

тәсіліне қарағанда осы тәсілді пайдаланған кезде ғана тамыр жүйесі жақсы дамиды. Тамыршалардың негізгі массасы тамшылар аймағында шоғырланады, тамыр жүйесі шашақталып көптеген белсенді тамыр түктерін дамытады. Өсімдіктің су мен қоректік заттарды тұтыну қарқындылығы артады.

2. Су баяу жүреді, топырақ эрозияға ұшырамайды - мұның барлығы ылғалдың шығынына тосқауыл қоюға мүмкіндік береді;

3. Ерітілген тыңайтқыштар тікелей тамырлы аймаққа суару кезінде енгізіледі. Қоректік заттардың тез және қарқынды сіңуі іске асады. Бұл құрғақ климаттық жағдайларда тыңайтқыштарды енгізудің ең тиімді тәсілі.

4. Өсімдіктердің жапырақтары жаңбырлатып суарғандағыдай ылғалданбайды, сондықтан аурулардың таралу ықтималдығы төмендейді, инсектицидтер мен фунгицидтер жапырақтардан шайылмайды.

5. Барлық жүйе автоматты түрде әрекет етеді, қажет болған жағдайда ол компьютерге қосылуы мүмкін. Осының бәрі жұмыс уақытының 60% үнемдеуге мүмкіндік береді.

Әдебиеттер тізімі:

Открытое письмо Д. А. Медведеву академиком П. А. Полад-Заде, А. А. Виксне, Б. М. Кизяева // Мелиорация и водное хозяйство. – 2009. – № 5. – С. 2.

Проблемы и перспективы использования водных ресурсов в агропромышленном комплексе России / В. Н. Щедрин [и др.]. – М.: ФГНУ ЦНТИ «Мелиоводинформ», 2009. – 342 с.

Снипич Ю. Ф. Техника и технология орошения в современных условиях землепользования // Мелиорация и водное хозяйство. – 2006. – № 6. – С. 28-30.

Reinders F. B. Micro-irrigation: world overview on technology and utilization // Keynote address at the opening of the 7th International Micro-Irrigation Congress in Kuala Lumpur, Malaysia, 2006.

S.A. Kulkarni, F.B. Reinders, and F. Ligetvari Global Scenario of Sprinkler and Micro Irrigated Areas 7th International Micro Irrigation Con-gress. 2010.– С. 105-110.

INTERSUBJECT COMMUNICATIONS OF LITERATURE AND CHEMISTRY IN THE PERIODIC SYSTEM.

ПЕРИОДТЫҚ ЖҮЙЕДЕ ӘДЕБИЕТ ПЕН ХИМИЯНЫҢ ПӘН АРАЛЫҚ БАЙЛАНЫСЫ.

МЕЖПРЕДМЕТНЫЕ СВЯЗИ ЛИТЕРАТУРЫ И ХИМИИ В ПЕРИОДИЧЕСКОЙ СИСТЕМЕ.

Nazhikanova Diana Adilkanovna
Kenshinbek Zhuldyzai Bauyrzhankyzy,

Kostanay State Pedagogical University named after U. Sultangazin, 3rd year
student of chemistry 5B011200

Research supervisor: Tauakelov.Ch.A.

Түйін: Мақалада химия мен әдебиетті оқытуда аралық байланыстарды жүзеге асырудың орындылығы, химия сабақтарында әдеби шығармаларды қолдану мысалдары көрсетілген. Бұл мақалада химия пәнін өлең жолдарымен жалпы әдебиетпен байланыстыра

өтудің маңыздылығымен артықшылығын көрсетеді. Оқу тәжірибесінде пәнаралық байланысты жүзеге асыру химия пәнінің мұғалімінің басқа пәндер оқытушыларымен ынтымақтастығын көздейді.

Аннотация: В статье рассматриваются возможности реализации межпредметных связей в ходе изучения химии и литературы, приведены приемы использования произведений художественной литературы на уроках химии. Эта статья подчеркивает важность и преимущества соединения химии с поэзией. Реализация межпредметных связей в практике обучения предполагает сотрудничество учителя химии с учителями других предметов.

Annotation: In the article, the possibilities of the implementation of interdisciplinary relations in the course of studying chemistry and literature are considered. This article emphasizes the importance and benefits of combining chemistry with poetry. The implementation of intersubject communications in the practice of learning involves the cooperation of a chemistry teacher with teachers of other subjects.

Кілт сөздер: өлең, көзқарастар, сабақты дамыту, мәдени ой, периодтық жүйе тарихы, пәнаралық байланыс, білім беру, Д.И.Менделеевтің периодтық кестесі, химия қақпасы.

Ключевые слова: поэзия, взгляды, развитие урока, культурная мысль, история периодической таблицы, межпредметные связи, образование, периодическая таблица Д.И.Менделеева, врата химии.

Keywords: poetry, views, lesson development, cultural thought, history of the periodic table, intersubject communications, education, periodic table of D.I. Mendeleev, gate of chemistry.

Interdisciplinary links with other sciences are very important for students in the study of any subject. In the study of chemistry, interdisciplinary links are often obtained in mathematics (solving problems), biology (biological role of metallic and non-metallic ions, organic matter), physics and geography (distribution of elements in nature, ore), i.e. the objects of the natural mathematical cycle. However, the lesson can be integrated with the literature. The use of literary riddles, poems in the new or grouping of the read material develops students' ability to think logically, as well as contributes to their heuristic activity in the classroom. Examples of the use of poetic lines are often found in the methodological literature for inorganic chemistry lessons and extracurricular activities, but very few in organic chemistry.

Interdisciplinary integration of natural sciences includes physics, physiology, biology, ecology, paleontology, geography, geology, cosmology, etc. helps to combine different information. Comprehensive knowledge is very important for a unified understanding of the inanimate and living world, that is, to form a holistic natural-scientific image of the world. This means, for example, that knowledge of chemistry is incomplete without knowing the information about the school course and the connection between the individual subjects of the school course.

Another important point is to draw parallels between the humanities and industries in the field of chemistry: literature, world art culture, art, museum work, history, criminology, cinema, photography, music, linguistics (etymology) and others. This allows us to show the importance of chemistry. It examines in more detail the role of chemistry in human activity in areas that at first glance may seem far-fetched. Thus, through the interaction of natural and social sciences, one of the main directions in the development of modern education is a systematic approach to humanized learning.

The structure of the periodic table and musical composition reflects the laws of universal harmony in nature. If D. I. Mendeleev's periodic law and Kh. H. If we model Lewis Octet's rule for music, we can assume that 8 records (1 octave) correspond to one period in the periodic table, and then the record "do" corresponds. Atoms of chemical

elements are placed in the periodic table with their charge and relative atomic mass in a certain periodicity, in ascending order of periods and groups. On a musical scale, notes are placed as they increase in octaves. Atoms of chemical elements can be connected to each other in different ways, there are different chemical bonds: ionic, metallic, covalently polar and non-polar. When playing a musical instrument, the notes (sounds) associated with the beats can be combined in different ways: legato (legato), staccato (staccato), partimento (partimento), etc. There are no music groups for high school students. By chemical names or combinations thereof: "Metal Corrosion", "Bricks", "Metallica", "Lead Fog", "Toxic Substances". You can also recall the song "Lithium" by Nirvana or Evanescence or the song "Beryllium" by Spena:

It's easy to get lost in an apartment.
Some old people sleep and see the table,
In this table I am between chalk and lithium.
I don't live, I develop my life.

It would be hard for you to believe that Mendeleev also made a contribution to literature. But Mendeleev's proverbs are in the pages of literature.

Mendeleev's proverbs

1. The role of science is to serve, it is a means to an end.
2. If there is no modern industry without science, there can be no modern science without industry.
3. Experience is the link between natural phenomena and cognitive abilities.
4. There are two main and final goals of scientific study of the discipline, which is to be able to predict and implement progress.
5. Science is the common good of the people, so it is necessary to respect not only the person who first told a certain truth, but also the person who was able to convince others, convinced of that truth and created it for the benefit of science.
6. No talent and no genius will come out until you fall in love with work.
7. You will find a breath of breath that can not be found in anything else!
8. It's easy to get lost in a well-known data adventure if you don't have a plan.
9. The more useful a person is for all public and state interests and for all mankind, the more perfect he will be.
10. The future of the periodic law is not to be broken, but to be completed and developed.
11. The glory of the teacher is in the growth of the seeds that he sows in his disciples.

Suggestion for the passage of chemistry in Kazakhstan through poetry.

Zhubaibek Zhumakhan, a teacher of the highest category of the Republic of Kazakhstan, has been teaching chemistry in secondary schools in the villages of Zaisan district of East Kazakhstan region for 40 years. More than 500 articles by students, teachers and scientists have been published in the district, regional and national pedagogical readings. comments, comments published.

In 1973, a small book was published by "Mektep" publishing house. It was also printed and distributed as a poster as a best practice in the regions. In 2004, Zh. Zhumakhan's "Atamura" publishing house published a children's textbook in Kazakh and Russian for 8th grade and a table "Chemistry Gate" as a visual aid.

According to many scientists and teachers, the schedule "Chemical Gate" for the study of the basic course of chemistry and the methodology of its teaching, such as the schedule of DI Mendeleev, is a novelty of global significance, common to all schools abroad. However, the authors of the existing textbooks do not prevent the teaching of this

work in schools. It is even growing. In general, people do not want to accept new events and changes, but the art of teaching chemistry in connection with literature is interesting, that is, today it is more convenient for some students to study in the humanities, so this approach is optimal for them.

Poems written by N. Beketov about the active series of metals:

Potassium, sodium are monovalent.

Calcium and magnesium are divalent.

Aluminum is trivalent.

Manganese pairs, seven.

The valence of zinc is two.

Both in iron.

Nickel is similar to iron.

Tin and lead.

Both have four surnames.

Hydrogen metal in a row.

Formed with a single valence.

With both valences

Copper and mercury are listed.

Silver has one valence

With one or three valences.

Platinum seemed

With one or three valences

Gold melted from the feet.

And the boy who memorized this poem, without confusing the elements of the active series of metals created by Beketov, remembers all their valences. He will not forget for a lifetime. For example, when asked what the valence of manganese is, we recite verses and tap "manganese pairs, seven", ie even numbers - 2-4-6 and 7. Beketov's line of activity of these metals is on the left threshold of the "Chemical Gate", while the non-metallic elements created by the American chemist Pauling are listed on the right threshold of the gate. And in the middle of the gate, both metal and non-metal, that is, a series of dual-sacred, amphoteric elements, Uncle Zhubaibek himself selected. We memorized them with a song. Also, according to the lines of the poem, "Look at the gates of chemistry, why is hydrogen at the top of the throne?" confused. After memorizing the poem, it was not difficult to write it without confusion. In later lessons, reading the Mendeleev's table, atomic and electronic theories, the "Chemical Gate" was very useful.

Before reading DI Mendeleev's periodic table in school textbooks, a brief information about dozens of elements and compounds was given, while the "Chemical Gate" table used an easy-to-understand and sequential method of classifying 40-50 elements and compounds according to their common properties.

On both sides of the door of the "Chemical Gate" there are tables for writing chemical formulas, samples of reactions according to the common properties of each of the salts, bases, acids, oxides. A child who has read and mastered all of this will be able to easily read and understand even a chemistry textbook for university. Figuratively speaking, the "Chemical Gate" is the "alphabet" of chemistry. The "gate of chemistry" is not only the "alphabet" of chemistry, but also the "grammar" of chemistry. I mean, in the grammar of the Kazakh language, after reading and understanding the syllables, you write the sentences without mistakes. In the same way, after reading and mastering the "Gates of Chemistry", you will be able to read and understand the science of chemistry on your own. Fiction helps to reveal the external and internal beauty of chemistry. Of course, the problem is not only the beauty of the structure of substances, crystals, solutions.

Chemistry is beautiful in its inner meaning, in its ability to explain phenomena, and in its infinite variety of possibilities. There are many ways to use fiction in chemistry lessons: when explaining new material with excerpts from literary works, when doing exercises for asking questions, or when summarizing and reviewing a topic. In recent years, they have turned to fiction in order to increase their interest in reading. The organization of home study in the classroom and in extracurricular activities, using fiction and popular scientific literature, helps students to master the basics of chemistry for a long time. As a result of such work, students develop interest in reading, the ability to work with books, the desire to read more. Interdisciplinary communication in teaching is considered as a didactic principle and a situation that takes into account the goals and objectives, content, methods, tools and forms of teaching for different academic disciplines.

Interdisciplinary communication affects the composition and structure of disciplines. Each topic is a source of different object communications. When studying amines and anilines, you can use an excerpt from the book "Engineer hyperboloid Garin" by A. Tolstoy. You can read an excerpt on the production and properties of aniline, its use. In the general survey you can ask a few questions from the literature. Modern ideas and interdisciplinary connections about the integrity and development of students contribute to the formation of dialectical and materialist views on nature, which are reflected in the teaching of the methodology of science. Experience has shown that interdisciplinary contacts at school are a clear reflection of the integration processes taking place in science and society. These relationships play an important role in improving the practical and scientific-theoretical training of students.

The use of interdisciplinary communication in practice poses many challenges for teachers, as each subject in the school is presented as a reflection of the real world: how to organize students' cognitive activities in such a way that they can connect knowledge from different subjects; how to arouse their cognitive interest in the worldviews of science. All this indicates the need to use interdisciplinary links in the study of chemistry. This problem has defined the purpose of the study: to identify the main ways to implement intra-school communication in the teaching of chemistry in grades 10-11 in the current conditions of development of school education. The subject of research is the process of improving the methods of chemical teaching based on a systematic approach and the use of interdisciplinary communication. This method increases the motivation to study chemistry; helps to form elements of system thinking; demonstrate the continuity and interconnectedness of all disciplines of the natural cycle and the possibility of applying chemical research methods in further professional activities; effective teaching of chemistry.

In order to achieve the goal and test the hypothesis, the main objectives of the study were formulated:

1. Analysis of methodological, pedagogical and psychological literature on the research topic.
2. Substantiation of interdisciplinary material on the basis of a systematic approach to the effectiveness of chemical education.
3. Development of a course in chemistry with the use of new teaching materials and interdisciplinary materials.
4. Examine the impact of teaching methods proposed in the pedagogical research on the effectiveness of teaching chemistry and the development of systematic thinking of students.

Thus, interdisciplinary communication is a modern principle of teaching, designed to strengthen the systematic knowledge of students, which affects the choice and structure of educational material in a number of disciplines. The full use of

interdisciplinary communication in education lays the foundation for the design and implementation of interdisciplinary activities of teacher and student at all stages of the learning process. In the process of teaching chemistry, all the methods known to modern science can be used to implement interdisciplinary communication.

In conclusion, the Chemical Gate, developed by Mendeleev, is an indispensable tool for understanding the meaning of the Periodic Table in the teaching of chemistry. Through this child-friendly table, the student learns about a number of elements. Explaining the natural sciences to students through interdisciplinary links is effective. To show and support the advantages of Zhubaibek Zhumakhan's book.

Thus, through the systematic use of interdisciplinary communication between students:

1. Develops interest in the topic.
2. Students learn to search for the connection between chemistry and life, which encourages them to use additional sources of information.
3. The level of education increases.
4. Improves the skills of self-education.
5. A dialectical materialist worldview is formed.

List of used literature:

1. Берресон Дж., Лекутер П. Пуговицы Наполеона. Семнадцать молекул, которые изменили мир. — М.: Изд-во Астрель: CORPUS, Москва, 2013. <http://profilib.com/chtenie/136172/dzhey-berreson-pugovitsy-napoleona-semnadtsat-molekul-kotorye-izmenili-mir.php>
2. Захаров В.Б., Мамонтов С.Г., Сивоглазов В.И. Биология: общие закономерности: Учебник для 10-11 кл. общеобразовательных учебных заведений. — М.: Изд-во "Школа-Пресс", 1996. — 624 с.
3. Караковский В.А. Стать человеком. Общечеловеческие ценности — основа целостного учебно-воспитательного процесса. — М., 1993. — 80 с.
4. Энгельс Ф. Диалектика природы. - Маркс К., Энгельс Ф., соч. 2-е изд., т.20, с.343-626.
5. Антонов Н.С. Межпредметные связи измерительных комплексов естественно-научных дисциплин в средней школе: Автореф. дис. канд.пед.наук. М., 1969.
6. Батурина Г.И. Межпредметные связи в процессе преподавания основ науки в средней школе. Сов.педагогика, 1974, № 5, с.153-156.
7. Борисенко Н.Ф. Об основных межпредметных связях. Сов.педагогика, 1971, № II, с.24-32.
8. Воробьев Г.В. Межпредметные связи в процессе обучения.

УКД 615.322

АМИНОКИСЛОТНЫЙ СОСТАВ ELYTRÍGIA RÉPENS (ПЫРЕЙ ПОЛЗУЧИЙ), ПРОИЗРАСТАЮЩЕГО НА ТЕРРИТОРИИ КОСТАНАЙСКОЙ ОБЛАСТИ

Нурсултанова К.А.,
КГУ им. А. Байтурсынова, г. Костанай.

Научный руководитель: Дрюк О.В.