

Differensial hisobning iqtisodda qo'llanilishini takomillashtirish istiqbollari

Muyassar Norboyevna Boboyeva
Buxoro davlat universiteti

Annotatsiya: Ushbu maqolada, Oliy ta'lim tizimida o'quv fanlararo bog'lanish va bilimlarni muvofiqlashtirish tamoyili asosida o'quv fanlarining o'zaro bog'liqligi va fanlararo bog'lanishlarni ta'minlashga xizmat qiladi. O'qituvchilarning metodik-matematik tayyorgarligi haqida so'z borganda biz uni ilmiy pedagogik va matematik tayyorgarlik bilan uzviy bog'lanishda tayyorgarligini tushunishimiz kerak. Bu esa ba'zan bir darsning o'zida bir nechta fanlarga murojaat qilamiz. Darslarning qay darajada tashkillanishi bu o'qituvchining ijodkorlik qobiliyatiga ham bog'liqdir.

Kalit so'zlar: Oliy ta'lim tizimida fanlararo bog'lanish, hosilaning iqtisodiy ma'nosi, funksiyaning egiluvchanligi.

Prospects for improving the application of differential calculus in the economy

Muyassar Norboyevna Boboeva
Bukhara State University

Abstract: This article aims to ensure the interdisciplinary and interdisciplinary links between academic disciplines in higher education based on the principles of interdisciplinary links and knowledge coordination. When we talk about the methodological and mathematical training of teachers, we need to understand that it is inextricably linked with scientific, pedagogical and mathematical training. This means that sometimes we have to cover several subjects in one lesson. The level of organization of the lessons also depends on the creativity of the teacher.

Keywords: Interdisciplinary links in higher education, the economic meaning of the product, the flexibility of the function

KIRISH

Mamlakatimizda yuz berayotgan ijtimoiy-iqtisodiy munosabatlar, Oliy ta'lim tizimida bo'layotgan o'zgarishlar ta'lim to'g'risidagi qonunlarda hamda «Kadrlar tayyorlash milliy dasturi»da ko'rsatib o'tilgandek har bir pedagogik kadr oldiga muhim vazifa qo'yimoqda. Bu vazifalar oliy ta'lim uchun xos bo'g'inlarni ajratish imkonini beradiki, bu bo'g'inlar xilma-xil o'quv fanlari dasturida, o'quv rejalarida

darsliklarda ta'limning joriy etilishi hamda metodik tizimda biror tarmoqni hosil qilish mumkin. Davlat ta'lim standartlari o'quv fani bo'yicha o'quv metodik rejalarini yaratish uchun keng imkoniyatlar ochib beradi. Shuningdek o'quv fanlararo bog'lanish va bilimlarni muvofiqlashtirish tamoyili asosida o'quv fanlarining o'zaro bog'liqligi va fanlararo bog'lanishlarni ta'minlashga xizmat qiladi. O'qituvchilarning metodik-matematik tayyorgarligi haqida so'z borganda uni ilmiy pedagogik va matematik tayyorgarlik bilan uzviy bog'lanishda tayyorgarligini tushunish kerak.

Fanlararo aloqani tashkil etishda matematika o'qitish metodikasi oldiga bir necha vazifalarni qo'yadi:

1. Ta'lim tarbiyaviy va amaliy vazifalarni amalga oshirish;
2. Nazariy bilimlar tizimini o'rganish jarayonini yoritib berish;
3. O'quvchilarning dunyoqarashini shakllantirish yo'llarini o'rgatish;
4. Ta'limni insonparvarlashtirish;
5. Matematikani o'qitish jarayonida insonni mehnatni sevishga, o'zining qadr-qimmatini, bir-biriga hurmati kabi vazifalarni tarbiyalashni ko'rsatib berishi;
6. O'qitish metodikasi keyingi bosqichlarning mazmuni bilan bog'lab o'qitishdan iborat.

O'z o'rnida matematika o'rganiladigan barcha fanlar bilan uzviy bog'liqdir. Matematika fanini o'rgatish jarayonida didaktik o'yinlardan foydalaniladi. Bunda esa ba'zan bir darsning o'zida bir nechta fanlarga murojaat qilamiz. Darslarning qay darajada tashkillanishi bu o'qituvchining ijodkorlik qobiliyatiga va dars jarayonida zamonaviy pedagogik texnologiyalardan [1-30] foydalanish imkoniyatlariga ham bog'liqdir.

Matematika fanining boshqa fanlar bilan uzviy aloqasi quyidagi ikki yo'l bilan amalga oshiriladi:

- 1) Matematika tizimining butunligini buzmaganda holda o'qishni fanlarning dasturlarini moslashtirish.
- 2) Boshqa fanlarda matematika qonunlarini, formulalarini teoremlarni o'rganish bilan bog'liq bo'lgan materiallardan matematika kursida foydalanish.

Hozirgi vaqtda matematika dasturini boshqa fanlar bilan moslashtirish masalasi ancha muvaffaqiyatli hal qilingan. Lekin matematika darslarida boshqa fanlardan foydalanish masalasini dasturda aniq ko'rsatish qiyin, buni o'qituvchining o'zi amalga oshiradi, ya'ni o'quv materialini rejalashtirishda va darsga tayyorlanish vaqtida e'tiborga olishi kerak.

Qo'shni fanlarga doir materiallardan matematika darslarida foydalanish fanlararo uzviy aloqadorlikni yanada mustahkamlaydi.

HOSILANING IQTISODIY MA'NOSI HAQIDA

Hosilaning iqtisodiy ma'nosini quyidagi misolda qaraymiz. Biror xil mahsulot ishlab chiqarilganda ishlab chiqarish xarajatlari ishlab chiqarilgan mahsulotning

miqdoriga bog'liq. Mahsulot miqdorini x bilan, ishlab chiqarish xarajatlarini y bilan belgilasak $y = f(x)$ funksional bog'lanish kelib chiqadi. Mahsulot ishlab chiqarishni Δx ga ko'paytirilsa $x + \Delta x$ mahsulotga mos keluvchi xarajat $f(x + \Delta x)$ bo'ladi. Demak, mahsulot miqdorining Δx orttirmasiga, mahsulot ishlab chiqarish xarajatining orttirmasi $\Delta y = f(x + \Delta x) - f(x)$ mos keladi.

$$\frac{\Delta y}{\Delta x}$$

1-Ta'rif. $\frac{\Delta y}{\Delta x}$ nisbatga mahsulot ishlab chiqarish xarajatining o'rtacha orttirmasi

deyiladi. $\lim_{\Delta x \rightarrow 0} \frac{\Delta y}{\Delta x} = y' = f'(x)$ ga ishlab chiqarish limitik xarajati deb ataladi.

Yuqoridagiga o'xshash $\varphi(x)$ bilan x mahsulotni sotishdan olingan jami savdo

pul mablag'i bo'lsa, quyidagi limit $\lim_{\Delta x \rightarrow 0} \frac{\Delta \varphi(x)}{\Delta x} = \varphi'(x)$

ga savdo limitik pul mablag'i deyiladi.

1-misol. Mahsulot ishlab chiqarish xarajati va mahsulot hajmi x orasida

$y = 100x - \frac{1}{30}x^3$ bog'lanish bo'lsin. Ishlab chiqarish hajmi, 5 birlik va 10 birlik bo'lganda limitik xarajatni toping.

Yechish. Masala shartiga asosan, $x = 5$, $x = 10$. Funksional bog'lanish hosilasi

$$y' = 100 - \frac{1}{10}x^2 \quad \text{bo'lib,} \quad f'(5) = 100 - \frac{1}{10}5^2 = 97.5, \quad f'(10) = 90 \quad \text{bo'ladi.}$$

Bularning iqtisodiy ma'nosi, mahsulot ishlab chiqarish hajmi 5 birlik bo'lganda, mahsulot ishlab chiqarish xarajati kelgusi mahsulotni ishlab chiqarishga o'tishda 97,5 ni tashkil etadi; ishlab chiqarish hajmi 10 birlik bo'lganda, esa u 90 ni tashkil etadi.

AYRIM IQTISODIY TUSHUNCHALARNING TA'RIFLARI

2-Ta'rif. Tovar va xizmatlarning ma'lum turiga, iste'molchining ma'lum vaqtda, narxlarning mavjud darajasida, sotib olishga qodir bo'lgan ehtiyoji talab deyiladi.

Talab miqdorining o'zgarishiga bir qancha omillar ta'sir qiladi. Ularning ichida eng ko'p ta'sir qiladigan omil narx omilidir.

2-misol. Biror mahsulotga talab va mahsulot narxi orasida bog'lanish $p = 20 - 3x$ formula bilan ifodalansin, bunda x mahsulotga talab, P mahsulotning narxi.

Mahsulotni sotishdan olingan savdo puli

$$U = xp \quad \text{ëku} \quad U = x(20 - 3x) = 20x - 3x^2$$

bo'ladi. Bundan hosila $U' = 20 - 6x$ bo'ladi. $x = 2$ bo'lsa, $U'(2) = 8$. Buning ma'nosi, talab 2 dan 3 birlikka ortsa, savdo puli 8 birlikka oshishini bildiradi.

Funksiyaning egiluvchanligi (elastikligi). Hosila yordamida erkli o‘zgaruvchi (argument) orttirmasiga mos erksiz o‘zgaruvchi (funksiya) orttirmasini hisoblash mumkin. Ko‘p iqtisodiy masalalarni hal etishda nisbiy orttirma, ya’ni argumentning o‘shish foiziga mos, funksiyaning o‘shish foizini hisoblashga to‘g‘ri keladi. Bu funksiyaning egiluvchanligi yoki nisbiy hosila tushunchasiga olib keladi.

3-ta’rif. $\frac{\Delta x}{x}, \frac{\Delta y}{y}$ nisbatlarga, mos ravishda, argument va funksiya nisbiy orttirmalari deyiladi. Funksiya nisbiy orttirmasining argument nisbiy orttirmasiga

nisbati $\frac{\Delta y}{y} : \frac{\Delta x}{x}$ ni qaraymiz. Bu nisbatni quyidagicha yozamiz:

$$\frac{\Delta y}{y} : \frac{\Delta x}{x} = \frac{\Delta y}{\Delta x} \cdot \frac{x}{y} \tag{1}$$

$y = f(x)$ funksiyaning hosilasi mavjud bo‘lsa,

$$\lim_{\Delta x \rightarrow 0} \frac{\Delta y}{y} : \frac{\Delta x}{x} = \lim_{\Delta x \rightarrow 0} \frac{x}{y} \cdot \frac{\Delta y}{\Delta x} = \lim_{\Delta x \rightarrow 0} \frac{\Delta y}{\Delta x} \cdot \frac{x}{y} = \frac{x}{y} \frac{dy}{dx} \tag{2}$$

kelib chiqadi.

4-ta’rif. (2) munosabatga $y = f(x)$ funksiyaning x ga nisbatan egiluvchanligi deyiladi, va $E_x(y)$ bilan belgilanadi. Ta’rifga asosan:

$$E_x(y) = \frac{x}{y} \cdot \frac{dy}{dx} \text{ bo‘ladi.}$$

x ga nisbatan egiluvchanlik argumentning orttirmasi 1% ga oshganda unga mos funksiya orttirmasining foizlarda hisoblangan o‘shishi (yoki kamayishi)ni taqriban ifodalaydi.

Funksiya egiluvchanligini topishga bir necha misollar qaraymiz.

3-misol. $y = 3x - 6$ funksiya egiluvchanligini hisoblang.

Yechish Egiluvchanlik ta’rifiga asosan:

$$E_x(y) = \frac{x}{y} \cdot \frac{dy}{dx} = \frac{x}{3x - 6} \cdot 3 = \frac{3x}{3x - 6} = \frac{x}{x - 2}.$$

Masalan, $x = 10$ bo‘lsa, funksiya egiluvchanligi

$$\frac{10}{10 - 2} = \frac{5}{4}$$

bo‘ladi, ya’ni x 1% oshganda, y $\frac{5}{4}$ % ga oshadi.

4-misol. $y = 1 + 6x^2 - 4x^3$ funksiya egiluvchanligini hisoblang.

Yechish. Ta'rifga asosan:

$$E_x(y) = \frac{x}{1 + 6x^2 - 4x^3} (12x - 12x^2) = \frac{12x^2 - 12x^3}{1 + 6x^2 - 4x^3}$$

$$\frac{(12 - 12)}{7} = 0.$$

Masalan, $x = 1$ bo'lganda, Bu argument 1% ga ya'ni 1 dan 1,01 ga oshganda, funksiya qiymati taqriban o'zgarmaydi.

Endi funksiya egiluvchanligini hisoblashda qo'llaniladigan ayrim qoidalarni eslatamiz.

1-Teorema. Ikkita funksiya ko'patmasining egiluvchanligi shu funksiyalar egiluvchanliklari yig'indisiga teng.

Isbot. Ikkita funksiya ko'paytmasining hosilasi formulasiga asosan.

$$E_x(u \cdot v) = \frac{x}{uv} (u \cdot v)' = \frac{x}{uv} (u'v + uv') =$$

$$= \frac{x}{u} u' + \frac{x}{v} v' = E_x(u) + E_x(v), \text{ ya'ni } E_x(u \cdot v) = E_x(u) + E_x(v). \quad (3)$$

Bu teoremaning isbotidir.

5-misol. $y = x^2 \cdot e^{2x}$ funksiya egiluvchanligini hisoblang.

Yechish. $u = x^2$, $v = e^{2x}$ ni olish mumkin. Demak, (3) formulaga asosan:

$$E_x(y) = \frac{x}{x^2} (x^2)' + \frac{x}{e^{2x}} (e^{2x})' = 2 + 2x, E_x = (y) = 2(1 + x)$$

bo'ladi.

2-Teorema. Ikkita funksiya nisbatining egiluvchanligi bo'linuvchi va bo'luvchi egiluvchanliklarining ayirmasiga teng, ya'ni

$$E_x\left(\frac{u}{v}\right) = E_x(u) - E_x(v) \quad (4)$$

bo'ladi.

6-misol. $y = \frac{x^3 + 5}{e^{3x}}$ funksiya egiluvchanligini hisoblang.

Yechish. $u = x^3 + 5$, $v = e^{3x}$ ekanligini hisobga olib (4) formulaga asosan:

$$E_x(y) = E_x(x^3 + 5) - E_x(e^{3x}) = \frac{x}{x^3 + 5} \cdot 3x^2 - \frac{x}{e^{3x}} \cdot 3e^{3x} = \frac{3x^3}{x^3 + 5} - 3x, \text{ ya'ni}$$

$$E_x(y) = \frac{3x^3}{x^3 + 5} - 3x$$

bo'ladi.

Zamonaviy o'qituvchining muammolardan biri - muammolarni aniqlash va aniq misollar bilan fanlararo aloqalarni talabalarga tushuntirish. Bu sifat ta'lim tizimini barpo etishning juda muhim shartidir. Chunki ilm murakkabligi amaliy muammolarni hal qilish uchun qo'llash samaradorligi bilan bevosita bog'liq.

Foydalanilgan adabiyotlar

1. Расулов Т.Х., Расулов Х.Р. Ўзгариши чегараланган функциялар бўлимини ўқитишга доир методик тавсиялар // Scientific progress. (2021) 2:1, 559-567 б.
2. Умарова У.У. Роль современных интерактивных методов в изучении темы «Множества и операции над ними» // Вестник науки и образования. 94:16 (2020), часть 2, с. 21-24.
3. Umarova U.U., Sharipova M.Sh. "Bul funksiyalari" bobini o'qitishda "6x6x6" va "charxpalak" metodi // Scientific progress. (2021) 2:1, 786-793 б.
4. Шарипова Р.Т., Умарова У.У., Шарипова М.Ш. Использование методов «мозговой штурм» и «case study» при изучении темы «условная вероятность, независимость событий» // Scientific progress. (2021) 2:1, с. 982-988.
5. Хайитова Х.Г. Использование эвристического метода при объяснении темы «Непрерывные линейные операторы» по предмету «Функциональный анализ» // Вестник науки и образования. 94:16 (2020), часть 2, С. 25-28.
6. Курбонов Г.Г. Информационные технологии в преподавании аналитической геометрии // Проблемы педагогики № 53:2 (2021), с. 20-23.
7. Курбонов Г.Г. Интерактивные методы обучения аналитической геометрии: метод case study // Наука, техника и образование, 72:8 (2020), с. 44-47.
8. Курбонов Г.Г. Преимущества компьютерный образовательный технологий в обучении теме скалярного произведения векторов // Вестник науки и образования. 94:16 (2020), часть 2, С. 26-33.
9. Бахронов Б.И. Функциянинг узлуксизлиги ва текис узлуксизлиги мавзусини ўқитишга доир баъзи методик тавсиялар // Scientific progress. (2021) 2:1, 1355-1363 б.
10. Бобоева М.Н. "Номанфий бутун сонлар тўплами" мавзусини ўқитишда айрим интерфаол методлардан фойдаланиш // Scientific progress. (2021) 2:1, 53-60 б.
11. Boboyeva M.N., Parmonov H.F. Arkfunksiyalar qatnashgan tenglama va tengsizliklar hamda ularni yechish usullari // Scientific progress. (2021) 2:1, 1724-1733 б.

12. Тошева Н.А. Использование метода мозгового штурма на уроке комплексного анализа и его преимущества // Проблемы педагогики № 2:2 (2021), с. 42-46.
13. Марданова Ф.Я. Использование научного наследия великих предков на уроках математики // Проблемы педагогики № 51:6 (2021), с. 40-42.
14. Марданова Ф.Я. Нестандартные методы обучения высшей математике // Проблемы педагогики № 53:2 (2021), с. 19-22.
15. Умиркулова Г.Х. Использование mathcad при обучении теме «квадратичные функции» // Проблемы педагогики № 51:6 (2020), с. 93-95.
16. Хайитова Х.Г., Рустамова Б.И. Метод обобщения при обучении математике в школе // Проблемы педагогики № 51:6 (2020), с. 45-47.
17. Умарова У.У. Использование педагогических технологий в дистанционном обучении moodle // Проблемы педагогики № 51:6 (2020), с. 31-34.
18. Boboeva M.N., Rasulov T.H. The method of using problematic equation in teaching theory of matrix to students // Academy. 55:4 (2020), pp. 68-71.
19. Rasulov T.H., Rashidov A.Sh. The usage of foreign experience in effective organization of teaching activities in Mathematics // International Journal of Scientific & Technology Research. 9:4 (2020), pp. 3068-3071.
20. Mardanova F.Ya., Rasulov T.H. Advantages and disadvantages of the method of working in small group in teaching higher mathematics // Academy. 55:4 (2020), pp. 65-68.
21. Расулов Т.Х. Инновационные технологии изучения темы линейные интегральные уравнения // Наука, техника и образование. 73:9 (2020), С. 74-76.
22. Бобоева М.Н., Бобокулова С.Б. Использование игровых элементов при введении первичных понятий математики // Вестник науки и образования. 99:2 (2020), часть 2, С. 85-87.
23. Бобоева М.Н., Шукурова М.Ф. Обучение теме «множества неотрицательных целых чисел» с технологией «Бумеранг» // Проблемы педагогики № 51:6 (2020), с. 81-83.
24. Рашидов А.Ш. Интерактивные методы при изучении темы Определенный интеграл и его приложения // Научные исследования (2020) 34:3, с. 21-24.
25. Akhmedov O.S. Implementing "Venn diagram method" in mathematics lessons // Наука, техника и образование. 2020. № 8 (72), с. 40-43.
26. Ахмедов О.С. Основные требования к языку учителя математики // Наука, техника и образование. 2021. № 2 (77). Часть 2, с. 74-75.
27. Ахмедов О.С. Профессия - учитель математики // Scientific progress. 2:1, с. 277-284.

28. Boboyeva M., Qutliyeva Z. Formation of elementary mathematical concepts in preschool children // J. Global Research in Math. Archives. 6:11 (2019). C. 10-12.

29. Rashidov A.Sh. Use of differentiation technology in teaching Mathematics // European Journal of Research and Reflection in Educational Sciences, 8:3 (2020), Part II, pp. 163-167.

30. Rasulov T.H., Rasulova Z.D. Organizing educational activities based on interactive methods on mathematics subject // Journal of Global Research in Mathematical Archives, 6:10, 2019. pp. 43-45.

References

1. Rasulov T.H., Rasulov X.R. Methodical recommendations for teaching the department of functions with limited variability // Scientific progress. (2021) 2: 1, 559-567 b.

2. Umarova U. U. The role of modern interactive methods in the study of the topic "Sets and operations on them" // Bulletin of Science and Education. 94:16 (2020), part 2, p. 21-24.

3. Umarova U.U., Sharipova M.Sh. "6x6x6" and "wheel" method in teaching the chapter "These functions" // Scientific progress. (2021) 2: 1, 786-793 p.

4. Sharipova RT, Umarova U.U., Sharipova M.Sh. Using the methods of "brainstorming" and "case study" in the study of the topic "conditional probability, independence of events" // Scientific progress. (2021) 2: 1, p. 982-988.

5. Khayitova Kh.G. Using the heuristic method in explaining the topic "Continuous linear operators" on the subject "Functional analysis" // Bulletin of Science and Education. 94:16 (2020), part 2, pp. 25-28.

6. Kurbonov G.G. Information technologies in teaching analytical geometry // Problems of pedagogy no. 53: 2 (2021), p. 20-23.

7. Kurbonov G.G. Interactive methods of teaching analytical geometry: a case study method // Science, technology and education, 72: 8 (2020), p. 44-47.

8. Kurbonov G.G. Advantages of computer educational technologies in teaching the topic of the scalar product of vectors // Bulletin of Science and Education. 94:16 (2020), part 2, pp. 26-33.

9. Bahronov B.I. Some methodological recommendations for teaching the topic of function continuity and plane continuity // Scientific progress. (2021) 2: 1, 1355-1363 b.

10. Boboeva M.N. Use of some interactive methods in teaching the topic "Set of non-negative integers" // Scientific progress. (2021) 2: 1, 53-60 p.

11. Boboyeva M.N., Parmonov H.F. Equations and inequalities involving functions and ways to solve them // Scientific progress. (2021) 2: 1, 1724-1733 b.

12. Tosheva N.A. Using the method of brainstorming in the lesson of complex analysis and its advantages // Problems of Pedagogy № 2: 2 (2021), p. 42-46.
13. Mardanova F.Ya. Using the scientific heritage of great ancestors in mathematics lessons // Problems of Pedagogy № 51: 6 (2021), p. 40-42.
14. Mardanova F.Ya. Non-standard methods of teaching higher mathematics // Problems of pedagogy № 53: 2 (2021), p. 19-22.
15. Umirkulova G.Kh. Using mathcad in teaching the topic "quadratic functions" // Problems of pedagogy № 51: 6 (2020), p. 93-95.
16. Khayitova Kh.G., Rustamova B.I. Generalization method in teaching mathematics at school // Problems of pedagogy № 51: 6 (2020), p. 45-47.
17. Umarova U. U. The use of pedagogical technologies in distance learning moodle // Problems of pedagogy № 51: 6 (2020), p. 31-34.
18. Boboeva M.N., Rasulov T.H. The method of using problematic equation in teaching theory of matrix to students // Academy. 55: 4 (2020), pp. 68-71.
19. Rasulov T.H., Rashidov A.Sh. The usage of foreign experience in effective organization of teaching activities in Mathematics // International Journal of Scientific & Technology Research. 9: 4 (2020), pp. 3068-3071.
20. Mardanova F. Ya., Rasulov T.H. Advantages and disadvantages of the method of working in small group in teaching higher mathematics // Academy. 55: 4 (2020), pp. 65-68.
21. Rasulov T.Kh. Innovative technologies for studying the topic linear integral equations // Science, technology and education. 73: 9 (2020), pp. 74-76.
22. Boboeva M.N., Bobokulova S.B. The use of game elements in the introduction of primary concepts of mathematics // Bulletin of Science and Education. 99: 2 (2020), part 2, pp. 85-87.
23. Boboeva M.N., Shukurova M.F. Teaching the topic "sets of non-negative integers" with the technology "Boomerang" // Problems of Pedagogy № 51: 6 (2020), p. 81-83.
24. Rashidov A.Sh. Interactive methods in studying the topic The definite integral and its applications // Scientific research (2020) 34: 3, p. 21-24.
25. Akhmedov O.S. Implementing "Venn diagram method" in mathematics lessons // Science, technology and education. 2020. No. 8 (72), p. 40-43.
26. O.S. Akhmedov. Basic requirements for the language of a teacher of mathematics // Science, technology and education. 2021. No. 2 (77). Part 2, p. 74-75.
27. Akhmedov O.S. Profession - a teacher of mathematics // Scientific progress. 2: 1, p. 277-284.
28. Boboyeva M., Qutliyeva Z. Formation of elementary mathematical concepts in preschool children // J. Global Research in Math. Archives. 6:11 (2019). S. 10-12.

29. Rashidov A.Sh. Use of differentiation technology in teaching Mathematics // European Journal of Research and Reflection in Educational Sciences, 8: 3 (2020), Part II, pp. 163-167.

30. Rasulov T.H., Rasulova Z.D. Organizing educational activities based on interactive methods on mathematics subject // Journal of Global Research in Mathematical Archives, 6:10, 2019.p. 43-45.