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Research Article

IMPROVEMENT OF TRAINING OF SEMICONDUCTOR RELAY PROTECTION DEVICES BY NEW INTERACTIVE METHODS

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ABSTRACT

This article states that technological developments are inextricably linked with energy, it is necessary to provide consumers with high-quality and uninterrupted sources of electricity, in this regard, students must be fully qualified in their areas of specialization. In particular, the problems of the competent use of existing pedagogical technologies for teaching subjects were highlighted, and a new interactive method of teaching with semiconductor relays in the subject "Relay Protection and Automation" was proposed.

KEYWORDS

Electric power industry, relay protection and automation, electrical engineering, pedagogy, technical sciences, interactive methods, semiconductor materials, microprocessor relays.

INTRODUCTION

In the modern age of technical and technological development, it is unthinkable without energy. A number of innovations are being introduced around the world in the field of production, transmission and distribution of electricity. In this regard, the main requirement is that the personnel trained in the higher education system must be highly qualified and be able to apply the knowledge gained in the educational process in the process of work. In particular, it is necessary to further improve the teaching of technical

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sciences in technical universities, the creation of new interactive methods that effectively use existing pedagogical technologies.

Organization of training based on the development of new interactive methods in educational processes is the basis for the creation of scientific innovations along with the development of production. Thus, scientific innovation and student results are based on the knowledge that the student has acquired in the classroom.

While creating new pedagogical technologies, it is necessary to take into account the following aspects:

- establishment of mutual cooperation and interactivity in relations between the teacher and the student;

- taking into account the interests of students to the extent that they can attract their attention;

- Setting a specific goal for each lesson, distributing tasks according to the plan, at the end of the lesson, listen to the conclusions of students on the topic;

- development of students' critical thinking;

- try to explain each topic to students in simplified ways;

- Whereas the created pedagogical technologies are taught in modern pedagogical programs if they deviate from traditional methods;

- Achieving a creative approach to the subject.

The organization of educational activities with methodological potential in educational processes allows to achieve effective results in educational work. Therefore, the achievement of new innovative achievements in any field lies in the ways of preparing students as mature specialists, in other words, in the correct selection of specialist training systems.

According to the new education systems, it is necessary to create the possibility of demonstrating self-research of needs. According to him, most of the hours allotted for science are hours of self-study. Therefore, it is necessary to create enough opportunities for them to independently search for requirements.

In order for students not to be limited to obtaining knowledge given by teachers, in order to further strengthen the possibility of forming skills to use the acquired knowledge , it is necessary to integrate science subjects with current areas of production. Therefore, the student should not be satisfied with self-esteem, remembering the knowledge given in the lessons, according to it, the student must show the knowledge gained, being able to apply it in practice.

The teacher should organize the lesson process taking into account these aspects .

For the effective organization of one lecture session on a taught subject, it is recommended to consider the following actions:

- From the beginning of the lecture session, it is necessary to set the students ready for the lesson and wake them up mentally.

Use an energizer for this , and this energizer should not take more than 3 minutes. Because if the student does not listen to the lesson of his own free will, if he does not study, if he is not interactive, the result of the lesson will be ineffective.

- At the beginning of the lecture, it is necessary to choose a method that covers students as a whole in order to repeat the previous topic. Since the number of students in lecture classes is large, repeating the previous lesson is appropriate for situations where it is not possible to cover everyone. To do this, the basic concepts of the previous lesson are read and

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expressed in the form of confirmation and negation. This lesson takes no more than 5 minutes.

- Lessons will be conducted by choosing specific teaching methods on a new topic. According to him, especially in the case of technical sciences , new methods are used that are suitable for explaining their schemes and formulas. The pedagogical technologies used for this will be more effective if they are implemented through computer programs.

- According to the methods used, it is necessary to exchange ideas with students on scientific topics.

- If the lesson is correctly divided by time, it is necessary to give a conclusion on the topic. 5 minutes should be allotted for the final part at the end of the lesson.

- If the teacher manages to organize the lessons correctly and effectively, it will be easier for him to achieve the goals of higher education.

Taking into account the above points, we will pay special attention to the teaching of technical areas of higher education. Special attention in technical universities is given to energy, a number of important requirements are imposed on power engineers.

Particular attention is paid to providing consumers with high-quality, reliable and uninterrupted electricity in power systems [1,2]. When categorizing consumers of electricity according to their degree of reliability, conditions will be created for consumers of the first category not to be disconnected from the power supply. This system mainly uses protection measures and additional, newly developed automatic control devices to fulfill these important conditions. Being the main means of protection, relay protection and automation devices perform important functions and their role is significant in electrical networks.

Initially, the relays produced were electromechanical, they have not been abandoned to this day. Induction current relays have been produced since 1901. Differential current protection types of relay protection were developed in 1905-1908. Directional overcurrent protections have been used since 1910. In 1932, consistent work was carried out on the transmission of high-frequency signals over power lines.

Relay protection and automation devices (RP and A) play an important role in the management and automation of power systems. This is due to the fact that in automated power systems, protection must also be automated. The same relay protection devices operate in accordance with such requirements. Various injuries and accidents in power systems are possible. An increase or decrease in current values in the event of a possible emergency situation can lead to a voltage drop on the substation busbars and distribution network. Exceeding the allowable current will cause damage at the accident site, as well as dangerous overheating of the conductors, and a decrease in voltage leads to a violation of the normal operating modes of electricity consumers. If such accidents are not prevented, consumers will be disconnected from electricity, and electrical equipment will fail. In the event of an accident, it is necessary to reduce the accident rate, ensure the normal operation of undamaged power elements, reliably and quickly disconnect the damaged section from the source. Such important functions are performed by relay protection and automation devices in the power system.

Semiconductor devices led to the creation of relay protection and automation devices of the second generation [3]. Along with non-contact relays based on primary semiconductor devices, the use of measuring and logical relay protection elements was introduced, and then types of relays were developed that meet the

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requirements of modern technology. Of these, the use of microprocessor relays in power systems is expanding. Microprocessor relays are software protection devices that are interconnected and multifunctional. Relay devices made from semiconductor devices are more compact and reliable because they are non-contact. Therefore, in order to provide students studying in the field of electrical engineering with knowledge and skills in specialized disciplines, it is necessary to select and teach topics in accordance with the latest types of technology, equipment used in production.

Relay protection and automation is one of the main disciplines of the specialty for students of energy specialties. Hence, it is important to convey to students that knowledge on the devices of semiconductor relays is important for the power system [4-6]. New interactive methods are needed to improve the teaching of relay protection devices based on semiconductors and microelements in the discipline "Relay Protection and Automation". Among the new pedagogical technologies used in the classroom, I propose a new interactive method called "Octopus ". The reason the method is so named is because the eight-legged creature controls all of its legs with a single brain. Modern new devices are also controlled from a single point, interconnected and perform many functions. The theoretical explanation of the device and the principles of operation of such devices and equipment is difficult to convey to students. The best result can be achieved by showing them verbal ideas given on topics using methods that interest them. That is, most students are able to work with a number of computer programs, show a keen interest in color, sound and animation processes. It is necessary to create new teaching methods using new computer programs, taking into account such features. The Octopus method is specially programmed for such tasks. According to the program, a special scheme of the method is formed in the form of eight legs, with special symbols. In the scheme, each of the eight legs is automated, taking into account the performance of interrelated functions. For example, according to the principles of operation of relay protection and automation, measuring instruments are installed on the first leg of the circuit and connected to the measuring elements of relay protection. As soon as it is actuated by the measuring organs, it sends a special signal to the other leg in another programmed circuit, i.e. to a logical organ. The logical organ transmits the generated signal to the working organ and through the working organ gives commands to the interrupting devices. The principle of operation of RZ and A is programmed according to a special scheme according to our proposed method. Such programs can be used to explain automatically controlled interconnected electrical devices and even automatic electricity generation and transmission accounting programs, to organize topics by the interdependence of power quality indicators.

The sequence of organization of the interactive method " Octopus ":

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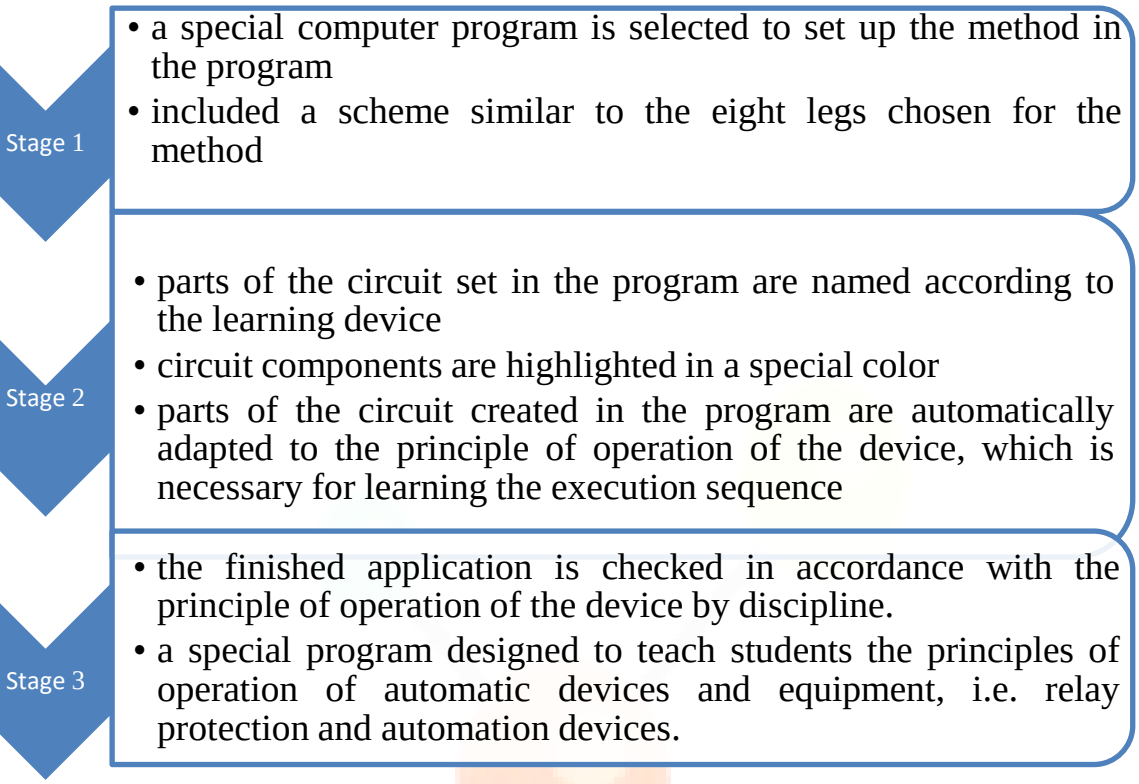

The effective use of the proposed Octopus method is effective in transferring knowledge and skills to students on the principles of operation of semiconductor relay devices.

In higher educational institutions, highly qualified personnel required by the time are being formed. If they are provided with knowledge and skills based on new interactive methods, effectively using existing pedagogical technologies for teaching special subjects in the educational process, the result will be at a similar level. Because today's students are interested in innovation, modernity and remember such processes well. The requirements of the time are the organization of classes for teaching students, taking into account the characteristics of the student.

REFERENCES

1. A.A. Nikitin , Microprocessor relays. Text of lectures. Cheboksary - 2003
2. A.M.Kasimahunova , I.Kh.Siddikov . Elekt ta'minoti tizimining relay hymoyashi wa automation. Darslik - Fargona: Aloqachi -2021. [one]
3. L.G. Prishchep . Qishloq electric fitter uchun qўllanma. Tashkent : Ўқituvchi -1967.
4. Nasretdinova.FN ., Ashurov AV, Xalilova.FA . Efficiency of using information resources and technology in students research work //ACADEMICIA: An International Multidisciplinary Research Journal. - 2020. - T . 10. - S. _ 1680 -1684.
5. Xalilova FA Improvement of Teaching Methods in Electrical Materials in Universities //Annals of the Romanian Society for Cell Biology. - 2021. - S. 14564 -14570.
6. Xalilova FA, Nasretdinova FN The factors accelerating the innovative activity of teachers

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//ACADEMICIA: An International Multidisciplinary Research Journal. - 2021. - T . 11. - no. 4. - S. 1090-1094.

7. Rafikova D., Khalilova F. Maruza mashgulotlarini zamonaviy usulda tashkil etishning pedagogy asoslari //Society and innovations. - 2021. - Vol. 2. - No. 3/S. - S. 466-472.