

### Technologies for Organizing Virtual Laboratory Classes

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#### Article Information

**Received:** April 27, 2023

**Accepted:** May 27, 2023

**Published:** June 28, 2023

**Keywords:** education, system, multimedia, virtual laboratory, interactive, technology, module, innovation, text, graphics, animation.

#### ANNOTATIONS

*The article mentioned the role of multimedia tools and virtual laboratories in teaching Natural Sciences in education, the peculiarities of the use of a multimedia system in the educational process. It is noted that the modern learning process is more effective when using interactive, multimedia resources that provide active learning styles. The best way is through educational resources and virtual laboratory systems. Virtual laboratories, interaction, interactivity, are modern technologies designed for the educational process and aimed at achieving the desired goal, contributing to the formation of the cognitive and creative activity of students.*

The search for new educational models in our country and abroad is intense, in which the level of innovative approaches to the organization of training on the basis of extensive and active use of informative and communicative technologies is considered as a driving force of modernization in the entire educational process. Therefore, the development of methodological developments for the training of future specialists is an urgent issue, in order to solve the issue of modern education, it is necessary to widely and actively use scientific educational technology in its professional activities. The application of Information Communication Technologies in particular virtual laboratories at the modern stage of educational development is a necessary need in the activities of both teachers and students. [6]

Due to the fact that the introduction of computer technology in education is the result of scientific and technical progress, and is an objective and inevitable process, the problem of virtualization of education as a way to introduce computer technology is one of the pressing problems in China.

Modern information technologies and computer telecommunications, embodied in the rapidly developing Internet hypertheism, discover fundamentally new opportunities for information

collection and access, but in this there is a conflict between the high level of these technologies and insufficient development of their use in education.

Virtual laboratories model real-life object behavior in an e-learning environment, allowing students and students to acquire new knowledge, skills and qualifications, mainly from scientific and natural sciences such as physics, chemistry, biology, mathematics, geometry, computer science [4] . Under the term Virtual laboratory, in the process of teaching physics, a set of computer information is understood, which is necessary for the implementation of laboratory regulations in laboratory activities [5].

The Virtual laboratory is a platform and is only a practical work on the topic at the appointed time, so at the same time our established actions in the scientific environment to acquire new knowledge. Scientists from the Max Planck Institute Berlin Sven Dierig, Jörg Kantel, Henning Schmidgen, A.F.Yegorov, V.P.Belkov, T.V.Savitskaya believes that the virtual laboratory" is an integrated information environment and includes educational, educational-methodological, practical, reference, control-teaching and control-testing materials". N.V.Krivolutskaya believes that" a virtual laboratory is an apparatus for researching various natural (physical) phenomena, which has a wide range of possibilities in the construction of mathematical models and is practically the only software –computing complex."

The world – wide virtual laboratories STAR (Software Tools for Academics and Researchers) is a program of the Masechutia Institute of technology for the research and teaching of virtual laboratories. The program's activities consist of teaching in general biology, biochemistry, genetics, hydrology, and developing laboratories for research. StarBiochem, StarGenetics, StarORF, StarMolSim, StarBiogene, StarHydro, StarClusterVirtualLab is a project of the Russian Federation for the development of virtual laboratories for students from physics, chemistry, biology, ecology. (Algodo-Norland University (Sweden) program to create laboratories for the study of physical simulations (PhET is Colorado's program to create virtual laboratories for physics, chemistry, biology, Earth Sciences).

As the tasks of the Virtual laboratory, the following can be said: visual illustration, the absolute safety of the experiments (experiments)carried out, the individual performance of experiments, the independence of students, as well as the development of their structural ability and technical competence, the performance of virtual laboratory work during classes, the virtual information and educational laboratory provides ample opportunities for conducting experiments of a

What can be included in the capabilities of Virtual laboratories:

1. Lack of need to buy expensive laboratory tools;
2. Ability to model processes whose execution in laboratory conditions is not fundamentally feasible
3. Security, time and resource savings
4. Automatic calculation of performed laboratory results
5. Availability of the opportunity to apply Virtual laboratories in distance learning
6. Taking into account the fact that the control of the Virtual process falls on the computer, there is an opportunity to conduct a series of experiments, changing the parameters being entered
7. That the laboratory experiment being carried out can be observed on other scales of time.

In addition, when studying new areas of knowledge through educational modeling in the conditions of a virtual information and educational laboratory, students ' independent activity regarding the knowledge of phenomena in the surrounding world increases, the ability to independently find solutions to problems that arise during their life activity, readiness to apply

the acquired knowledge in practice is formed. Therefore, the use of virtual laboratories that promote the development of student independence is considered an integral part of success in the introduction of an e-learning computer product.

The technological process of training in a Virtual environment puts complex tasks on the quality management of the educational services provided. The technological system of Virtual education includes four subsystems:

- training tools that are conditionally divided into virtual (virtual worlds, virtual libraries, etc.) and virtualized (audio, video, Computer Training Systems, etc.);
- virtual pedagogical communication tools, represented by the relevant information and telecommunication technology tools;
- organizational forms of conducting training, at the same time virtualized traditional forms of teaching institutions (lectures, seminars, etc.) and types of virtual innovative classes (training firms, project virtual groups, etc.);
- the methodological environment is characterized by active educational methods in which virtual education is the most sensitive ("business Games", "practical affairs", etc.).

A Virtual student is rightfully a key figure in the virtual education process, since he is the main client of the virtual education system. A Virtual student has specific requirements, motivation, discipline, the ability to use computers and communication tools, etc.

A Virtual teacher is a person who works in direct contact or indirectly through telecommunications. In the "live version", the virtual teacher is obliged to perform the functions of the training manager, teacher, and coordinator of the virtual learning process.

Requirements for a Virtual teacher consist of traditional and specific requirements. The main task of a Virtual teacher is to manage the processes of teaching, upbringing, development, in other words, to become a pedagogical manager.

At application in professional activities and the use of virtual laboratories in their subjects in the teaching of specialty subjects, firstly, to ensure the full implementation of the educational program, and secondly, to improve the theoretical knowledge and practical skills and professional competence of qualified specialists in ICT and specialty subjects that meet the requirements of the time.

In higher education, TAT, at application in professional activities and teaching specialty subjects, virtual laboratories have a positive impact on the development of students' intellectual ability, cognitive activity:

TAT, at application in professional activities and formation of theoretical knowledge and practical skills from specialty disciplines; development of students' ability to think creatively, to receive independent knowledge, through the use of telecommunication tools; development and improvement of students' research activities, self-control, independent work skills, acquisition of knowledge aimed at a specific goal and formation of students' intelligence; the Friends of students can be explained in the formation of a culture of reciprocity that happens to their groupmates.

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