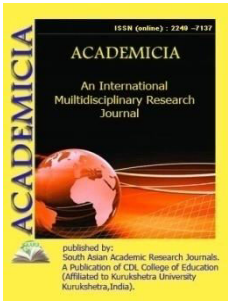
ACADEMICIA
An International Multidisciplinary Research Journal
(Double Blind Refereed & Peer Reviewed Journal)



DOI: 10.5958/2249-7137.2021.02129.7

ICT - AS A MEANS OF ACHIEVING NEW EDUCATIONAL RESULTS IN TEACHING NATURAL DISCIPLINES IN SECONDARY SCHOOLS

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ABSTRACT

The new quality of education is determined by the maturity of new educational results, and the modeling of educational systems allows us to take into account the conditions that ensure the achievement of these results. The article describes a model of the education system that ensures the modern quality of generations education is modeled in the context of students achieving new educational results with the help of information and communication technologies, management activities of teachers to create conditions for the implementation of requirements for the development of basic educational programs of general education in the conditions of functioning of the school information and educational environment.

KEYWORDS: *Education System, Modern Quality Of General Education, New Educational Results, State Educational Standards, Modeling*

INTRODUCTION

The Decree of the President of the Republic of Uzbekistan "On the strategy of action for the further development of the Republic of Uzbekistan" outlines the important tasks of developing education and science, significantly improving the quality of general secondary education, in-depth study at a high level of foreign languages, computer science and mathematics, physics, chemistry and biology.

Modern approaches to the learning process, fundamental reforms carried out today in the teaching of all academic subjects are inextricably linked with the use of modern innovations and interactive means in the educational process, the professional competence of teachers, and the intellectual potential of students.

Based on the goal and objectives of teaching biology in secondary educational institutions, it is required to create a modern informatized educational environment that provides for the targeted use, along with educational and methodological complexes, electronic resources aimed at developing basic and subject competencies in biology among students, developing skills in using information technologies and competencies for working with information.

Teaching subjects in all institutions of the continuing education system, in particular biology, is due to the fact that throughout the study of biology, materials are prepared for presentation on each topic, and the most suitable means are used in the educational process.

The general requirements for the development of educational and methodological complexes of a new generation in general subjects are reflected in the State educational standards for general secondary and secondary specialized, vocational education: “Multimedia applications to textbooks include video, audio sources, animation, tables, texts and dictionaries, covering materials on academic subjects using information and communication technologies in accordance with state educational standards and curricula, contributing to the effective assimilation of the content of academic disciplines and the development of self-education skills, helping to control knowledge and consolidate it, enriching the main content of the academic subject. " The above emphasizes the need to use electronic educational resources in all general education subjects.

Visual aids that serve to increase the effectiveness of teaching scientific disciplines are created on the basis of specific practical programs. Teachers are required to prepare such software and master the competencies of their implementation; in this matter, there is a need to involve programmers directly. In many cases, electronic means are created that combine scientific sources on an integration basis in two scientific disciplines. If each student is able to independently use a computer, then the opportunities to introduce him to the world of inventions and research are expanding. Modern education is mainly based on teaching programs, visual presentation techniques, computational operations using a computer and mobile means. In any study, it is impossible to do without electronic educational resources, electronic means and technologies for their use, therefore, an informatized learning environment is considered as an effective scientific and practical tool.

The use of high-quality electronic means and the correct connection to the educational process create optimal conditions for students to accept the necessary information, process it, master basic and subject competencies, control them, develop creative abilities, introduce additions and changes in the educational process, and continuously check the results of education. In addition, opportunities are created for diagnosing and predicting student activities, developing recommendations for designing future lessons, determining the order of educational and cognitive activities of students aimed at consolidating certain information.

This article reflects the issues of using electronic educational resources in biology lessons, existing electronic educational tools in general education schools, organizing the activities of a biology teacher in an informatized educational environment, problems of computerization of the science of biology, information obtained through answers to the questionnaire, conclusions on their analysis ...

Efficiency in biology lessons in most cases is achieved through adherence to didactic laws and the purposeful introduction of scientifically grounded forms, methods and techniques into the educational process. Acquaintance of students with the world of animals, their way of life, reproduction and development occurs through obtaining scientific information from a textbook and teaching aids.

The activation of the educational process is implemented on the basis of innovative approaches in the education system, through the use of modern technologies and programmed teaching aids, tests and other non-traditional teaching aids. Electronic learning tools also help to increase student engagement in many academic disciplines.

The use of electronic means in biology lessons is associated with new methods of their implementation. The use of electronic educational resources in biology is associated with the fulfillment of certain conditions:

clarity and variety of information presented (color illustrations, audio-video recordings, animation and other types);

implementation of feedback (a system of tests to determine the degree of assimilation, ensuring quick control);

self-control skills training with the aim of active and accelerated assimilation of educational materials;

constant "maintenance" of teaching aids and enrichment of new information, that is, the purpose of electronic teaching aids is to synthesize the main educational material with additional new information with the prospect of its possible use in the future.

The use of electronic educational resources in teaching biology also provides a solution to educational problems. With the help of electronic educational resources, the effectiveness of assimilation of educational material in biology, the development and consolidation of vital skills and abilities is achieved:

1) the clarity and accessibility of the presentation of the most difficult topics and concepts is ensured, for example, familiarization with the external and internal processes occurring in the body of animals, it becomes possible to visually observe and track them (through the monitor); 2) specific methods of studying the structure and location of organs in animal organisms are organized; 3) the use of CD and DVD consoles with the display of short popular science films directly related to the habitat of animals, helps to form students' notions about the lifestyle of animals, their distribution area, animal species, interaction and relationship with nature; 4) the integration of electronic resources into the educational process contributes to the development of skills for independent acquisition of knowledge.

On the basis of the research results, a didactic model of the effective use of electronic educational resources and its implementation in the educational process was created.

The level of development of knowledge and skills of students within the framework of the studied topic depends on how the quality and quantity of visual aids corresponds to the requirements and objectives of teaching biology at a particular stage. Thanks to electronic

resources, it is possible to present a color image of animals, their external and internal structure, functioning systems, a variety of species of the animal world, and more.

The prepared electronic educational resources were introduced into the educational process in biology in 7 grades of secondary schools. Particular attention was paid to the choice of topics in accordance with the SES, the program and the textbook, the use of resources was carried out taking into account the competence-based approach and focusing on international standards in assessing the quality of education. On the basis of the developed didactic model, a methodological system was created, aimed at increasing the efficiency of using electronic educational resources in biology.

When choosing the elements of the didactic system used in teaching technology, it is necessary to take into account the nature and orientation of the educational and cognitive activity of students. Practice shows that, as a rule, 7-8 minutes of a lesson is devoted to the theoretical part, followed by a discussion, work in small groups is organized in order to consolidate knowledge. In the first 7-8 minutes, the highest assimilation efficiency is observed, then the motivation for cognition weakens (over the next 15 minutes). It becomes necessary to keep the attention of students as long as possible.

It was noted above that the reasonable quality and quantity of visualization involved will help maintain the attention and cognitive activity of students at the level necessary for effective assimilation. These can be drawings of animals in color, diagrams of their external and internal structure, images of functioning systems, habitats and other visual materials.

Large sections of zoology were selected for the study: Protozoa, Mollusks, Worms, Amphibians, Reptiles, Mammals (by class) and electronic resources prepared in the form of animation with a dynamic effect in the Makromedia Flish program.

The main difference between this program and the main ones is that it includes a complex of materials in multimedia format on all topics of the section - about morphological and physiological processes in the body of animals, presented in a series of animations, videos, drawings, infographic information.

For independent study in the educational resource posted "Red Book" of Uzbekistan in PDF form. In biology lessons, additional material is interesting information about the classes of animals or individual animals in the block for biology lessons in grade 7 "The World of Amazing Animals". These materials can be consulted when organizing extracurricular activities in biology. The resources include photos of excursions and videos.

It should be admitted that the created program aimed at increasing the effectiveness of biology lessons is not without some shortcomings. Along with the widespread introduction of technological elements into the modern educational process, one should also remember about innovative methods of increasing the effectiveness of biological education.

As for extracurricular and extracurricular work in biology, its main content is the presentation of additional information about the morphological and anatomical structure of animals, the functioning of life support systems. Extracurricular activities are aimed at consolidating theoretical knowledge and practical skills and abilities.

In the process of extracurricular work, it is advisable to organize short-term observations of the development of animals at different stages of their life. For example, the breeding period (by observing the fish in the aquarium, or the moment the egg is opened and a canary chick or chick is "born", the development and growth of a kitten or puppy). Students can use living examples to follow the behavior and development of animals in different periods, such observations will help form in schoolchildren a feeling of love for nature and a desire to protect and preserve the animal and plant world. Electronic educational resources are an effective means of innovative orientation, helping to enrich the theoretical knowledge and practical skills of 7th grade students, to form their research skills.

In order to prepare students for the international knowledge assessment system in educational institutions of the secondary education system, one should focus on the parameters of the PISA, TIMSS systems, where it is proposed to use a set of computerized test tasks in several academic subjects.

In this regard, there is a need to develop a didactic system for using computerized non-standard tests in biology in grade 7 for lessons, extracurricular and extracurricular activities. We have prepared blocks of test items on 10 topics from the section "Mammals". These are mainly self-assessment tests. Working with non-standard tests requires some explanation.

A program for editing tests in the process of computerizing non-standard tasks has also been created. When using them, teachers are advised to use an editor program. This creates the ability to update test material, enter new information, and change test questions as needed.

In the pedagogical literature, the thesis that the new quality of education is determined by the formation of new educational results is increasingly heard. In this context, the processes of modeling educational systems are of fundamental importance, since this makes it possible to take into account the maximum possible number of conditions that ensure the achievement of the planned results. One of such conditions, in our opinion, is the use of information and communication technologies.

We only note that the structure of the model is made up of four interrelated and interdependent blocks (target, organizational and content, diagnostic and effective and functional). Let us dwell in detail on the diagnostic-resultant component, since, in our opinion, it is of interest from a procedural point of view.

The selection of criteria and indicators of this component is due to the need to assess both the effectiveness of the activities of a general education institution and the quality of education of students.

The criteria were: the presence of mechanisms for identifying the educational needs of participants in the educational process in the organization of the educational process based on ICT, which is a toolkit for studying the social order for training using ICT on the part of the participants in the educational process;

- the formation of a set of conditions for achieving new educational results through ICT, associated with the degree of development of the telecommunications infrastructure, the ability to receive, transmit information and data through various channels;

- the formation of the system of advanced training of teachers and executives in the field of ICT, represented by elements that characterize the elaboration of a set of measures to study the needs of teachers in professional development in terms of mastering ICT and the possibilities of an educational institution for in-house advanced training;

- the development of the organizational mechanisms for the use of ICT tools in the educational process, characterized by the presence of an information (electronic) representation of the educational process management system and the information and educational environment, which makes it possible to judge

- the effectiveness of the management decisions taken;

- the availability of mechanisms for information and methodological support for the achievement of new educational results by students when using ICT in the educational process, allowing to assess the completeness and quality of the provision of information necessary for the implementation of interaction

- between different actors of the information society;

- the development of monitoring of the use of informatization means in an educational institution, ensuring the achievement of new educational results by students, which makes it possible to judge the degree of effectiveness of the use of informatization means and the variety of educational, teaching and methodological and other resources used;

- the effectiveness of the use of informatization means in the educational process for the achievement of new educational results by students, represented by the results of achieving subject, metasubject results through reliance on the educational environment, its subject aspects.

Each of the selected criteria has its own content, indicators that make it possible to judge the formation of the information and educational environment, focused on the achievement of new educational results.

The criterion characterizing the presence of mechanisms for identifying the educational needs of participants in the educational process in organizing the educational process based on ICT is represented by three indicators, namely:

the existence of regulations for studying the needs of participants in the educational process in training using ICT;

taking into account the results of surveys, questionnaires in the development program of an educational institution, in the content of a part of the curriculum formed by the participants of the educational process, the plan of extracurricular activities and other local regulations of the educational institution;

the presence of the practice of studying the level of satisfaction of participants in the educational process with the use of ICT when achieving new educational results.

It is possible to talk about the formation of a complex of conditions for achieving new educational results through ICT if an educational institution has.

It is obvious that the conditions we have identified contribute to the adequate selection and substantiation of criteria and indicators of the effectiveness of the functioning of the educational

system in the aspect of students achieving new educational results through information and communication technologies. At the same time, within the framework of the model under consideration, the managerial activity of pedagogical workers of a general educational institution is associated with the creation of conditions conducive to the implementation of the requirements for the results of mastering the basic educational programs of general education in the conditions of the functioning of the information and educational environment of the school.

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