6 – TOM 12 – SON / 2023 - YIL / 15 - DEKABR

TALABALARNING BILIMINI BAHOLASHNING MATEMATIK MODELLARINI SHAKLLANTIRISH

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Annotatsiya: *maqolada talabalar bilimini baholashning matematika modillini takomillshtirish haqida gap boradi.*

Kalit so’zlar:*talaba, bilim, baho, baholash, matematika, model, shakll.*

Pedagogik o‘lchovning asosiy maqsadi qiziqtirayotgan bilim darajasini ifodalovchi miqdoriy ekvivalentga ega bo‘lishdan iborat. Bu jihatdan pedagogik test eng haqqoniy o‘lchov usuli hisoblanadi. Bilimlarni o‘lchash va baholash o‘quv jarayonining hamma tomonlari uchun eng muhim muammolardan biri sifatida baho berish muammosi zamonaviy ta’limning eng muhim nazariy va amaliy masalalaridan biri hisoblanadi. Muammoning dolzarbligi talabalar bilimini aniqlash va uning sifatiga baho berishning maqsad va vazifalari bilan bog‘liq [3] .

Baho - o‘quv jarayonini boshqarish va unda sodir bo‘ladigan chetlanish va kamchiliklarning oldini olishga asos bo‘ladigan ko‘rsatkich bo‘lib xizmat qiladi.

B.T.Ananaev so‘zi bilan aytganda pedagogik baho o‘quvchiga uning bilimi to‘g‘risida ma’lumot beruvchi manba hisoblanadi. Pedagogik baho juda muhim ahamiyatga ega bo‘lishiga qaramasdan o‘lcham obyektning haddan tashqari murakkabligi va xilma-xilligi tufayli bilim sifatini miqdoriy o‘lcham va sifatigi baho berish juda qiyin va yetarli darajada tadqiq qilinmagan muammo hisoblanadi [2].

Pedagogik adabiyotda talabalar bilimini o‘lchash va baholash uchun turli usullar mavjud bo‘lib, ko‘p tanlov javobli test topshiriqlari natijalarini baholash usuli B.Toshpo‘latov, A.Normatov, O.Mavlonov tomonidan taklif qilingan bo‘lib, quyidagi formula yordamida amalga oshiriladi: $x = \dfrac{2c - \sum_{i=1}^{n}(a_i + b_i)}{2c} \cdot D$ [1].

Bu formuladagi x-talaba bilim sifatini ballar asosida ifodalangan miqdoriy ko‘rsatkichi, n-testdagi topshiriqlar soni, C-test bo‘yicha jami to‘g‘ri javoblar soni, a_i-talaba i- topshiriqda noto‘g‘ri ko‘satgan javoblari soni va b_i-talaba i-topshiriqda ko‘rsata olmagan to‘g‘ri javoblari soni, D-talaba olishi mumkin bo‘lgan eng yuqori ballni ifodalaydi. Formula to‘g‘ri va noto‘g‘ri javoblar soni teng 1:1 nisbatda bo‘lgan topshiriqlar uchun mo‘ljallangan. Formula $c_1 = \sum_{i=1}^{n} a_i$, $c_2 = \sum_{i=1}^{n} b_i$ bo‘lishiga asoslangan.

Faqat to‘g‘ri javoblarni shakllantirish uchun zarur tushunchalardan iborat bo‘lgan rasmlarni o‘qish va ketma-ketlikni aniqlashga mo‘ljallangan topshiriqlarni quyidagi formula orqali baholash mumkin: [4] $x = \frac{c - \sum_{i=1}^{n} b_i}{c} \cdot D$

Xatolar soni bo‘yicha baholash ko‘p tanlov javobli test topshiriqlardan tuzilgan testlar uchun mo‘ljallangan.

1. $A: C[-1,1] \to C[-1,1],\ (Af)(x) = \int_{-1}^{1} xyf(y)dy$ operator yadrosini toping.

A) $KerA = \{f : f(x) = const\}$ B) $KerA = \{f : f(x) = \alpha + \beta x\}$

C) $KerA = \{f: \int_{-1}^{1} yf(y)dy = 0\}$ D) $KerA = \{f: \int_{-1}^{1} xf(x)dx = 0\}$

2. Noto‘g‘ri tasdiqni toping.

A) Agar A chiziqli operator bo‘lsa, A^{-1} ham chiziqli operator bo‘ladi.

B) Agar $A \in L(X,Y)$ bo‘lsa, u holda $A^{-1} \in L(Y,X)$ bo‘ladi.

C) Agar $A \in L(X)$ bo‘lsa, u holda $A^{-1} \in L(Y)$ bo‘ladi.

D) Agar $A \in L(X,Y)$ bo‘lsa, u holda $A^{*} \in L(Y^{*}, X^{*})$ bo‘ladi.

3. A operator chiziqli bo‘lishini ta’minlaydigan shartlarni ajrating:

A) $A(x+y) = Ax + Ay$ B) $A(\alpha x) = \alpha Ax$

C) $A(\alpha x) = \overline{\alpha} Ax$ D) $A(x-y) = Ax - Ay$

4. Chiziqli bo‘lmagan $A: C[a,b] \to C[a,b]$ operatorni toping.

A) $(Af)(x) = f'(x+1)$ B) $(Af)(x) = f(x)$

C) $(Af)(x) = 0$ D) $(Af)(x) = f(x) + 1$

5. Quyidagilar ichidan A chiziqli chegaralangan operator normasini hisoblash formulalarini ajrating:

A) $\|A\| = \sup_{\|x\|=1} \|Ax\|,$ B) $\|A\| = \sup_{x \neq 0} \frac{\|Ax\|}{\|x\|},$

C) $\|A\| = \inf_{\|x\|=1} \|Ax\|.$ D) $\|A\| = \inf_{\|x\|=1} \frac{\|Ax\|.}{\|x\|}$

6. Quyidagilar ichidan to‘g‘ri tasdiqlarni ajrating:

A) Operatorlarni qo‘shish kommutativ.

B) Operatorlarni ko‘paytirish kommutativ.

C) Operatorlarni ko‘paytirish assotsiativ.

D) Operatorlarni bo‘lish kommutativ

7. Quyidagilar ichidan to‘g‘rilarini ajrating:

A) $\|A+B\| \le \|A\| + \|B\|,$ B) $\|A \cdot B\| \le \|A\| \cdot \|B\|,$

C) $\|A \cdot B\| = \|A\| \cdot \|B\|,$ D) $\|A \backslash B\| = \|A\| \backslash \|B\|$

8. $C[-1,1]$ fazoda normasi 1 bo‘lgan operatorlarni ko‘rsating.

A) $(Af)(x) = xf(x)$ B) $(Bf)(x) = f(x)$

C) $(Cf)(x) = 0.$ D) $(Af)(x) = f(x)$

Ushbu test bo‘yicha to‘g‘ri javoblar soni c=16 bo‘ladi. Talabaning test topshiriqlariga javobi quyidagicha bo‘lgan deb faraz qilaylik: 1. B,C; 2. B,C; 3.B,C; 4. A,D; 5. B,C; 6. A,C; 7. D,C; 8. B,D. U holda Talaba yozgan javoblarni to‘g‘ri javoblar bilan solishtirganimizda quyidagi hol kuzatiladi.

Savollar tartibi								**8**	**J ami**
Noto‘g‘ri ko‘rsatilgan javoblar							,C	I	6
Ko‘rsatilmagan to‘g‘ri javoblar							B	A	6

Demak, noto‘g‘ri ko‘rsatilgan javoblar va aniqlanmagan to‘g‘ri javoblar soni bir xil, ya’ni 8 ga teng bo‘ladi. Talabaning javobi bo‘yicha topshiriqda noto‘g‘ri ko‘satgan javoblari –a va topshiriqda ko‘rsata olmagan to‘g‘ri javoblari soni - b bo‘lib, ya’ni umumiy xatolar soni a+b=12 ga teng bo‘ladi. Talabaning javobini 100 ballik sistema asosida formula bo‘yicha baholaymiz. U holda talaba

$x = \frac{32-(6+6)}{32} \cdot 100 = \frac{2000}{32} = 62{,}5$ ball to‘plagan bo‘ladi.

Formula bo‘yicha $c - \sum_{i=1}^{n} a_i$ yoki $c - \sum_{i=1}^{n} b_i$ bo‘lganidan testdagi to‘g‘ri javoblar soni 2 ga ko‘paytirilgan. Demak, Talabaning yuqorida keltirilgan test topshiriqlari bo‘yicha ko‘rsatilgan bilimi 62,5 ballga teng bo‘ladi. Bu esa talabaning tushunchasi qoniqarli darajada ekanligini ko‘rsatadi.

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