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MODERN TECHNOLOGIES FOR DEVELOPING CREATIVE THINKING OF STUDENTS

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Abstract: In this article was talk about modern technologies for the development of students' creative thinking.
Key words: creative thinking, brainstorming, digital technology, flexibility, higher education system, creative thinking, SMART technology, originality, curiosity, creativity development technologies.

TALABALARNING KREATIV FIKRLASHLARINI RIVOJLANTIRISHNING ZAMONAVIY TEXNOLOGIYALARI

Abdumajitova Maftuna Ixtiyor qizi
Pedagogika, psixologiya va boshlang'ich ta'lim kafedrasi
Toshkent Iqtisodiyot va Pedagogika Instituti

Annotatsiya: talabalarning kreativ fikrlashlarini rivojlantirishning zamonaviy texnologiyalari haqida gap borgan.
Kalit so‘zlar: ijodiy fikrlash, aqliy hujum, raqamli texnologiya, moslashuvchanlik, oliy ta’lim tizimi, kreativ fikrlash, SMART texnologiya, originallik, qiziquvchanlik, kreativlikning rivojlanish texnologiyalari.

Creativity, that is, creativity, is to learn more deeply, to see better, to correct mistakes, to meet the future in accordance with the age of digital technologies. As Paul Torrance wrote, the primary goal of modern education is not the reproductive transfer of knowledge, skills, and abilities from the teacher to the

student, but the student's ability to independently define the educational problem, formulate an algorithm for solving it, and fully control it. formation and development.

Processing and evaluation of the result - teaching to learn. The country's education system faces a complex task: to form and develop a self-fulfilling, mobile person who is able to learn throughout his life. And this, in turn, corrects the tasks and conditions of the educational process based on the ideas of the student's personality development. Everyone knows that students are interested in digital news, and at the same time, it is necessary to take into account their interest in the environment, people, and social phenomena, based on the inner nature of humanity.

If the teacher works in the zone of proximal development, then interest in thinking deepens. This is a necessary condition for the development of creative thinking and cognitive activity of students. Creativity, that is, what is creativity? The simplest definition of this concept is as follows: creativity is the process of creating a new product of material or ideal nature. Creativity is called and believed to be special creativity. Pedagogical, psychological, philosophical and methodological literature is full of the terms "creativity", i.e. "creativity", "creative thinking". CREATIVITY is characterized by a person's creative abilities, willingness to create radically new ideas that deviate from the traditional or accepted way of thinking and are part of talent as an independent factor.

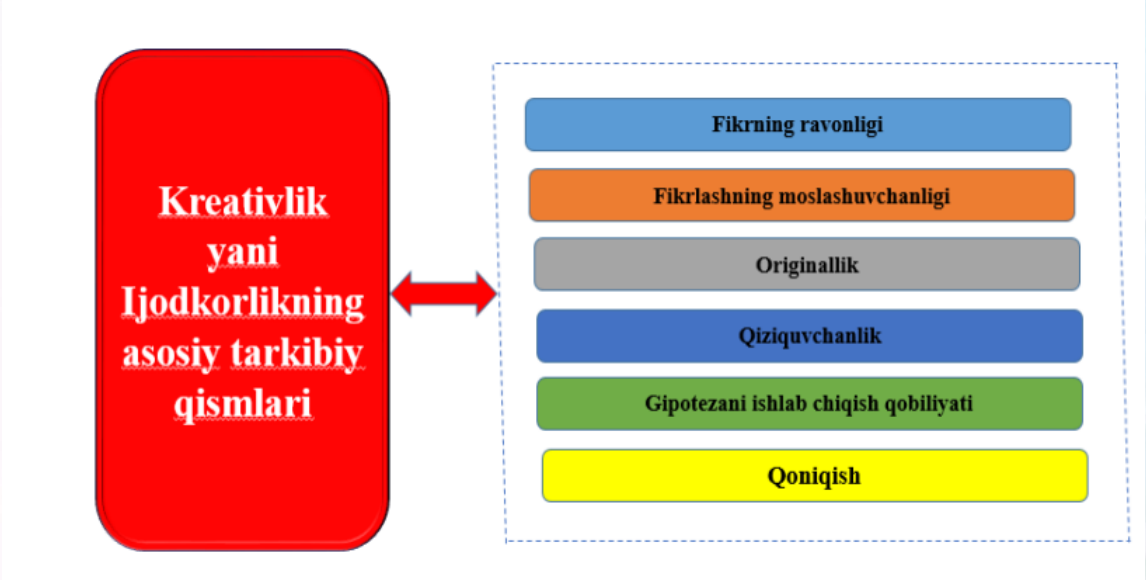

Figure 1. The main components of creativity.

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To develop creative thinking in teenagers, pedagogues use different game methods. Creative thinking methods in technology lessons [6] is a method of searching for alternatives and analogies. Different tasks and solutions are characterized by independent thinking. It does not require specific work on every option that comes to mind. Thus, it allows you to find a solution using all the experiences you have accumulated throughout your life.

Sometimes there are such situations that it is necessary to think and think about the actions being performed. Here, it's better to trust your intuition than to struggle with uncertainty. For example:

– Brownian motion. Explanation: the movement of pollen observed by the English botanist through a microscope is named after him.

- The characteristic of the device shows how much work is done per unit of time. Italian physicist, one of the founders of the doctrine of electric current, the creator of the first galvanic element, founded the doctrine of electric current.

- Brainstorming

This popular method was created in the 30s of the 20th century. Its distinctive feature lies in the prohibition of criticism, that is, it separates itself from the generation of ideas. For example, the group consists of 10 participants, and within 40 minutes they will have to express their opinion on the given topic. All kinds of fantasies are allowed: from games to imaginations to mistakes. At a certain point, excitement begins, when participants involuntarily form ideas, and the brain begins to put forward the most implausible hypotheses. The conclusion of the brainstorming session involves a detailed analysis and evaluation of the options proposed by the participants. The main advantage of this method is the non-standard thinking experience acquired by each participant.

Task: you need to quickly cool a glass of boiling water. How to implement? A solution is required. Clarify: What is in the problem statement? A glass of boiling water, you, the kitchen and everything in the kitchen - the source for solving the problem. We use the technique: intermediary + physical effect (transfer of heat from cold to body).

Possible student answers:

1. Add cold water, tea leaves or milk.
2. Pour into a plate, a large bowl.
3. Pour several times from the glass, holding them at a great distance from each other.

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4. Add lots of jam or sugar.
5. Pour off the excess.
6. Dip cold spoons and mix.
7. Place in refrigerator, cold water container, ...etc.

A great creative thinking technique that can be used to make decisions in the head, write down new information, or organize thoughts.

How to work with SMART maps: - the sheet should be large (A4 - minimum); - it is necessary to draw a picture of the problem or situation that appeared in the center; - signed branches (the main keywords of the problem) are drawn from the center, from which smaller "branches" come;

- block letters, different colored markers, etc. should be used.

The technique helps to create a connection diagram, remember the important points of the problem and restore the visual image of the problem.

The main thing is to learn to ignore stereotypical thinking, to believe in yourself and to believe in the power of your own thoughts!

Technologies for the development of creative thinking: (Figure 2)

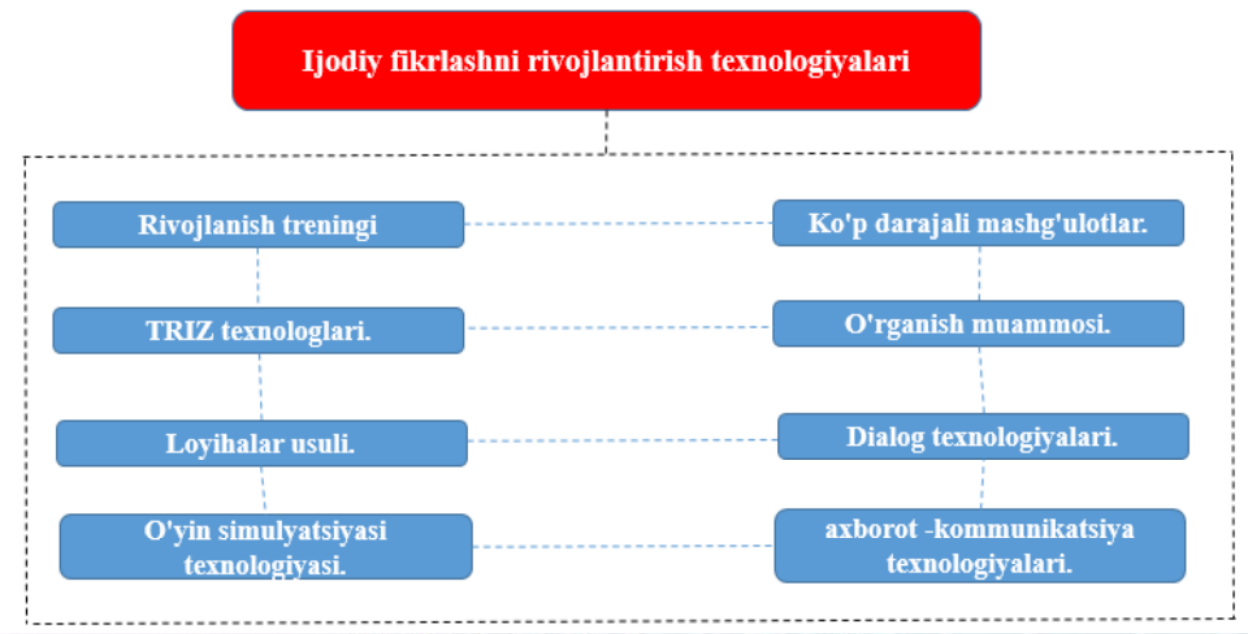

Figure 2. Technologies for the development of creative thinking.

Therefore, the following conditions must be met for the development of creative thinking:

- traditionalism in teaching methods, everyday life, monotony, keeping the student from being separated from his personal experience;
- prevention of overwork and educational overload;

- stimulation of cognitive interest in various ways using digital technologies;
- Special teaching of techniques of SMART activity and educational work, use of problem-search methods of teaching.

Creative activity develops the student's personality, helps to master national and moral standards. Creating creativity, the student reflects in them his understanding of life values, his personal characteristics. An adult student often hesitates to critically evaluate his creative abilities and show them. And scientists V.A. According to Sukhomlinsky, "People should live in the world of beauty, games, fairy tales, music, painting, fantasy, creativity." In short, everyone has creativity. The task of us pedagogues in the age of digital technologies is to awaken this inner creativity and show the right path.

In different regions of the world, creative ideas became the basis for the development of human culture, the development of natural sciences, philosophy, art and humanities. Creative writing is different from just random writing. Creative thinking is a real competence based on knowledge and experience, which creates conditions for people to achieve the expected results in tense and complex situations. The task of education is to provide students with the necessary competencies for success in the future. Because of this, they help to adapt to a world that is changing rapidly in the process of globalization, literacy and digitization are promoted, and flexible workers with modern requirements. As a result of the acquisition of creative creativity by young people, they develop the ability to use new technologies to solve current problems, work in sectors that have not yet been created, as well as perform tasks that cannot be done by machines and solve global problems. The importance of schools in the life of society is that: it is to make students feel that they are a part of society, to contribute to the development of society and to fulfill their duties in front of it. International studies in students by increasing their creativity, it ensures that they approach experiences, events, and other situations in a new way, and helps them acquire knowledge. In order to accelerate the student's creativity, curiosity and motivation, new style technology that reveals new aspects of his creativity and learning patterns must be formed.

Learning such developmental styles helps slow learners to express themselves and increase their interests. Creative thinking is as objective and practical as other skills. In the eyes of some teachers, increasing the student's creative thinking seems to involve engaging in other activities outside of the curriculum.

In fact, students' ability to create creative ideas in all subjects is taken into account. One of the advantages of creative writing is that the student acquires basic knowledge by supporting the ability to search and write, rather than by memorization.

The PISA 2022 research focuses more on the creative development of 15-year-old students. evaluates how well the lime is integrated with other properties.

In this process, based on the mastery of students, the assigned tasks should be connected with the subjects taught at school, and the practical and test tasks should be simple and simple, close to the tasks performed in the classroom or outside the classroom. Collecting information on different aspects of creative thinking in PISA studies is somewhat difficult. But this is one of the main tasks. Assessment of students' creativity in the PISA program consists of test and general information parts. The information given in the process of working with tasks necessary for reasoning and evaluation in the tests will be at the level of developing the student's creativity. The collected general information is complemented by other creative approaches aimed at developing students' creative thinking (openness, goal orientation, reliability) through active participation in classroom and extracurricular activities.

Creative design is a direction of design that leads to the creation of valuable and original ideas. All people can engage in creativity and "everyday" creativity (finding non-standard solutions to everyday problems). Creative thinking can be used not only in creating creative works or imagining situations related to art, but also in functional tasks in other areas, such as solving problems or social issues.

The PISA assessment program examines students' ability to generate diverse and original ideas, as well as evaluate and refine ideas in different situations or 'domains'. Assessment includes four areas: written expression, visual expression, social problem solving, and scientific problem solving. In each of these areas, students perform open-ended tasks that do not have a single correct answer. They are asked to provide multiple answers individually or create a non-simple answer. These answers can be a solution to the problem in the form of a creative text or visual image. Why is it important to develop creativity in students? Creative creativity supports students' experiences, actions, events in new and personally meaningful interpretations of their scientific curiosity and can positively affect achievement, self-awareness, and social-emotional development.

Beyond the classroom, creative writing helps students adapt to a constantly changing world. Supporting students' creative thinking helps them to contribute to the development of the society they live in as today's and tomorrow's workers: organizations and societies around the world increasingly rely on innovation and knowledge creation to solve complex problems. , as a collective association, values innovation and creativity. [1] It is worth noting that the more fields are included in the system of evaluation of creative writing, the more comprehensive the concept will be. Even so, the practical and logical limitations of PISA research play a central role in the PISA 2022 assessment of student achievement. The first limitation is that although the 15-year-old students in the study had a limited level of knowledge and skills, the activities selected for evaluation relied on knowledge and skills that could be acquired by a large number of students around the world. a must The second limitation is the standardized test run time. Students are required to complete one-hour creative tests based on the PISA assessment requirement. Since PISA studies are designed to assess international students and not just one student, they are also given repeated tests with different tasks on different topics. Third. The limitation is that the PISA assessment program standard requires the use of tests that test creative thinking. These tests are checked on computers with non-touch monitors that are not connected to the Internet. Given these limitations, the PISA 2022 assessment program for students' creative thinking includes two thematic content areas, which are: "creative expression, knowledge generation and creative problem solving". includes mastery creative writing tasks and demonstrates real-world visualization or creative writing. let's meet.

Writing: Writing is a natural way of creative expression in school and out-of-school settings. Through this, it is possible to develop cognitive, speech, communication and other abilities of students. A truly creative writer's writing is easy to understand, rich in detail, and most importantly, logical. The reader is only required to imagine and understand. The event that takes place in the writing of the writer who creates the written expression is responsible for the content of the processes and even the experiences and texts of others. Through the creative writings created by the creative writer, the reader acquires emotional and intellectual abilities to understand the existence in general. Written creativity gives the student such achievements as a full understanding of life and communication with the social environment.

Visual representation: This field differs from other fields in that students can discover new experiences using various visual aids, processes, and information materials, test them through laboratory or other experiments, and increase their independent learning. Creative visual expression is the most popular field today. Since the 21st century is the age of technology, the development of the digital communication system allows the automatic transmission and projection of text and images. In tests given in the field of visual processing, students perform open visual exercises using digital drawing equipment. Using the provided textual information and prompting questions, it is required to offer visual feedback, and to make suggestions or changes to various visual expressions based on additional information.

Solving social problems: students use creative thinking skills to solve individual and social problems. In this case, the existing problem is looked at from a social point of view, that is, ways of finding a solution to the needs of each person are sought, regardless of the problem's personal, educational and social global nature. In this field, students' abilities such as innovative, practical solutions to global problems, identifying the needs of social groups, and expressing a positive attitude towards others are developed through creative thinking. Pupils who perform the tasks of the tests created within the framework of solving social problems are required to collect ideas for finding a social solution to the problem, regardless of whether the problem is personal or global.

Solving scientific problems: Creative thinking in the scientific field can occur through the following methods: in the framework of experiments that increase hypothesis, based on ideas that develop knowledge, promote ideas that increase practical interest, develop inventions and new engineering plans, etc. In the inquiry sessions, the students will be able to perform any experiment and discover new inventions with the materials of their choice. Creativity in the field of science is inextricably linked to scientific research skills. includes various aspects of creative thinking in different scientific contexts. In this, students perform exercises to find a solution to an open-ended problem in a scientific context, use the given information, and develop ideas and concepts that give hypotheses in a scientific sense. interactive simulations and games are among the best ways to assess creativity in scientific problem solving because such environments allow students to make personal choices and actions. It can provide opportunities for such assessment through their participation in the process of discovery and failure determined by scientific innovation.

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Competency model of creativity

The ideas used in the PISA international program can be as follows: in the form of answers to questions about written, visual, social problems and scientific phenomena. In the test sections, open-type tasks and contexts are presented that determine the ability of students to express their opinions in a new way. In this, the results of the test sections can reveal all aspects of international level creativity. Even in such conditions, the test sections control all aspects of the competency model. Evaluating students' ideas requires appropriate cognitive skills, creative and creative experiences. How many ideas a person can express shows his creative ability. This situation shows that he has deep creativity. Creative creativity sets a goal and ends with the desired result. The expected creative thinking skill is not characterized by the creation of unusual innovations, but by the fact that it is a creative activity that gives the desired result. It helps to evaluate the students' creative processes and find effective and productive ideas. New ideas are found in these processes. or existing ideas are reshaped. Repetition and evaluation processes can be the basis of creativity. ..

The possibility of creative thinking in the educational process and its manifestation are as follows

Schools teach creative thinking skills, intellectual skills, field readiness (knowledge and experience related to a specific field), openness to new ideas and experiences, the skills of working with others or agreeing with others (cooperation), self-reliance when faced with difficulties. striving to achieve a goal, believing in a person's ability to be creative (goal orientation and confidence), and at the same time, introducing various aspects of students' internal capabilities (henceforth "individual exponents of creative thinking skills") to master the motivation to complete the task can reveal a secret.

The factors that manifest creativity in the classroom in such a unique way are closely related to each other. Factors that socially encourage creative thinking are formed by themselves with the help of general cultural rules or laws. In the process of education, encouraging students' creative thinking skills increases their confidence in their creative abilities, self-management characteristics and aimed at increasing efficiency in their activities (including perseverance and patience), which in turn affects the formation and strengthening of the factors that develop the individual abilities of students.

Internal creative efficiency refers to the confidence a person needs to be able to perform a task creatively. Self-confidence is closely related to goal orientation

and creativity, and some researchers believe that internal creative efficiency in a person is important in determining whether a person will act despite difficulties and finally complete a task. , believes. Such a firm belief in a person, in turn, depends on the diligence, determination and the social status of the task to be performed.

Industry readiness means that a certain level of pre-existing knowledge and experience in a certain field is required for a person to successfully implement a creative work. It can be concluded that the more knowledge a person has, the better he understands the relationship between various information related to the field and the greater the opportunity to discover creative ideas.

There is a lot of literature on identifying personality traits that characterize "creative people". Empirical studies that study the personality behavior of creative people usually use questionnaires and use creativity as a relatively stable personality trait. These studies show that most creative people are prone to thinking, and thus, collectively, to "openness": that is, they have both "openness to experience" and "openness to learning" (although both options seem to underlie the larger "openness" factor). indicates that it exists

The ability of a team approach is important in the formation of knowledge and skills, as well as in the process of education. Schools create an opportunity for students to discover or develop their own opinions in the process of learning with other peers, and to acquire new knowledge and skills together. Pupils should learn to respect the opinions of others, to develop the skills of working together and to work as a team.

Summary

Various methods of teaching or learning have been researched through a series of research conducted in the field of education, which increase the probability of the formation of knowledge and skills. Research shows that creative thinking can be effectively developed by working together in a team environment that allows for the creation of knowledge and skills. In other words, schools function as knowledge and skill-generating organizations, where students are actively engaged in creative and regular activities infused with new ideas. When the process of creating knowledge becomes a purposeful activity that is an integral part of the educational process, that is, a type of daily activity, the student contributes to the development of society with new ideas and practical activities that constantly develop these ideas.

Knowledge can also be created by "looking at the world with the eyes of questioning wonder." Looking at the world with questioning wonder means the process of the student trying to understand the world, and this motivates students to put forward their own opinions about various events.

A creative approach

Students' creativity is reflected in their creative thinking skills, especially in performing the most "invisible" tasks of the creative thinking process. The student's creative competence is of great importance in determining whether the creative thinking process has been successfully implemented or not.

Over the years, a lot of literature has appeared on the importance of human creativity in several fields and its analysis. According to the definition given in this written literature, creative excellence is considered new and useful in relation to a certain social sphere. In the course of education, the creative approach has its "daily" form. For example, it is manifested through expressive activities of writing, drawing, music or other areas of "art", creating new knowledge and concepts, or finding creative solutions to various open questions.

REFERENCES:

1. Kaldibekova, A. S., & Norboyev, F. C. (2021). Pedagogik innovatsion faoliyatda psixologik to'siqlar muammosi. Academic research in educational sciences, 2(CSPI conference 1), 611-615.
2. Urinova, M. V. (2021). Issues of use of information and communication technologies in the conditions of digital economy. Academic Research In Educational Sciences, 2(6), 1520-1525.
3. Bakhronovna, R. M. (2023). The Theory And Experience Of The Formation Of Professional Value Criteria In The Continuous Education Of The Future Primary School Teacher. Boletin de Literatura Oral-The Literary Journal, 10(1), 2179-2186.
4. Baxronovna, R. M. (2023). Developing teacher's skills in using scientific methodological articles in science teaching. International Journal of Advance Scientific Research, 3(09), 122-127.
5. Baxronovna, R. M. (2023). Boshlang 'ich ta'limda xorijiy metodikalar asosida o 'qish savodxonligini oshirish. fan, ta'lim va amaliyotning integrasiyasi, 408-411.

6. Baxronovna, R. M., & Nishanovich, X. J. (2023). Improving Reading Literacy Using Foreign Methods in Primary Education. Journal of Pedagogical Inventions and Practices, 18, 94-96.
7. Raxmonova, Z. (2021). The influence of family values on personality development. ACADEMICIA: An International Multidisciplinary Research Journal, 11(3), 1855-1857.
8. Ne'matovna, R. Z. (2024). Problems of emotional intelligence stability in the formation of individual values. Academia Repository, 5(3), 218-220.
9. Hayitmuradova, N. A. (2022). Positive influence of physical activities on the organism of young athletes. Science and Innovation, 1(8), 641-644.
10. Xamidov, M. (2023). On some similar and different aspects of proverbs and subjects. American Journal of Pedagogical and Educational Research, 15, 66-68.
11. Mirakhmedova, S. N. (2024). Socio-philosophical analysis of transformation of spiritual-ideological reforms in new Uzbekistan. Proximus Journal of Sports Science and Physical Education, 1(1), 28-32.
12. Xamidov, M. A. (2022). Surxondaryo o 'zbek shevalariga doir ayrim paremalar tahlili. Oriental Renaissance: Innovative, educational, natural and social sciences, 2(7), 676-684.
13. Musurmanov, A. A., Bazarova, R. S., & Tojiyev, K. (2022). Innovative methods of growing pineapples (Ananas comosus (L.) MERR). Journal of Academic Research and Trends in Educational Sciences, 1(8), 7-12.
14. Xamidov, M. (2023). JANUBIY SURXONDARYO O 'ZBEK SHEVALARI MAQOLLARINING HOSIL BO 'LISHIDA BILINGVIZM HODISASI. INNOVATIVE DEVELOPMENTS AND RESEARCH IN EDUCATION, 2(20), 123-125.
15. Xamidov, M. (2023). Badiiy matnlarda uchrovchi o 'zbek sheva maqollarining transformatsiyasi. models and methods for increasing the efficiency of innovative research, 3(25), 204-206.
16. Xamidov, M. (2023). On some similar and different aspects of proverbs and subjects. American Journal of Pedagogical and Educational Research, 15, 66-68.
17. Abdumannobovich, X. M. (2023). TRANSFORMATION OF PAREMIOLOGICAL UNITS IN SOUTHERN SURKHANDARYA UZBEK DIALECTS. European International Journal of Multidisciplinary Research and Management Studies, 3(05), 168-173.

18. Abdumannobovich, X. M. (2021). O'zbek tili paremiologik birliklarida somatik so'zlar salmog'i (Janubiy Surxondaryo o'zbek shevalari misolida): Xamidov Mansur Abdumannobovich Termiz davlat universiteti O'zbek tili va adabiyoti kafedrasi o'qituvchisi, erkin tadqiqotchi. In Научно-практическая конференция.
19. Holiqova, D. S. (2023). Methodology of developing students' reading and writing skills based on distance education technologies (in the example of English language materials). Current Issues of Bio Economics and Digitalization in the Sustainable Development of Regions (Germany), 7(2), 75-80.
20. Holiqova, D. S. (2023). Тенденции развития образования и педагогики. Conference, 1(5), 147-150.
21. Jalilovna, K. D. (2020). The stability of the ideological concept in the work of Dostoevsky. ACADEMICIA: An International Multidisciplinary Research Journal, 10(53), 301-309.
22. Umurqulov, Z. (2019). Lingvistik tahlil asoslari. Ilm sarchashmalari, 6, 23.
23. Умурқулов, З. Б. (2015). Эркин Аъзамнинг сўз қўллаш маҳорати. 56.
24. Халилова, Д., & Халилова, Ш. (2019). Концептуальный подход к художественному творчеству Достоевского. Евразийское Научное Объединение, (4-5), 308-310.
25. Jalilovna, K. D. (2019). The concept of literary psychologism in the works of F. Dostoyevsky. European journal of literature and linguistics, (2), 39-42.
26. Yorbekova, D., & Raximova, U. (2023). Modern Foundations of Teaching Economics in University. Евразийский журнал академических исследований, 3(2 Part 4), 173-176.
27. Rahimova, U. (2019). Lingvopersonologics As A New Direction Of Anthropocentric Linguistics. Scientific Bulletin of Namangan State University, 1(8), 259-265.
28. Umurqulov, Z. B. (2020). Comparison in literary text and its linguopoetic value. Karshi State University.
29. Умурқулов, З. Б. (2020). Сравнение в художественном тексте и его лингвопоэтическая ценность. Каршинский государственный университет.
30. Khalilova, D. J. (2019). Human and society interpretation in literary work. Гуманитарный трактат, (55), 20-23.
31. Умурқулов, З. Б. (2020). Бадиий матнда қиёс ва унинг лингвопоэтик қиммати. Қарши давлат университети.

32. Rakhimova, U. (2023). Formal features of the rhyme. Proceedings Of ASAR Internaional Conference, New Deihi, 58-59.