Faol ta’lim orqali o‘quvchilarning darslardagi faolligini oshirish

Olimjon Solijon o‘g‘li Melikuziyev
Denov pedagogika va tadbirkorlik instituti

Annotatsiya: O‘quvchilarning dars jarayoniga jalb etilishi akademik muvaffaqiyat, kontseptual tushunish va ilmiy sohalarga uzoq muddatli qiziqishning hal qiluvchi omilidir. An’anaviy ma’ruzaga asoslangan yondashuvlar ko‘pincha o‘quvchilarni passiv va materialdan uzilib qoldiradigan chuqur ishtirokni rivojlantirmaydi. Faol ta’lim ishtirok etish, izlanish, hamkorlik va amaliy tajribaga urg‘u beruvchi transformativ pedagogik strategiya sifatida paydo bo‘ldi. Konstruktivistik va ijtimoiy konstruktivistik nazariyalarga asoslangan faol o‘rganish o‘quvchilarni mazmun, tengdoshlar va o‘qituvchilar bilan mazmunli o‘zaro ta’sir qilish orqali bilimlarni qurishga undaydi. Ushbu maqola fan ta’limida faol o‘rganishni qo‘llab-quvvatlovchi nazariy asoslar, amaliy qo‘llash va empirik dalillarni o‘rganadi. Bu tanqidiy fikrlash, muammolarni hal qilish, hamkorlik va texnologik savodxonlikni oshirish uchun faol o‘rganishning afzalliklarini ta’kidlaydi. Faol ta’lim muhitiga o‘tish bilan bog‘liq muammolar, jumladan, o‘quvchilarning moslashuvi va sinfni boshqarish ham ko‘rib chiqiladi. Bundan tashqari, shakllantirish va loyihaga asoslangan baholash usullariga e’tibor qaratib, hamkorlikni mustahkamlashda baholashning roli muhokama qilinadi. Topilmalar shuni ko‘rsatadiki, faol o‘rganish nafaqat bevosita faollikni oshiradi, balki ilmiy qiziqish, chidamlilik va umrbod ta’lim ko‘nikmalarini rivojlantiradi. Faol ta’lim strategiyalarini fan kabinetlariga integratsiya qilish ta’lim tajribasini o‘zgartirishi, o‘quvchilarni o‘quv yutuqlari va kelajakdagi ilmiy izlanishlari uchun zarur bo‘lgan bilim, ko‘nikma va motivatsiya bilan qurollantirishi mumkin.

Kalit so‘zlar: o‘quvchilarning faolligi, faol ta’lim, fan ta’limi, so‘rovga asoslangan ta’lim, tanqidiy fikrlash, hamkorlikda o‘rganish, ta’lim texnologiyasi

Enhancing Student Engagement in Science Classrooms Through Active Learning

Olimjon Solijon oglu Melikuziyev
Denov Institute of Pedagogy and Entrepreneurship

Abstract: Student engagement in science classrooms is a critical determinant of academic success, conceptual understanding, and long-term interest in scientific fields. Traditional lecture-based approaches often fail to foster deep engagement, leaving

learners passive and disconnected from the material. Active learning has emerged as a transformative pedagogical strategy that emphasizes participation, inquiry, collaboration, and hands-on experience. Grounded in constructivist and social constructivist theories, active learning encourages students to construct knowledge through meaningful interactions with content, peers, and instructors. This article explores the theoretical foundations, practical implementations, and empirical evidence supporting active learning in science education. It highlights the benefits of active learning for enhancing critical thinking, problem-solving, collaboration, and technological literacy. Challenges associated with transitioning to active learning environments, including student adaptation and classroom management, are also examined. Furthermore, the role of assessment in reinforcing engagement is discussed, with emphasis on formative and project-based evaluation methods. The findings suggest that active learning not only increases immediate engagement but also fosters scientific curiosity, resilience, and lifelong learning skills. Integrating active learning strategies into science classrooms can transform the educational experience, equipping students with the knowledge, skills, and motivation necessary for academic achievement and future scientific endeavors.

Keywords: Student engagement, Active learning, Science education, Inquiry-based learning, Critical thinking, Collaborative learning, Educational technology

Zamonaviy ta’limda o‘quvchilarning fan kabinetlarida faolligini saqlab qolish muammosi tobora muhim ahamiyat kasb etmoqda. Ko‘pincha ma’ruzalar va eslab qolishga tayanadigan an’anaviy pedagogik yondashuvlar chuqur tushunish va ilmiy fanlarga doimiy qiziqishni rivojlantirishda cheklovlarni ko‘rsatdi. O‘quvchilar ko‘pincha fanni mavhum va o‘z tajribalaridan uzilgan deb qabul qiladilar, bu esa o‘z hayotiy tajribalaridan ajralib turishi va motivatsiyaning pasayishiga olib kelishi mumkin. Faol o‘rganish bu qiyinchiliklarga qarshi turishning muhim strategiyasi sifatida paydo bo‘ldi va o‘quvchilar ishtiroki, izlanishlari va hamkorliklarini ta’kidlaydigan ta’lim paradigmasini taklif qildi. Faol ta’lim orqali o‘quvchilar o‘quv jarayonida ma’lumotni passiv oluvchilardan dinamik hissa qo‘shuvchilarga o‘tishadi va shu bilan ilmiy tushunchalarni tushunish va saqlashni kuchaytiradilar.

Tabiatshunoslik ta’limida faol o‘rganish pedagogik usullarning keng doirasini o‘z ichiga oladi, biroq uning asosiy tamoyili o‘quvchilarga yo‘naltirilgan faollik atrofida aylanadi. An’anaviy ma’ruzaga asoslangan o‘qitishdan farqli o‘laroq , faol o‘rganish o‘quvchilarni material, ularning tengdoshlari va o‘qituvchilari bilan mazmunli tarzda o‘zaro munosabatda bo‘lishga undaydi. Ushbu yondashuv o‘rganishda kognitiv va ijtimoiy ishtirokning muhimligini ta’kidlaydigan ta’lim nazariyasiga asoslanadi. Konstruktivistik nazariya, masalan, o‘quvchilar bilimlarni tajriba va mulohazalar orqali qurishlarini ta’kidlaydi. O‘quvchilar muammoni hal qilish, tajriba o‘tkazish yoki

hamkorlikda muhokama qilishda faol ishtirok etganlarida, ular yangi ma'lumotlarni oldingi bilimlar bilan birlashtiradi, bu esa yanada chuqurroq va mustahkam tushunishga olib keladi. Bundan tashqari, ijtimoiy konstruktivizm hamkorlikning rolini ta'kidlab, tengdoshlar bilan o'zaro munosabat tanqidiy fikrlashni rag'batlantirishi va istiqbollarni kengaytirishi mumkinligini ko'rsatadi. Fan ta'limi kontekstida ushbu nazariy asoslar faol ta'lim metodologiyalarini qabul qilish uchun ishonchli asoslar beradi.

Empirik tadqiqotlar faol o'rganishning o'quvchilarning fan kabinetlarida faolligiga ijobiy ta'sirini izchillik bilan ko'rsatdi. Tadqiqotlar shuni ko'rsatadiki, hamkorlikda muammolarni hal qilish, so'rovga asoslangan tadqiqotlar va amaliy tajribalar kabi faol o'rganish usullarini o'z ichiga olgan sinflar o'quvchilarning ishtiroki va ishtiyoqining yuqori darajasini ko'rsatadi. Ishtirok etish xulq-atvor ishtiroki bilan cheklanmaydi; u hissiy va kognitiv o'lchovlarni ham o'z ichiga oladi. O'quv faoliyatiga hissiy jihatdan investitsiya qilingan o'quvchilar qiziqish, qat'iyat va ichki motivatsiyani namoyon qiladilar, kognitiv faollik esa o'quvchilarning ilmiy tushunchalarni faol qayta ishlash va qo'llash darajasini aks ettiradi. Faol o'rganish strategiyalari tadqiqot va tanqidiy izlanishni rag'batlantiradigan muhitlarni yaratish orqali nazariy tushunish va amaliy qo'llash o'rtasidagi tafovutni bartaraf etib, yaxlit ishtirokni rivojlantiradi.

Fan ta'limida faol o'rganishning asosiy afzalliklaridan biri tanqidiy fikrlash ko'nikmalarini rivojlantirishdir. Fan o'z tabiatiga ko'ra analitik fikrlashni, gipotezalarni tekshirishni va dalillarga asoslangan qarorlar qabul qilishni talab qiladi. An'anaviy ma'ruzalar faktik ma'lumotlarni uzatishda samarali bo'lsada, ko'pincha bu yuqori darajadagi kognitiv qobiliyatlarni rivojlantirmaydi. Faol ta'lim muammoni yechish va izlanishga urg'u berish orqali o'quvchilarni dalillarni baholash, bashorat qilish va xulosalar chiqarishga undaydi. Masalan, o'quvchilarga gipotezani tekshirish uchun eksperimentlar tuzish topshirilganda, ular o'zgaruvchilar, nazorat va metodologiyani ko'rib chiqishlari, ilmiy savodxonlikni mustahkamlovchi murakkab mulohazalar bilan shug'ullanishlari kerak. Ushbu yondashuv nafaqat kontseptual tushunishni kuchaytiradi, balki o'quvchilarni umrbod ta'lim olish va ilmiy sohalarda professional muvaffaqiyat uchun zarur bo'lgan ko'nikmalar bilan jihozlaydi.

Faol ta'lim, shuningdek, zamonaviy fan ta'limida tobora muhim ahamiyatga ega bo'lgan o'quvchilarning hamkorlik qobiliyatlarini mustahkamlaydi. Ilmiy izlanish kamdan-kam hollarda alohida ish bo'ladi; u jamoaviy ish, muloqot va turli nuqtai nazarlarni birlashtirish qobiliyatini o'z ichiga oladi. Guruhga asoslangan loyihalar, tengdoshlar bilan muhokamalar va hamkorlikda muammolarni hal qilish mashqlarini o'z ichiga olgan holda, o'qituvchilar o'quvchilarga shaxslararo va hamkorlikdagi vakolatlarni rivojlantirish uchun imkoniyatlar yaratadi. Ushbu tajribalar o'quvchilarni fanlararo loyihalar va tadqiqot guruhlarini boshqarishga tayyorlaydigan professional

sharoitlarda ilmiy ishning hamkorlik xarakterini aks ettiradi. Bundan tashqari, hamkorlikda faol o‘rganish sinfda hamjamiyat hissini uyg‘otadi, bu izolyatsiya tuyg‘usini yumshatadi va motivatsiyani oshiradi. O‘quvchilar o‘z tengdoshlari bilan bog‘langanligini his qilsalar va ularning hissalarini mazmunli deb bilishsa, ularning o‘quv jarayoniga aloqadorligi kuchayadi.

Texnologiyalar integratsiyasi fan kabinetlarida faol o‘qitish imkoniyatlarini yanada kengaytirdi. Raqamli vositalar, simulyatsiyalar va interfaol platformalar o‘quvchilarga bevosita kuzatish qiyin bo‘lishi mumkin bo‘lgan murakkab ilmiy hodisalar bilan shug‘ullanish imkonini beradi. Masalan, virtual laboratoriyalar o‘quvchilarga nazorat ostida, simulyatsiya qilingan muhitda eksperimentlar o‘tkazish imkonini beradi, bu esa darhol qayta aloqa va takroriy o‘rganish imkoniyatini beradi. Xuddi shunday, ma’lumotlarni vizualizatsiya qilish dasturi o‘quvchilarga ilmiy ma’lumotlarni manipulyatsiya qilish va tahlil qilish imkonini beradi, interaktiv tadqiqotlar orqali chuqurroq tushunishga yordam beradi. Texnologiyalar yordamida faol o‘rganish nafaqat kontseptual tushunishni qo‘llab-quvvatlaydi, balki zamonaviy ilmiy landshaftda ajralmas bo‘lgan raqamli savodxonlik ko‘nikmalarini rivojlantiradi. Texnologiyadan foydalangan holda, o‘qituvchilar faollikni qo‘llab-quvvatlaydigan va izlanish madaniyatini rivojlantiradigan dinamik, immersiv o‘rganish tajribasini yaratishi mumkin.

Aniq afzalliklariga qaramay, fan sinflarida faol o‘rganishni amalga oshirish qiyinchiliklardan holi emas. Umumiy to‘siqlardan biri passiv ta’lim usullariga o‘rganib qolgan o‘quvchilarning qarshiligidir. Faol ta’lim muhitiga o‘tish o‘quvchilardan o‘z ta’limlari uchun mas’uliyatni o‘z zimmalariga olishni talab qiladi, bu esa dastlab noqulaylik yoki noaniqlikni keltirib chiqarishi mumkin. Shuning uchun o‘qituvchilar ushbu o‘tishni osonlashtirish uchun yo‘l-yo‘riq, iskala va dalda berishlari kerak. Sinfni boshqarish yana bir e’tibordir, chunki faol o‘quv faoliyati an’anaviy ma’ruzalarga qaraganda ancha dinamik va oldindan aytib bo‘lmaydigan bo‘lishi mumkin. O‘qituvchilar tuzilmani moslashuvchanlik bilan muvozanatlashi kerak, bu esa o‘quvchilarga izlanish va tajriba o‘tkazish imkonini beradigan o‘quv maqsadlariga erishishni ta’minlashi kerak. Kasbiy rivojlanish va institutsional qo‘llab-quvvatlash o‘qituvchilarni faol o‘rganishni samarali amalga oshirish uchun zarur bo‘lgan ko‘nikmalar va ishonch bilan jihozlash uchun juda muhimdir.

Baholash amaliyoti, shuningdek, faol o‘rganish orqali o‘quvchilarning faolligini oshirishda muhim rol o‘ynaydi. Asosan yodlash va eslab qolishga qaratilgan an’anaviy baholashlar faol ishtirok etish orqali erishilgan o‘rganish chuqurligini to‘liq qamrab olmasligi mumkin. Formativ baholash, loyiha asosidagi baholash va aks ettiruvchi jurnallar kabi muqobil baholash usullari o‘quvchilarning o‘rganishini yanada to‘liqroq tushunish imkonini beradi. Bu yondashuvlar o‘quvchilarning o‘quv jarayonidagi faol ishtirokini kuchaytirib, uzluksiz fikr-mulohaza, o‘z-o‘zini baholash va mulohaza

yuritishni rag‘batlantiradi. Baholash strategiyalarini faol o‘rganish tamoyillari bilan uyg‘unlashtirib, o‘qituvchilar o‘quvchilarni rag‘batlantiradigan hamda tanqidiy fikrlash, ijodkorlik va hamkorlikni mukofotlaydigan yaxlit ta’lim tajribasini yaratishi mumkin.

Faol ta’limning ta’siri alohida sinflardan tashqarida ham kengroq ta’lim natijalariga va ilmiy savodxonlikka ta’sir qiladi. Faol o‘rganish orqali faollikni boshdan kechirgan o‘quvchilar fan, texnologiya, muhandislik va matematika (STEM) sohalarida keyingi o‘qishni davom ettirish ehtimoli ko‘proq. Ular murakkab ijtimoiy muammolarni hal qilish uchun zarur bo‘lgan chidamlilik, muammolarni hal qilish qobiliyatlari va qiziqishga asoslangan fikrlashni rivojlantiradilar. Bundan tashqari, faol ta’lim umrbod ta’lim madaniyatini rivojlantiradi, o‘quvchilarni mustaqil ravishda bilim izlashga, samarali hamkorlik qilishga va rivojlanayotgan ilmiy landshaftlarga moslashishga undaydi. Shu ma’noda, faol o‘rganish nafaqat sinfning bevosita ishtirokini kuchaytiradi, balki qobiliyatli, bilimli va g‘ayratli ilmiy fuqarolarning rivojlanishiga ham hissa qo‘shadi.

Xulosa qilib aytish mumkinki, fan kabinetlarida o‘quvchilarning faolligini oshirish passiv, ma’ruza asosidagi ta’limdan faol, o‘quvchilarga yo‘naltirilgan pedagogikaga ataylab o‘tishni talab qiladi. Konstruktivistik nazariyalarga asoslangan va empirik dalillar bilan qo‘llab-quvvatlangan faol o‘rganish kognitiv, hissiy va ijtimoiy faollikni rivojlantirish uchun kuchli asos yaratadi. Tanqidiy fikrlashni, hamkorlikni va izlanishni rag‘batlantirish orqali faol o‘rganish ilmiy izlanishning ichki tabiatiga mos keladi, o‘quvchilarni akademik muvaffaqiyatga va kasbiy kompetentsiyaga tayyorlaydi. Texnologiyaning integratsiyasi, o‘ylangan baholash amaliyoti va qo‘llab-quvvatlovchi ta’lim strategiyalari uning samaradorligini yanada oshiradi, o‘quvchilarni o‘ziga jalb qiladigan, qiyinlashtiradigan va ilhomlantiradigan dinamik o‘quv muhitini yaratadi. Oxir oqibat, fan ta’limida faol o‘rganishni qo‘llash nafaqat o‘qitish strategiyasini, balki qiziquvchanlik, chidamlilik va kashfiyotga bo‘lgan ishtiyoqni rivojlantiruvchi transformativ yondashuvdir. Ta’lim muassasalari o‘quvchilarni o‘ziga jalb etadigan va ularga kuch beradigan usullarni izlashda davom etar ekan, faol ta’lim fan ta’limining kelajagini shakllantirishning asosi bo‘lib, o‘quvchilar nafaqat bilimli, balki g‘ayratli, qobiliyatli va ilmiy korxonaga mazmunli hissa qo‘shishga tayyor bo‘lishlarini ta’minlaydi.

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