OPTIKA DARSLARIDA INTERFAOL METODLARDAN FOYDALANISH IMKONIYATLARI

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Annotation:
Provides information about teaching physics based on pedagogical technologies

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Ta'lim tizimini modernizatsiyalash jadal rivojlanayotgan bir vaqtda oliy ta'lim tizimida yuz berayotgan tub o'zgarishlar talabalar o'zlashtirishi lozim bo'lgan o'quv fanlari tizimini ishlab chiqish va bu fanlarni o'qitishni tashkil etishning noan'anaviy shakl, metod va vositalari (ma'ruza, amaliy va laboratoriya mashg'ulotlari, mustaqil ta'lim)dagi roli va ahamiyati ta'lim paradigmalari asosida o'zgaradi. Asosan, oliy ta'limda DTS asosida ishlab chiqilgan yangi o'quv rejalarda talabalarning mustaqil ishlari va ularni tashkil etish masalalariga alohida e'tibor qaratilgan bo'lib, bunda o'qitish jarayonini tashkil qilish metodikasini takomillashtirish, noan'anaviy ta'lim, xususan, interfaol o'qitish metodlarini qo'llagan holda amalga oshirilsa, ta'limda samarali natijalarga erishish mumkin.

O'qitish metodikasi jadal o'zgarib borayotgan bir davrda, ta'limning noan'anaviyligi o'qitishning an'anaviy shakl, metod va vositalarni sifat jihatidan innovatsion darajaga ko'taribgina qolmay, balki o'quv fanlarini o'rganish jarayonida yangi variativ metodlarni yaratishda ham muhim ahamiyat kasb etmoqda. Ushbu yaratilayotgan metodlar ma'lum bir fan bo'yicha amaliy dars jarayonida bilim oluvchining ijodiy qobiliyatlarini rivojlantirish, talabalarni innovatsion fikrlashlarini kengaytirish va mantig'ini rivojlantirish, ularning mustaqil ravishda bilim egallash imkoniyatlarini kengaytirish, o'quv jarayonlarining abstrakt elementlarini tasavvur qila olish ko'nikmalarini shakllantirish, o'quv-metodik va tajriba-tadqiqot faoliyatlarini amalga oshirish borasida ko'nikma va malakalarni shakllantirish kabi masalalarni yechishga yo'naltirilgan.Ta'lim samaradorligini oshirishda quyidagi innovatsion ta'lim metodlari muhim ahamiyat kasb etadi:

"Rainbow method" - Kamalak usuli metodi. Bu metodda talabalar auditoriyaga kiraverishlarida savollar yozilgan kartochkalar tarqatiladi. Auditoriyadagi 7 ta stolga spektr ranglardagi (qizil, zarg'aldoq, sariq, yashil, havorang, ko'k, binafsha) skatertlar stolga to'shalgan bo'ladi. Yoki, rangli qog'oz, ranglar nomini yozib ham qo'yish mumkin. Talabalar savollarga javob topishda kamalak ranglaridan birini tanlashlari zarur bo'ladi. Savollar:

1. "Televideniye" so'zining kamalak ranglari bilan bog'liq sinonimini ayting? (Zangori ekran – Havorang).
2. Zulmatning rangi va uning birinchi harfi bilan boshlanadigan kamalak ranglaridan biri nima? (Qora – qizil).
3. Mars planetasini qanday rangli planeta deb ataymiz? (Qizil)
4. Bodring pishganda yashil ham qizil ham emas, qanday rangda bo'ladi? (Sariq).
5. Qizil va sariq ranglarining qo'shilishidan qanday rang hosil bo'ladi? (Zarg'aldoq).
6. Tabiat tirikligini ramzi qanday rangda? (Yashil)
7. Oydan turib kuzatganda yer qanday rangda ko'rinadi? (Havorang).

8. O'zbek kurashi polvonlari yashil rangdan tashqari yana qanday rangdagi yaktakda kurash tushishadi? (Ko'k).
9. "Kamalak" so'zida nechta harf bor. Shu songa teng raqamli kamalak rangi qanday ataladi? (Binafsha)
10. "Za'faron" so'zining kamalak ranglaridan birini ifodalovchi sinonimini ayting? (Sariq).

"Black box" - "Qora quti" – Bu metod orqali guruhlarga laboratoriya ishi kerakli jihozlarni topishni "Qora quti" metodi asosida tekshiradi. "Qora quti" metodi uchun o'quv topshirig'ini tarqatadi, talabalarga jarayonlarni o'rganish uchun kerakli jihozlarni belgilab, kerak bo'lmagan jihozlarni "Qora quti" ichidan chiqarib tashlashlarini ta'kidlaydi.

Qora quti usuli uchun o'quv topshirig'i:

1-Topshiriq mazmuni*:* Nyuton halqalari yordamida linzaning egrilik radiusini aniqlashni o'rganish uchun qurilmaning ishlash prinsipini o'rganing.

2-Topshiriq mazmuni: Nyuton halqalari yordamida linzaning egrilik radiusini aniqlashni o'rganish uchun qurilmani ish holatiga tayyorlang.

3-Topshiriq mazmuni: Yo'riqnoma asosida ishni bajaring. Olingan natijalarni "Ishchi daftar"ga yozing.

4-Topshiriq mazmuni: Olingan natijalar asosida ma'lumotlarni hisobotga kiriting.

Eslatma: Qurilmani laboratoriya ishlari qo'llanmasidan foydalanib, qurilma tuzilishi bilan solishtiring.

1. Interferensiya deb nimaga aytiladi?
2. Nyuton halqalari qanday hosil bo'ladi?
3. Nyuton halqalarining radiusi o'tuvchi nurlar uchun qanday topiladi?
4. Nyuton halqalarining radiusi qaytuvchi nurlar uchun qanday topiladi?
5. Linzaning egrilik radiusi deb nimaga aytiladi?
6. Qurilma tuzilishini aytib bering.
7. Ishning bajarish tartibini so'zlab bering.

Mashg'ulotga tayyorgarlikni tekshirish uchun savollar:

1 - Guruh uchun: laboratoriya ishining mavzusi, maqsad va kerakli jihozlarning nomlarini ayting.

2 - Guruh uchun: Laboratoriya ishini bajarish uchun muhim bo'lgan nazariy asoslarni sanab bering.

3 - Guruh uchun: ishni bajarish tartibini izohlang.

4 - Guruh uchun: laboratoriya ishida natijaga erishish uchun qurilmaning ishlash jarayonini ko'rsating.

Scientific discussion – "Ilmiy munozara" metodi orqali talabalarda darsga bo'lgan motivatsiya uyg'otiladi. Turli hayotiy misollar bilan hodisani fizika fanining optika bo'limiga bog'lab tushuntirishda bu metod o'z afzalliklariga ega. O'yin tezkor savol-javoblar asosida o'tkaziladi. Savollar:

a) Ma'lumki, quyoshdan yerga energiya nurlanish orqali uzatiladi. Bu hodisani qanday izohlaysiz?

Javob: Chunki, quyoshdan kelayotgan yorug'lik oqimi o'zi bilan birga issiqlik energiyasini ham olib keladi.

Taklif etayotgan metodika talabalarning umumiy fizika fanining "Optika" bo'limi bo'yicha ma'ruza, amaliy va laboratoriya mashg'ulotlarida, o'qitishni noan'anaviy ta'lim metodikasi asosida tashkil qilishga qaratilgan bo'lib, bu yerda mazkur vositalar fan bo'yicha muayyan jarayonlarni yoritib berish, olib borilayotgan izlanishlar, tadqiqotlar, ularning natijalarini obrazli taqdim etish, konstruksiyalash, egallangan bilimlarni rivojlantirish imkoniyatlari jamlangan vosita sifatida ahamiyatlidir. Tadqiqotda qo'llanilgan noan'anaviy ta'lim metodikasini o'quv jarayonida talabalarga ijobiy ta'sir ko'rsatadi. Ta'lim jarayonini amalga oshirishda, albatta, o'qitishning texnik vositalaridan foydalaniladi. O'qitishning texnik vositalari, axborot texnologiyalari, ta'lim metodi va metodikasi hamda darsga oid o'quv - me'yoriy hujjatlarsiz ta'lim-tarbiya jarayonini noan'anaviy tashkil etib bo'lmaydi. Ayniqsa,

talabalarning individual shaxsiy fazilatlarini hisobga olgan holda o'quv jarayonining yondashishning samarasi yuqori bo'ladi. Bizga ma'lumki, bilim, ko'nikma va malakaga ega bo'lishga motivatsiya sifatlari talabalarda kreativ fikrlashga katta ta'sir etadi. Motivatsiya orqali talabada kompetensiyaga bo'lgan ehtiyoj hosil bo'ladi. Kreativ fikrlash talaba o'rganayotgan mavzuning tub mohiyatini tushunib, hayotiy misollar orqali anglab, o'z pedagogik faoliyatida qo'llay olish ko'nikmasiga ega bo'lib, o'quv tajribasida bu jarayonining guvohi bo'lishadi.

Bunday metodlar talabalarning bilimlarini yanada chuqurroq o'zlashtirishlariga yordam beradi. O'quv jarayonida psixik bilish jarayonlari takomillashadi. Talabalarning mustaqil, aqliy va mantiqiy fikrlash qobiliyatlari shakllanadi.

Adabiyotlar ro'yxati

1. Ж.М.Абдуллаев, Л.И.Очилов. "Изъятие пресной воды из подземных вод при помощи гелиоустановки водоносного опреснителя". Молодой учёный научный журнал. 2015/5. 274-276
2. Abdullayev J. M. ANALYSIS OF THE CALCULATION OF THE ELECTROSTATIC FIELD BY DIFFERENTIATING AND INTEGRATING METHODS// Uzbek Scholar Journal Volume- 24, January, 2024 www.uzbekscholar.com
3. Azzamova Nilufar Buronovna, Nasriddinov Komiljon Rahmatovich. Electrodynamics As A Basis For Consolidating Knowledge Of Electromagnetism. Solid State Technology. 4(63). 5146.
4. Nasriddinov Komiljon Raxmatovich, Azzamova Nilufar Buronovna "ELEKTROMAGNITIZM" VA "ELEKTRODINAMIKA" O'QUV PREDMETLARI ORASIDAGI UMUMIYLIKLAR VA UNING MUHIM JIHATLARI// Uzbek Scholar Journal Volume- 25, February, 2024 www.uzbekscholar.com
5. B.N Khushvaqtov Didactic factors affecting improvement academicia: an international multidisciplinary research journal 2021й 1823-1826б
6. B. N. Xushvaqtov Integrative model of improving the content of classes in optics European Journal of Research and Reflection in Educational Sciences Vol 7 (12)
7. Khushvaktov Bekmurod Normurodovich TEACHING PHYSICS ON THE BASIS OF PEDAGOGICAL TECHNOLOGIES Uzbek Scholar Journal Volume- 24, January, 2024 www.uzbekscholar.com
8. U.R.Bekpulatov. "Physical style of thinking-methodological basis for the formation of a scientific world view". Theoretical&Applied Science. 09(89). 183-188.
9. U.R.Bekpulatov METHODOLOGICAL SIGNIFICANCE OF THE PRINCIPLES OF "SYMMETRY AND DISSYMMETRY" IN THE SYSTEM OF PHYSICAL KNOWLEDGE // Uzbek scholar ISSN: 2181-0869 JOURNAL DOI: HTTPS:// DOI.ORG/10.31251 IFSIJ JIF 2024: 7.125 SJIF 2024: 6.59 Volume-24, January-2024
10. F.Nabiyeva. Issiqlik hodisalarini o'qitishga oid umumiy metodik tavsiyalar. «Science and innovation». 446-449.
11. Nabiyeva Firuza Odil qizi THE IMPORTANCE OF PRACTICAL TRAINING IN THE TEACHING OF THE" ELECTROMAGNETISM " DEPARTMENT// // Uzbek scholar ISSN: 2181-0869 JOURNAL DOI: HTTPS://DOI.ORG/10.31251 IFSIJ JIF 2024: 7.125 SJIF 2024: 6.59 Volume-24, January-2024
12. D.I.Kamalova, S.N.Abdisalomova. "Zamonaviy innovatsion ta'lim". Journal of universal science research. Volume 1. Issue 1. 17 january, 2023. pp. 187-189.
13. D.I.Kamalova, Y.O'.Mardanova. The role of pedagogical competencies in improving technical knowledge of students in the higher education system. International scientific-online conference

"Innovation in the modern education system". Washington, USA. Part 12. November 25. 2021. pp. 434-437.

14. Khamroeva Sevara Nasriddinovna THE THEORETICAL SIGNIFICANCE OF DEVELOPING LOGICAL THINKING SKILLS AMONG FUTURE PHYSICS TEACHERS uzbek scholar journal volume- 24, january, 2024 www.uzbekscholar.com 193-196
15. Laylo Turdieva, Khamroeva Sevara Nasriddinovna METHODOLOGY FOR TEACHING THE TOPIC "DEVICE USED IN CRAFTS" uzbek scholar journal volume- 24, january, 2024 www.uzbekscholar.com225-227
16. Tursunboy Izzatillo ugli Soliyev, Amrullo Mustafoyevich Muzafarov, Bahriddin Faxriddinovich Izbosarov. Experimental determination of the radioactive equilibrium coefficient between radionuclides of the uranium decay chain. International Scientific Journal Theoretical&Applied Science. 801-804.
17. Soliyev Tursunboy Izzatillo ugli RELATION BETWEEN RADIOACTIVE EQUILIBRIUM COEFFICIENT AND SAMPLE AGE // Uzbek scholar ISSN: 2181-0869 JOURNAL DOI: HTTPS://DOI.ORG/10.31251 IFSIJ JIF 2024: 7.125 SJIF 2024: 6.59 Volume-24, January-2024
18. Sayfullaeva Gulkhayo Ikhtiyor Kizi, Shodiev Khamza Ruziculovich, Xaitova Shakhnoza G'olibjon Kizi // CONDITIONS FOR THE FORMATION OF TEACHING INNOVATION ACTIVITIES// Journal of Pharmaceutical Negative Results Volume 14. Issue 2. 2023. 2420-24233 pp
19. Sayfullayeva Gulhayo Ixtiyor qizi, Norqulov Madina Hamza qizi Astronomiyani axborot ta'lim muhitlaridan foydalanib o'qitishning pedagogik tamoyillari// «Zamonaviy dunyoda innovatsion tadqiqotlar: Nazariya va amaliyot» nomli ilmiy, masofaviy onlayn konferensiyasi 104-109 https://doi.org/10.5281/zenodo.10443860
20. Sayfullayeva Gulhayo Ixtiyor qizi Namozova Nilufar Tuxtamurodovna Astronomiya fanini o'qitishda elektron darsliklarning o'ziga xos xususiyatlari va afzalliklari// Journal of Universal Science Research 1 (10), 873-877
21. Н Намозова, Г Сайфуллаева Астрономия фанига интеграциялашган медиатаълимнинг фаолиятли тузилмаси// бюллетень педагогов нового Узбекистана 1 (7), 21-23
22. Aziza Bozorova, Gulhayo Sayfullayeva kredit–Modul Ta'lim Tizimida Talabalarning Mustaqil Ta'lim Jarayonini Tashkil Etish// Бюллетень студентов нового Узбекистана, 2023
23. Haydarova Dilorom, Sayfullayeva Gulhayo Pyton dasturida astronomiyadan animatsiya yaratish // Journal of Universal Science Research, 2023
24. Kamolov Ikhtiyor Ramazonovich Features of using mathematical knowledge and laws of physics in teaching astronomy Uzbek scholar journal volume- 24, january, 2024 www.uzbekscholar.com 152-157
25. I.R. Kamolov, G.I. Sayfullaeva -Formation of teacher's competence in the performance of laboratory and experimental works Journal of critical reviews. ISSN-2394-5125, 2020
26. Саттаров Ахлиддин Ризакулович ОБУЧЕНИЯ ЗНАНИЕ ПО "ФИЗИКЕ СОЛНЦА" В ВЫСШИХ ПЕДАГОГИЧЕСКИХ УЧЕБНЫХ ЗАВЕДЕНИЯХ НА ОСНОВЕ ИНТЕГРАТИВНОГО ПОДХОДА // Uzbek scholar ISSN: 2181-0869 JOURNAL DOI: HTTPS://DOI.ORG/10.31251 IFSIJ JIF 2024: 7.125 SJIF 2024: 6.59 Volume-24, January-2024
27. Sattorov Ahliddin Rizoqulovich, Kamolov Ixtiyor Ramazonovich Astrofizika fanini integrativ yondoshuv asosida o'qitishning metodik asoslari//SCIENCE AND INNOVATION INTERNATIONAL SCIENTIFIC JOURNAL VOLUME 1 ISSUE 8 UIF-2022: 8.2 | ISSN: 2181-3337

28. Э. А. Кудратов Э. А. Аллаберганова, Г. М., Кутбеддинов, А. К., Каримов, А. М., Интерактивные методы обучения студентов естественных специальностей на основании радиационных факторов экосистемы. Педагогика и современность ISSN: 2304-9065
29. E.N.Xudayberdiyev. “Bo‘lajak fizika o‘qituvchilarini tayyorlashda olamning fizik manzarasi bo‘yicha tasavvurlarni shakllantirish”. Academic research in educational sciences. 2021.
30. Barakayeva Sarvinoz To`lqunovna THE ROLE OF ASTRONOMICAL COMPONENTS IN THE INTERDISCIPLINARY TEACHING OF THE "SUN AND SOLAR SYSTEM" SECTION FROM ASTRONOMY// Uzbek scholar ISSN: 2181-0869 JOURNAL DOI: HTTPS://DOI.ORG/10.31251 IFSIJ JIF 2024: 7.125 SJIF 2024: 6.59 Volume-24, January-2024
31. Barakayeva Sarvinoz To`lqunovna INTEGRATIVE APPROACH IN ASTRONOMY TEACHING AND ITS PRACTICAL ESSENCE// SCIENCE AND INNOVATION INTERNATIONAL SCIENTIFIC JOURNAL VOLUME 3 ISSUE 1 JANUARY 2024 UIF-2022: 8.2 | ISSN: 2181-3337 | SCIENTISTS.UZ
32. Сайфуллаева Гулхаё Ихтиёровна, Негматов Сайибжан Садыкович , Абед Нодира Сайибжановна, Камолов Ихтиёр Рамазонович, Баракаева Сарвиноз Тулкуновна, Камалова Дилнавоз Ихтиёровна МЕТОДИКА ПОЛУЧЕНИЯ КОМПОЗИЦИОННЫХ ОБРАЗЦОВ НА ОСНОВЕ ТЕРМОРЕАКТИВНЫХ ФУРАНО-ЭПОКСИДНЫХ ПОЛИМЕРОВ И ОРГАНОМИНЕРАЛЬНЫХ НАПОЛНИТЕЛЕЙ// Универсум технические науки январь, 2021 1(82)
33. L.K.Samandarov, E.N.Xudayberdiyev. Methodological problems of teaching the theory of particle-wave dualism for physics students. Theoretical&applied science. Теоретическая и прикладная наука. 256-262.
34. Samandarov Latifbek Kalandar ugli Didactic principles of implementation of integration among the disciplines of nuclear physics and biology, chemistry, mathematics, computer science// Uzbek scholar ISSN: 2181-0869 JOURNAL DOI: HTTPS://DOI.ORG/10.31251 IFSIJ JIF 2024: 7.125 SJIF 2024: 6.59 Volume-24, January-2024
35. Integrative model of improving the content of classes in optics BN Xushvaqtov European Journal of Research and Reflection in Educational Sciences Vol 7 (12)
36. B Khushvaktov Using fresnel bipprisms to explain the theme of light interference science and innovation 2023 46-48b
37. B.N Khushvaqtov Didactic factors affecting improvement academicia: an international multidisciplinary research journal 2021y 1823-1826b
38. B.N Khushvaqtov Innovative fundamentals of non-traditional teaching (on the example of the optics department) journal of ethics and diversity in international communication e-issn: 2792-4017 | www.openaccessjournals.eu | volume: 1 issue: 3 2021y
39. Khushvaktov Bekmurod Normurodovich TEACHING PHYSICS ON THE BASIS OF PEDAGOGICAL TECHNOLOGIES Uzbek Scholar Journal Volume- 24, January, 2024 www.uzbekscholar.com