WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 3, Issue 4, April., 2022

DEVELOPMENT OF EFFECTIVE METHODS OF TEACHING THEORETICAL ELECTROTECHNICS

Sirojiddin Zaynobiddinov
Academic Andijan State University

Tulkinov Mukhammad Ali Erkinjon ugli
Namangan Institute of Engineering Technology
Email: Muhammadali.tolqinov.91@mail.ru

Kuchqarov Behzod Hoshimjonovich
Namangan Institute of Engineering Technology
Email: bxquchqarov@mail.ru

Abstract
In this article, for students of higher educational institutions in the field of electric energy, the organization of the subject "Theoretical Electrotechnics" is considered through a creative approach to the educational process, the use of interesting methods of organizing the educational process, methods of teaching subjects with interdisciplinary communication. Effective ways to increase the rate of mastering the course are shown.

Keywords: Interdisciplinary communication, lecture, demonstration, demonstration lecture, theory, practice, creative method, innovation, pedagogy, factors influencing learning.

Аннотация
В данной статье для студентов высших учебных заведений в области электроэнергетики рассматривается организация предмета «Теоретическая электротехника» через творческий подход к учебному процессу, использование интересных методов организации учебного процесса, методы преподавания предметов с межпредметной связью. Показаны эффективные способы повышения скорости усвоения курса.
Ключевые слова: междисциплинарная коммуникация, лекция, демонстрация, показательная лекция, теория, практика, творческий метод, новаторство, педагогика, факторы, влияющие на обучение.

Introduction

Based on the Decree of the President of the Republic of Uzbekistan Shavkat Mirziyoyev dated 08.10.2019 No. PF-5847 on the development of the education system of the Republic of Uzbekistan, In order to improve the process of training highly qualified staffs with high spiritual and moral qualities, independent thinking to a qualitatively new level, modernization of higher education, development of the social sphere and economy based on advanced educational technologies necessary work is being carried out to improve the quality of education in educational institutions.[1] All this work is aimed at training competitive staffs who are the best in their field, regardless of the field of activity.

The subject "Theoretical Electrotechnics " is a special subject for students of the specialty "Electric Energy", which is closely linked with many disciplines of the field and plays an important role in the training of highly qualified staffs. Students who have not mastered it will not be able to become specialists in this field. In this regard, the development of effective methods of teaching and learning this subject to students is one of the most pressing issues today. [2]

When organizing educational processes in the field of theoretical electrotechnics, it is advisable to simplify educational materials from simple to complex, deepen the content, link topics between disciplines, systematize classes depending on the sequence of production. process. The systematization of theoretical and practical training provides a comprehensive coverage of the content of the educational material, narration, consolidation and study of the sequence of topics, as well as control over the level of assimilation. When studying theoretical electrotechnics, when choosing teaching methods, special attention should be paid to the choice of methods that are adequate to ensure the activity, independence, speed of thinking of students and teachers. Student learning is a process in which students change their behavior through interaction with the environment and the resulting experience. In the learning process, the student acquires his own thoughts, knowledge, skills and abilities [3].

Practical research shows that the study of theoretical electrotechnics is also influenced by the following initial conditions:

- Develop practical skills in the form of simple and complex topics, explain them with understandable examples;
- Passion for learning, i.e. Clearly defined learning objectives

Striving for achievement;

- External incentives, i.e. prompting the teacher to arouse interest in an uninterested student.

The teacher must control these interactions during the lesson, as he or she can influence the attention and perception of the student and lay the foundation for successful learning. Learning can be understood as a process consisting of several stages. From one stage to another, the process becomes more complicated. Thus, the process of studying the theoretical science of electrical engineering according to the Bloom program can be divided into the following stages. The quantity depends on various prerequisites for the study of special disciplines, i.e., the quantity and quality of the studied knowledge based on previously acquired knowledge, enthusiasm for learning, personal learning and thinking abilities, memorization ability, i.e. in the learning process. There are many factors that make it a mystery.

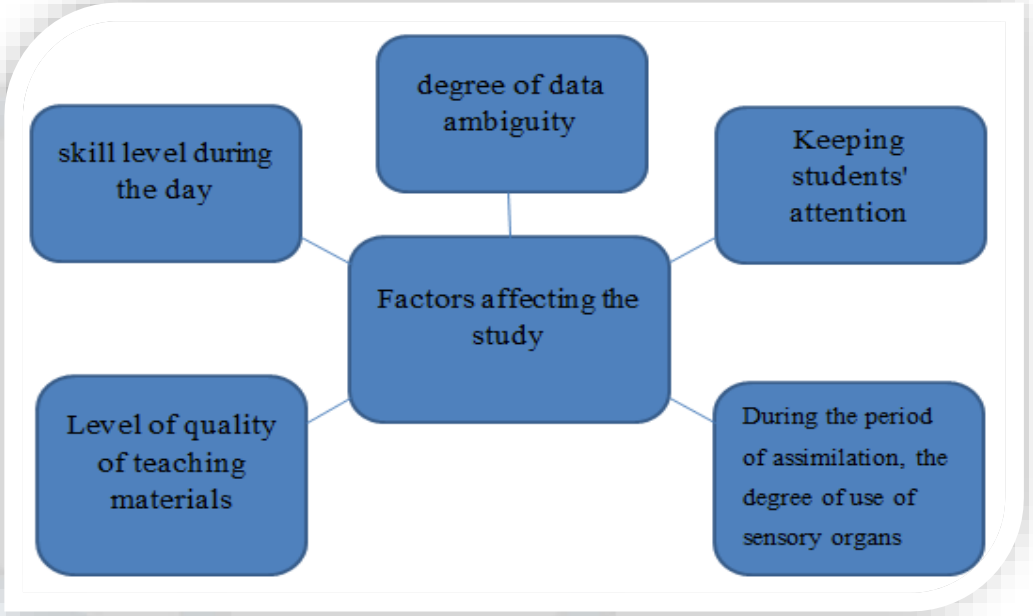

Figure 1: Factors influencing the study

The diagram above shows the main factors that influence the study.

These factors can be divided into the following types:

- Degree of data ambiguity
- The level of attention of students.
- The level of use of the senses in the process of development
- The level of quality of educational material
- Skill level throughout the day

WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 3, Issue 4, April., 2022

Research shows that students learn in three ways: at the level of real experience, imagination and symbolism. The conscious use of learning tools in the learning process is a set of factors that are of great importance [4].

From a methodological point of view, the effective organization of the educational process in the field of theoretical electrotechnics.

Teaching is a complex and important part of developing knowledge and skills. Studies show that if specific knowledge is conveyed in certain ways, then the time for careful study in an adult student is a maximum of 20 minutes. After about 60 minutes, attention drops to a minimum.

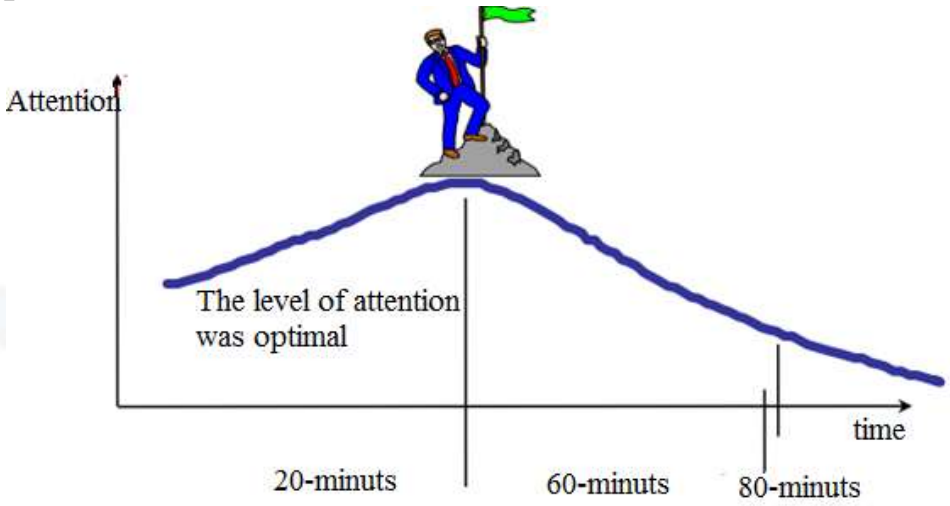

Figure 2: Student Attention Level

As can be seen from the above diagram, the introduction of new knowledge occurs in the first 20 minutes of the theoretical lesson, followed by discussions, group work and other similar active exercises to consolidate the organization of the process.

In any case, in a theoretical lesson, for example, the time of one lecture alone should not exceed 20 minutes. Even 5-minute breaks can have a unique effect on rest, as the first 3 minutes of rest are the most effective, and after 30 minutes, interest in continuing to exercise quickly declines. All these suggestions serve to keep the attention of the disciple for a long time.

It is known that the information in the report is obtained only by ear. Experiments show that during a lecture it is possible to keep the listener's attention for 20 minutes. Even then, it can be seen that at the end of this period, attention is greatly reduced (see Figure. 2). Accordingly, the level of assimilation of educational material is very low, only 5-10%.

WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 3, Issue 4, April., 2022

When visualizing and transmitting educational material using a variety of visual images, it is perceived by both the organs of hearing and the organs of vision, and the speed of contraction also increases the range of students' attention. Presenting educational materials on the principles of demonstration will help students to attract their attention, which means that it will be easier and more effective to understand and assimilate this material. Independent or group study of educational material not only in acquiring practical skills, but also in acquiring theoretical knowledge. Execution leads to the fact that all the senses work on one sheet, and in this case, mastering is higher. Therefore, it is advisable to break the theoretical training material into small pieces every 20 minutes, using different teaching methods. Below is an example of a 20-minute presentation using a combination of different methods in sequence. According to him, the description of a new topic begins with a lecture of 6-7 minutes, and then 3-4 minutes of visualization of the lecture material, i.e. explaining it on the basis of visual materials, within 3-4 minutes. The effective organization of the process is based on the demonstration of experience or analysis of an example, and at the end of 6-7 minutes of independent or group practical exercises aimed at consolidating the learning material. Using teaching methods in such a harmonious and coherent manner can not only increase the level of attention of students, but also ultimately increase the effectiveness of learning. This can be seen in the diagram [5].

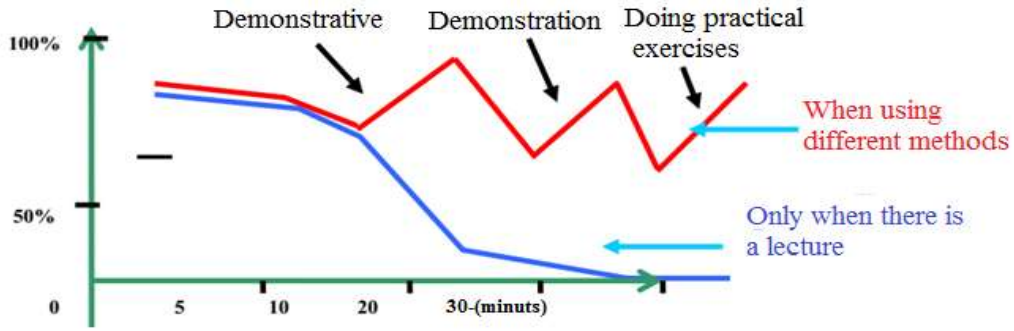

Figure 3: Student attention span over time

The above methods (Figure. 3) are selected taking into account the didactic function of the educational material, conditions and time. Properly selected, combined methods allow you to keep the attention of the student longer and increase his activity. This, in turn, increases the effectiveness of training. The more sensory states are used in cognition, the higher the quantity and quality of memorized knowledge. On the basis of pedagogical research, it was determined that the strength of knowledge depends on the content and quality of the educational process, and based on specific research results, the following conclusions can be drawn.

WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 3, Issue 4, April., 2022

If knowledge is given only through lectures (Figure 4), then after 3 days only 25% of them can be remembered. If not only through lectures, but also reading (listening), visual If given through presentations and in the form of reasoning on the topic, then we see that after 3 days it is possible to remember 75% of the information provided.

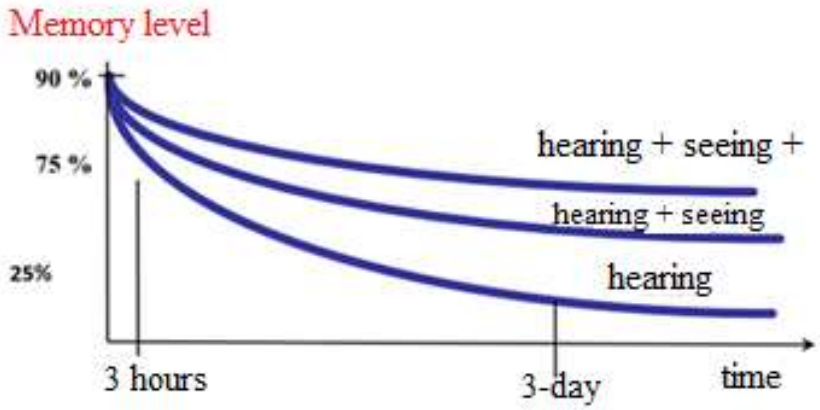

Figure 4: Diagram showing the dependence of mastery on the use of sensory organs

If several sensory states are used together in the perception of knowledge, then the process of transferring information from short to long memory is accelerated, which is the basis of the learning process. As a result, the effectiveness of learning will increase due to the active participation of students in the learning environment. This allows us to draw the following conclusions about the effective organization of the process.

- The learning situation should be prepared for the rational use of interactive methods and audiovisual means.

-Always allow to argue about educational material. Educational conversations, interactive methods, interdisciplinary linking of topics, group discussions are recommended, since these methods help to increase the speed of assimilation through the involvement of students.

Conclusion

Currently, one of the most pressing issues in the system of higher education is the education of students as full-fledged specialists in their field. From this point of view, in this article, unusual methods are used in the educational process, linking the subject of theoretical electrical engineering, which is the main fundamental science for electrical engineering students, with the level of highly competitive personnel. It was believed that effective results could be achieved through the organization of trainings.

Referenses

1. O`zbekiston Respublikasi Prezidenti Sh. Mirziyoyevning 08.10.2019 yildagi “o‘zbekiston respublikasi oliy ta’lim tizimini 2030-yilgacha rivojlantirish konsepsiyasini tasdiqlash” to‘g‘risida PF-5847-son farmoni.
2. A.S. Karimov, M.Ibadullayev, B.Abdullayev. “Elektrotexnikaning nazariy asoslari” Darslik. T.: <<Fan va texnologiya>> 2017 y
3. M.Jo`rayev, B.Sattorova. “Fizika va astronomiya o`qitish nazariyasi va metodikasi” O`quv qo`llanma. T.: <<fan va texnologiya>> 2015 y
4. H.T.Omonov, N. X. Xo`jayev, S.A. Madyorova, E.U. Eshchonov. “Pedododik texnologiyalar va pedagogik mahorat” Darslik. T.: <<Iqtisod moliya >> 2009 y
5. M.U Dexkanova. “Kasb ta`limi metodikasi” o`quv qo`llanma. ToshTYMI. T.: 2031 y

Zaynobiddinov Sirojiddin Zaynobiddinovich
Andijon davlat Universiteti Akademigi.
To`lqinov Muhammad Ali Erkinjon O`g`li - Namangan muhandislik- texnologiya instituti, "Energetika" kafedrasi assistenti.
Tel: (+99899) 086-76-74. Email: Muhammadali.tolqinov.91@mail.ru