

INNOVATIVE APPROACHES TO THE DEVELOPMENT OF CRITICAL THINKING IN BIOLOGY EDUCATION

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Abstract

Brings us closer to understanding the essence of distance learning, which is one of the methods of learning based on the use of new pedagogical information and telecommunication technologies. It is theoretical and practical issues of distance learning, which is a synthetic integral and humanistic form of education, that should solve a large part of the problems facing the national education system in the context of educational reform.

Keywords: Biology education, innovative technologies, distance learning, advanced foreign experience, pedagogical innovation, medicinal plants, continuous education system.

Introduction

In today's era of globalization and rapid information exchange, the effective use of innovative technologies at all stages of the educational process remains one of the pressing issues. In particular, the introduction of new pedagogical approaches, advanced foreign experience, and modern information and communication technologies in teaching biology not only improves the quality of education, but also contributes to the formation of creative abilities, a culture of independent thinking, and practical skills of young people.

In modern conditions, the system of continuous education of the Republic of Uzbekistan is increasingly integrating into the global educational arena. In this process, the study of advanced pedagogical approaches of developed foreign countries and their adaptation to national educational practice is of particular importance. International experience shows that distance learning, modular learning, the use of interactive methods and information technologies significantly increase the effectiveness of education. This situation directly serves the main tasks facing the education system of Uzbekistan - creating an innovative environment, reforming the educational process, and improving the quality of personnel training.

The study and application of advanced foreign experience in teaching biology, on the one hand, allows for the rapid transfer of modern knowledge to students, and on the other hand, creates the possibility of combining theoretical knowledge with practical life. For example, the integration of foreign and national experience in the field of medicinal plants not only ensures the scientific validity of the educational process, but also develops students' skills in the rational use of natural resources, the formation of a healthy lifestyle, and the appreciation of national values.

Therefore, the use of innovative technologies in teaching biology, the introduction of advanced foreign experience into the national education system, the renewal of the educational process and its adaptation to the requirements of the development of society is one of the urgent tasks of today.

MAIN PART

In modern conditions, advanced pedagogical technologies and educational innovations used in the teaching practice of developed foreign countries are used in the system of continuous education of the Republic of Uzbekistan. The sphere of knowledge and the sphere of social practice develops according to the general trends and laws of world development. Therefore, the study of foreign experience in professional-pedagogical education, its scientific understanding, and the use of advanced ideas in national educational practice are especially relevant. "Taking into account the positive world experience in the field of personnel training applies to all elements of the system of continuous education and personnel training and is one of the factors of its development." At the same time, it should be remembered that education built on national ideas and traditions always meets the tasks of national development. The technical or organizational forms of such education can be diverse, sometimes having completely unimaginable manifestations. The rich foreign and national experience in the theory and practice of distance learning confirms the relevance of the research directions in general. This brings us closer to understanding the essence of distance learning, which is one of the methods of learning based on the use of new pedagogical information and telecommunication technologies. It is precisely the theoretical and practical issues of distance learning, which is a synthetic integral and humanistic form of education, that should solve a large part of the problems facing the national education system in the context of educational reform. When studying the process of formation and development of distance (modular) learning in foreign educational systems, it is necessary to pay attention to the analysis of various forms and variants of practical organization of distance learning in educational institutions, as well as the means of didactic support for distance learning. Distance learning is a set of educational services with the help of a special information educational environment, based on the means of exchanging educational information remotely. Distance learning is a set of information technologies that ensure the delivery of the main volume of studied material to teachers, interactive interaction between teachers and students in the learning process, providing students with the opportunity to work independently on the independent assimilation of the studied material, as well as assessing the acquired knowledge and skills in the learning process. At the same time, we are primarily interested in the development trends of this area of education. In general, the transition to non-traditional forms of education is accompanied by an increase in the number of professional educational institutions that train in new information technologies. One of the important tasks set before the system of continuous education introduced in our republic is the creation of an innovative environment in the educational process. Modern society has its own rapidly and deeply changing character, and such changes are clearly visible in public structures, including independent states, relations between the individual and society, demographic policy, and urbanization processes. Education, as a separate component of the global community structure, must take into account all changes taking place in society and, on this basis, change its structure and content of activity. Today, the fact that education lags behind the pace of development of society, the technologies used in the educational process do not fully meet modern requirements, is often recognized by the world community. Because education, as a function of socialization, must follow changes in society and influence its development. However, the relationship between the development of society and the education system is

complex and characterized by a high degree of dynamism. Education does not accept the influence of all active and passive changes, but influences what is happening in society. From this point of view, changes in education are not only a result, but also a specific condition for the future development of society. It is known that today, when science and technology are developing rapidly, the volume of many scientific knowledge, concepts, and ideas is sharply increasing. This, on the one hand, ensures its differentiation due to the development of new fields and branches of science and technology, and on the other hand, creates the process of integration between sciences. As is known, today all countries strive to introduce as many innovations as possible into education. To awaken interest in innovation and cultivate an individual striving for innovation, education itself must be rich in innovations, and a spirit and environment of creativity should prevail. Based on such relevance, today an independent branch of pedagogy - innovative pedagogy - is developing rapidly. The main goal of innovative education is to form in students a sense of responsibility for the future and self-confidence. In the "Club of Rome" report, a group of scientists led by J. Botkin described innovative education as an alternative to traditional, i.e., "normative" education, as the main type of knowledge acquisition. If normative education "is aimed at mastering the rules of behavior in repeated situations," then innovative education provides for the development of the ability to act together in new situations. The effectiveness of using innovative technologies in teaching medicinal plants largely depends on the teacher's thorough preparation for the lesson, otherwise it will not give the expected result. It is necessary to develop its own methodology for increasing the effectiveness of the educational process.

In particular, among the medicinal plants widely distributed in Uzbekistan, common liontail - *Leonurus cardiaca* L. and Turkestan liontail - *Leonurus turkestanicus* V. Kresz. et Kurp.; is a plant belonging to the Lamiaceae (Lamiaceae) family.

Arslonqusruq consists of a 30-40 cm long truncated aboveground part (stems, leaves, and flowers). The stem is four-sided, hollow, and colored red-purple. The leaves are dark green, hairy (the leaves of common and Turkestan liontails are hairless), the lower part of the stem is ovate and has a heart-shaped base, the middle part is palmate, cut into 5 segments, and the upper part is elongated elliptical or lanceolate, three-lobed or three-lobed, arranged opposite each other on the stem with a petiole. The flowers are arranged in a ring in the axils of the leaves of the upper part of the stem, forming a spike-like inflorescence. Calyx 5-toothed, tubular, campanulate, corolla two-lobed, pink or pinkish-purple, stamens 4, of which the upper 2 are short, ovary four-lobed, superiorly arranged



According to ICDF, product moisture should not exceed 13%, total ash 12%, 10% hydrochloric acid insoluble ash 6%, yellowed and browned leaves 7%, stem fragments 40%, stems thicker than 5 mm 3%, organic impurities 3%, and mineral impurities 1%.

Usage. Arslonquyruq medicinal preparations are used as a sedative (like valerian preparations) to treat hypertension, nervous excitability, and some heart diseases (heart neurosis, cardiosclerosis).

Product preparation. When the plant blooms, the upper part of the stem is cut 30-40 cm long with a sickle and dried in the shade.

Medicinal preparations. Infusion, tincture, liquid extract. The product is included in sedative tea compositions and the Zdrenko composition.

CONCLUSION

In conclusion, the use of innovative technologies in teaching biology and the introduction of advanced foreign experience into the national education system is one of the most important factors in increasing the effectiveness of education. Distance learning, modular learning, interactive methods, and the use of new information and communication technologies allow students to develop independent thinking, creativity, and practical skills.

By studying foreign experience and adapting their most effective approaches to national conditions, the education system of Uzbekistan is being further improved, and the knowledge and skills of the younger generation are being brought closer to world standards. At the same time, the application of innovative methods in the process of studying medicinal plants in the teaching of biology forms in students such values as the preservation of natural resources, the development of ecological culture, and adherence to a healthy lifestyle.

Consequently, the application of innovative pedagogical approaches and advanced foreign experience in updating the national education system not only modernizes the educational process in teaching biology, but also serves to educate young people as creative and socially responsible individuals striving for innovation.

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