementing general education. It is taken into account that the idea is an important value; the world of human activity is always based on the idea; everyone takes steps to check the adequacy of the result of their activity to the idea they consider acceptable.

Methodological basis of the study. In the process of conducting the research, based on L. Bertalanfi's "Idea of System Analysis" (Mirzajanzadeh, 1990, p. 8) (the idea, the meaning of which is explained as an attempt to study the properties of an object based on the properties of its parts – *italics are ours* – F.I., G.A.), the "System-structural approach", which has been formed as an important branch of dialectics and has risen to the level of its alternative, empirical, empirical-theoretical and theoretical methods of scientific cognition, the internal relationships of the forms of scientific cognition, and various pedagogical and psychological research generalizations were used as a methodological basis.

Interpretation of generalizations from research materials: It is undeniable that education, which is a process of sharing human experience, has developed in stages as a product of social practice (especially pedagogical science), incorporating the characteristics of industrial revolutions. The era of the Fourth Industrial Revolution requires an education system that can shape a generation that is creative, innovative, and globally competitive. Currently, the impact of the aforementioned revolution on education and the issue of "education of the future" are being discussed on various platforms, and appropriate necessary steps are being taken. (World Economic Forum, 2016b; Vichian, 2016, pp. 92-97).

The Fourth Industrial Revolution has different implications for different areas of our lives. From this perspective, there are both opportunities and challenges for education. The use of different technologies such as IoT, 3D printing, quantum computing, artificial intelligence, etc. allows for more effective information transfer and the development of a new “educational framework” (Hristian, 2019, pp. 78-94).

It is necessary to distinguish two main reasons for the reforms carried out in the education system and its implementation system in connection with the challenges of the Fourth Industrial Revolution. The first is the training of a workforce that has the knowledge (information) and skills



to meet the needs of a rapidly changing global economy, and the second is the establishment of an education and implementation system that can produce the productive forces (labor force) necessary for the development of an adequate information society during the industrial revolution (Rasulov et al., 2022, p. 288).

Currently, there is a system called "techno-democratic information society" that makes people stronger. The provision of all members with sufficient information in an appropriate manner and the implementation of information services at a high level are the main features of the society in question. Unlike the industrial society, the information society is a more intellectual society and creates conditions for people to be highly educated, skilled, determined, and develop comprehensively.

The information society refers to the production and use of information, information resources, basic technologies and techniques of the information society, new information – telecommunication technologies and techniques, etc. The main characteristic features of the information society are: mass satisfaction of information needs in society; information economy in society; high level of information demand of society members; high information culture in society, expansion of open information networks for society members; prospects for the formation and development of a single information environment; information security for society members; level of globalization and integration, etc. Members of the "techno-democratic information society" must have information culture and technological literacy, otherwise they will not be able to assert themselves as active and creative members of the society in question.

Information culture is the knowledge, intellectual skills, and habits necessary for a person to adapt to the information society. The role of the computer network in the formation of information culture is great. Information culture is the ability to use information resources and information communication tools of society; is the application of advanced achievements in the field of informatization and the development of information technology tools in society; is the ability to obtain and transmit information using modern technical means and methods, computer technologies.

Technological literacy is the ability of people to use various digital technologies, analyze data, and operate safely in a digital environment. "This skill is not limited to using a computer and the internet, but also includes: 1. Adhering to digital safety and cybersecurity rules; 2. Working with artificial intelligence and automation; 3. Digital analytics and data processing skills; 4. Using cloud technologies; 5. Quickly adapting to new technologies." (Mammadova, n.d.)

Technological literacy includes the ability to use information and communication technologies. Digital education allows people to participate independently in social life. In addition, the reality of digital education and the digital revolution requires fundamental changes in the forms and methods of moral education, leading to the emergence of digital skills as the most important ability (Priya, 2019, pp. 58-64).



Developing digital skills is essential to ensure that they can safely and effectively engage with digital technologies in the future. Education systems need to take a comprehensive and integrated approach, supporting all learners to develop the skills to be active and ethical users of digital technologies (Mascheroni & Olafsson, 2016, pp. 57-79).

In order to ensure accessibility to digital technologies, students are provided with devices that they can use at school and at home, or BYOD (Bring Your Own Device) strategies are used. A number of steps can be taken to develop digital skills, such as updating the curriculum, developing "learning frameworks", involving educators in training, and developing digital educational resources (Sari & Arif, 2019).

Equipped with digital technology, learners can learn with peers from around the world and develop solutions to problems as a team. There is no doubt that the development of digital skills in learners will lead to their more active participation in society as digital citizens in the future (Sari & Arif, 2019; Mascheroni & Olafsson, 2016, pp. 57-79).

In order for students to be able to demonstrate their skills and abilities in new fields emerging under the influence of the Fourth Industrial Revolution, it is necessary to implement fundamental changes in technology and taught subject programs. By reviewing the curricula of subjects based on chemistry, biology, physics, etc., which are considered "basic sciences" in the new curricula, more attention should be paid to teaching computer science subjects, which play a key role in the formation of the literacy of the Fourth Industrial Revolution. Naturally, more space should be given to the teaching of the subjects in question (Fatih et al., 2019, pp. 432-466).

Due to the rapid development of technology, the knowledge and skills that students learn during their education become obsolete by the time they graduate. In scientific and technical education, it is necessary to educate students and prepare them for the digital environment to help develop and shape the use of today's fastest-growing technologies. Adapting to a rapidly changing environment will require students to engage with educational institutions even after graduation, providing both workers with updated skills and young students (and faculty) with a new perspective on the rapidly changing realities of the industrial and corporate sectors (Ercan, 2018, pp. 25-30; Li, 2020, pp. 579-592).

It is undeniable that the challenges of each industrial revolution have their own uniqueness. This is manifested against the background of global changes taking place in the world, and at the same time it determines the existence of new shades in information culture and the content of technological literacy. At different stages of world history, humanity has faced serious changes and achieved results with the reforms carried out. Against the backdrop of industrial revolutions, educational program developers had to seek answers to the following fundamental questions: 1. What knowledge, skills, and values should be reflected in educational programs? 2. Will these knowledge, skills, values, and competencies form the necessary life skills in learners? 3. How can the process of implementing education be made relevant and interesting for learners? 4. How can assessment (an integral part of the process of implementing education) be made more productive and effective?



In our modern era, parameters such as relevance, practicality, effectiveness, and sustainability are the focus of attention as indicators of the quality of an educational program, while the indicator of its success is the quality of acquisition by learners and the extent to which learners can effectively use what they have acquired for their personal, social, cognitive, psychological, and emotional development (Methodology and pedagogy, 2024, p. 5).

By the way, it should be noted that UNESCO has the following criteria for a quality education program: the educational program must have clear objectives; meet today's requirements; be relevant to the current and future lives, experiences, desires and aspirations of learners; have the goal of building a prosperous future for learners in social and economic terms, taking into account the history and culture of the country in which they live; be fair and inclusive (taking into account the individuality, individual needs of learners, etc.); be learner-oriented (takes into account the needs of the learner, is appropriate to the learner's age, helps in personal development and the formation of life skills, and does not overload learners); be open and flexible (integrates emerging innovations into the content); be consistent and relevant. (Methodology and pedagogy, 2024, p. 5)

The Fourth Industrial Revolution is having an impact on the education system as well as on the socio-economic spheres. In line with the industrial revolutions, "education, which is a process of sharing the experience of understanding and transformation", has developed in stages (including the specific characteristics of industrial revolutions). It is worth emphasizing that the expected paradigmatic changes in the education system and the implementation of global education reform have been further accelerated by the impact of the Fourth Industrial Revolution (Abdullah, 2018, pp. 147-171).

The education system is faced with the demand to prepare learners for rapid economic and social changes, for jobs that do not yet exist, for undiscovered technologies, for the ability to understand unexpected social problems in a timely manner and to eliminate them competently. Therefore, the education system must be continuously adjusted and focus on these goals in order to meet this demand. In the era of the 4th industrial revolution, education must have the potential to develop society, complex and dialectical opportunities. Educational institutions must achieve digital and technological literacy – intellectual skills – in addition to acquiring knowledge (Schwab, 2016).

As we mentioned above, technological literacy includes the ability to use information and communication technologies. Digital education allows people to participate independently in social life. The reality of the digital revolution requires fundamental changes in the forms and methods of moral education.

In connection with Industry 4.0, we would not be wrong if we said that “innovation is beginning to dominate education systems.” Educational institutions will have to see innovation not only as a means to ensure increased global competitiveness due to the impact of globalization, but also as one of the key parts of the education system. In accordance with the requirements of the times, the teaching of new technologies will be accepted as one of the main needs on a logical basis. “Lifelong learning” will be the main motto of the education system. Naturally, the content of education should also take into account 21st century skills: in addition to knowledge, the



development of abilities and skills such as complex problem solving, critical thinking, creativity, leadership, digital literacy, emotional intelligence, global citizenship, cooperation, discussion, judgment, decision-making will also be accepted as the main learning outcomes.

Education 4.0 should serve to develop the skills (intellectual skills) to use new technologies that contribute to the development of learners in line with changes in society. It should form knowledge and skills that learners can use throughout their lives, not just reading and writing. Thus, the system must respond to changes in the social and economic environment to meet the needs of human capital. Education 4.0 aims to prepare individuals to be creative and innovative. Education must adapt to the environment in which learners live, providing them with a secure and successful future. This new system uses “smart” school management systems, learning management programs, communication tools and teaching and learning tools (Wilkesmann & Wilkesmann, 2018, pp. 238-254).

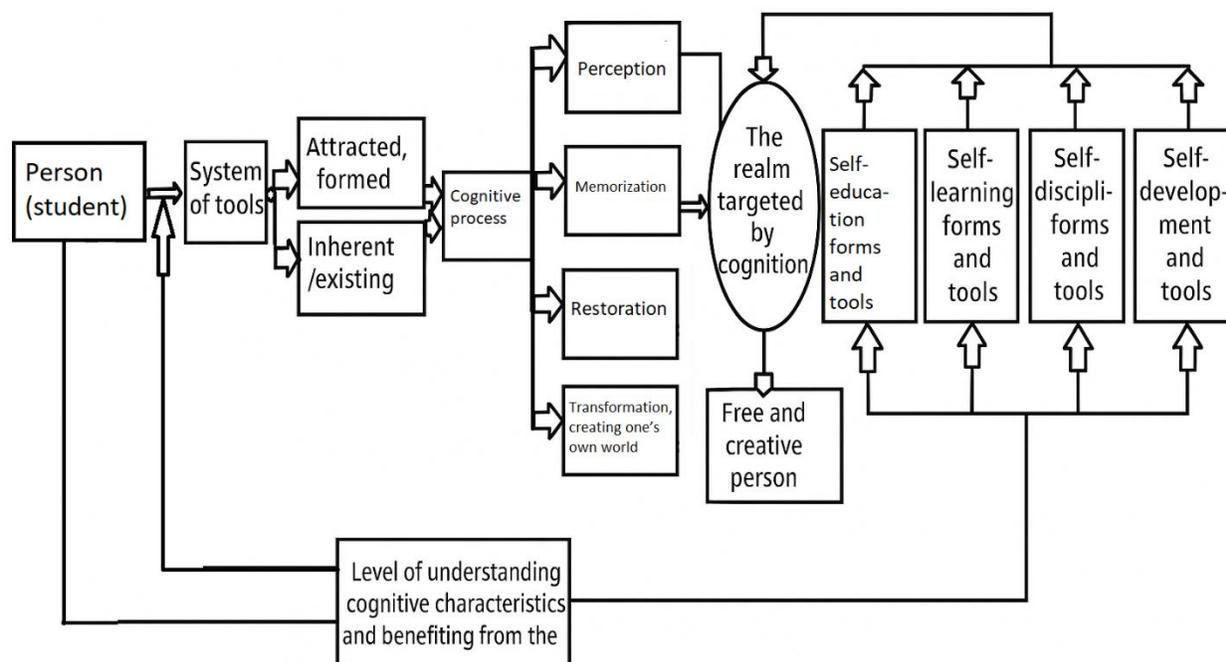
In the Education 4.0 approach, it has been determined that, going beyond constructivist education systems and Bloom's taxonomy, an environment – a learning process – will be applied, focusing on the formation and development of intellectual skills, especially based on the following directions: 1. 3R (Recalling, Relating, Refining) regulating understanding; 2. 3I (Inquiring, Interacting, Interpreting) encouraging research; 3. 3P (Participating, Processing, Presenting) based on drawing conclusions (Hussin, 2017, pp. 92-98; Dario et al., 2019, pp. 40-45).

Education 4.0, which provides an effective environment for the formation of intellectual skills, has the following characteristics: 1. Learning regardless of time and place (lifelong learning, e-learning, etc.); 2. The opportunity to receive personalized education according to the skills and abilities of students; 3. Taking into account the suggestions of students when preparing the curriculum; 4. Predominance of project-based learning; 5. Formation of students' ability to conduct analysis on large-scale data (Big Data); 6. Assessment of students' knowledge in the process of applying them to projects; 7. Becoming a part of the education system of developing new technologies, etc. (World Economic Forum, 2016b; Vichian, 2016).

In the era of the Fourth Industrial Revolution, "smart" educational tools and resources should enable individuals to acquire more advanced experience, knowledge, and skills, and to reveal their innovative perspectives.

The way of forming intellectual cognitive skills in education is adequate to the merits of innovative teaching applied in our modern era. We can visualize our idea with the following scheme:





Scientific sources indicate that in the process of implementing general education, a student must acquire the necessary intellectual skills to realize his intellectual qualities and purposefully regulate cognitive activity. Intellectual skills are numerous. Taking into account N.A. Menchinskaya's research in this area, intellectual skills can be divided into the following groups: 1. General intellectual skills (planning, working with a book, self-control); 2. Intellectual skills necessary for organizing mental activity (distinguishing the main idea in the text, dividing the text into parts according to meaning, comparing events, etc.); 3. Specific intellectual skills (they reflect the characteristics of a particular subject, for example, graphic skills). Another classification of intellectual skills, authored by I. Unt, is as follows: 1. Skills related to the perception of educational material (reading, observation, listening skills); 2. The ability to perform logical operations with educational material (the ability to attribute what is important, compare, draw conclusions, etc.); 3. Creative skills (the ability to build a composition, etc.) (Alizadeh, 2004, p. 60).

The main function of intellectual abilities is related to the exteriorization of intellectual operations (mental activity is considered external, practical activity is considered internal, and mental activity is considered external – transformation into something external): the content of cognitive activity is determined by intellectual operations, and their realization in the process of activity directly depends on the level of intellectual abilities (Alizadeh, 2004, p. 60; Petrovsky, 1977, p. 174).

Human self-awareness has always been a pressing problem of world philosophy, psychology, and pedagogy. Scientists have approached human self-awareness from a personality perspective, seeking its roots in the process of forming a person's ideas about his or her "I". Unfortunately, until recently, researchers have not sufficiently appreciated a person's understanding of the characteristics of their own mental world, world of thought, and cognitive processes.



In school practice, the psychology of cognitive activity has not been studied sufficiently, and although students are interested in the characteristics of their memory or thinking, their interests have not been satisfied. In modern American psychology, this issue has been brought into the spotlight and studied as a metacognitive system. It has been established that as children develop, certain ideas about cognitive processes are formed in them and they begin to regulate their mental activity.

It is worth emphasizing that self-monitoring, self-regulation, and self-assessment are metacognitive skills, and are related but distinct concepts. They are a person's awareness and understanding of self-awareness processes. Self-monitoring involves observing and following one's actions, behaviors, and cognitive processes during a task. Here, the learner does not try to control himself, judge, or evaluate his own performance. He simply observes himself and collects information about his performance. The main components of this process are: observation; awareness; feedback. Self-regulation is the process of monitoring and managing one's cognition, emotional state, and behavior to achieve a goal. The main components of this process are: goal setting; planning; emotional regulation; adaptation. Self-assessment is the process of making judgments or evaluations about one's own performance and learning. The main components of this process are: evaluation; reflection (Methodology and pedagogy, 2024, p. 50).

Flavell has studied and described in detail some of the functions of metacognition. Among them are the following: 1. Problem formulation and identification of possible solutions; 2. Knowing which cognitive processes are necessary to solve a task; 3. Activation of cognitive rules and methods; 4. Confidence in the capabilities of thinking; 5. Attempting to solve tasks more efficiently.

These functions are interconnected. The first function is conditioned by the formation of ideas about the goals of activity in children. As they grow older, they learn to apply known methods to various situations. Gradually, students develop ideas about cognitive processes. They understand that in order to remember the material, one must listen carefully to the teacher, and in order to remember, one must remember. When the student has a clear understanding of these psychological processes, he or she activates attention in one case and memory in another, depending on the nature of the task. In this process, his competence gradually increases: he looks for new ways to solve the problem. When a student believes in the possibilities of his own thinking, he is not afraid of difficulties, even if he fails, he thinks and tries to solve the problem. In this process, his attitude towards himself also changes. He solves the task not in a hurry, but in an efficient way (Alizadeh, 2004, p. 60).

According to P. Massen, C. Kenger, C. Kogan, and A. Houston, the above functions develop to one degree or another in all children. However, the level of their development is significantly influenced by the upbringing conditions. Students with well-organized metacognitive functions solve educational (cognitive) tasks in a planned and purposeful manner. These functions are a necessary condition for successful learning (learning is an activity whose direct goal is to master certain information, actions, and forms of behavior) (Petrovsky, 1977, p. 192). They need to be



developed by all means. The relevance of the issue must be understood scientifically and methodically with all its clarity, and systematic work in this area must be carried out at school.

A system of special tasks is applied to form intellectual skills in students. These tasks are designed based on the principle of modeling the structure of various intellectual skills. As students complete them, they acquire intellectual skills such as determining the purpose of their work, systematizing educational material from this perspective, independently collecting material, writing essays, etc. From the perspective of the principle of developmental learning, this approach is considered effective. However, in order to use it purposefully, the system and content of intellectual skills across grades and subjects must be thoroughly developed.

According to our subjective understanding, by creatively using the curriculum model currently being applied in secondary schools (which is conditioned by the teacher's scientific and theoretical training and pedagogical mastery), it is possible to form a system of tasks that also aims to develop intellectual skills in students.

In the preparation of tasks for active learning aimed at general, specific learning outcomes and performance indicators, the hierarchy of thinking types is established from simple to complex in the following order: logical thinking – critical thinking – creative thinking. The operations of thinking provide the basis for determining its type. This factor can also be used in the management of learning.

The tasks and their system should be consistent with the purpose of the lesson and aimed at solving the research problem set (in terms of the type of thinking, sources of information, form of presenting the results, etc.); should be appropriate to the age, knowledge and intellectual level, abilities and interests of the students, and should be differentiated; should be based on the state program and national values; should be relevant, related to real life and students' experiences; should be interesting, attractive, and stimulating; should be clearly stated; should contain clear and open questions.

The formation of a system of tasks is only part of the work aimed at developing students' intellectual skills in the learning process. One of the important issues is to achieve the emergence of cognitive activity in students while working on tasks and to maintain it throughout the entire process (continuously). It should be noted that four main mechanisms of active (interactive) learning (the goal of the active learning process is research) lead to the emergence and maintenance of cognitive activity during the lesson. These are the following: Mechanism No. 1. Creating a problem situation (A problem is presented to the student and as a result of his/her orientation to solving the problem, cognitive activity arises); Mechanism No. 2. The student acts as a researcher and the teacher as a facilitator (During active (interactive) learning, the student should stand in the position of a subject, be an equal participant in this process, he/she should independently acquire knowledge during research); Mechanism No. 3. The necessity of dialogue and cooperation (Active (interactive) learning is carried out in a dialogical manner in a cooperative environment). Mechanism No. 4. Psychological support: respect and trust (A means of maintaining students' cognitive activity is their psychological support, which is made possible by the teacher's



benevolent attitude, respect and trust towards students, and confidence in their abilities) (Veysova, 2013, pp. 49-50).

It is possible for a student to act in the position of a researcher when the content of the training material, the form of action of the tools and methods (in the training process, the content of the training material, tools and methods act in place of the content, in relation to the organizational form) are in accordance with the research process. The organizational form of training organized in accordance with the research process has a unique structure (the structure of the active lesson resembles the stages of the research process).

This form, called active learning, includes the following stages: 1. Motivation stage (posing the problem, putting forward hypotheses); 2. Research stage (searching for facts to verify hypotheses); 3. Information exchange stage (presentation of the obtained data); 4. The stage of discussion and organization of information (discussion of the obtained data, correlation of various facts, their systematization); 5. The stage of generalization and drawing conclusions (generalizations, comparison of results with hypotheses and conclusion on their confirmation or refutation, answer to the research question); 6. The stage of productive (creative) application (application in new conditions, solution of practical problems); 7. The stage of evaluation or reflection (evaluation of activity, mastering the rules of learning, reflection in consciousness of the already completed process, one of the main mechanisms that allows analyzing and deeply understanding all stages of knowledge acquisition) (Ibrahimov & Huseynzadeh, 2013, pp. 646-652).

The following principles should be kept in focus when selecting and systematizing tasks to be applied for the purpose of forming intellectual skills, and organizing students' activities on them: completeness of the learning process; creation of equal opportunities in learning; student-centeredness; development-orientedness; stimulation of activity; creation of a supportive environment.

The scientific novelty of the study is the identification of the idea of the directions of pedagogical influence aimed at the formation of students' intellectual skills in the process of implementing general education.

The theoretical significance of the study lies in the fact that the research on the presented topic has a special function in directing further scientific activity for a broad study of theoretical and practical ways of solving the problem of creating conditions for sustainability for the future development of society.

The practical significance of the research is that in the real pedagogical process, practical educators have the opportunity to benefit from the idea of the directions of pedagogical influence aimed at the formation of students' intellectual skills in their activities.

Result. 1. Intellectual and creative activity of everyone living in the "techno-democratic information society" becomes a paramount requirement, and for this, it is necessary for every member of this society to rise to the level of a subject of intellectual skills; 2. The existence of information culture and technological literacy in every member of a society formed in accordance



with the challenges of the 4th industrial revolution is a desirable quality; 3. The education system adequate to the "techno-democratic information society" has taken its place in scientific sources and pedagogical practice under the term "Education 4.0" and has been interpreted as a superstructure on logical grounds; 4. "Education 4.0", which presents an effective environment for the formation of intellectual skills, has its own unique characteristics and it is possible to divide the intellectual skills that need to be formed in this system into groups on a certain logical basis; 5. In general education schools, a system of special tasks is applied to form intellectual skills in students, and it is advisable to compile these tasks based on the principle of modeling the structure of various intellectual skills; 6. In selecting and systematizing tasks to be applied to form intellectual skills, and organizing students' activities on them, the following principles should be kept in focus: 1) completeness of the educational process; 2) creation of equal opportunities in education; 3) student orientation; 4) development orientation; 5) stimulation of activity; 6) creation of a supportive environment.

References:

- Abdullah, D. (2018). Changing education training paradigms from industrial 4.0 to education 4.0. *International Congress on Social Sciences (INCSOS 2018, Quds)*, 13(15), 147-171.
- Alizadeh, A. E. (2004). *Psychological problems of the modern Azerbaijani school*. Baku: Pedagogika. 432 p.
- Dario, A., Alessandro, C., Marta, F., & Elpido, R. (2019). Smart education in the context of Industry 4.0. *IEEE Global Engineering Education Conference (EDUCON), 2019*, 40-45.
- Ercan, Ö. (2018). Evaluation of new trends in education and Education 4.0. *University Research Journal*, 1(1), 25-30.
- Fatih, D., Elif, İ., & Nurdan, K. (2019). Education Program 4.0 as a tool for realizing the targeted transformation in higher education. *Bayburt Education Faculty Journal*, 14(8), 432-466.
- Feyziyev, C. A., Ibrahimov, F. N., & Bediyev, S. R. (2011). *Didactics* [Textbook]. Baku: Mutarjim. 624 p.
- General psychology* (A. V. Petrovsky, Ed.) [Translation from the second edition]. (1977). Baku: Maarif. 494 p.
- Hristian, K. (2019). Challenges and opportunities for education in the Fourth Industrial Revolution. *African Journal of Public Affairs*, 11(3), 78-94.
- Hussin, A. (2017). Education 4.0 made simple: Ideas for teaching. *International Journal of Education and Literacy Studies*, 6(3), 92-98.
- Ibrahimov, F. N., & Huseynzadeh, R. L. (2013). *Pedagogy* (Vol. 1) [Textbook]. Baku: Mutarjim. 708 p.



- Li, L. (2020). Education supply chain in the era of Industry 4.0. *Systems Research and Behavioral Science*, 37(4), 579-592.
- Mammadova, E. (n.d.). Technological literacy: The key to success in the digital world [LinkedIn post]. Retrieved from <https://tr.linkedin.com/posts/elmira-mammadova-01807722>
- Mascheroni, G., & Olafsson, K. (2016). The mobile internet: Access, use, opportunities and divides among European children. *New Media & Society*, 18(8), 57-79.
- Methodology and pedagogy (Textbook based on the updated framework document)*. (2024). Baku: Maximum Training Center. 182 p.
- Mirzajanzadeh, A. Kh. (1990). *Introduction to the specialty* (Textbook for oil and gas profile higher schools). Baku: BSU Publishing House. 368 p.
- Priya, S. (2019). Digital revolution of Education 4.0. *International Journal of Engineering and Advanced Technology*, 9(2), 58-64.
- Rasulov, R. A., Ibrahimov, F. N., & Abdullayeva, G. A. (2022). *Sheki branch of the Azerbaijan State University of Physical Education in 30 years: Successes, prospects*. Baku: Mutarjim. 502 p.
- Sari, L., & Arif, S. (2019). The roles of digital literacy, technology literacy, and human literacy to encourage work readiness of accounting education students in the Fourth Industrial Revolution era. *International Conference on Economics, Education, Business and Accounting*, 2019.
- Schwab, K. (2016). *The fourth industrial revolution*. Geneva, Switzerland: World Economic Forum. ISBN 97819448350020.
- Veysova, Z. (2013). *Application of new subject curricula at the general secondary education level*. Baku: Inkishaf Scientific Center. 163 p.
- Vichian, P. (2016). Education 4.0: New challenge of learning. *St. Theresa Journal of Humanities and Social Sciences*, 2(2), 92-97.
- Wilkesmann, M., & Wilkesmann, U. (2018). Industry 4.0 – Organizing routines or innovations? *VINE Journal of Information and Knowledge Management Systems*, 48(2), 238-254.
- World Economic Forum. (2016b). *New vision for education: Fostering social and emotional learning through technology* [Report]. Retrieved from http://www3.weforum.org/docs/WEF_New_Vision_for_Education.pdf

Received: 07.30.2025

Revised: 08.02.2025

Accepted: 08.12.2025

Published: 08.13.2025



This is an open access article under the
Creative Commons Attribution-
NonCommercial 4.0 International License

Acta Globalis Humanitatis et Linguarum
ISSN 3030-1718