

UDC 581.555.22

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**INNOVATIVE METHODS FOR STUDYING THE INFLUENCE OF EDAPHIC  
ENVIRONMENTAL FACTORS ON PLANT LIFE**

**Abstract**

Our research showed that at present, our country is undergoing significant changes in the national education policy. This is due to the transition to the position of personality-oriented pedagogy. The tasks of the educational process include the disclosure of the potential of all participants, the manifestation of their creative abilities in educational activities. Various innovative methods and technologies are used in educational institutions to solve these problems. Innovative learning is considered as a tool for organizing the ways of knowledge used in the activities of subjects of the educational process.

The use of technological tools for organizing project activities allows us to achieve significant changes in the results of training. Teachers have the opportunity to implement new models of educational process organization, for example, «inverted classroom». In this educational technology of the XXI century, the teacher first provides students with the opportunity to independently study new material at home, and then organizes the practical consolidation of this material in the classroom.

We come to the conclusion that the use of innovative technologies in the educational process is aimed at educating students in the spirit of citizenship, developing their worldview, expanding their horizons, and improving their knowledge.

Learning technology reflects learning theory and is a strategy that reflects the technological level of learning. The formation of educational and cognitive activity of the younger generation is impossible without familiarization with the latest pedagogical technologies. Much attention is paid to the independent work of students, which will affect the understanding of the topic and improve professional skills in the future.

**Keywords:** *innovative technologies, individual and collective abilities, integration, information, distance learning, developing.*

The Law of the Republic of Kazakhstan «On Education» States that «the main task of the education system is to create the necessary conditions for obtaining education aimed at the formation, development and improvement of professional skills of the individual on the basis of the values of national and universal society, achievements of science and practice» [1].

Today, changes in the country's educational systems and government resolutions require linking knowledge with life, improving the quality of education, and educating a well-rounded generation. In order to enter the World educational space, a new education system is currently being created in the country. This process requires, along with making specific changes to the educational work of the theory of pedagogy, a new approach to the educational activities of various areas taking place in the country, differentiation of achievements, improvement of the creative potential of students, orientation of teachers to the scientific direction, and a new organization of activities.

In the country's strategic program «Kazakhstan – 2050», one of the main goals is to educate highly developed intellectual youth and promote their potential. Therefore, the teachers have a very big task. Today, one of the most effective concepts of the discipline for the younger generation is the basics of innovative technologies.

The word «innovation» is a term that is currently used in all industries, medicine, and technology. Now this word means «new, changing, new», that is, in the modern era there is a need for

«new, new change». On the basis of this method, it is assumed to increase the cognitive activity of the student through the formation of individual abilities, activity, and independent use of educational material. The features of this are mainly as follows:

- development of student activity;
- creating a harmony of learning and learning;
- to develop the student's ability to learn independently right here;
- the ability to identify the active participation of the student in the cognitive process;
- influence on perception, perception of emotions, using more visual AIDS [2].

Innovations, on the one hand, change the methods of work of the teacher, the relationship of the teacher and the student, games, on the other hand, and turn into a philosophy of practical activity.

New methods of training are the teacher's skillful development of innovative technologies, sustainable care for its use, and «multi-functional weapons» that require modification.

Innovative learning technologies-improving students' abilities to the educational process on the basis of personal-oriented, integration, collective abilities, information, distance, developmental, and other technologies [3].

Johann Wolfgang von Goethe says: «Knowing is not enough; we must apply. Willing is not enough; we must do». Thus, a modern teacher should be not only theoretically armed, but also supportive, able to teach the student to apply knowledge in life, constantly in search, and most importantly-a teacher who can think [4].

In the course of innovative training, the student learns to be active, form their own opinion, correctly Express their thoughts, argue their point of view, conduct discussions, listen to others, respect and communicate with them. The creation of a modern education system and the introduction of innovative forms and methods of training places high demands on the personality and professional competence of teachers [5].

The above types of innovative technologies in modern conditions are very effective for use in the educational process of the University. It does not damage the content of training defined by state standards of education, and allows you to achieve the goals specified in the curriculum of academic disciplines, in unity with the already established methods of training. Currently, a new education system is being created in a sovereign country that is focused on entering the world educational space. This is due to significant changes in the educational process. Because the educational paradigm has changed, the content of education is being updated, new views and new relationships are emerging.

New innovative training technologies are a special kind of professional competence. To form innovative technologies of training is necessary to mobilize a great educational experience. This is a job that requires a person who is creatively suited to their work, who has well-known personal business qualities. In fact, each teacher is self-forming and self-forming in the process of developing new innovative technologies [6].

The main tasks of the new innovative pedagogical technology at the University are: obtaining knowledge, development, purposeful organization of each student's activity; education to the extent that a reference point is chosen that corresponds to knowledge and knowledge; formation and development of skills for independent work; development of analytical thinking. Based on these tasks, we will consider the methods of innovative technologies that are effective in studying the topic «the influence of Edaphic environmental factors on the vital activity of plants».

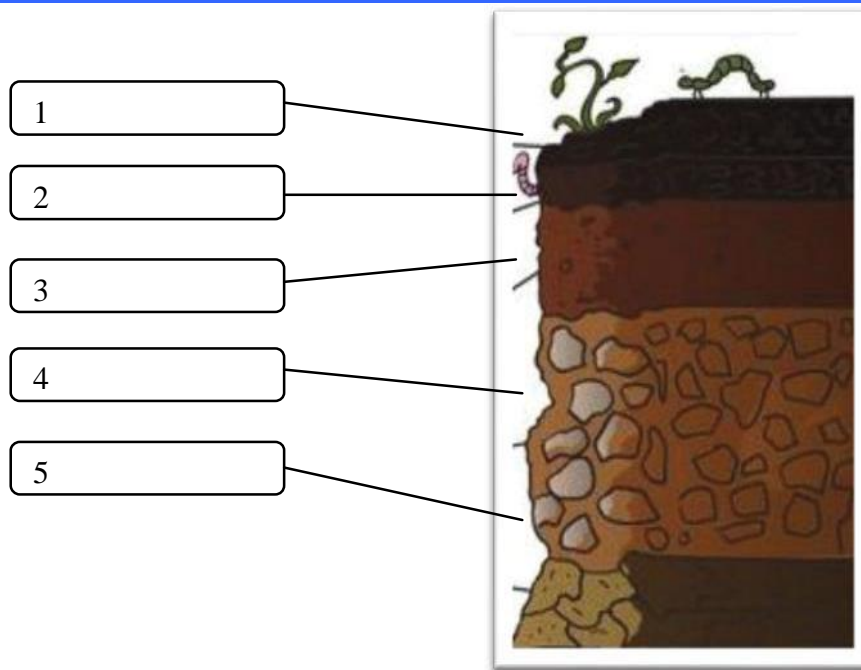


Figure 1. Scheme «Soil layers»

In the process of working with the support scheme «Soil layers» (fig.1) using the necessary words: humus, parent material, topsoil, bedrock, subsoil. Describe the picture (fig.2, fig.3) development of innovative knowledge, introduction of changes, implementation of new pedagogical ideas. We must pay special attention to the fact that the student is a person who is looking for education on their own.

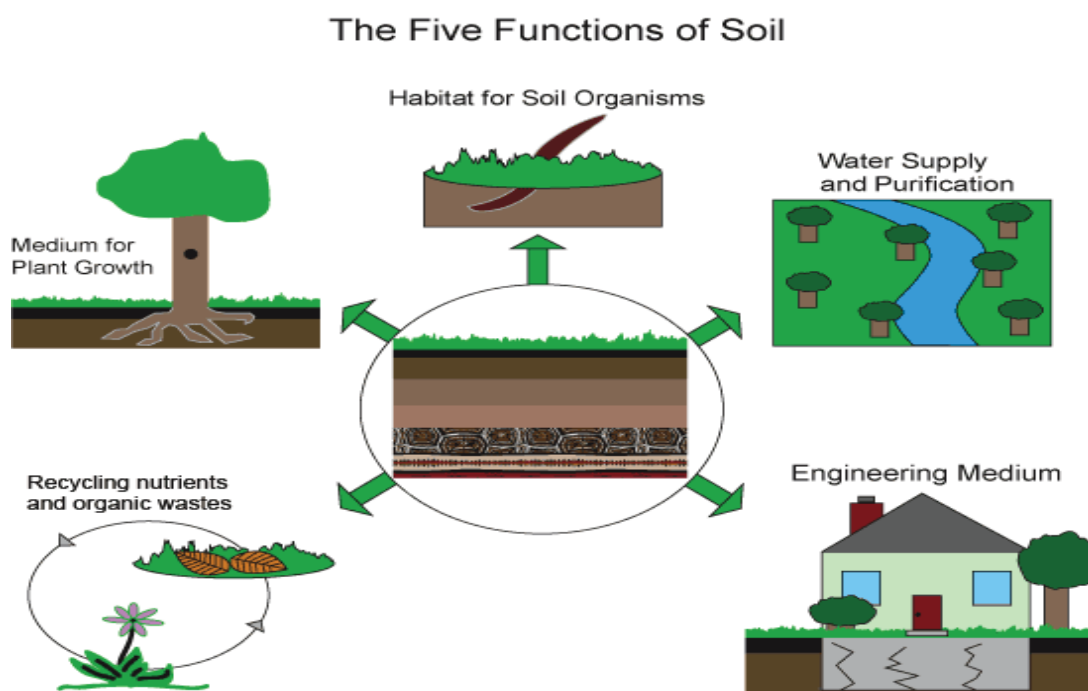


Figure 2. The five functions of soil

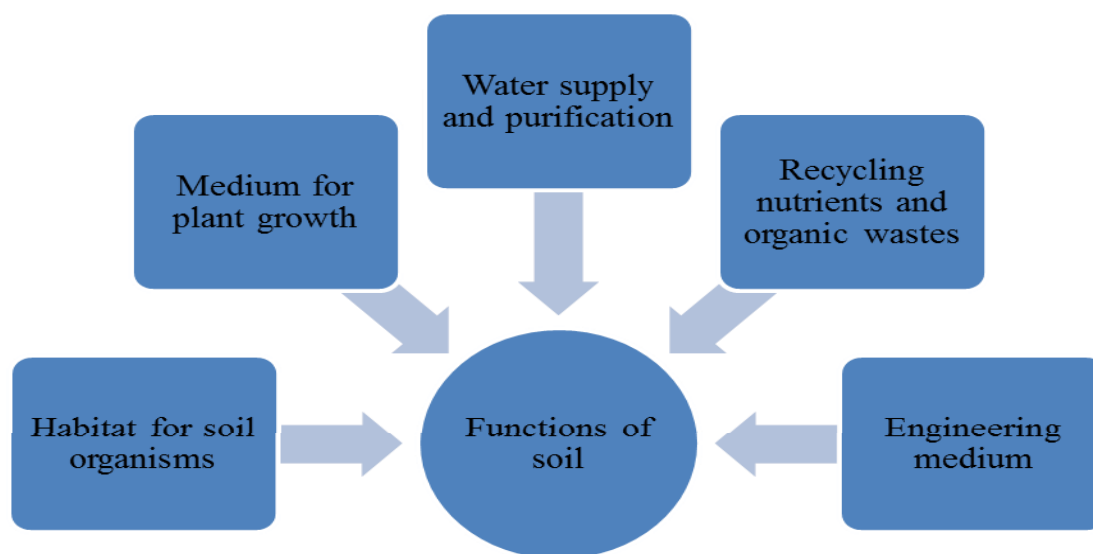


Figure 3. Functions of soil

Soil and plants are in constant interconnected metabolism, if there is no metabolism in the media, neither in plants nor in the soil. Some plants grow only on certain soils, so they are called plant indicators [7]. Task of identifying soils types and chemical composition (table 1).

Table 1- Identification task «6 types of soil»

Soil	Feel	Composed of	Location	Other
Sand				
Clay				
Silt				
Peat				
Loam				
Chalk				

Results of innovative technology: help to reveal more deeply the specific essence of the topic using various methods. Allows you to attract all students to classes. At the same time, students' abilities, freedom of communication, organization, and creative activity increase. Development of personal qualities, development of creative potential, formation of professional self-confidence.

As noted by the Russian teacher K.D.Ushinsky: «In accord with the modern requirements, every teacher, improving their knowledge, uses innovative technologies in accordance with new requirements, and not the old monotonous lessons».

Therefore, keeping up with scientific and technological progress, the ability to timely accept, process and effectively use new pedagogical innovations is the primary mission of every teacher. In our opinion, it is need to be established a system of innovative management in educational institutions and implement it.

After studying and analyzing new innovative technologies to improve the quality of education, we come to the following conclusion:

- it offers a variety of new innovative technologies improving the quality of students' knowledge and skills, the choice and conclusion from it depends on the professional competence of the teacher;
- success can be achieved only when the introduction of new innovative technologies is carried out systematically and purposefully;

- when introducing new innovative training technologies, a large obstacle is created by the lack and non-compliance of the material and technical base of each educational institution with modern requirements, and low personnel potential.

Thus, the effective use of innovative technologies in teaching the topic is the goal of educating students in a civic spirit, developing their worldview, expanding their horizons, and improving their knowledge.

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### ТҮЙІН

Біздің зерттеулеріміз қазіргі уақытта біздің елімізде ұлттық білім беру саясатында айтарлықтай өзгерістер болып жатқанын көрсетті. Бұл тұлғаға бағытталған педагогика ұстанымына ауысумен байланысты. Қазіргі мектептің міндеттерінің бірі-педагогикалық процестің барлық қатысушыларының әлеуетін ашу, оларға шығармашылық қабілеттерін көрсетуге мүмкіндік беру. Бұл мәселелерді шешу білім беру процестерінің өзгермелілігін жүзеге асырмай мүмкін емес, сондықтан терең ғылыми және практикалық түсінуді қажет ететін оқу орындарының әртүрлі инновациялық түрлері мен түрлері бар.

Жобалық қызметті ұйымдастырудың технологиялық құралдарын қолдану Оқыту нәтижелерінде айтарлықтай өзгерістерге қол жеткізуге мүмкіндік береді. Оқытушылар оқу процесін ұйымдастырудың жаңа модельдерін, мысалы, «төңкерілген сынып» енгізу мүмкіндігіне ие. ХХІ ғасырдың осы білім беру технологиясында мұғалім алдымен студенттерге үйде жаңа материалды өз бетінше оқуға мүмкіндік береді, содан кейін сыныпта осы материалды практикалық шоғырландыруды ұйымдастырады.

Біз пәнді оқытуда инновациялық технологияларды тиімді пайдалану студенттерді азаматтық рухқа тәрбиелеуге, олардың дүниетанымын дамытуға, ой-өрісін кеңейтуге, білімді жетілдіруге бағытталған деген қорытындыға келеміз.

### РЕЗЮМЕ

Наше исследование показывает, что на сегодняшний день в нашей стране происходят колоссальные изменения в образовательной сфере, связанное с переходом на позиции личностно-ориентированной педагогики. К задачам современной школы относится расширение потенциалов участников образовательного процесса, предоставляя возможности проявить свои творческие способности. Решение образовательных проблем невозможно без реализации этих процессов, поэтому существуют различные инновационные методы и технологии, требующие научные и практические осмысления.

Использование технологических средств организации проектной деятельности позволяет добиться существенных изменений в результатах обучения. Преподаватели имеют возможность внедрять новые модели организации учебного процесса, например, «перевернутый класс». В этой образовательной технологии ХХІ века учитель сначала предоставляет учащимся возможность самостоятельно изучать новый материал дома, а затем организует практическое закрепление этого материала на занятиях.

Мы приходим к выводу, что эффективное использование инновационных технологий в преподавании предмета направлено на воспитание у студентов духа гражданственности, развитие их мировоззрения, расширение кругозора, совершенствование знаний