

METHODOLOGY FOR IMPROVING THE EFFICIENCY OF STUDENTS LEARNING
BIOCHEMISTRY.

S.A. Tokhtayev

Tokhtayev is the son of Sardor Anvarjon

*Bukhara State Medical Institute, assistant of the Department of Biochemistry,**Bukhara city, Bukhara region, Republic of Uzbekistan**e-mail: toxtayev.s@mail.ru*

Abstract. *This article allows students to enrich their knowledge level and learn the science without difficulties when studying the subject of biochemistry. Analysis of interdisciplinary integration between biochemistry and other natural sciences is given. Special schemes are used in these interactive teaching methods. BDTI was introduced in the Department of Biochemistry.*

Key words: *modification, animation, competence, interdisciplinary integration, module, PCR technologies, brainstorming .*

Абстрактный. *Данная статья позволяет студентам пополнить свой уровень знаний и без затруднений освоить науку при изучении предмета биохимия. Дан анализ междисциплинарной интеграции биохимии с другими естественными науками. В этих интерактивных методах обучения используются специальные схемы. БДТИ был внедрен на кафедре биохимии.*

Ключевые слова: *модификация, анимация, компетентность, междисциплинарная интеграция, модуль, ПЦР-технологии, мозговой штурм.*

Annotatsiya. *Ushbu maqola biokimyo fanini mavzular kesimida o'rganishda talabalarni bilim saviyasini boyitish va fanni qiyinchiliklarsiz o'rganish imkonini beradi. Biokimyo va boshqa tabiiy fanlar o'rtasidagi fanlararo integratsiya tahlili berilgan. Ushbu interfaol o'qitish usullarida maxsus sxemalar qo'llanilladi. BDTI biokimyo kafedrasida joriy etilgan.*

Kalit so'zlar: *modifikatsiya , animatsiya, kompetentsiya, fanlararo integratsiya, modul, PCR texnologiyalari , aqliy hujum .*

The number of methodological systems that ensure the formation of students' interest in various areas of teaching biochemistry is very few. no field. Modern biological chemistry is located at the intersection of many natural sciences: organic chemistry, physical chemistry, physiology, immunology, microbiology, etc. are among them. Biological chemistry studies the structure of important biological substances in relation to the functions they perform, and changes in these compounds at the molecular, cellular, tissue, and organismal levels. Biochemistry can be considered the main basis of

all natural sciences, because it studies the laws of structure and metabolism common to all organisms. At the same time, biological chemistry forms the theoretical basis of medicine, agriculture, nanobiotechnology, genetic engineering and a number of industries. In the last decade, the biochemical approach has become important in solving many problems of human and animal physiology, plant physiology, immunology, cytology and histology. Biochemical analysis methods, in particular, types of chromatography and electrophoresis, are the instrumental basis of scientific research and are widely used in natural environment, food quality control, and laboratory diagnostics. Therefore, summarizing the results of the survey from the Bukhara State Medical Institute, we note that the selected modules have approximately the same value for studying biochemistry subjects or their separate departments.

Thus, the module "Nucleic Acids and Protein Metabolism" is a theoretical basis for the study of molecular biology, genetics, toxicology, cell and tissue evolution; The "Carbohydrate Metabolism" module is more closely related to plant physiology than others; the lipid metabolism module is interconnected with relevant departments of cytology, biophysics, human and animal physiology, in particular, it takes into account the structure of membranes, mechanisms of membrane transport, technologies for creating membranes with the desired properties. The contents of the modules "Proteins", "Enzymes" and "Nucleic acids", interrelated with other fundamental sciences, are understood on the basis of modern physico-chemical methods of analysis, chromatographic, electrochemical, immunochemical, to understand the essence of metabolic processes. Chromatography, electrophoresis, measurement of enzymatic activity, PCR technologies and various modifications of a number of other methods closely related to the science of biochemistry are widely used in laboratory diagnostics, including monitoring in clinical laboratories, forensic examination, chemical laboratories, etc. is used. These are the laboratories of industrial enterprises, including the actively developing pharmaceutical cluster, research laboratories and analytical centers in the Bukhara region. Competence in the field of biochemistry, experience in the application of acquired knowledge, skills in solving practical problems, having modern biochemical analysis methods will increase the competitiveness of a future expert-biochemist in the labor market, in this field he will be able to work in the field of chemistry, pharmaceutical industry, medicine, environment. areas of protection organizations and for further study at the master's degree - allows to work in research institutes. At the same time, the process of forming the competence of students in biochemistry is associated with a number of objective difficulties and, first of all, the fact that most students are not able to work on themselves actively, rhythmically, including independently.

Therefore, the primary task of the teacher is to activate the educational activities of the students, to purposefully increase their motivation to master the subject, taking into account their personal characteristics and interests. Changing the requirements for

the organization of the educational process requires a review of the forms and methods of education. Thus, lecture training in the traditional sense is losing its importance as a coherent presentation of course content. We use problem lectures, dialogues that involve students to search for answers to the questions asked during the lecture. This increases students' interest in science, makes the process of its development emotionally colorful and personally relevant, and allows to more fully reveal the range of problems faced by modern biochemistry. Laboratory classes in biochemistry, analysis of laboratory work results play an important role in the development of students' skills. This is helped by the students' work in groups and the step-by-step complexity of the tasks they solve. In our opinion, such a system of monitoring the results of educational and cognitive activity allows the student to be the most active participant in the educational process, to develop educational motivation, self-control, for a professional, future specialist helps to form necessary skills and general cultural qualities.

LIST OF REFERENCES:

- 1.А. Н. Шамин, История биологической химии. Формирование биохимии // Москва : КомКнига, 2006. – 264 с.
2. М.М. Amonova Study of the biochemical method for wastewater purification from textile productions from dyes and suspended substances// Ra Journal of Applied Research. Volume: 08 Issue: 04.04.2022. P. 272-277.
- 3.М. В. Носков, Междисциплинарная интеграция в условиях компетентного подхода [Текст] / М. В. Носков, В. А. Шершнева // Высшее образование сегодня. – 2008. – № 9. – С. 23–25.
4. Н.Н. Матушкин, Роль междисциплинарного компонента образовательных программ, реализующих компетентностную парадигму [Текст] / Н. Н. Матушкин, И. Д. Столбова // Инновации в образовании –2010.–№ 11. С. 5–17.
- 5 . S.R. Bahadirova , PEDAGOGIKA VA PSIXOLOGIYA ASOSLARI // Toshkent - «ILM ZIYO» - 2016