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METHODOLOGICAL ASPECTS OF TEACHING SUBJECT CHEMISTRY IN ENGLISH LANGUAGE IN THE 8th GRADE

The article describes methods of teaching subject «chemistry» of the 8th grade in English language. Scientific-methodical work reflects the development of chemistry lessons in English. Traditional and laboratory practical lessons, also terminology and basic concepts are given in English and tabulated.

Keywords: chemistry, English, multi-language, lesson plan.

8-СЫНЫПТА ХИМИЯНЫ АҒЫЛШЫН ТІЛІНДЕ ОҚЫТУДЫҢ ӘДІСТЕМЕЛІК ЖАҚТАРЫ

Мақалада 8-сыныптың бейорганикалық химия пәнін ағылшын тілінде оқыту әдістемесі жазылған. Ғылыми-әдістемелік жұмыс ағылшын тілінде химия пәнінен сабақ жоспарын құрудың алғашқы тәжірибесін көрсетеді. Дәстүрлі сабақтар, зертханалық тәжірибелік сабақтар, сондай-ақ терминдер мен негізгі ұғымдар ағылшын тілінде беріледі және тақырыптар кестеде берілген.

Түйін сөздер: химия, ағылшын тілі, көптілділік, сабақ жоспары.

МЕТОДИЧЕСКИЕ АСПЕКТЫ ПРЕПОДАВАНИЯ ПРЕДМЕТА ХИМИИ НА АНГЛИЙСКОМ ЯЗЫКЕ В 8 КЛАССЕ

В статье рассмотрена методика преподавания предмета «химия» в 8-ом классе на английском языке. Научно-методическая работа отражает первоначальный опыт по разработке уроков химии на английском языке. Традиционные, лабораторно-практические уроки, а также термины и понятия даются на английском языке и сведены в таблицы.

Ключевые слова: химия, английский язык, полиязычия, разработка урока.

Kazakhstan is a multinational country. About 130 nationalities peacefully live in the country. Today Kazakhstan is characterized by social modernization and striving for world integration processes, where the education takes leading role in the modernization process. It is known that only the society can successfully develop education which creates a decent standard of acquisition of high-quality and modern education for their citizens.

The President N.A. Nazarbayev sets tasks to the national education. Education should become a competitive, high-quality, so that school graduates of Kazakhstan schools could easily continue their studies in foreign universities. Educational process in three languages - is a certainly significant step towards the re-

alization of the Concept of Development of Education of the Republic of Kazakhstan. The President said “Kazakhstan should be perceived worldwide as a highly educated country whose population uses three languages .They are: Kazakh language - the state language, the Russian language - the language of international communication, English - the language of successful integration into the global economy” [1].

The basic concept is that every graduate should speak English fluently and it is a vital necessity, because the development of science and technology in the world requires fluency in foreign languages to get the necessary theoretical and practical knowledge and skills. These concepts have been successfully implemented in schools where teaching is conducted in Kazakh, Russian and English. It is affected the development of communication skills of the students. Besides training in three languages, will promote familiarizing students to the culture and traditions of different peoples. And it is called the formation of the multi-language personality. Multilingual education - is the process of formation of multilingual personality through the mastery of three or more languages.

Currently, many schools in Europe, Asia and America successfully practiced teaching various school subjects through a foreign language communicative environment. Thus the international project “Content and Language Integrated Learning” [2]. “Integrated learning subject and a foreign language” the main task at the moment is to develop students’ knowledge, skills and experience of dialogue on the subject matter of using not only the mother, and a foreign language, and the long-term goal - the formation of multi-language personality with general scientific literacy and it will create real opportunities for learning a foreign language at a level to teach subjects in a foreign language. It concerns students whose professional activity is related to the subject area of science education [3].

In this regard this year it has been prepared the Regional Development Program of multi-language in East Kazakhstan. The program’s aim is to create the necessary organizational, methodological, pedagogical conditions, providing the development of linguistic communicative competence of pupils in Kazakh, English and Russian languages. The program will be realized in three stages. In 2015-2016 academic year the number of hours will increase and dividing the classes into subgroups occupancy no more than 10-12 students. Work will begin on a phased introduction of comprehensive schools to a single area of textbooks, educational complex on English and Kazakh languages, which should be completed in the next academic year.

In 2016-2017 academic year it will be developed training materials in English, Kazakh (for schools with Russian as the language of instruction), Russian (for schools with the Kazakh language learning) languages, integrated with other subject areas (geography, biology, mathematics, chemistry and others) [4].

According to the program this year in our school we began teaching chemistry in

English in the 8th grade. At first it was created a calendar plan (таблица 1), it consists of 34 hours, an hour per week. The aim of the program is: taking into account the level of students' knowledge of languages, teaching chemistry in English, enrich students' knowledge of English and chemistry.

Table 1 – Calendar thematic plan [5]

№	Theme	hour	Content	time
1	Introduction Chemistry	1	substance, science, conversion, property	
2	Safety in laboratory	1	safety, experiment, chemical reagent, chemical vessels, tripod, alcoholic lamp	
3	Substance, mixture	1	Mixture, admixture, homogeneous, heterogeneous, technically pure, sulfur, iron	
4	Atom molecule theory	1	Atom, molecule, theory, the law of conservation of mass	
5	Chemical elements	1	Hydrogenium Hydrargyrum nitrogen, carbon, zinc, lead, magnesium,	
6	Chemical elements	1	Bromine, fluorine, halogen chlorine, iodine, potassium, sodium, barium	
7	<u>Simple substances</u>	1	Decompose, simple substance sugar, carbon, iron, sulfur, copper, oxygen, hydrogen	
8	Complex substance	1	complex substances, non-degradable	
9	Review	1	Names of chemical elements	
10	Physical phenomenon	1	A phenomenon in which the substance is not converted into another, changing only their physical state or form. Examples: melting wax, boiling and evaporation of water, melting of snow	
11	Chemical phenomenon	1	Phenomena in which the substances formed from one or more new substances. Examples: starch charring, burning wood, rusting iron, souring milk, rotting leaves. volcanic eruption, rotting leaves in autumn, fog formation, ice melting, melting metal	
12	Chemical formula	1	The chemical formula, composition of the material, signs and indices.	
13	The law of constancy	1	Law of constancy, determining mass fraction of the element in the material.	

14	Valency	1	molecule of water, hydrogen atoms, oxygen atom, graphic formula define the valence
15	Valency	1	the value of its valence - II (oxygen has a constant valence); multiplying, valence, divide, total number, phosphorus atoms
16	Review	1	Practical work
17	Chemical reactions	1	Chemical, reaction, products, equation coefficients
18	Chemical reactions	1	algorithm of drawing up the chemical reaction equation: writing the starting materials of the formula. Arrange the coefficients.
19	The structure of the electron shells of atoms	1	electron shell, energy, level
20	Chemical elements	1	A certain kind of atoms called a chemical element. Each element has its own name and symbol. The names and symbols of all the chemical elements in the periodic table are given. Chemical elements can be metallic and non-metallic properties.
21	D.I.Mendeleev's Periodic Law	1	D.I. Mendeleev, approaches, constructing the elements. atomic weight, place element in the system, determined taking into account the valence and properties of the element.
22	The Periodic Table of Elements	1	Period, row, vertical columns, sequence number, the main and secondary subgroups
23	Air	1	The air - gas mixture. One of the components of air is oxygen. Combustion - the interaction of substances with oxygen produces heat and light.
24	Oxygen	1	Oxygen - colorless gas, tasteless, slightly soluble in water. Boiling liquid oxygen -183 C, the melting point of the solid oxygen -219 C. Oxygen supports combustion and respiration.
25	Oxides	1	An oxide is a chemical compound that contains at least one oxygen atom and one other element in its chemical formula. Metal oxides typically contain an anion of oxygen in the oxidation state of -2. Most of the Earth's crust consists of solid oxides, the result of elements being oxidized by the oxygen in air or in water.

33	Water purification	1	Water from natural sources are not always suitable for drinking and even industrial processes. Therefore it is purified. Drinking water should not contain undissolved impurities and pathogenic microorganisms. First, water from rivers, lakes and ponds defend in special pools, and filtered through a layer of sand. Then treated with chlorine, and sometimes ozone or ultraviolet light to destroy microorganisms.
34	Review	1	Practical work

As a result of the working out the lessons in consideration of the calendar thematic plan the lesson plans (tables 2-4) for the 8th were presented in the English language [6].

Table 2 – Lesson plan «Introduction. Chemistry as a subject » in English

Theme	Introduction. Chemistry as a subject
Grade	8
Date	
Objectives	To form an idea about the subject of chemistry, give the original concept of matter, chemical elements of both simple and complex substances, develop students' logical thinking
Org moment Warm-up	Good afternoon! Do you like chemistry? Do you like English? Is chemistry in English is good or bad? Is it difficult? Let's watch video https://www.youtube.com/watch?v=4SbyQ9eVP7Q
Presentations	1. Read the text and write down new words. Everything that surrounds us - people, animals, plants, mountains, sea, objects - is directly related to chemistry. The objects around us and the objects called physical bodies. The bodies are made up of many different substances. To date, there are about 15 million compounds, and this is not the limit! Nail - a body made of matter - iron. A piece of granite - is also a body made of several materials - quartz, mica and feldspar. The same body are often made of different materials. For example, the wire may be copper, iron, aluminum. Conversely, one and the same substance may be made different body: glass made different kinds of dishes, vases, and so on The properties of the substance - is signs, which are different substances from each other or similar to each other.

Practice	Group work 1. Describe these substances The physical properties of the material are its density state of aggregation, Color, The melting and boiling point Electrical and thermal conductivity. For example: aluminum - a metal silver-white color
Production	Explain the meaning of the sentence Chemistry - is the science of materials, chemical reactions and their application. Questions: What is the body? What characterizes the body? What is the matter? Give examples of bodies and substances? Can several bodies consist of one substance? Can a single body composed of different substances?
Assessment	Formative assessment
Feedback	What have you learnt today? Your wishes
H/W	Learn new words

Table 3 – Lesson plan «Rules in the chemical laboratory» in English

Theme	Rules in the chemical laboratory
Grade	8
Objectives	Learn the general rules of work in the chemical laboratory; follow safety in chemical laboratory, first aid in case of accidents; study the rules with acids
Org moment	Good afternoon dear boys and girls! The experiment is very important in chemistry. First we must follow the rules in laboratory. Let's watch video https://www.youtube.com/watch?v=cFlqABLPgVk https://www.youtube.com/watch?v=J6NSTjfkPQU

Presentations	<p>Read the text</p> <p>Rules of work in the chemical laboratory</p> <p>Before the experiments, it is necessary to prepare the workplace, equipment, and carefully read the description of the experience.</p> <p>Reagents can cause burns on the skin; especially the need to protect eyes. By mixing some completely harmless substances can form toxic compounds which may be poisonous.</p> <p>A reliable way to avoid unexpected trouble - is to strictly follow the instructions describing the experience.</p> <p>It must be remembered that the substance can not taste and take arms. A familiar with the smell of substances should be with great caution. The liquid from the vessel must take a pipette. Solids - a spoon, spatula or a dry swab. Substances should not be stored together with food. Also during the tests can not eat.</p> <p>You can not lean over the heated liquid, because the spray can get into the eyes or face.</p> <p>After the end of the experience you need to remove the workstation and wash the dishes.</p>
Practice	Translate the text
Production	Write your own rules in groups
Assessment	Formative assessment
Feedback	What have you learnt today?
H/W	Learn new words

Table 4 – Lesson plan «Pure substances and mixtures» in English

Theme	Pure substances and mixtures
Grade	8
Date	
Objectives	<ol style="list-style-type: none"> 1. form the concept of pure substances and mixtures of substances 2. To acquaint with the methods of separation of mixtures
Org moment	<p>Good afternoon dear boys and girls!</p> <p>Let's watch video</p> <p>https://www.youtube.com/watch?v=WBWf1T4V7xE</p> <p>https://www.youtube.com/watch?v=JanmdsuyUc4</p>

Presentations	<p>Read the text</p> <p>In daily life, each of us is faced with a variety of mixtures of substances, it deals not only with pure but contaminated substances. It is important to distinguish between these concepts and be able to identify specific characteristics, what you're dealing: clean or contaminated material, the individual substance or mixture of substances. After all, people want to use only the water that does not contain harmful impurities. We want to breathe air not contaminated with unhealthy gases. In medicine and production of drugs and the problem of obtaining the use of pure substances is particularly relevant. Let's get acquainted with the basic terms of the lesson. The mixture - this is what is formed by mixing two or more substances different in properties. The substances constituting the mixture, called components. For example, air - gas mixture: nitrogen, oxygen, carbon dioxide and others.</p> <p>The classification of mixtures</p> <p>Mixtures of different from each other in appearance. For example, salt water (a mixture of salt and water) and a mixture of river sand and water. In the first case it is impossible to see the interface between solid-liquid phases. This mixture is called a uniform (or homogeneous). Other examples of homogeneous mixtures are vinegar (acetic acid-water), air, sugar syrup.</p> <p>A mixture of river sand and water attributed to inhomogeneous (or heterogeneous) of the mixture as Composition of the mixture varies at different points in the volume. Are inhomogeneous mixture of clay and water, gasoline and water.</p>
Practice	Translate the text
Production	Retell the text
Assessment	Formative assessment
Feedback	What have you learnt today?
H/W	Retelling the text

To know Kazakh, Russian and foreign languages in a modern society becomes an important component of personal and professional activity of the person. All of this together is the need for students, practical and professional multi-lingual and receiving in connection with a real chance to take a more prestigious both socially and professionally in society. The reasonable, competent and correct implementation of three languages will enable the graduates of schools to be communicative and adapted to any environment. Teachers can use this program and lesson plans at school and it is closely connected with life spheres to help students think about their future life and future profession.

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ГНЕЗДОВАЯ ПОПУЛЯЦИЯ СТЕПНЫХ ОРЛОВ (*Aquilanipalensis*) В ВОСТОЧНОМ КАЗАХСТАНЕ

В статье предоставляется информация об основных аспектах формирования популяции степных орлов в Восточном Казахстане. Рассматривается благоприятное физико-географическое расположение хребта Манрак для формирования стабильной гнездовой популяции степных орлов. Приводятся координаты гнездовых территорий и гнезд степного орла в Восточном Казахстане.

Ключевые слова: питание, численность, хребет Манрак, гнездовая популяция, лимитирующие факторы, Восточный Казахстан.

ҚАЗАҚСТАННЫҢ ШЫҒЫСЫНДАҒЫ ДАЛА ҚЫРАННЫҢ (*Aquila nipalensis*) ҰЯЛЫҚ ТОПТАСТЫРУЫ

Мақалада Шығыс Қазақстандағы дала қыранның үлкен тобының қалыптастыру бойынша негізгі аспектілері қарастырылған. Дала қырандарының ұялық популяциясын тұрақты қалыптастыру үшін Маңырақ жотасының физика-географиялық қолайлы орналастырылуы қарастырылған. Шығыс Қазақстандағы дала қырандарының ұясы және ұялық аймағының координаталары келтіріледі.

Түйін сөздер: қоректенуы, саны, Маңырақ жотасы, ұялық популяциясы, лимиттеу факторлар, Шығыс Қазақстан.

STEPPE EAGLES (*Aquila nipalensis*) NESTING GROUP IN THE EAST OF KAZAKHSTAN

The article provides information about the main aspects of the formation of a large breeding group of steppe eagles in East Kazakhstan. We consider the adverse physical and geographic location of the foothills of Manrak to form a stable breeding population of steppe