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NAMANGAN

**KIMYO FANLARINI O‘QITISHNING NAZARIYASI VA
 METODLARI**“Kimyo fanining muammolari, sanoat sohalariga **L**tatbiqi vayashil texnologiyalar mavzusidagi xalqaro anjumani //

-Наг bir o‘quvchi faol ishtirok etadi, passiv o‘quvchilar ham rag‘batlantiriladi.

-Yodlash emas, balki tushunishga asoslangan o‘rgatish usuli qo‘llaniladi.

-Zaryad muvozanatini tushunishga yordam beradi.

-Interaktiv yondashuv asosida tanqidiy fikrlash va izohlash ko‘nikmasi shakllanadi.

-Har xil darajadagi o‘quvchilar uchun moslashtirish imkoniyati mavjud.

-Birgalikda ishlash va jamoaviy o'rganish muhiti yaratadi.

**Kamchiliklari va tanqidiy yondashuv** Har qanday metodda bo‘lgani kabi, zar toshlari
metodikasida ham ayrim kamchiliklar mavjud:

-Nazariy asos yetarlicha mustahkam bo‘lmasa, faqat taxmin bilan o‘yin o‘ynalishi mumkin.

-Formulani tuzish sababini chuqur izohlash ba’zida amalga oshmaydi.

-Murakkab ionlar, kompleks birikmalar bilan ishlash qiyin kechishi mumkin.

-O‘yin jarayonida vaqtni to‘g‘ri taqsimlamaslikka olib kelishi mumkin.

-Har doim barcha o'quvchilami birdek jalb qilish qiyin.

Shunday bo‘lsa-da, bu kamchiliklar metodikani to‘g‘ri tashkil qilish, o‘qituvchi tomonidan
puxta tayyorlanish orqali bartaraf etilishi mumkin.

**Taklif va yechimlar**

Har bir o‘yindan keyin muhokama qilishni yo‘lga qo‘yish: nima uchun aynan shunday formula
hosil bo‘ldi?

Zarlami o‘quvchilaming bilim darajasiga moslab tayyorlash: boshlang‘ichlar uchun oddiy
ionlar, ilg'orlar uchun komplekslar.

O‘yin asosida mini-loyihalar tayyorlash: “Tushgan formula qayerda qo‘llaniladi?”, “Bu modda
qanday xossalarga ega?”

O‘yin natijalarini baholashda analitik tafakkur va izohlash qobiliyatiga e’tibor qaratish

Didaktik zarlami kompyuter grafikasi asosida raqamlashtirish va onlayn shaklga o‘tkazish

Zar toshlari metodikasi - bu kimyo fanini interaktiv, tushunarli, ijodiy va samarali o'qitish
imkonini bemvchi zamonaviy yondashuvdir. U o‘quvchilarda nafaqat formulani eslab qolish, balki
uni mantiqiy asosda tuzish, izohlash, hayotdagi qo‘llanilishini tushunish kabi chuqur bilimlami
shakllantiradi. Ta’limda innovatsion usullardan foydalanish nafaqat o‘qituvchining, balki
o‘quvchining ham bilim olishga bo‘lgan yondashuvini o‘zgartiradi. Ushbu metodika orqali
o‘quvchilar mustaqil, tanqidiy va tizimli fikrlovchi shaxs sifatida shakllanadi.

***FOYDALANILGAN ADABIYOTLAR***

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**THE IMPORTANCE OF CHEMICALSIN THE HUMAN BODY
(INTEGRATED CHEMISTRY,BIOLOGY AND ENGLISH)
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AbstractChemical substances play a fundamental role in sustaining human life, far beyond
basic nutrition. Essential elements such as calcium, potassium, and magnesium are involved in
structural integrity, nerve signaling, and enzyme activation, forming the biochemical foundation of
bodily fimctions. Trace elements like zinc, iron, and selenium, though required in minute amounts,
are vital for immune defense, oxygen transport, and cellular protection. Hormonal activity, metabolic
rate, and pH balance are tightly regulated by specific chemical compounds and ions. Moreover,
imbalances in these substances often serve as early indicators of diseases, making their presence and
1882

**KIMYO FANLARINI O‘QITISHNING NAZARIYASI VA
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proportion critical to both health maintenance and medical diagnostics. Understanding the role of
these chemicals reveals how intricately chemistry govems the human body, and highlights the
necessity of maintaining intemal chemical harmony for optimal health.

**Keywords.** chemical substances, human body, biochemical processes, trace elements,
enzymes, metabolism, hormonal balance, electrolyte balance, cellular functions, health diagnostics,
disease prevention, biological functions, experimental leaming, scientific competence,
interdisciplinary teaching, student engagement, innovative pedagogy, educational quality.

**Introduction.The** human body is an intricate system of chemical interactions, where various
substances play critical roles in maintaining life and overall health. Chemical elements such as
calcium, phosphoms, and magnesium form the stmctural components of bones and teeth, while trace
elements like zinc, iron, and selenium contribute to immune functions and cell protection.
Additionally, enzymes and hormones, driven by specific chemical substances, regulate vital processes
such as metabolism, energy production, and growth. The balance of electrolytes like sodium,
potassium, and chloride is equally essential for maintaining proper nerve function, muscle
contraction, and fluid balance. Dismptions in these chemical processes often indicate underlying
health issues and are key markers in the diagnosis of diseases. This paper explores the essential
chemical substances in the human body and their indispensable roles in maintaining health,
supporting growth, and preventing disease. Understanding the chemistry behind the body’s functions
is crucial for advancing health science and improving medical practices.



The human body relies on a vast array of chemical substances that work together to sustain life.
These substances are essential not only for the stmctural integrity of the body but also for its
continuous metabolic and biochemical functions.

**KIMYO FANLARINI O‘QITISHNING NAZARIYASI VA
 METODLARI**“Kimyo fanining muammolari, sanoat sohalariga **L**tatbiqi vayashil texnologiyalar mavzusidagi xalqaro anjumani //

1. Chemical Elements and Structural Integrity.The body’s structure is heavily dependent on
chemical elements like calcium, phosphorus, and magnesium. Calcium is a critical component of
bones and teeth, providing them with strength and durability. Phosphorus, along with calcium, helps
form the mineral structure of bones, while magnesium supports the function of muscles and nerves.
These elements contribute to maintaining the body's skeletal framework, which is essential for
mobility and physical health.
2. Trace Elements and Enzyme Functions.Trace elements, although required in minute
quantities, play crucial roles in various biochemical processes. Zinc, for instance, is vital for immune
fiinction, wound healing, and the synthesis of proteins and DNA. fron is a key component of
hemoglobin, enabling oxygen transport throughout the body. Selenium, a powerful antioxidant, helps
protect cells from oxidative stress, reducing the risk of chronic diseases such as cancer and heart
disease.
3. Metabolism and Energy Production.Chemical substances are at the heart of metabolism, the
process by which the body converts food into energy. Enzymes, which are proteins that speed up
chemical reactions, rely on minerals like magnesium and iron to function. These enzymes facilitate
the breakdown of food molecules, allowing the body to absorb nutrients and produce energy. Without
these essential chemicals, vital metabolic processes would cease, leading to a collapse of bodily
functions.
4. Hormonal Regulation and Chemical Signaling.Hormones are another key group of chemical
substances that regulate numerous bodily functions. For instance, thyroid hormones, produced with
the help of iodine, regulate metabolism and energy production. Insulin, produced by the pancreas,
controls blood sugar levels, while adrenaline, released during stress, helps prepare the body for “fight
or flight” responses. These chemical signals are integral to maintaining homeostasis, the stable
intemal conditions necessary for health.
5. Electrolytes and Fluid Balance.Electrolytes, such as sodium, potassium, and chloride, are
essential for maintaining fluid balance and ensuring proper function of cells. These charged particles
help regulate the body’s pH levels, nerve impulses, and muscle contractions. An imbalance in
electrolytes can lead to severe health issues, including dehydration, muscle weakness, or even cardiac
arrest.
6. Health Indicators and Disease PreventionChemical imbalances in the body often serve as
early indicators of health issues. For example, elevated blood glucose levels may point to diabetes,
while abnormal cholesterol levels can indicate a risk for heart disease. By understanding the roles of
various chemical substances in the body, healthcare providers can identify potential health risks early
and implement preventive measures.

Here’s a lesson outline and a short sample text on “The Importance of Chemicals in the Human
Body”, integrating chemistry, biology, and English for high school students (suitable for 9th grade):
Lesson Title:

The Importance of Chemicals in the Human Body

Subjects fritegrated:

Chemistry: Chemical elements and compounds

Biology: Body systems and their functions

English: Reading comprehension, vocabulary, and speaking

Leaming Objectives:

1. Identify key chemical elements found in the human body.
2. Explain the biological role of these chemicals.
3. Expand English vocabulary related to chemistry and biology.
4. Practice speaking and writing about scientific topics in English.

Key Vocabulary:

Elements: oxygen, carbon, hydrogen, nitrogen, calcium, phosphoms

1884

KIMYO FANLARINI O‘QITISHNING NAZARIYASI VA

*6-SHO‘BA*

 METODLARI

“Kimyo fanining muammolari, sanoat sohalariga L
tatbiqi vayashil texnologiyalar mavzusidagi xalqaro anjumani //

Compounds: water, proteins, carbohydrates, DNA

Terms: essential, metabolism, energy, structure, function, nutrients

Sample Text for Reading (English):

The Importance of Chemicals in the Human Body

The human body is made up of many different chemicals. Some of the most important elements are
oxygen (O), carbon (C), hydrogen (H), and nitrogen (N). These elements are found in water, proteins,
and DNA. For example, water makes up about 60% of the body and is essential for all life processes.
Calcium (Ca) and phosphorus (P) are important for strong bones and teeth.

Without these chemicals, the human body would not be able to function. Every movement, thought,
and heartbeat depends on chemical reactions inside the body. That is why chemistry and biology are
closely connected.

Follow-up Questions (English):

1. Which elements are most common in the human body?
2. Why is water important for the body?
3. What is the role of calcium and phosphorus?

Activity Ideas:

Chemistry task: Match elements to their symbols and roles.

Biology task: Label a diagram of the body with elements and their locations/functions.

English task: Write a short paragraph on your favorite chemical in the body and why it is important.

**Conclusion**

Today we have seen that chemistry and biology are closely connected: every cell in our body exists
thanks to chemical elements and compounds. We have studied which substances form the basis of
the human body and what role they play in vital processes such as breathing, nutrition, growth, and
information transmission.

Knowing scientific terms in English helps us understand intemational scientific literature, broaden
our horizons, and prepare for further leaming.

So, chemistry explains what we are made of, biology shows how we live, and the English language
opens the door to global scientific communication.

**KIMYO FANINI O’QITISHDA ERKINLIK USULIDAN FOYDALANISHNING ALOHIDA
TOMONLARI**

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***Annotatsiya.*** *Ushbu maqolada o 'qitishning erkinlik usuli mohiyati, ta 'limda erkimlik usulidan
foydalanish muhimligining sabablari va samarali tomonlari, kimyo fanini o 'qitishda erkinlik usuli
zaruriyati va kamchiliklari hamda bir necha xildagi erkinlik modellari xususida fikr yuritilgan.*

***Kalit so’zlar:*** *erkinlik, anarxiya, diktatura, kichik improvizatsiya, to'liq mustaqillik.*

***Аннотация.*** *B данной статъе рассматривается сутъ метода свободъг обучения,
причинъг важности и эффективности исполъзования метода свободъг e образовании,
необходимостъ и недостатки метода свободъг e преподавании химии, а также несколъко
различнъгх моделей свободъг.*

***Ключевъге слова:*** *свобода, анархия, диктатура, неболъшая импровизация, полная
независимостъ.*

O'qitishda erkinlik- akademik erkinliklaming ajralmas qismi bo'lib, ilmiy tadqiqotlar
natijalarini yuqori ishonch bilan ifoda etish, fanni tadqiq qilish va taqdim etish usulini tanlash hamda
fanning o'quv rejasini o'z ichiga oladi.