# Analyse der funktionellen möglichkeiten von elementen aus elektronischen ressourcen bei der bildung unabhängige lernkompetenzen.

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**Zusammenfassung:** In diesem Artikel ist die Rolle elektronischer Ressourcen von unschätzbarem Wert bei der Verbesserung der Kenntnisse und Fähigkeiten von Studenten an technischen Universitäten, bei der Bildung von Fähigkeiten zur selbstständigen Arbeit. Daher werden Meinungen und Kommentare zu den Vorteilen der Lehre mit elektronischen Lernressourcen präsentiert.

**Schlüsselwörter und Konzepte:** unabhängiges Lernen, eine Reihe von E-Learning-Ressourcen, virtuell, Modellierung, Design, interaktiv, technologisch, didaktisch, diagnostisch, Hypertext.

# Analysis of the functional possibilities of elements from electronic resources in the formation of independent learning skills.

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Abstract:In this article, the role of electronic resources is invaluable in improving the knowledge and skills of students enrolled in technical universities, in the formation of skills of independent work. Therefore, opinions and comments on the benefits of teaching using electronic learning resources are presented.

**Keywords and concepts**: independent learning, a set of e-learning resources, virtual, modeling, design, interactive, technological, didactic, diagnostic, hypertext.

## Introduction

The positive changes taking place in all spheres today, the achievements, can not be imagined without information and communication technologies. The use of information and telecommunication technologies in the educational process is aimed at improving the quality and effectiveness of education [1]. It is important to develop students' independent learning skills using information technology.

Analysis of the functional capabilities of the elements of the complex of e-learning resources, which regularly contribute to the formation of students' perfect (thorough) and meaningful scientific and professional knowledge, skills in working with information technology, self-confidence and critical thinking, development of cognitive activity, computer literacy serves for.

## Literature review

All the considered elements of the complex of electronic resources are located in the electronic information educational environment. A.A. Andreev, O.I. Ilchenko, L.A. Kozlovskix, Yu.I. Lobanov, S.A. Nazarov, L.F. Naseykina, T.N. Noskova, I.M. Osmolovskaya, I.V. Robert. A.A. Andreev, O.I. Ilchenko, L.A. Kozlovskix, Yu.I. Lobanov, S.A. Nazarov, L.F. Naseykina, T.N. Noskova, I.M. Osmolovskaya, I.V.

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Scholars such as Robert have explored the concept of ‘information learning environment’ in their prohibition work.

## Discussion

When using e-learning resources in independent learning activities, the student not only acquires ready-made ideas and concepts, but also draws his own conclusions based on various facts, data, expanding his imagination [2; 3]. The formation of independent learning skills is done through the necessary, reliable electronic resources for these future engineers.

Each tool of the complex of e-learning resources has its advantages and disadvantages, their use and application in education, so combining them in the independent learning activities of future engineers is the most important way to improve their independent learning skills.

Electronic information educational environment is described as a pedagogical system that provides for the formation of an information educational space, creating opportunities for thorough acquisition of knowledge[4]. The information educational environment should consist of information educational resources, computer-based teaching aids, educational process management tools, pedagogical technologies and methods aimed at forming an intellectually developed socially significant creative person with the necessary professional knowledge, skills and abilities [5].

One of the requirements of state educational standards, blood on education, other normative documents in the field requires the creation and implementation of electronic information learning environment in higher education institutions, which is considered as a set of tools to ensure e-learning resources, mastering educational programs by students using information and communication technologies . The implementation of electronic information learning environment in higher education institutions is mainly determined by its electronic resources, their quality characteristics, the provision of independent educational activities of future engineers.

The objectives of the educational program adopted by the virtual network educational environment are based on the independent educational information and communication technologies in this environment, in the adoption and solution of educational technologies:

first, it views the student as a system of conditions for creating an “environment” for self-development;

secondly, the process is considered as a means of activity of the subjects [6].

The teacher solves his/her professional tasks by modeling, designing and creating a virtual part of the learning environment. The student selects the resources needed for himself, manages the educational activity in achieving the accepted goals and objectives. By solving educational tasks and assignments using this environment, the student interacts with the resources of the environment and the subjects of the educational process, learns, develops professional skills.

In the interactive electronic information educational environment created for students of higher education institutions, pedagogical interaction between the teacher

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and the future engineer takes place, while the complex of electronic resources is a means of activity of these subjects. Interactive deganda ("Inter"- меж, “active”- эффективный) conversation (беседа), user interaction is understood. In this interaction, the teacher is given the role of counselor and facilitator who monitors the student’s activities in this environment.

The set of e-learning resources located in this environment provides an opportunity to reconnect with the subjects of the educational process, which is a source of significant and different levels of educational information in terms of complexity and content. Electronic resources will be able to “ask questions”, “answer questions”, “suggest” different ways of working with an information resource, correct student and even teacher behavior, and provide feedback in an interactive conversation mode.

They produce a variety of tips, error correction recommendations, provide independent learning outcomes, and provide self-monitoring.

The use of independently "acquired" learning materials, the "learning process" from the level of passive use of information to the level of active change of information, and in the more advanced version - the level of independent formation of the educational task (problem), the assumption of its solution, verification and will be generalized according to the laws sought to form conclusions ” [7].

When using interactive electronic resources, students come from a variety of sources, data and knowledge banks:

data acquisition, storage, processing;

to formulate their ideas concisely and clearly, to debate, to prove their point of view;

skills such as engaging in research activities are formed.

By interacting with this information, prospective engineers not only become consumers of real data, but also move on to a more complex path of independent search, selection, processing, and transmission.Электрон ресурслар комплекси элементларини электрон дарсликлар ва ўқув қўлланмалари, фанларнинг электрон ўқув методик мажмуалари, ўқув порталлари ва сайтлари, электрон кутубхоналар ташкил қилади.

The main purpose of the complex of electronic resources is to find and use the information necessary for the effective performance of professional tasks, the use of its elements in the independent learning activities of students and the formation of organizational, information analysis and reflexive skills of future engineers. The set of electronic resources allows future engineers to perform key tasks in the process of independent learning activities.

Using a set of electronic resources, the independent educational activities of future engineering professionals will be manageable and tailored to the specific characteristics of the students. The identified tasks include pedagogical capabilities of electronic resources such as flexibility, optimization, motivation and reading error correction in the formation of independent learning skills in future engineers:

– organizational capabilities; interactive and integrative functions;

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– technological capabilities; information and systematization functions;

– didactic opportunities; exercise and training control functions;

– diagnostic (diagnostic) capabilities are identified.

The pedagogical potential of electronic resources in the formation of independent learning skills in future engineers is as follows:

- adapting to the individual characteristics of organizational students;
- a separate educational trajectory of independent learning activities;
- step-by-step work with electronic resources;
- activation of information retrieval activities;
- interactive and multimedia support of technologically independent learning activities;
- use of hypertext technologies;
- interaction of elements of a set of electronic resources;
- didactic diversity, openness, comprehensibility of professionally oriented content;
- computer visualization of teaching materials on the subject;
- systematic interaction of didactic elements of a set of electronic resources;
- multi-purpose use of diagnostic (diagnostic) training tasks;
- self-assessment of educational achievements.

Implementation of the set of electronic resources in the formation of independent learning skills of future engineers will be carried out during the pedagogical process, considering its content, teacher and future engineer activities, basic methods, forms, tools and conditions.

The role of future engineers in shaping independent learning skills is invaluable. The process of forming the independent learning skills of future engineers can be divided into the following groups. Tasks to be performed by the teacher from Brinchi, tasks to be performed by the teacher, tasks to be performed by independent students.

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In the second stage, during the practical training, students perform practical tasks under the supervision of a teacher, which creates the basis for independent performance of practical tasks in the classroom..

In the third stage, students will have the opportunity to get acquainted with the e-learning resources provided, to monitor their knowledge, as well as to strengthen their knowledge and skills by independently completing the assigned tasks..

## Conclusion

Conducting traditional education using electronic resources, in addition to the content of students' free time from lessons, will encourage them to independently master the subject and consolidate the acquired knowledge. This helps students to think independently and increase their self-confidence.

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