

magnit yoki galvanik oqim kabi induktiv oqimlarni keltirib chiqaradigan yer magnitlanishi edi. Buni aniqroq ko'rsatish va isbotlash uchun Faraday o'z fikrlarini to'liq tasdiqlaydigan yana bir tajriba o'tkazdi.

Uning fikricha, agar magnit bo'lmagan metall, masalan, mis, qo'shni magnitning magnit kuchlari chiziqlarini kesib o'tadigan holatda aylansa, induktiv oqim hosil qilsa, u holda xuddi shu doira yo'q bo'lganda aylanadi. magnit, lekin aylana yer magnitlanishining chiziqlarini kesib o'tadigan holatda ham induktiv oqim berishi kerak.

Va haqiqatan ham, gorizontall tekislikda aylanadigan mis doira induktiv oqim berdi, bu galvanometr ignasining sezilarli og'ishini keltirib chiqardi. Faraday 1835 yilda "Tokning o'ziga induktiv ta'siri" kashfiyoti bilan elektr induksiya sohasidagi bir qator tadqiqotlarni yakunladi.

U galvanik oqim yopilganda yoki ochilganda simning o'zida lahzali induktiv oqimlar qo'zg'alishini aniqladi, bu oqim uchun o'tkazgich bo'lib xizmat qiladi.

Rus fizigi Emil Xristoforovich Lenz (1804-1861) yo'nalishni aniqlash qoidasini berdi. induksion oqim. "Induksion tok har doim shunday yo'naltiriladiki, u yaratgan magnit maydon induksiya keltirib chiqaradigan harakatga to'sqinlik qiladi yoki sekinlashtiradi", deb ta'kidlaydi A.A. Korobko-Stefanov elektromagnit induksiya haqidagi maqolasida. - Masalan, lasan magnitga yaqinlashganda, hosil bo'lgan induktiv oqim shunday yo'nalishga ega bo'ladi, u tomonidan yaratilgan magnit maydon magnitning magnit maydoniga qarama-qarshi bo'ladi. Natijada, bobin va magnit o'rtasida itaruvchi kuchlar paydo bo'ladi.

Lenz qoidasi energiyani saqlanish va aylanish qonunidan kelib chiqadi. Agar induksion oqimlar ularni keltirib chiqaradigan harakatni tezlashtirsa, u holda ish yo'qdan yaratilgan bo'lar edi. Bobinning o'zi, kichik bir surishdan so'ng, magnit tomon shoshilardi va shu bilan birga induksiya oqimi undagi issiqlikni chiqaradi. Aslida, induksion oqim magnit va lasanni bir-biriga yaqinlashtirish ishi tufayli hosil bo'ladi.

Nima uchun induksiyalangan oqim mavjud? Elektromagnit induksiya hodisasini chuqur tushuntirish ingliz fizigi Jeyms Klerk Maksvell tomonidan berilgan - tugallanganlarning yaratuvchisi. matematik nazariya elektromagnit maydon.

Masalaning mohiyatini yaxshiroq tushunish uchun juda oddiy tajribani ko'rib chiqing. Bobin bir burilish simidan iborat bo'lsin va burilish tekisligiga perpendikulyar o'zgaruvchan magnit maydon tomonidan teshilgan bo'lsin. Bobinda, albatta, induksiya oqimi mavjud. Maksvell bu tajribani favqulodda jasorat va kutilmaganlik bilan izohladi.

Kosmosda magnit maydon o'zgariganda, Maksvellning fikriga ko'ra, simli bobinning mavjudligi hech qanday ahamiyatga ega bo'lmagan jarayon paydo bo'ladi. Bu erda asosiy narsa o'zgaruvchan magnit maydonni qoplaydigan elektr maydonining yopiq halqa chiziqlari paydo bo'lishi. Rivojlanayotgan elektr maydonining ta'siri ostida elektronlar harakatlana boshlaydi va g'altakda elektr toki paydo bo'ladi. Bobin shunchaki elektr maydonini aniqlashga imkon beruvchi qurilma.

Elektromagnit induksiya hodisasining mohiyati shundaki, o'zgaruvchan magnit maydon doimo atrofdagi kosmosda yopiq kuch chiziqlari bo'lgan elektr maydonini hosil qiladi. Bunday maydon vorteks maydoni deb ataladi.

Magnitlanish natijasida hosil bo'lgan induksiya sohasidagi tadqiqotlar Faradayga 1832 yilda telegraf g'oyasini ifodalash imkoniyatini berdi, bu esa keyinchalik ushbu ixtironing asosini tashkil etdi. Umuman olganda, elektromagnit induksiyaning kashfiyoti bejiz emas ajoyib kashfiyotlar XIX asr - butun dunyo bo'ylab millionlab elektr motorlari va elektr toki generatorlarining ishi ushbu hodisaga asoslanadi ...

Ma'lumot manbai: Samin D.K. "Yuz buyuk ilmiy kashfiyotlar"., M.: "Veche", 2002 yil
Javob:

Amper tajribalaridan keyin elektrodinamikaning rivojlanishidagi navbatdagi muhim qadam elektromagnit induksiya hodisasining ochilishi bo'ldi. Ingliz fizigi Maykl Faraday (1791 - 1867) elektromagnit induksiya hodisasini kashf etdi.

Faraday, Oersted kabi hali ham yosh olim, tabiatning barcha kuchlari bir-biriga bog'langan va, bundan tashqari, ular bir-biriga o'tishga qodir, deb o'ylardi. Faraday bu fikrni energiyaning saqlanish va o'zgarishi qonuni o'rnatilishidan oldin ham bildirganligi qiziq. Faraday Amparning kashfiyoti haqida bilgan, u majoziy ma'noda elektrni magnitlanishga aylantirgan. Faraday bu kashfiyot haqida mulohaza yuritir ekan, agar "elektr toki magnitlanish hosil qilsa", aksincha, "magnetizm elektrni yaratishi kerak" degan xulosaga keldi. Va 1823 yilda u o'z kundaligida shunday deb yozgan edi: "Magnitizmni elektrga aylantiring". Sakkiz yil davomida Faraday muammoni hal qilish ustida ishladi. Uzoq vaqt davomida uni muvaffaqiyatsizliklar ta'qib qildi va nihoyat, 1831 yilda u buni hal qildi - u elektromagnit induksiya hodisasini kashf etdi.

Birinchiidan, Faraday elektromagnit induksiya hodisasini bobinlar bir barabanga o'ralgan holda topdi. Agar galvanik akkumulyatorning unga ulanishi yoki undan uzilishi natijasida bir lasanda elektr toki paydo bo'lsa yoki yo'qolsa, u holda boshqa lasanda qisqa muddatli oqim paydo bo'ladi. Bu oqim ikkinchi lasanga ulangan galvanometr tomonidan aniqlanadi.

Keyin Faraday, shuningdek, g'altakga yaqinlashganda yoki undan uzoqlashganda, elektr toki oqib o'tadigan g'altakda induksion oqim mavjudligini aniqladi.

nihoyat, Faraday kashf etgan elektromagnit induksiyaning uchinchi holati shundan iboratki, magnit o'rnatilgan yoki undan chiqarilganda g'altakda tok paydo bo'lgan.

Faradayning kashfiyoti ko'plab fiziklarning e'tiborini tortdi va ular ham elektromagnit induksiya hodisasining xususiyatlarini o'rganishga kirishdilar. Keyingi vazifa elektromagnit induksiyaning umumiy qonunini o'rnatish edi. O'tkazgichdagi induksiya oqimining kuchi qanday va nimaga bog'liqligini yoki elektr toki induksiya qilingan o'tkazgichdagi induksiyaning elektromotor kuchining qiymati nimaga bog'liqligini aniqlash kerak edi.

Bu vazifa qiyin bo'ldi. Bu Faraday va Maksvell tomonidan keyinchalik ular elektromagnit maydon haqida ishlab chiqqan ta'limot doirasida to'liq hal qilindi. Ammo

fiziklar ham uni hal qilishga harakat qilishdi, ular elektr va magnit hodisalar haqidagi ta'limotda o'sha davr uchun umumiy bo'lgan uzoq masofali nazariyaga amal qilishdi.

Bu olimlar nimadir qilishga muvaffaq bo'lishdi. Shu bilan birga, ularga Sankt-Peterburglik akademik Emil Xristianovich Lenz (1804 - 1865) tomonidan induksiya oqimining yo'nalishini topish uchun kashf etilgan qoida yordam berdi. turli holatlar elektromagnit induksiya. Lenz buni quyidagicha ifodalagan: "Agar metall o'tkazgich galvanik tok yoki magnit yaqinida harakat qilsa, unda galvanik tok shunday yo'nalishda qo'zg'aladiki, agar bu o'tkazgich harakatsiz bo'lsa, u holda oqim uning teskari harakatiga olib kelishi mumkin. yo'nalish; tinch holatda o'tkazgich faqat harakat yo'nalishi bo'yicha yoki teskari yo'nalishda harakat qilishi mumkin deb taxmin qilinadi.

Elektromagnit induksiya orqali o'tadigan magnit oqimo'zgarganda, yopiq zanjir da elektr tokining paydo bo'lishi hodisasi.

Elektromagnit induksiya 1831 yil 29 avgustda Maykl Faraday tomonidan kashf etilgan. U yopiq o'tkazuvchi zanjir da yuzaga keladigan elektromotor kuch magnit oqimining ushbu zanjir bilan chegaralangan sirt orqali o'zgarish tezligiga mutanosib ekanligini aniqladi.

Elektromagnit induksiyaning kashfiyoti

1821 yilda Maykl Faraday o'z kundaligida shunday deb yozgan edi: "Magnitizmni elektrga aylantirish". 10 yildan keyin bu muammoni u hal qildi.

M. Faraday elektr va magnit hodisalarining birlashgan tabiatiga ishonchi komil edi, lekin uzoq vaqt bu hodisalar o'rtasidagi bog'liqlik topilmadi. Asosiy fikrni o'ylab ko'rish qiyin edi: faqat vaqt o'zgaruvchan magnit maydon qo'zg'almas lasandagi elektr tokini qo'zg'atishi mumkin yoki lasanning o'zi magnit maydonda harakatlanishi kerak.

Faraday bu hodisa deb atagan elektromagnit induksiyaning kashfiyoti 1831 yil 29 avgustda amalga oshirilgan. qisqa Tasvir Faraday tomonidan berilgan birinchi tajriba. "203 fut uzunlikdagi mis sim (bir oyoq 304,8 mm ga teng) keng yog'och lasanga o'ralgan va uning burilishlari orasiga bir xil uzunlikdagi sim o'ralgan, lekin birinchi paxta ipidan ajratilgan. Bu spirallardan biri galvanometr ga, ikkinchisi esa 100 juft plastinadan iborat kuchli akkumulyator ga ulangan edi... Sxema yopilganda, galvanometr ga birdaniga, lekin nihoyatda kuchsiz ta'sir ko'rsatishini sezish mumkin edi va oqim to'xtaganda ham xuddi shunday sezildi. Bobinlardan biri orqali oqimning uzluksiz o'tishi bilan batareyaga ulangan butun lasanning isishiga qaramay, galvanometr ga hech qanday ta'sir yoki umuman boshqa bobinga biron bir induktiv ta'sir ko'rsatish mumkin emas edi. va ko'mirlar orasidagi uchqunning yorqinligi batareya quvvati haqida guvohlik beradi.

Shunday qilib, dastlab konturning yopilishi va ochilishi vaqtida bir-biriga nisbatan harakatsiz bo'lgan o'tkazgichlarda induksiya kashf qilindi. Keyin, o'tkazgichlarning oqim bilan yondashishi yoki olib tashlanishi kontaktlarning zanglashiga olib kirishi va ochilishi bilan bir xil natijaga olib kelishi kerakligini aniq tushungan Faraday, bobinlar bir-biriga nisbatan harakat qilganda oqim paydo bo'lishini tajribalar orqali isbotladi

THE ROLE OF INTELLECTUAL GAMES IN ACTIVATING THE EDUCATIONAL PROCESS

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Abstract: *The main types of didactic games are intellectual (mental), action and mixed games. These games help the participants to develop mental, physical, moral, psychological, aesthetic, artistic entrepreneurship, work and other skills. In the process of education, didactic games are mainly used, which show students' motivations for learning and their inclination to a profession that increases their abilities and interests in various directions. In this article, the use of interactive methods of didactic games in the educational process methodical recommendations are given about its effectiveness.*

Key words: *Didactic games, computer tool, "Brain-ring", small groups, educational method, education, knowledge.*

The concept of "Educational technology" to the concept of "Educational methodology". is relatively wide. Educational method — the collective tasks of the educational process solution-oriented method of joint activity of the teacher and students and the educational methodology is based on the science of teaching a specific subject represents a system of methods, rules and methods. Educational technology is a general process of achieving educational goals content, i.e. pre-planned educational process on the basis of a holistic system, step-by-step implementation, a specific method to achieve a specific goal, development of a system of methods and tools, their effective and efficient use and represents high-level management of the educational process.

The central problem of pedagogical technology is the identity of the student is to ensure the achievement of the educational goal through development. A teacher is a scientist VPBespalko recognized that the pedagogical system is the basis of pedagogical technology he states that it consists of the following elements: * u> 1) student; 2) the goal of education; 3) education - content of education; 4) educational process; 5) teacher or technical means; 6) organization of education forms. Therefore, it should be recognized that pedagogical technology is a science of the holistic process of educational activity. Especially interactive lesson to teach.

One of the interactive methods is the use of "Working in small groups" technology. The method of using this technology is as follows: - the direction of activity is determined. Interrelated issues are identified from the problem;

- the necessary basis is created. Readers should gain a greater understanding of the subject;

- groups are defined. Students are divided into groups of 7-8 people;

- a clear instruction is given. Independent work, crossword, test preparation;
- the starting student is appointed in advance. Independently, works on the subject or section, composes questions, crosswords, evaluates test answers;
- an expert or assistant (assistant) student is appointed, they help in conducting the game, evaluate and analyze the answers;
- captains are elected from the groups. The captain is a sober person, he will die for his team without violating the rules of the game;
- the process is supported and guided by the teacher. He monitors the game, and after the game is over, he announces the total score of the students. It is then discussed;
- the names of students divided into 3 groups are written on the blackboard, the maximum points according to the purpose of the lesson are indicated, each point collected according to the plan is written against the student's last name.
- As a result of the interaction between the teacher and the student, the student is known in addition to simply acquiring knowledge, i.e. learning
- Usually, the teacher chooses the method of teaching and teaching a foreign language. The content of the course remains largely unchanged, but the way it is delivered to the student may change.

- If the task is about giving an argument, methods such as presentations or interactive lectures are the most effective methods. The best way to discuss the problems is to divide the students into small groups and have a group discussion. Discussion, Brainstorming method can be used for this. It is known that didactic games such as plot, role-playing, creative, businessmen, conference, game exercises are important for students' independent wide and thorough knowledge acquisition, which are educational, strengthen knowledge, and repeat educational materials. , is significant in that it is expressed as knowledge control games. Students' creative thinking, independent knowledge acquisition.

The role of games is special.

Activity game lesson - in the process of solving problems on the subject of the lesson an exercise in mastering new knowledge by ensuring the active participation of students.

Role-playing lesson - assigning pre-determined roles to students in learning the issues on the subject of the lesson and organizing them to fulfill this role during the lesson a lesson to strengthen knowledge based on achievement.

Theatrical lesson is a lesson that provides in-depth, clear information on the subject of the lesson by organizing scenes related to the topic of the lesson.

the subject of the lesson is uo yicna cnuqui, clearly ma lumouai ueiisn lesson.

A computer lesson is a lesson conducted on the basis of computer materials (multimedia, virtual training course, etc.)

An auction lesson is a lesson to demonstrate how much each student knows about a particular subject.

Fair lesson - pre-mastery of the subject of the lesson in pieces a lesson that is taught through an interesting explanation to the class based on student interaction

lesson

A game lesson is a lesson to organize students' learning through a game appropriate to the subject of the lesson.

Court lesson - a lesson to organize a new topic by organizing a "court" process with the students, appropriate to the topic of the lesson.

A concert lesson is an exercise of presenting the subject of the lesson in the form of a concert, which provides an opportunity to activate students and strengthen their knowledge.

The lesson conducted by investigative experts is a proof and explanation exercise based on interesting question-answers and analysis with the help of students who have thoroughly studied the topic of the lesson in advance.

they create comfort for their stay.

Integral (integrated) lesson is a lesson organized on topics that are convenient for integration of several subjects, which increases students' interest in various subjects and ensures their activity in the educational process. By teaching students about interdisciplinarity, such classes help them become more human. full understanding of the scientific foundations of the structure, formation of a scientific worldview serves to develop creative thinking.

Field of Miracles lessons are fun games with students to find the correct answers to various questions within a set time and encourage the winners to develop thinking, ingenuity and intelligence in students, expanding knowledge. forms the qualities of going.

Didactic game activities can be divided into game exercises with plots, role-playing games, creative games, business games, conferences, depending on the combination of students' learning and game activities. The teacher and pedagogue must first prepare students for individual (individual) and then group games and conduct them, and after the game is successful, prepare them for public games. Because in order for students to actively participate in didactic games, they should have the necessary knowledge, skills, and abilities, and cooperation and mutual support should be established among the group. Among the didactic game sessions, conference sessions also occupy an important place. Conference sessions are important in activating students' cognitive activities, broadening the view of the scientific world, introducing additional and local materials, acquiring skills and qualifications for independent work with scientific and popular scientific literature, and conscious preparation for independent life. Before the conference training session, the goals and tasks of the training topic are determined, and additional scientific and popular literature on this topic is reviewed. A week before the training, the topic of the training is announced and literature is recommended for preparing for it. in introducing additional and local materials, independent work with scientific and popular literature is important in acquiring skills and qualifications, conscious preparation for independent life. Before the conference training session, the goals and tasks of the training topic are determined, and additional scientific and popular literature on this topic is reviewed. A week before the

training, the topic of the training is announced and literature is recommended for preparing for it. in introducing additional and local materials, independent work with scientific and popular literature is important in acquiring skills and qualifications, conscious preparation for independent life. Before the conference training session, the goals and tasks of the training topic are determined, and additional scientific and popular literature on this topic is reviewed. A week before the training, the topic of the training is announced and literature is recommended for preparing for it. additional scientific, scientific-popular literature on this topic is reviewed. A week before the training, the topic of the training is announced and literature is recommended for preparing for it. additional scientific, scientific-popular literature on this topic is reviewed. A week before the training, the topic of the training is announced and literature is recommended for preparing for it.

The use of new pedagogical technology in the educational system does not require thinking based on a certain pattern, but arriving at a common solution through diverse creative research.

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YENGIL ATLETIKANING O'ZIGA XOS XUSUSIYATLARI

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Asaka tumani 6-umumta'lim maktabi
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Annotatsiya: *Yengil atletikada yurish, yugurish, sakrash, uloqtirish kabi mashqlar aloxida ahamiyatga ega. Ushbu maqolada yengil atletikaning o'ziga xosligi haqida so'z yuritilgan.*

Kalit so'zlar: *atlet, yengil atletika, yugurish, yurish mashqlari, uloqtirish, ko'pkurash, sog'lom turmush tarzi, barkamol shaxs, sport musobaqalari.*

KIRISH

Bugungi kunda mamlakatimizda mamlakatimiz yigit qizlarini XXI asrga to'liq javob beradigan har tomonlama rivojlangan, sog'lom, va barkamol shaxslar etib voyaga yetkazish dolzarb vazifalardan biridir. Bu jarayonda esa yoshlarni sport musobaqalarga jalb etish va ularga barcha shart sharoitlar yaratib berish muhimdir. Ayniqsa, sog'lom turmush tarziga rioya etishlari uchun ularda yengil atletikaga oid ko'nikmalarini shakllantirish maqsadga muvofiqdir. KIRISH Barchamizga ma'lumki, yengil atletika – yurish, yugurish, sakrash va uloqtirish mashqlaridan iborat bo'lgan sport turi hisoblanadi. —Atletika|| so'zi — yunoncha so'zdan olingan bo'lib, u bellashuv, kurash, mashq ma'nolarini anglatadi. Qadimgi Yunonistonda kuch va chaqqonlik bo'yicha bellashganlami atletlar deb nomlaganlar. Sportchilar mashqlarni yengil va o'z xohishiga ko'ra bajarganlar. —Yengil atletika|| atamasi ham shu bilan bog'liq ravishda vujudga kelgan bo'lishi mumkin. Qadim davrlarda katta-katta tadbir va tantanalarda yugurish, sakrash, uloqtirish bo'yicha musobaqalar uyushtirilgan. Shunga ko'ra, aynan sportning mazkur turlari ham qadimgi olimpiada o'yinlariga kiritilgandi. Zamonaviy yengil atletika ham yuqoridagi sport turlari: yurish, yugurish, sakrash, uloqtirish va shu singari turlarni qamrab olgan ko'pkurashdan iboratdir. Qamrab olingan sport turlari hammabop bo'lgani uchun Yer sharidagi millionlab odamlar yengil atletika bilan shug'ullanmoqdalar. Mashqlarning turli-tumanligi va ularning nafi katta ekanligi, jihozlarning murakkab emasligi yengil atletikani har bir shaxs shug'ullanishi mumkin bolgan ommaviy sport turi bo'lib qolishiga olib keldi. Shuning uchun ham yengil atletikani —Sport qirol|| deb ataydilar. Hozirda esa jismoniy kamolotga yetgan kuchli odamlarni atlet deyiladi. Yengil atletika degan nom shartli bo'lib sirtdan qaraganda, yengil atletika mashqlarining og'ir atletika mashqlariga nisbatan yengil tuyulishigagina asoslangan. Ayrim mamlakatlarda yengil atletikani «atletika» Fransiyada yoki yo'lka maydondagi mashqlar AQSH Angliyada deb ataydilar. Yengil atletika besh bo'limdan.(1-rasm). 1-rasm. Yengil atletikaning bo'limlari.