How to Organize Independent Education of Future Biology Teachers in Biotechnology

Yakhshibaeva Damira Tolib qizi
Teacher of Navoi State Pedagogical Institute

A B S T R A C T

This article provides suggestions and recommendations for the organization of independent education of future biology teachers in biotechnology.

A R T I C L E I N F O

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Today, due to the improvement of the process of education and upbringing of higher education institutions, there is a need to improve the methodology of organizing future independent teaching activities of biology teachers in one of the professional disciplines – biotechnology [1, 2].

The emergence of this need is due to the new role of independent work in connection with the transition to the active paradigm of biotechnology. Independent education and independent work will become the leading form of organization of the educational process of biotechnology, and at the same time the problem of its activation will arise. In achieving qualitatively new goals of biotechnology education, the task is to increase the effectiveness of independent education of future biology teachers. An integrated pedagogical understanding of this problem leads to the need to develop effective ways to develop the independence of future biology teachers. One of the key factors influencing the success of this process is the ability of future biology teachers to know their abilities, interests, and ways of working independently. Independent education is not only a means of struggle for future biology teachers to acquire deep and solid knowledge, to form their activity and independence as personality traits, a means of developing their mental abilities. Independent learning activities are the basis for the formation of creativity in the activities of future professionals [3].

Independent study of biotechnology by future professionals, especially biology teachers, is one of the most important components of the educational process, during which the development of knowledge, skills and abilities in teaching, research, professional activity, the formation of professionally important qualities (ability to take responsibility) finding solutions, finding constructive solutions, finding ways out of different situations. The reform, it is necessary to pay special attention to the organization of independent teaching activities of future biology teachers in the field of biotechnology. This requires the improvement of methods of organizing their independent learning activities [3].

In the organization of independent educational activities of future biology teachers in the field of biotechnology, it is effective to conduct case studies, experiments in field practices and scientific laboratories. It is also advisable to assign future biology teachers the task of preparing various didactic teaching aids on the topic using computer applications and mobile applications. Based on these tasks,

future biology teachers will be able to independently search for scientific information and work with computer applications and mobile device applications.

Therefore, the structure of the stages of the organization of future educational activities of future biology teachers independent of the subject of biotechnology was developed (see Figure 1).

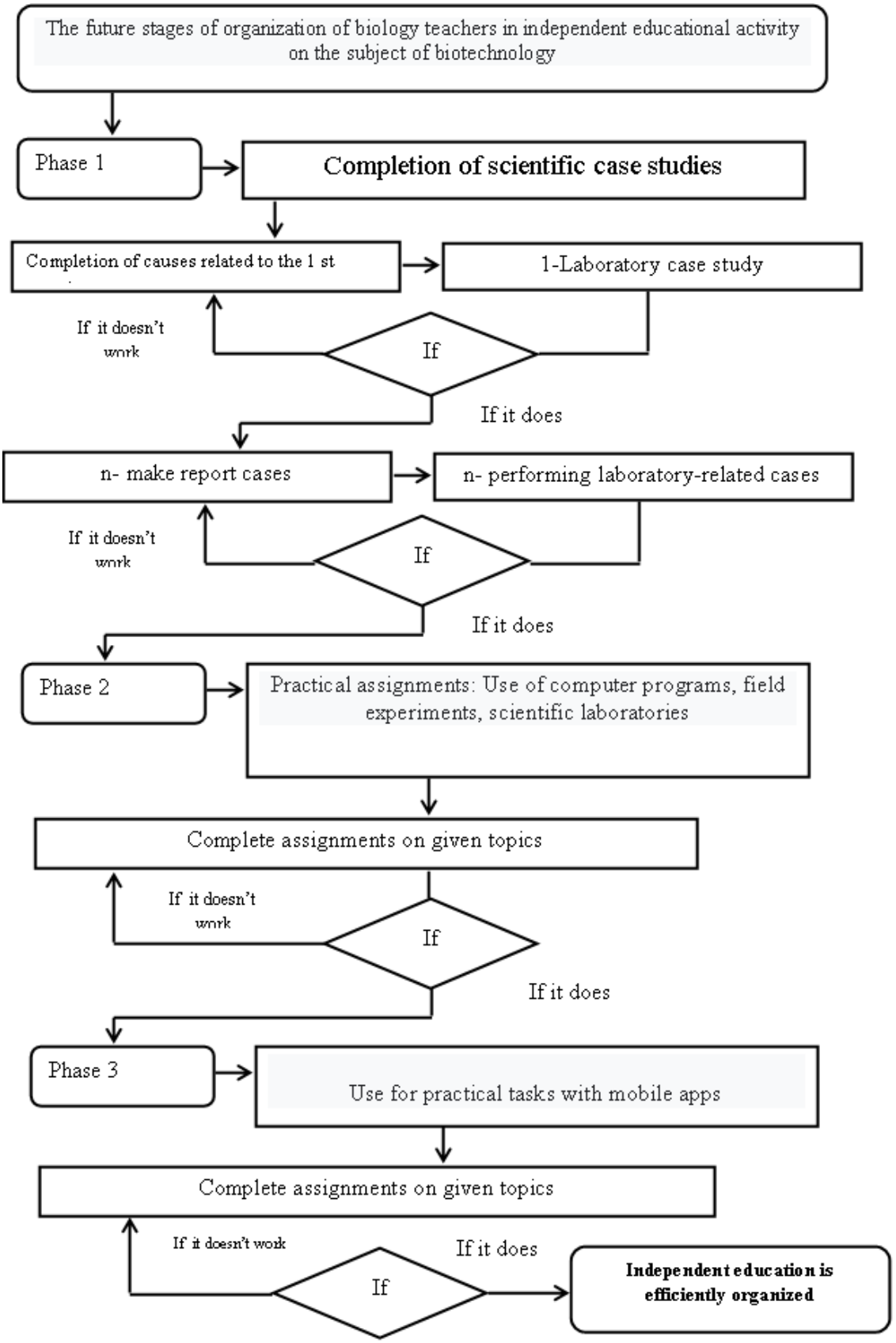

Figure 1. Stages of organizing independent education of future biology teachers in in biotechnology.

In this structure, prospective biology teachers perform case studies for each lecture and laboratory session. As a result, future biology teachers will be able to solve problems independently.

The professor should focus on five steps when assigning case studies in biotechnology to future biology teachers.

Stages	Assignments to be given
Phase 1.	Keys theme is given.
Phase 2.	Assignments on the topic will be given.
Phase 3.	Keys questions are asked.
Phase 4.	The resources used are given
Phase 5.	Recommendations are given
Phase 6.	Keys accepts assignments
Phase 7.	Highly developed cases by future biology teachers are discussed in lectures and laboratory sessions and through various online information exchange systems

Provides future biology teachers with a theoretical study of science and the latest developments in the field by completing case studies on each subject and laboratory sessions in biotechnology.

The purpose of this proposed case technology is to teach independent, logical, scientific, creative thinking through the organization of independent training of future biology teachers in biotechnology and to solve existing problems in this area in an independent, creative way. Independent education organized with the help of this technology stimulates the emotional attitude of future biology teachers to the science of biotechnology, increases their motivation and interest in independent learning. As a result, it develops the competence of future biology teachers in the field of biotechnology.

Given the nature of the science of biotechnology, it is effective to give more practical assignments in the study of this science. The practical tasks were used in order to be able to apply in practice the theoretical knowledge, rules and conclusions expressed in the classroom, in the process of finding and finding solutions to the training tasks. The use of practical assignments in the independent learning activities of future biology teachers consists in systematizing them after the completion of certain modules.

Therefore, after future biology teachers have completed case studies on the topic, the completion of practical assignments on computer technology should be given as an independent topic [3].

Teaching biotechnology using computer technology has several advantages over traditional technologies. In addition to more illustrative, visual presentation of material on the science of biotechnology with the help of computer technology, effective testing of knowledge and all other possibilities, they include various organizational forms in the work of future biology teachers, methodological techniques in teaching. Unlike traditional technical teaching aids, information technology not only serves as a pedagogical software tool for professors, but also allows future biology teachers to develop intellectual, creative abilities, independently acquire new knowledge, work with different sources of information [2].

Therefore, it is necessary to introduce the use of computer and mobile technologies in the independent education of future biology teachers in the field of biotechnology. The use of computer technology and mobile technology in the independent education of future biology teachers in the field of biotechnology is effective not only in studying the resources of existing educational e-learning resources, but also in creating various e-learning resources using computer applications and mobile applications [1].

At the same time, in the organization of independent training of future biology teachers in biotechnology, it is necessary to focus on the creation of different plant varieties and drug development in field practices and scientific laboratories, along with the implementation of practical tasks using computer applications and mobile applications. On this basis, it will be possible to develop the competencies of future biology teachers in the field of biotechnology.

In short, the use of computer applications, mobile applications, as well as field practice and scientific laboratories in the independent training of future biology teachers in the field of biotechnology is considered appropriate [2].

References

1. Nikadambaeva H.B. Methods of using computer technology in teaching the subject "Natural Geography of Uzbekistan" (on the example of higher education) // Dissertation for the degree of Candidate of Pedagogical Sciences. - Tashkent, 2012. - 223 p.
2. Dinits G.N. Self-employment as a means of professional training of students // Dissertation of the degree of candidate of pedagogical sciences. - Moscow, 2002. - 176 p.
3. Baxodirova U.B. Improving the methodology of using virtual educational technologies in the teaching of microbiology (on the example of pedagogical higher education institutions) // Dissertation for the degree of Doctor of Philosophy (PhD) in Pedagogical Sciences. - Karshi, 2020. - 156 p.