

CONTENT, CRITERIA AND PRINCIPLES OF USE OF ELECTRONIC INFORMATION EDUCATIONAL RESOURCES IN BIOLOGY EDUCATION IN GENERAL EDUCATION SCHOOLS

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DOI: 10.63001/tbs.2025.v20.i02.S2.pp147-150

KEYWORDS

Electronic information educational resources, biology education, scientific and methodological support

Received on:

12-02-2025

Accepted on:

15-03-2025

Published on:

23-04-2025

ABSTRACT

In this article, the issues of wide introduction of electronic information educational resources to educational processes, improvement of scientific and methodical provision of electronic information educational resources and their effective use are highlighted, and the educational system is based on advanced foreign and national experiences. On the basis of improvement, special importance is attached to the creation and implementation of a new generation of electronic information technologies for the educational system. Also, opinions on the content, criteria and principles of the use of electronic information educational resources, the organization of biology education in general education schools on the basis of electronic information educational resources and the improvement of educational efficiency are provided.

INTRODUCTION

In the developed countries of the world, special importance is attached to the development of students' competence with information through the wide introduction of electronic information educational resources to educational processes, improvement of scientific and methodological support of electronic information educational resources, and their effective use. In particular, the experience of foreign countries such as the USA (Information Network Database), Great Britain (Professional Counseling Organizations), France (National Information Bureau for Education and Professions (ONISEP)) in the use of electronic educational tools by students showed the need to improve the competence development model and didactic conditions.

In the educational practice of the world, the creation of electronic information educational resources based on the visual and virtual capabilities of interactive software tools in the teaching of natural sciences, aimed at enriching the knowledge of biological processes and improving the biological competence of students through these tools and introducing them into educational practice there is a need to do it.

Today, a lot of attention is being paid to improving the education system in our country based on advanced foreign and national experiences.

In particular, it is important to organize the educational processes organized in general education schools at the level of world

standards, to improve the professional skills of pedagogues and to create electronic methodical developments of an educational nature on educational subjects. In particular, the Decree of the President of the Republic of Uzbekistan dated January 28, 2022 "On the Development Strategy of New Uzbekistan for 2022-2026" No. PF-60 [1] fully revise and implement programs and textbooks based on advanced foreign experience (goal 47), in particular, national education According to the program, the creation of 699 new textbooks, exercise books, teaching methodology books and mobile applications by 2026 is defined as urgent tasks.

Also, in the Decision No. 161 of the Cabinet of Ministers of the Republic of Uzbekistan dated February 23, 2019, "Creation of electronic training base, formation of information infrastructure of educational institutions; priority tasks such as providing all students of general education schools with extensive training in working with computers and information technologies" [2]. Introduction of modern electronic educational resources and advanced teaching methods and technologies into educational processes in order to fulfill the tasks defined in these legal and regulatory documents is becoming a demand of the time.

Today, in the educational system of our country, certain experience has been accumulated in terms of increasing the knowledge potential of students and improving their independent activities, but there is a need to enrich this experience. One of the most convenient ways to effectively solve this need is the

creation and implementation of electronic information technologies for the educational system.

N.Muslimov., D.Sayfurov., M.Usmonboyeva and A.Torayev in their scientific literature describe electronic information educational resources (EATR): EATR is systematization, work, interdependence and integrity in educational subjects, or formed, learning materials directly from computer technology or Internet information is a collection of electronic publications in sources [3].

Electronic information educational resources (EATR) are considered to be one of the most convenient and effective tools for the development of methodological support for each subject taught in general education schools. According to the opinions presented in scientific sources, the use of educational EATR in educational processes helps to achieve the following goals: providing educational information with the involvement of multimedia technologies; organization of user feedback in the organization of a cooperative attitude of learners; control, determine the learning results of learners and increase the effectiveness of education on this basis; automation of the process of development of electronic methodological support of the educational process and effective organizational management of the activities of educational institutions [4].

According to the definition of Sh.A. Abdurakhmanova, electronic educational resources are understood as a system of transmission of educational materials combined with a system of automatic control of acquired knowledge, which allows automatic adjustment taking into account the personal characteristics of the user, that is, the student [5].

In recent years, in connection with the rapid development of EATR and the increase in its functional capabilities, the experience of using them in general education schools is also increasing. In particular, the fact that the use of EATR for didactic purposes in the teaching of biological science is a factor of ensuring the effectiveness of education is proven not only in foreign, but also in national experiences.

According to Ye.A.Eyrikh's recognition, EATR serves to improve the quality of education and ensure its effectiveness according to its technical, technological and functional characteristics:

- effective organization of students' cognitive activities during the educational process;
 - to make teaching more effective, involving all kinds of emotional activities of learners, which are important in acquiring knowledge, while using the multimedia context and arming the intellect with new conceptual tools;
 - to build an open education system that allows to ensure the personal learning trajectory of each person;
 - to involve in the process of active teaching a category of persons who differ from each other according to their reading ability and style; focus on the use of special features of the computer that provide individualization of the educational process and the use of completely new means of knowledge;
 - rapid development of all levels of the educational process [6].
- M.V.Zimina, N.A.Lyulyayeva completes the opinions on the didactic nature of EATR as follows:
- increases the motivation of students to learn and to search for themselves;
 - stimulates students' activities in the field of knowledge; improving the methodology of classes organized on various topics, helps to enrich them with new theories;
 - creates an opportunity to analyze and summarize the results of teaching and educational activities in a timely manner;

- creates necessary conditions for planning and systematization of personal professional and educational activities by teachers and students;

- Internet resources serve as a source of self-development (professional development) for teachers and learners; serves to quickly prepare a lesson project (script of a spiritual-educational event) [7].
- Ye. N. Faber notes that the use of educational tools is considered effective only when certain conditions are observed in the teaching process. The author emphasizes that it is advisable to comply with the following conditions:
 - The use of didactic materials obtained through Internet resources is based on specific motivation;
 - a clear definition of factors such as the importance, nature and timing of using electronic educational resources and computer-based educational tools in the teaching process;
 - the pedagogue has a leading position during the organization of training;
 - introduction of components guaranteeing the quality of education into pedagogical technologies;
 - compliance of the computer education methodology with the general strategy for conducting training sessions;
- to change the general methodology of teaching computer programs included in the set of educational tools consisting of electronic educational resources by revising all system components;
- providing stable feedback in training [8].

The criteria for the use of electronic educational resources in biology education and the development of students' information-communicative competence (ICC) are as follows:

1) cognitive criterion - knowing one's abilities and personal qualities in using EATR developed from biological science; knowledge and practical application of practical skills and methods; imagine the role of electronic learning environment in acquiring biological knowledge.

2) motivational criterion - motivation of educational activities in the electronic educational environment of biology; the need to improve AKK in biology.

3) process criterion - the ability to combine knowledge of biology and methods of activity with other educational activities in an electronic educational environment; the ability to combine and re-transform previously known methods of activity in order to solve emerging educational biological problem situations and to search for original ideas and non-standard solutions.

4) reflexive criterion - self-determination of the level of mastery of biological science in the e-learning environment; A reflection on the use of EATR.

The criteria, indicators and methods of diagnosis of the use of electronic information educational resources in biology education and the development of students' AKK are presented in the table below (Table 1).

1-table

Criteria and indicators for the use of electronic information educational resources in biology education and the development of students' AKK

Criteria	Indicators
Cognitive criterion	<ul style="list-style-type: none"> - Knowing one's abilities and personal qualities in using EATR; - to know and apply practical skills and methods of educational activities in the electronic educational environment; - to imagine the role and importance of educational activities in the electronic learning environment of biology.

A motivational criterion	<ul style="list-style-type: none"> - motivation of educational activities in the electronic educational environment of biology; - the need to improve educational activities in the electronic educational environment of biology.
Process criterion	<ul style="list-style-type: none"> - the ability to apply the acquired knowledge of biology to other fields of activity and creativity; - the ability to unify and change previously known methods of activity in order to solve problems arising on the subject material in biology education and to search for unique ideas and non-standard solutions;
Reflexive criterion	<ul style="list-style-type: none"> - self-evaluation of the results of his educational activities in the electronic learning environment of biology; - reflection of educational activity.

Below we will focus on the theoretical aspects of these principles.

1. **The principle of cognition.** This concept lexically means the ability to receive and process information in Latin "cognitio" - to know, understand, learn. In a broader sense, it means to understand the environment or to perceive information. In many sources, this concept is considered to be knowledge or concepts related to information, and it is manifested in the mind and action in the form of thoughts [9].

2. In applied research cognition is controlled by the human mind, through which information is processed [10]. Based on this, in the course of this study, the students of this principle will develop knowledge of computer programs and systems that incorporate many possibilities, as well as the preparation of virtual methodological resources through them.

According to the corporate character, mutual cooperation, agreement, respect for each other, helping each other, compatibility of values among students is one of the main factors in increasing the effectiveness of their educational activities. They also help students to develop new ideas [12].

3. **The principle of vitagenicity.** One of the most important requirements of school education is to create the necessary didactic conditions for students to have the skills to use the acquired knowledge in practical activities without difficulties, to prepare them for targeted entry into future activities based on practical experiences. For this reason, the level of development of students' AKK qualities with the help of EATR should be the result of the process of acquiring vital, vitagenic experience, which is important for each student's personality [13].

4. **The principle of integrativeness.** This research work was carried out on the basis of mutual integration of biology and computer science. After all, the use of the available opportunities of EATR is carried out with the help of highly skilled and qualified teachers.

5. **The principle of visibility.** The concept of "visibility" is taken from the English language and means "reception of information by direct vision". Currently, visibility (media resources, cinema, photography) is just a "part", a "fragment" of the text, a direct (representative) reception of reality, existence, modern. It is not a cultural "trend", on the contrary, it is a basic view of the existence of modern society or culture, the general structural principle of their characteristic forms [14].

In all periods of the history of pedagogy, priority has been given to students receiving information by hearing and seeing. Therefore, transmission and reception of non-verbal (through leg, hand, eye movements, body movements) and verbal (speech, voice) information is of particular importance as the most important means of communication.

In modern education, more attention is paid to the transmission and reception of educational information by students in a visual form than verbal reception. In order for secondary schools to provide students with vitagenic experiences in biology education, first of all, it is necessary to improve the competence of biology teachers in creating and implementing visual teaching and methodical resources through EATR. In the course of this research, biology teachers of secondary schools were directly involved in the preparation of visual-methodical materials on certain topics.

6. **The principle of interactivity.** We know that in traditional education, individuality is the main focus in the performance of educational tasks by students, but in the innovative nature of today's modern education, this approach emphasizes the collective, group, and cooperative activities of students. is given. In this, attention is paid to establishing mutual cooperation of students in completing educational tasks. N.A. Muslimov and other scientists say that "Interactivity" - in English "interact" means to act mutually, together [15].

Due to the fact that the implementation of biological educational tasks in the EATR tool is a little more complicated, the students' work together in pairs, groups or teams increases their abilities to find a solution to a problem or issue with the help of specific methods, forms and tools. . In order to effectively organize students' interactive activities in biology classes, it is necessary to create the following pedagogical conditions:

- to create a comfortable pedagogical environment for students to freely express their personal opinion on the subject material being studied, to think analytically and critically about the ideas and suggestions presented;

- to support the opinions of their peers, group mates or team mates in the performance of educational tasks based on the establishment of mutual cooperation of students, as well as to put forward their personal opinions in their place, and to teach reasoning.

7. **Principle of differentiation.** Pupils in the same class differ from each other due to their individual characteristics, despite the fact that they belong to almost the same age group. In particular, these differences differ according to their mastery level and from the point of view of receiving, processing and analyzing educational information by them. In improving the qualities of biological competence by means of EATR, the above-mentioned activities of students are involved in their abilities to perform educational tasks.

8. **Step-by-step - technological approach.** The development of students' AKK level through EATR is a systematic process that reflects unique didactic features. This process consists of certain stages, and solving the tasks at each stage creates the basis for achieving the expected results.

The technological approach to this process on the basis of the predetermined educational goal in the development of students' AQ level by EATR means "in a broad sense, educational processes to achieve higher results in terms of the actual goals of ensuring education, upbringing and personal development requires the introduction of pedagogical technologies" [16].

9. **Mutual harmony with cultural development.** At the present time, great experiences have been accumulated in the education system, as well as in all spheres of society, in the creation and implementation of EATR. The creation and implementation of EATR in the biology education of general education schools is reflected in the fact that the school education activity was able to achieve mutual harmony with the cultural development of the society on the basis of this principle.

10. **Reflexive approach.** Along with imparting knowledge to students in general education schools, it is also important to control and objectively assess the level of mastery of the given knowledge. In traditional education, this activity was performed only by the teacher, but in modern education based on innovative approaches, attention is also paid to students' self-evaluation.

Through this approach, students will have opportunities such as "self-analysis, evaluation, and the ability to use their

internal capabilities" [17]. Also, reflection helps the student to "consciously understand his own activities, connect a logical chain, compare his achievements with the achievements of others" [18].

Reflection in the e-learning environment will allow students to understand the essence of the methods of mastering educational materials by means of EATR, and to find more convenient and concise methods [19].

CONCLUSION

In conclusion, it can be said that in the teacher's pedagogical activity, reflection develops the ability to foresee problems related to his professional activity, the solution of problematic situations and the implementation of correct decision-making in such situations, and creates an opportunity to increase the sense of responsibility.

The use of didactic capabilities of EATR in biology education of general education schools ensures effective mastering of visual knowledge by students. Therefore, it is necessary for teachers of biology to pay more attention to the organization of educational processes by means of EATR.

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