

## USE OF EDUCATIONAL TRAINING IN THE PROFESSIONAL TRAINING OF FUTURE BIOLOGY TEACHERS IN THE STUDY OF HUMAN AND ANIMAL ANATOMY AND PHYSIOLOGY

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**Abstract.** *The prospective and effective area of training is the use of training in the educational process for students of natural sciences. The relevance of introducing training technologies into the educational process for the study of human and animal anatomy and physiology by future biology teachers is emphasized. The latest domestic and foreign scientific researches and publications on the use of training technologies in the educational process are analyzed. The features of the use of training in the training of future specialists in a higher educational institution are characterized. It is shown that the training technology is a collective form of organization of training, helps to carry out training taking into account individual characteristics, promotes self-realization of the future professional and the choice of an adequate pace of learning. The expediency of using the training in the training of biology teachers in the development of certain aspects of the disciplines of human anatomy and physiology, namely: reproductive health, methods of contraception, rational nutrition, hardening, healthy lifestyle, is determined. A plan of training sessions for the cycle is proposed: «Show Awareness and Prudence», their topics and goals are defined. The questionnaire survey of higher education students of the Faculty of Natural Sciences and Geography of Pavlo Tychyna Uman State Pedagogical University, which took place before and after the training sessions on the following topics, was analyzed: «Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS)», «Sexually Transmitted Infections (STIs)». The effectiveness of the training in the educational activities of future biology teachers was evaluated. We consider it promising to introduce training technologies for the training of a biologist during higher education at the university.*

**Keywords:** *training, students of higher education, biology teacher, educational process, training courses, hard skills, soft skills.*

**JEL Classification:** A23, A29, I28

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**Introduction.** The peculiarity of the current moment in Ukrainian education lies in the particularly urgent need to improve it. This is possible only if the forms, methods, and technologies of training are updated. It is well known that interactive technologies are the most effective technologies for acquiring knowledge, forming skills, developing life and professional skills, and acquiring certain competencies. That is why the introduction of various forms and methods of interactive learning based on the principles of activity, trust, interaction, equality of participants in the educational process, reliance on collective experience and mandatory feedback is an urgent requirement of the time. A promising and effective area of training is the use of training in the educational process for higher education students majoring in

biology. However, there is no holistic view of how to use training to form a competent biology teacher. Therefore, the issues related to the organization of training courses in the study of biological disciplines as a means of developing a professionally oriented specialist are of particular relevance.

**Literature review.** A number of researchers emphasize the relevance of introducing training technologies into the educational process to study biological aspects in the training of higher education applicants (Skiba, 2016: 124- 129; Tsurul, 2017: 130-140; da Silva, 2020, Guidarelli, 2015), and some scholars emphasize the expediency of lifelong learning through training (Mampane, 2017).

Training, which means «to teach, train», is simultaneously – an interesting process of learning about oneself and others; communication; an effective form of knowledge acquisition; a tool for developing skills; a form of experience expansion. During the training, informal, relaxed communication is created, which opens up many options for the group to develop and solve the problem for which it has gathered. As a rule, participants are delighted with training methods because they make the learning process not burdensome (Technologies..., 2006).

Training has a fairly wide and successful range of applications in various fields of science: psychology, sociology, pedagogy, economics, biology, medicine, etc. In general terms, training is considered as a systematically implemented program of various exercises, the main purpose of which is to increase the interest of the individual in the process of mastering certain practical skills and acquiring competencies to solve various problems, finding ways out of difficult situations, overcoming certain vital problems, etc. (Pedagogical ..., 2003).

The wide range of applications of training courses gives rise to a significant number of definitions of its concept, among which we note domestic authors.

V. Busel characterizes training as a method of influencing a personality in order to increase the effectiveness of human interaction with society (Velykyi ..., 2005).

C. Makshanov believes that training is a multifunctional method of targeted changes in the psychological phenotypes of a person, group or organization in order to harmonize professional and personal existence (Miliutina, 2004).

A. Semenova notes that "training is an organizational form of educational work that, based on the experience and knowledge of its participants, ensures the effective use of various pedagogical methods, by creating a positive emotional atmosphere in the group, and is aimed at obtaining the skills and life competencies" (Semenova, 2006).

Conducting a training session or its elements remains a non-traditional form of teaching and is quite difficult to prepare and conduct, as it requires certain skills of the teacher. In the course of its implementation, the teacher should also create conditions for multilevel communication for all participants of the class (Training ..., 2018).

H. Romanova, characterizing the features of training education of future specialists in a higher education institution, argues that the use of training education can be represented by three stages: The first stage identifies, actualizes, and stimulates specific skills (for this purpose, special exercises are conducted to get to

know each other and activate participants to develop communication skills in the group); the second stage is aimed at practicing various skills (for this purpose, participants of training sessions are observed, various practical tasks are introduced, and feedback is received from the trainer, as well as evaluating the results of the training with a mandatory discussion of the expectations of the participants that they expressed before the training); The third stage is defined as the stage of promoting and supporting the acquired skills (during this stage, conditions and opportunities are created for individual practice, self-development, self-improvement, and the formation of the necessary positive skills) (Romanova et al., 2013: 177-185).

O. Kocherha's research on the peculiarities of using training technologies in the process of forming the practical component of future teachers' professional training has shown that during the training, participants have the opportunity to practice, experiment, model the situation, check their conclusions, analyze their achievements, polish their communication skills and their own behavior. This allows them to avoid mistakes in real life, helps them to make better decisions faster and overcome difficulties in their future professional activities (Кочерга, 2014: 116-119).

There are so-called hard skills and soft skills training courses (Laker et al., 2011). Hard skills training is characterized as having a highly specialized focus. In contrast, soft skills training courses have a greater interpersonal focus (Jayaram et al., 2017).

O. Fischuk considers training to be the best method for developing highly specialized professional skills (hard skills) and interpersonal skills (soft skills) for a higher education student majoring in biology (Fischuk, 2020: 148-161).

Although training technologies are actively used to develop skills and competencies in the field of health (Antonova et al., 2016; Vashchenko, 2005; Vorontsova et al., 2012; Concept of ..., 2005; Polischuk, 2012), but the use of training in biology teacher training in the study of human anatomy and physiology remains poorly understood.

**Aims.** The aim of the article is to carry out a theoretical analysis of the peculiarities of using training in the process of training a biology teacher in the study of human anatomy and physiology.

**Methodology.** Educational and scientific-methodical literature, modern publications on the problem became the information base of the conducted research. The research used comparative-historical and logical methods, analysis and synthesis, as well as the generalization method.

**Results&Discussion.** It should be noted that the training form of work in biology teacher training remains poorly studied and not sufficiently widespread in the educational process of higher education institutions in Ukraine. The development of the content and procedure for conducting a training session requires the teacher to have skills not only in the field of specialized disciplines, but also implementation abilities in the field of pedagogy and psychology, the ability to apply non-standard approaches in the training of biology teachers.

Among the conditions for improving the professional development of biology teachers, professionals (Weilande, 2008) consider the achievement of results not

through differentiation of training, but as a process of modeling conditions, i.e. the use of new and adaptation of traditional teaching technologies to the individual and professional needs of the higher education student, active use of individual and group forms of work during professional training. In this case, the training technology is a collective form of training organization, helps to carry out training taking into account individual characteristics, promotes self-realization of the future professional and the choice of an adequate pace of learning.

Formation of biology teachers' readiness to implement training forms in their professional activities should begin when they are obtaining higher education. It is advisable to use the training for the disciplines of human anatomy and physiology when working on certain aspects of the following topics: reproductive health, contraceptive methods, rational nutrition, hardening, healthy lifestyle and future educational work.

According to the training technology, it is appropriate to organize training courses for future teachers on the prevention of HIV, AIDS, and STIs precisely because Ukraine lacks a comprehensive policy for preventing these diseases among the population.

Based on the literature reviewed, we offer the following plan for the training sessions of the cycle as one of the options: «Show awareness and prudence» aimed at preparing young people to understand that HIV, AIDS, STIs (sexually transmitted infections), and unplanned pregnancy are behavioral complications that can be prevented by developing their own responsible behavior skills; to provide young people with information about gender, sexual relations and psychophysiological changes associated with puberty; to focus the attention of participants on the physiological characteristics of puberty; to familiarize girls and boys with the ways of spreading and consequences of HIV, AIDS and STIs; to form in young people an understanding of their own responsibility for the risk of HIV and STI infection and unplanned pregnancy; to promote changes in the motivation of sexual behavior of girls and boys, increase their self-awareness in favor of reproductive health and individual protection against HIV, AIDS, and STIs; to form a tolerant attitude towards HIV-infected people among young people; to provide practical recommendations to higher education students, future biology teachers, on organizing educational work on safe behavior.

The training course will cover the following topics over the course of 12 hours: «Gender and Sexual Relations», «Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS)», Sexually Transmitted Infections (STIs)», «Risky Behavior», «Formation of Responsible Safe Behavior». Key concepts to learn: gender, sexual relations, sexuality; HIV/AIDS, ways of HIV transmission; STIs; risk levels; risky behavior, responsible behavior.

To determine the effectiveness of this form of work, we conducted a survey of the training participants (56 people in total), who are students of the Faculty of Natural Sciences and Geography of Pavlo Tychyna Uman State Pedagogical University.

The training participants were selected based on their professional specialization, as biology teachers are usually expected to conduct educational work to increase motivation for a healthy lifestyle.

The survey was conducted before and after the training sessions: «Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS)», «Sexually Transmitted Infections (STIs)».

The questions of the questionnaire were grouped into several blocks, which determined the main directions of analysis of the research material, namely age of sexual debut and the presence of systematic sexual intercourse; level, age, sources of awareness of the training participants in the concepts of HIV, AIDS, STIs; level of awareness of the appearance, manifestations, methods of infection, spread and responsibility for the spread of HIV, AIDS, STIs; predicted behavioral model in case of HIV, AIDS, STIs; assessment of the use of training in professional activities.

The results of the survey show that the average age of sexual debut (17-18 years, 65%) and regular sexual intercourse (37%) among respondents correspond to the average data in Ukraine. All training participants are familiar with the concepts of HIV, AIDS, and STIs. The average age of receiving information for them is 11-14 years (55%), while 32% of respondents were familiar with them before the age of 10, and the rest (13%) received information about HIV, AIDS, STIs after the age of 15. In our opinion, it is positive that 66% of respondents received it in the process of studying, among the rest: 4% - from parents, 5% - from doctors, 10% - from the media, the remaining 15% - do not remember; 57% of participants received it from teachers, 16% - from literature, 10% - from doctors, 17% - from other sources, which indicates a fairly high role of educational activities of schools and the media.

In terms of awareness of the emergence, manifestations, modes of infection, spread and responsibility for the spread of HIV, AIDS and STIs, the training participants show a fairly high level of awareness, but there is a clear trend towards an increase in its level after the training sessions. When analyzing the predicted behavioral model in case of HIV, AIDS, STI infection, we consider positive the respondents' awareness of the independence of the possibility of infection from any factors (gender, education, nationality, social status, etc.) and the consequences of not receiving treatment for these diseases (93% and 79%, respectively). It is encouraging that 46% and 43% of young people believe it is possible to turn to their parents and doctors in case of a problem, and 55% and 21% of respondents plan to discuss these issues with health care workers and family members, as timely treatment can be quite effective or limit the spread of the disease. Given the age of respondents and their rather limited life experience, we hope that 52% of respondents will not change their answer to the question about tolerant attitude towards people living with HIV, AIDS and STIs.

When asked to assess the use of training in their professional activities, all respondents gave highly positive answers: 86% consider this form of training to be appropriate; 95% are willing to use it in their professional activities; 88% believe that this form of work, given the accessibility of information, should be used in other areas for the comprehensive development of young people.

**Conclusions.** Thus, the use of training technology in the preparation of biology teachers in the study of human anatomy and physiology contributes not only to the intensity of learning, but also helps to create qualities that are important for the formation of a future specialist, to form new professional skills, and involves the development of creative thinking and intellectual abilities of the individual. A biology teacher should be ready to implement training technologies in their professional activities after obtaining a university degree.

**Author contributions.** The authors contributed equally.

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