



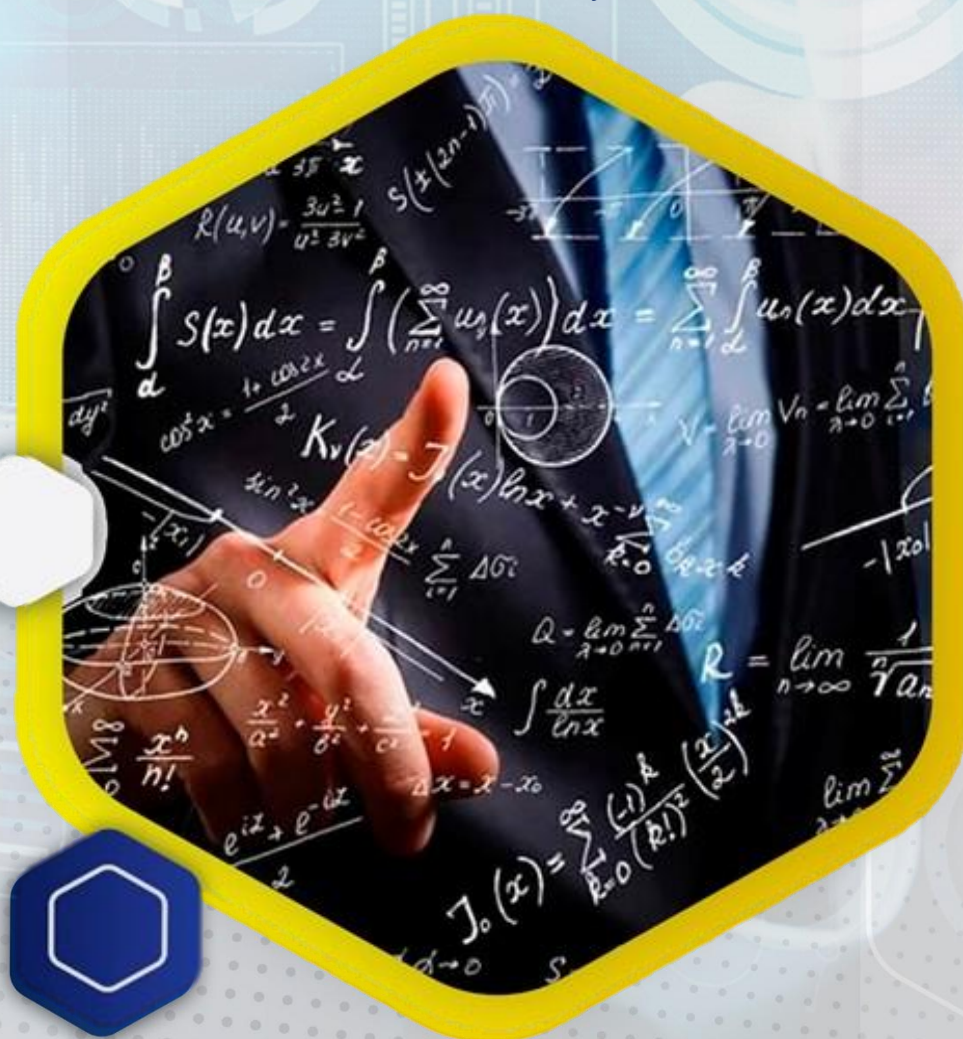
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XALQARO ILMIY-NAZARIY ANJUMAN MATERILLARI



BUXORO-2025



**O'ZBEKISTON RESPUBLIKASI
OLIY TA'LIM, FAN VA INNOVATSIYALAR
VAZIRLIGI**



CURRENT PROBLEMS OF PHYSICS, MATHEMATICS AND ARTIFICIAL INTELLIGENCE TECHNOLOGIES

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TALABALARNING KOMPETENTLIGINI BAHOLASHDA EXCEL DASTURIDAN FOYDALANISH: TIZIMLI YONDASHUV

Hayitov Umidjon Hamidovich

p.f.f.d.(PhD)., dotsent, BuxDU

Hojiyev Nozimjon Yoqubovich

BuxDU o'qituvchisi

i

Zamonaviy ta'lim tizimi nafaqat bilimni o'zlashtirishga, balki shaxsning kasbiy va ijtimoiy kompetentligini shakllantirishga ham qaratilgan. Kompetentlik – bu shaxsning ma'lum bir faoliyatni samarali bajara olish qobiliyatidir. Shu sababli, talabalarning kompetentlik darajasini aniqlash va baholash dolzarb masala hisoblanadi.

Excel dasturi – bu turdagi baholash va tahlillarni olib borishda sodda, ammo kuchli vosita hisoblanadi. Ushbu maqolada Excel dasturida talabalarning kompetentligini tizimli tarzda qanday aniqlash va tahlil qilish mumkinligi haqida metodik yondashuv bayon qilinadi.

Talabalarning kompetentligini aniqlash murakkab, ko'p omilli jarayon bo'lib, uni samarali amalga oshirish uchun aniq metodologik yondashuv zarur. Eng avvalo, baholashning maqsadi va unga asos bo'ladigan mezonlar aniqlab olinishi lozim. Kompetensiyani baholashda har bir shaxsning bilim, ko'nikma va munosabatlar yig'indisi sifatida qaraladigan integrallashgan xususiyatlari e'tiborga olinadi. Shuningdek, baholash mezonlarini belgilashda ular nafaqat o'qituvchilar, balki talabaning o'zi va tengdoshlari tomonidan ham qo'llanilishi mumkin bo'lishi kerak.

Ushbu tadqiqot doirasida talabalar kompetentligini baholash quyidagi besh asosiy mezon orqali amalga oshirildi: **tanqidiy fikrlash, muammolarni hal qilish qobiliyati, guruhda ishlash ko'nikmasi, kasbiy bilimlar**, hamda **axborot-kommunikatsiya texnologiyalaridan foydalanish savodxonligi**. Ushbu komponentlar zamonaviy ta'lim jarayonida eng muhim kompetensiyalar qatoriga kiradi va ularning har biri shaxsiy va kasbiy muvaffaqiyatga bevosita ta'sir ko'rsatadi.

Baholash jarayoni har bir mezon uchun 1 dan 5 gacha ballar tizimi asosida olib boriladi, bunda 1 ball – past, 5 ball – yuqori darajani anglatadi. Bu yondashuv talabalar kompetentligini miqdoriy jihatdan ifodalash imkonini beradi. Shuningdek, baholashda uchta manba – o'qituvchi (ekspert fikri), tengdoshlar (peer-assessment) va o'z-o'zini baholash (self-assessment) – jalb etilishi mumkin (1-jadvalga qarang). Bu esa baholash natijalarining ob'ektivligini oshirishga xizmat qiladi.

Natijada, shakllangan baholash jadvali nafaqat talabaning umumiy kompetentlik darajasini aks ettiradi, balki uning kuchli va rivojlanishga muhtoj sohalarini aniqlash imkonini beradi.

Talabalar kompetentligini tizimli baholash jadvali

1-jadval

	A	B	C	D	E
1	Mezonlar	O'qituvchi bahosi	Tengdosh bahosi	O'z-o'zini baholash	O'rtacha ball
2	Tanqidiy fikrlash	4	5	3	4
3	Muammo hal qilish qobiliyati	5	4	4	4,333
4	Guruhda ishlash ko'nikmasi	3	4	4	3,667
5	Kasbiy bilimlar	4	5	5	4,667
6	AKT savodxonligi	5	4	5	4,667
7	Umumiy o'rtacha ball				4,267

Talabalarning baholarini tizimli tahlil qilish uchun Microsoft excel dasturidan foydalanish bugungi kun pedagoglari uchun sodda va qulay hisoblanadi. Eng avvalo excel dasturining ba'zi tahliliy funksiyalari bilan tanishsak: Microsoft Excel dasturi statistik va iqtisodiy tahlillarni amalga oshirishda samarali vosita hisoblanadi. Ulardan: masalan, СРЗНАЧ(), МЕДИАНА(), МОДА.ОДН() kabi statistik funksiyalar yordamida ma'lumotlar to'plamining asosiy tavsiflari (o'rtacha qiymat, median, modalar) aniqlanadi; СТАНДОТКЛОН.П() va СТАНДОТКЛОН.В() funksiyalari orqali esa dispersiya va standart og'ish kabi statistik ko'rsatkichlarni baholash mumkin (rus tilidagi versiyasida). Ushbu funksiyalar sonli ma'lumotlarning tarqalishini va ularning o'zgaruvchanlik darajasini tahlil qilishda muhim ahamiyat kasb etadi. Bundan tashqari, Excelning "Пакет анализа" (Analysis ToolPak) moduli yordamida regressiya, dispersion tahlil (ANOVA), t-test, gistogramma

kabi murakkab statistik hisob-kitoblarni bajarish imkoniyati mavjud. Ayniqsa, KOPPEJI(), ЛИНЕЙН(), ТРЕНД() kabi funksiyalar orqali omillar o'rtasidagi bog'liqlik darajasini aniqlash, trendni prognoz qilish va chiziqli regressiya modellari tuzish imkoniyati yaratiladi. Shu bilan birga, bu funksiyalar foydalanuvchilarga iqtisodiy, ijtimoiy va texnik jarayonlarning tahliliy modeli asosida qarorlar qabul qilish imkonini beradi. Excelda, AVERAGE() – o'rtacha kompetentlik darajasi, MAX() – eng yuqori ball, MIN() – eng past ball, COUNTIF(G2:G100, "<3") – 3 balldan past olgan talabalar soni, IF(G2<3, "Past", "Yaxshi") – baholashga tavsiyalar kabi funksiyalardan foydalanilsa tahlil osonlashadi. Shuningdek, **shartli formatlash** (Conditional Formatting) yordamida past ball olgan kataklar avtomatik qizil bilan ajratish mumkin.

Excelda grafik vositalar: **Radar diagramma** – har bir talabaning kompetentlik profilini ko'rsatadi, **Ustunli diagramma** – guruhlararo taqqoslash imkonini beradi, **Dinamik grafiklar** – vaqt bo'yicha o'zgarishlarni tahlil qilishda qo'l keladi. Bu vizualizatsiyalar rahbarlar, o'qituvchilar yoki ota-onalar bilan ma'lumot almashishda juda qulay hisoblanadi.

Yuqorida keltirilgan funksiyalar hamda Excel yordamida olingan natijalar asosida talabaning zaif kompetensiyalarini aniqlash, individual yondashuv asosida rivojlantiruvchi darslar tashkil etish hamda guruhdagi umumiy kamchiliklarni aniqlab, o'quv dasturiga tuzatish kiritish mumkin.

Excel dasturida kompetentligini baholash orqali ta'lim sifatini real ko'rsatkichlar asosida tahlil qilish mumkin bo'ladi. Bu yondashuv:

- Baholashni avtomatlashtiradi;
- Pedagogik qarorlarni tez va aniq qabul qilishga yordam beradi;
- Har bir talaba uchun shaxsiy rivojlanish xaritasini yaratish imkonini beradi.

Shunday qilib, Excel dasturidan foydalanish kompetentlikka asoslangan yondashuvni amaliyotga tatbiq etishda samarali vosita bo'lib xizmat qiladi.

PHYSICS LABORATORY TRAINING THROUGH SYNONYMOUS METHOD – AN INNOVATIVE APPROACH

**Kudratov Elmurod Abdukhalimovich,*

*Associate Professor, Department of physics and astronomy,
Navoi State University, Navoi, Uzbekistan*

Soliyev Tursunboy Izzatillo ugli

*Senior lecturer, Department of physics and astronomy,
Navoi State University, Navoi, Uzbekistan*

Cuddapah Dhananjaya Rao

*Professor of Physics, Department of physics and astronomy,
Navoi State University, Navoi, Uzbekistan*

Abstract: Development of pedagogical methods for determining the didactic functions of organizing and improving physics laboratory classes in the higher education system is an important issue of today's education. Therefore, it is felt necessary to organize the methodology of teaching physics and the development of dynamic practical training based on new approaches and in an innovative environment. For this purpose, this article presents the "Synonymous" method of improving the laboratory work by inclusion of additions to the traditional methods of organizing Physics laboratory classes. The "synonymous" method includes the improvement of methodological features of laboratory training through the organization of exactly one laboratory work in different forms and the effective use of modern ICT tools in this process. The "synonymous" method helps students to conduct creative and small scale scientific research at early stages.

Keywords: laboratory, synonymous, higher education, friction coefficient, sliding friction

Introduction. Today, there are current issues that await their solution in determining the role of physics laboratories, their didactic functions in improving the teaching learning process [1;10-15]

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Muharrir:	E.Eshov
Tex. muharrir:	D.Abduraxmonova
Musahhih:	M.Shodiyeva
Badiiy rahbar:	M.Sattorov

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Buxoro shahar Namozgoh ko'chasi 24-uy
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