



# Use of Electronic Textbooks in Optimizing Processes of Zoology Education

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**Abstract:** In this article, students' natural-scientific literacy, improving the quality and effectiveness of education using the possibilities of modern pedagogical and electronic information educational resources, the reforms carried out in our country in this regard, the science of using electronic textbooks in the teaching of zoology (Bird class) theoretical foundations, existing problems in the level of development of pedagogical skills of zoology teachers in higher educational institutions and their solutions are highlighted. There are also comments on the types of electronic textbooks, the requirements for their creation, principles, and the possibilities of their use for learners.

## 1 INTRODUCTION

In the world, special attention is being paid to improving the quality and efficiency of education, using the possibilities of modern pedagogical and electronic information educational resources, to improve the natural-scientific literacy of students based on the competence approach to the processes of natural science education. In the teaching of natural sciences, including biology, it is important to develop the creative and creative abilities of students and improve the theoretical, methodological and methodological foundations of education through the effective use of computer pedagogical software tools, electronic information educational environment.


At the international level, several scientific and research works aimed at improving the mechanisms of implementing innovative technologies, didactic materials and information technologies based on the principles of modern development are being carried out today. In particular, a number of reforms are being carried out in our country in order to modernize the education system, adapt it to modern requirements and achieve high efficiency. In particular, Decree No. PF-60 of the President of the Republic of Uzbekistan


dated January 28, 2022 "On the Development Strategy of New Uzbekistan for 2022-2026". Conducting a fair social policy, human in the direction of capital development, "to introduce young people to the world of art, to acquire knowledge and skills in the field of computer and IT technologies, to launch the activity of more than 100 thousand free clubs provided with the necessary equipment yish" task is defined separately.

## 2 THEORETICAL FRAMEWORK

It is appropriate to introduce computer software tools, innovative electronic textbooks, videos, presentation programs, mobile applications, interactive whiteboards, and online self-assessment systems in teaching the Zoology class of Birds - Asallaev U. X. (2023).

According to the analysis of the scientific and methodical literature on the topic and the processes of zoology education organized in higher educational institutions, it is known that there are several problems in the level of development of the

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pedagogical skills of science teachers in teaching zoology in higher educational institutions. it has been:

- The level of use of modern approaches and innovations used in the teaching of zoology is low, for which objective and subjective reasons were identified (lack of necessary tools in the material and technical base of higher educational institutions, low qualification of teachers in using modern information and communication technologies).
- Inadequate knowledge or lack of understanding of the time requirements for the teaching of zoology (as a result of a gap in the period from upgrading to upgrading).
- Inability to ensure the coherence and consistency of the content, methods and forms, technical means of teaching zoology.
- Inadequate level of competence in comprehensive, comprehensive information and pedagogical technologies in fulfilling the modern requirements for the organization of zoology classes.
- Lack of awareness of the achievements of the methodology of teaching zoology, the latest research and scientific research on the application of the science in technology and production (science related websites, electronic resources) - Asallaev O' Kh. (2023).

### 3 METHODOLOGY

Therefore, there is a need to develop the skills and abilities of science teachers to use computer technologies and create EATRs in order to increase the effectiveness of zoology education by means of electronic information educational resources (EIRT) in higher educational institutions. After all, in the scientific literature of professors S.Dadaev, K.Saparov, the importance of zoology in human life is emphasized, along with information about vertebrate zoology, their general classification, systematics, origin, structure, development, animal ecology, their conservation - care, breeding, importance of animals in the economy, prevention of breeding of harmful animals and measures to fight against them are of particular importance - Dadaev S., & et. al. (2019).

It became known that the following series of problems exist in the use of electronic information educational resources in the teaching of "Birds class" from zoology:

- Creating a bank of tests (online, offline, non-standard, electronic) corresponding to the international assessment programs for the bird class (TIMSS, PISA).
- Development of qualifications and skills of zoology teachers in using electronic information educational resources.
- Creation of an electronic information environment that allows wider use of electronic information educational resources in higher education institutions.
- Formation and development of an information-educational environment for teaching zoology on the Internet.
- Widening the integration of information technologies and teaching technologies in the teaching of the bird class - Ergasheva G. S. (2009).

If the above-mentioned problems are eliminated, the methodology of teaching zoology will be significantly improved, and students will have a wide range of opportunities for independent mastery of the science. Here we will touch on the brief essence of electronic textbooks, one of the electronic information resources of modern education.

It is known from experience that a person can remember five times stronger the information received with the help of the organs of vision compared to the organs of hearing. Unlike the auditory organs, the information received from the visual organs is not recoded, but goes directly to memory and is stored for a long time.

Electronic textbooks provide more opportunities for displaying educational materials than traditional textbooks. In addition to performing didactic functions designed for more independent work of students, the electronic textbook should meet all the requirements for the educational process. Therefore, in the application of electronic textbooks to the educational process, taking into account their psychological and hygienic aspects, in addition to their pedagogical aspects, ensures the intellectual abilities of students and pupils and their active participation in this process.

### 4 DISCUSSION AND RESULTS

The organization of the educational process based on electronic textbooks leads to rapid updating of educational materials based on the latest scientific achievements and a number of similar advantages. The advantage of the electronic textbook over the traditional textbook is its "intellectual" power. as well

as being able to provide information at the right time and in the right place.

An electronic textbook should contain all relevant educational materials for a given subject, and its intellectual level gives rise to a number of advantages over a regular textbook. For example, finding information quickly, mastering topics using multimedia and graphic elements, etc. - Taylakov N I, & et. al. (2013).

Electronic educational literature is a resource that has the ability to collect, describe, update, store, present and control knowledge based on modern information technologies. Electronic educational literature is classified by various categories, and examples of these are all electronic publications for educational purposes, from electronic lecture texts to electronic textbooks. Among them, the electronic textbook has a special place as an educational tool that creates wide opportunities for using educational materials in the educational process.

Each electronic textbook must have a unique appearance and meet the requirements of a certain standard. An electronic textbook is an educational literature based on the use of a computer-based learning method and comprehensive and effective mastering of the educational material of a subject, and it can be applied to one of four levels.

Level 1: an electronic textbook that presents educational material only in verbal (text) form.

Level 2: an electronic textbook that presents educational material in verbal (text) and graphic (picture) form.

Level 3: a multimedia textbook, i.e. a multimedia electronic textbook in which information is presented in three-dimensional graphic form, sound, video, animation, and partially verbal (text).

Level 4: the material is not only audio and three-dimensional, but is presented through tactile (perceptible) information, allowing the learner to enter the real world depicted in a stereoscopic "screen world" and the objects in it. an electronic textbook that creates the imagination of movement in relation to objects - Usmanov M. (2011).

Electronic textbooks of all categories increase the efficiency of the educational process and provide great opportunities for independent learning of students and the organization of distance learning. The main purpose of using electronic textbooks is to create new information and educational methods, to increase the efficiency, quality and productivity of the educational process through the use of modern information-pedagogical, information and computer technologies, modern educational resources in the continuous education system, wide use of e-learning

textbooks, the organization of their libraries in a certain sense, the practical implementation of distance learning methods and access to the universal e-learning system.

To achieve the pedagogical goals mentioned above, the electronic textbook must meet certain didactic, pedagogical, and psychological requirements. Didactic requirements include scientific, ease of learning, problem-solving and comprehensively justified learning, active and conscious participation of the student in the learning process, systematic and step-by-step implementation of learning, and the development of solid learning. integrity of tasks of knowledge-acquiring, developing, specialist-employees and educators in the educational system, provision of independent study for the learner, teaching interactivity, harmony of teaching provision, systematic approaches in the provision of educational material.

Psychological requirements include requirements that reflect the aesthetic, hygienic and medical-psychological aspects of the electronic textbook. The reason for this is that the human body requires specific characteristics of receiving information in electronic form. Not only its content, but also factors such as size, appearance of letters, color and movement of the image play an important role in the reception of information. Therefore, the text of the electronic textbook should have its own characteristics.

Such features in the electronic textbook, i.e., such tools as fading, color highlighting, underlining, and sound, have a strong influence on the rapid reception of information by learners. To solve these problems, it is necessary to improve the quality of the provided information and create a number of opportunities in the electronic textbook, with the help of which it is possible to change many parameters. For example, mute, lower, raise, change colors, etc. Achieving the effectiveness of the electronic textbook is carried out on the basis of taking into account the psychological aspects of interaction with the computer, which include the presentation of educational material, the verbal-logical, sensory process of understanding (cognitive); perspective (feel, feel) and level of expression should be matched.

Also, psychological processes related to perception include receiving information (mainly seeing and hearing, feeling), attention (its stability, concentration, transition from one thing to another, distribution and level of attention ), thinking (theoretical understanding, practical-visual and practical-action), imagination, memory (instant, short-term and long-term, short-term, the

phenomenon of placing information in short-term memory), etc.; e-textbook includes basic requirements such as user-friendly, creative approach to mastering science, and creation of optimal working conditions for health.

The main principles of creating an electronic textbook are as follows:

- development of comprehensive scientific-methodological bases and technical requirements for creating an electronic textbook;
- to identify priority subjects for the first time, for which it is necessary to create an electronic textbook;
- equipping educational institutions with modern computer equipment, connecting them to the Internet;
- organization of teams to create electronic textbooks in educational institutions;
- development of the mechanism of copyright protection of creators of electronic textbooks;
- creation of financial incentive mechanisms for authors of electronic textbooks, professors and teachers who implement electronic textbooks in the educational process;
- establishment of organizational and legal bases of standardization and certification of electronic textbooks;
- organizing competitions on the creation and use of the best electronic textbooks, organizing scientific and practical seminars, conferences and other meetings on existing problems;
- establishment of a fund library of electronic textbooks in higher educational institutions and among higher educational institutions;
- using the experiences of developed countries in creating electronic textbooks.

In conclusion, it should be said that electronic textbooks created in the science of zoology create a wide range of opportunities for teaching staff and students. Organization of the educational process based on electronic textbooks provides a number of advantages, such as rapid updating of educational materials based on the latest scientific achievements. Individualization of the teaching process occurs as a result of the use of electronic means of teaching in education.

With the help of electronic textbooks, each student will have the opportunity to master the educational materials about the class of birds based on the plan, relying on their individual abilities. This can result in high achievers making more progress

than low achievers. The electronic textbook can also be used to monitor the level of knowledge acquisition. In this case, it will be necessary to include a monitoring system in its composition. Tests can be given for each section. Test results are determined using a computer. The test results can be used by the teacher in the current or interim assessment. The percentage of correctly completed tests gives an idea of how well the student mastered the topics covered. Unmastered topics can be repeated. In this way, both the teacher and the student can control the learning process.

## 5 CONCLUSIONS

As a conclusion, it can be said that today, in the era of increased volume of information and globalization processes, the use of electronic information and educational tools to improve the level of knowledge of zoology of students is the need of the hour. In this case, systematization of information from zoology is carried out, revealing the relationship between man and nature with a complex approach to the issue. After all, the qualification of a teacher of an educational institution should have two sides, illuminated by special and pedagogical sciences, and he should always ask: "Why should we teach?", "How should we teach?" should find answers to the questions, as well as be based on knowledge that takes into account the characteristics of education.

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