


**18<sup>th</sup> INTERNATIONAL MULTIDISCIPLINARY  
SCIENTIFIC GEOCONFERENCE  
SGEM 2018**

**CONFERENCE PROCEEDINGS  
VOLUME 18**

*Ecology, Economics,  
Education and Legislation*

*Issue: 5.4*



**EDUCATION AND ACCREDITATION  
IN GEOSCIENCES**

**ENVIRONMENTAL LEGISLATION,  
MULTILATERAL RELATIONS  
AND FUNDING OPPORTUNITIES**

**18<sup>th</sup> INTERNATIONAL MULTIDISCIPLINARY  
SCIENTIFIC GEOCONFERENCE  
S G E M 2 0 1 8**

**CONFERENCE PROCEEDINGS**

**VOLUME 18**



**ECOLOGY, ECONOMICS, EDUCATION AND LEGISLATION**

**ISSUE 5.4**

-----  
**EDUCATION AND ACCREDITATION IN GEOSCIENCES**

**ENVIRONMENTAL LEGISLATION, MULTILATERAL  
RELATIONS AND FUNDING OPPORTUNITIES**  
-----

**2 July - 8 July, 2018**

**Albena, Bulgaria**

---

## DISCLAIMER

This book contains abstracts and complete papers approved by the Conference Review Committee. Authors are responsible for the content and accuracy.

Opinions expressed may not necessarily reflect the position of the International Scientific Council of SGEM.

Information in the SGEM 2018 Conference Proceedings is subject to change without notice. No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without the express written permission of the International Scientific Council of SGEM.

## ORGANIZERS AND SCIENTIFIC PARTNERS

- THE CZECH ACADEMY OF SCIENCES
- LATVIAN ACADEMY OF SCIENCES
- POLISH ACADEMY OF SCIENCES
- RUSSIAN ACADEMY OF SCIENCES
- SERBIAN ACADEMY OF SCIENCES AND ARTS
- SLOVAK ACADEMY OF SCIENCES
- NATIONAL ACADEMY OF SCIENCES OF UKRAINE
- INSTITUTE OF WATER PROBLEM AND HYDROPOWER OF NAS KR
- NATIONAL ACADEMY OF SCIENCES OF ARMENIA
- SCIENCE COUNCIL OF JAPAN
- EUROPEAN ACADEMY OF SCIENCES, ARTS AND LETTERS
- ACADEMY OF SCIENCES OF MOLDOVA
- MONTENEGRIN ACADEMY OF SCIENCES AND ARTS
- CROATIAN ACADEMY OF SCIENCES AND ARTS, CROATIA
- GEORGIAN NATIONAL ACADEMY OF SCIENCES
- ACADEMY OF FINE ARTS AND DESIGN IN BRATISLAVA
- TURKISH ACADEMY OF SCIENCES
- NIZHNY NOVGOROD STATE UNIVERSITY OF ARCHITECTURE AND CIVIL ENGINEERING, RUSSIAN FEDERATION
- BULGARIAN ACADEMY OF SCIENCES
- BULGARIAN INDUSTRIAL ASSOCIATION
- BULGARIAN MINISTRY OF ENVIRONMENT AND WATER

## INTERNATIONAL SCIENTIFIC COMMITTEE

Ecology, Economics, Education and Legislation

- PROF. DR. L. LAVRYSEN, BELGIUM
- PROF. DR. JÜRGEN H. BREUSTE, AUSTRIA
- PROF. TIEN-HUI CHIANG, TAIWAN
- DR. KRASSI RUMCHEV, AUSTRALIA
- ASSOC. PROF. MAŁGORZATA GRODZIŃSKA-JURCZAK, POLAND

Copyright © SGEM2018

All Rights Reserved by the International Multidisciplinary Scientific GeoConferences SGEM  
Published by STEF92 Technology Ltd., 51 "Alexander Malinov" Blvd., 1712 Sofia, Bulgaria  
Total print: 5000

ISBN 978-619-7408-49-2

ISSN 1314-2704

DOI: 10.5593/sgem2018/5.4

INTERNATIONAL MULTIDISCIPLINARY SCIENTIFIC GEOCONFERENCE SGEM  
Secretariat Bureau

E-mail: [sgem@sgem.org](mailto:sgem@sgem.org) | URL: [www.sgem.org](http://www.sgem.org)

- PROF. BÁNDI GYULA, HUNGARY
- PROF. ROBERTO CARANTA, ITALY
- PROF. PHD MIRELA MAZILU, ROMANIA
- PROF. RAIMONDS ERNSTEINS, LATVIA
- ASSOC. PROF. ALEXANDER IVANOV, RUSSIA
- DR. JERZY JENDROSKA, POLAND
- ASSOC. PROF. JAROSLAV VRBA, CZECH REPUBLIC

## CONFERENCE PROCEEDINGS CONTENTS

### EDUCATION AND ACCREDITATION IN GEOSCIENCES

1. A BIOLOGY LEARNING THROUGH THE INSTRUMENTALITY OF THE “FLIPPED CLASSROOM” METHOD WITH PARTICULAR REFERENCE TO PEDAGOGICAL UNIVERSITY IN KAZAKHSTAN, Bakhyt N. Mynbayeva, Gulzhan K. Yerubayeva, Bakytkul K. Amirasheva, Dinara I. Zakirova, Shynarai O. Mukhtarova, Kazakh National Pedagogical University named after Abay, Kazakhstan.....3
2. ANALYSIS OF COMPANIES’ CORPORATE SOCIAL RESPONSIBILITY PERFORMANCE AS A WAY TO DEVELOP ENVIRONMENTAL ETHICS FOR STUDENTS SPECIALIZING IN OIL AND GAS ACTIVITY, Goman I.V., Oblova I.S., NATIONAL MINERAL RESOURCES UNIVERSITY, Russia .....11
3. CORRELATION BETWEEN EDUCATIONAL BACKGROUND, AGE, SUCCESS IN THE ADMISSION PROCEDURE AND A LIKELIHOOD OF HIGH GRADES FOR APPLICANTS IN THE DUAL DEGREE PROGRAM “PRODUCTION TECHNOLOGY AND ORGANISATION”, Hagen H. Hochrinner, Anna Lena Stoeckmann, FH Joanneum Gesellschaft mbH, Austria .....19
4. DEVELOPMENT OF A SUSTAINABLE SAFETY DEGREE OF THE ACTIVITY WITH PYROTECHNIC ARTICLES FOR PROFESSIONAL USE (F4), Cristian Raul Cioara, Marius Cornel Suvar, Marius Simion Morar, Ciprian Ilie Jitea, Gabriel Dragos Vasilescu, National Institute for Research and Development in Mine Safety and Protection to Explosion - INSEMEX, Romania .....27
5. DISCOVERING CONTINENTS “THROUGH THE EYES OF THE WORLD”: MUSIC, GEOGRAPHY, EDUCATION AND RESEARCH, Dr. Ioan Sebastian JUCU, West University of Timisoara Chemistry Biology Geography Faculty Department of Geography, Romania.....35
6. DIVERSIFICATION OF THE EDUCATIONAL OFFER OF „1 DECEMBRIE 1918” UNIVERSITY OF ALBA IULIA, THROUGH THE ESTABLISHMENT OF NEW STUDY PROGRAMS, Assoc. Prof. Dr. Luciana Oprea, 1 Decembrie 1918 University of Alba Iulia, Romania .....43
7. ECONOMICS AND CONSTRUCTION LEGISLATION: TEACHING APPROACHES AND METHODS APPLIED TO OUR UNIVERSITY STUDENTS, Duta, A., Popa, D.L., Dumitru, V.C., Barbu-Mogosanu, A.M., University Of Craiova, Romania.....51

<b>8. EDUCATION AND TRAINING OF CRISIS MANAGEMENT AND CIVIL PROTECTION WORKERS IN THE SLOVAK REPUBLIC</b> , Kovacova Lucia, Kavan Stan, Mesaros Marian, Losoncz Peter, University of Security Management in Kosice, Slovakia.....	59
<b>9. EDUCATIONAL DESIGN OF THE ADAPTIVE LEARNING SYSTEM IN HIGHER EDUCATIONAL INSTITUTIONS</b> , V. Tokatrova, Mari State University, Russia.....	67
<b>10. FINANCIAL LITERACY: FROM THEORY TO PRACTICE</b> , Sudakova A.E., Ural Federal University, Russia.....	75
<b>11. FORMAL AND NON-FORMAL EDUCATION TECHNIQUES FOR ADOPTING AN ECOLOGICAL CITIZENSHIP</b> , PhD. Candidate Cristina Halbac-Cotoara-Zamfir, Politehnica University Timisoara, Romania.....	83
<b>12. GEOGRAPHY IN EDUCATIONAL SYSTEM OF PRIMARY SCHOOL TEACHER EDUCATION IN CROATIA</b> , Coll. Prof. Zeljko Popovic, Assoc. Prof. Dr. Irella Bogut, University of Osijek, Croatia.....	91
<b>13. GEOSCIENCE AS A CONNECTOR IN INTERDISCIPLINARY EDUCATION FOR GRADUATE STUDENTS</b> , Flokova L., Dr. Dockalikova I., Kalupova B., College of Logistics, Czech Republic.....	99
<b>14. GRAPHICAL VISUALIZATION OF EDUCATIONAL INFORMATION DURING THE STUDYING PROCESS OF THE STUDENTS IN UNIVERSITIES</b> , Prof. Dr. Tatyana Komissarova, Assoc. Prof. Dr. Elena Gadzhieva, Assoc. Prof. Dr. Maria Lebedeva, Assist. Prof. Dr. Olga Morozova, Pushkin Leningrad State University, Russia.....	107
<b>15. GREENING OF HIGHER EDUCATION AS A FACTOR OF FORMATION OF BALANCE BETWEEN MAN AND ENVIRONMENT (ON EXAMPLE OF TYUMEN INDUSTRIAL UNIVERSITY)</b> , Assoc. Prof. Dr. Alla Isakova, Tyumen Industrial University, Russia.....	115
<b>16. IMPROVING THE GEODESY EDUCATION FROM „1 DECEMBRIE 1918” UNIVERSITY OF ALBA IULIA THROUGH THE ACCREDITATION OF A MASTER'S DEGREE PROGRAM</b> , Prof. Dr. Ioan Ienciu, 1 Decembrie 1918 University of Alba Iulia, Romania.....	123
<b>17. INCREASING OF EFFICIENCY OF THE COOPERATION OF RESCUE COMPONENTS OF THE INTEGRATED RESCUE SYSTEM OF THE SR IN THE CONTEXT OF EDUCATION</b> , Ing. Lucia Kováčová, Ing. Bc. Danka Boguská, Prof. Ing. Marián Mesároš, University of Security Management And University of Prešov, Slovak Republic.....	131
<b>18. INDIVIDUAL STYLE OF SELF-REGULATION AND MOTIVATION OF ACHIEVEMENTS OF STUDENTS OF ECONOMIC SPECIALTIES</b> , Ass. Professor Irina Popelnitskaya, Ass. Professor Anna Semenova, Professor Evgeniya Buharova, Ass. Professor Sergei Pochekutov, Ass. Professor Nikolay Shulgin, Siberian Federal University, Russia.....	139
<b>19. INFORMATION AND COMMUNICATION TECHNOLOGIES IN MODERN GEOLOGICAL EDUCATION</b> , Prof. Dr. Anatoly Borisov, Assoc.Prof. Evgeniya Nurieva, Assoc.Prof. Boris Chervikov, Kazan (Volga Region) Federal University, Russia.....	147
<b>20. INNOVATIVE METHODS OF TRAINING DISCIPLINES OF THE ELECTROTECHNICAL CYCLE</b> , Nazgul Alimgazinova, Gulmira Tashkeyeva, Aisha Naurzabayeva, Arailym Manapbayeva and Saltanat Ikramova, Al-Farabi Kazakh National University, Kazakhstan.....	153
<b>21. INTERACTIVE TEACHING IN THE EDUCATIONAL ENVIRONMENT OF A UNIVERSITY</b> , Gulmira Tashkeyeva, Kenzhekhan Medeubaeva, Fatima Assilbayeva, Gulnara Shokobaeva, Nadira Mukhamejan, al-Faraby Kazakh National University, Kazakhstan.....	161
<b>22. INTERDISCIPLINARY NATURE OF TRAINING ENGLISH AT UNIVERSITY</b> , Dr. Sci. Aleksander Lipaev, Ludmila Alekseeva, Almetyevsk State Oil Institute, Russia.....	169
<b>23. MARI ETHNOLINGUISTICS IN THE EDUCATIONAL PROCESS: OPPORTUNITIES AND PROSPECTS FOR LANGUAGE ECOLOGY</b> , Natalia Glukhova, Galina Shkalina, Elina Guseva, Elena Andrianova, Galina Kadykova, Mari State University, Russia.....	177
<b>24. MASSIVE OPEN ONLINE COURSES IN TEACHING ENGLISH AS FOREIGN LANGUAGE TO DEVELOP CORE COMPETENCIES FOR GLOBAL INFORMATION SOCIETY</b> , Senior Lecturer Evgeniya Yadrikhinskaya, Assoc. Prof. Irina Savvina, Senior Lecturer Anna Krivoshapkina, Senior Lecturer Sardana Prokopeva, Assoc. Prof. Zarmina Emelyanova, North-Eastern federal university named by M.K.Ammosov, Russia.....	185
<b>25. MATHEMATICAL LITERACY OF ENGINEERS IN THE INDUSTRY 4.0</b> , Dalibor Bartonek, Jiri Bures, Pavel Kovarik, Jindrich Petrucha, Brno University of Technology, Czech Republic.....	193
<b>26. MODEL OF USE OF RESEARCH COMPETENCES IN EDUCATION AND INNOVATION PROCESSES</b> , Dr. Vladimir Minakov, PhD. Oleg Lobanov, Assoc. Prof. Tatyana Minakova, Saint Petersburg State University of Economics, Russia.....	201
<b>27. MODELLING OF DATA LIFE CYCLE IN AUTOID SYSTEMS USING WITNESS ENVIRONMENT</b> , Assoc. Prof. Kodym O., Dr. Kavka L., Dr. Sedlacek M., College of Logistics, Czech Republic.....	209

**DIRECTIONS**, Professor, Dr. Valery Nevinskiy Associate Professor, PhD Egor Doroshenko Associate Professor, PhD Alexander Sergeev Associate Professor, PhD Anastasia Mierkhold Assistant, Ivan Yapyryntsev, Kutafin Moscow State Law University, Russia.....515

**67. THE REGULATORY RULES OF MUNICIPALITY**, Mgr. Katerina Svarcova, Masaryk University in Brno Faculty of Law, Czech Republic .....521

**68. SELECTED ASPECTS OF THE LEGISLATIVE RESTRICTION ON THE ACQUISITION OF LAND OWNERSHIP IN SLOVAK REPUBLIC**, Toams Peracek, Boris Mucha, Patricia Brestovanska, Comenius University Bratislava, Slovakia .....531

**69. SELECTED LEGAL ISSUES IN RECREATIONAL ACTIVITIES IN SPECIALLY PROTECTED AREAS OF THE CZECH REPUBLIC**, Jana Dudova, Masaryk University in Brno Faculty of Law, Czech Republic .....539

**70. STUDENTS' ECOLOGIST-LEGAL FORMATION DURING PROFESSIONAL BECOMING: SOCIOLOGICAL AND LEGAL ANALYSIS**, Mikhail Demidov, Valeriy Andreev, Elena Antonova, Elena Ivanova, Nadezhda Khuraskina, Russian University of Cooperation And Chuvash State University, Russia.....547

**71. THE (NON) RESPECT OF ENVIRONMENTAL LEGISLATION AS A FUNDAMENTAL HUMAN RIGHT VIOLATION IN REPUBLIC OF KOSOVO**, Prof. Ass. Dr. Dukagjin Leka, University Kadri Zeka in Gjilan, Kosovo.....555

**72. THE ABANDONMENT OF MINING FACILITIES IN THE IBERIAN PYRITE BELT. CONSTRUCTIVE ANALYSIS OF THE THARSIS LINE RAILWAY STATIONS**, J.M. Davila, S. G. Melgar, J.C. Fortes, J. Castilla, M. Santesteban, University of Huelva- Technical Top School-Department of Mining Engineering, Spain .....563

**73. THE CONSEQUENCES TRANSPORTATION OF THE NFI DIRECTIVE INTO POLISH LAW**, Dr. Magdalena Wojcik-Jurkiewicz, University of Economics in Katowice, Poland.....571

**74. THE IMPORTANCE OF INTERNATIONAL COOPERATION IN THE MANAGEMENT OF ENVIRONMENTAL EFFECTS IN WESTERN BALKAN COUNTRIES**, Ass. Phd. Selim Daku, Ass. Prof. Dr. Dukagjin Leka, University Kadri Zeka in Gjilan, Kosovo.....579

**75. THE SIGNIFICANCE AND INFLUENCE OF CONSTITUTIONAL VALUES ON THE REGULATION OF ENVIRONMENT PROTECTION IN THE RUSSIAN ARCTIC ZONE**, Professor, Dr. Valentina Komarova Professor, Dr. Galina Sadovnikova Associate Professor, Dr. Nadezhda Pastukhova Senior Lecturer, PhD Sergey Zaikin Lecturer, PhD Natalia Petukhova, Kutafin Moscow State Law University, Russia .....587

---

**SECTION**

---

**EDUCATION AND ACCREDITATION IN GEOSCIENCES**

---

## INNOVATIVE METHODS OF TRAINING DISCIPLINES OF THE ELECTROTECHNICAL CYCLE

Nazgul Alimgazhina<sup>1</sup>

Gulmira Tashkeyeva<sup>2</sup>

Aisha Naurzabayeva<sup>3</sup>

Aralym Manapbayeva<sup>4</sup>

Saltanat Ikramova<sup>5</sup>

<sup>1</sup>Altanat Kazakh National University, Almaty, Republic of Kazakhstan

<sup>2</sup>Al-Farabi Kazakh National University, Almaty, Republic of Kazakhstan

<sup>3</sup>Al-Farabi Kazakh National University, Almaty, Republic of Kazakhstan

<sup>4</sup>Al-Farabi Kazakh National University, Almaty, Republic of Kazakhstan

<sup>5</sup>Al-Farabi Kazakh National University, Almaty, Republic of Kazakhstan

### ABSTRACT

In this paper, we present the innovative methods of organization and technology used in the teaching of disciplines of the electrical engineering cycle, adapted for technical specialties, during lecture, practical and laboratory classes.

In modern Kazakhstan, more than a hundred higher educational institutions produce highly qualified specialists in various fields of the national economy. The most successful competitive universities are those, whose graduates successfully implemented in their professional activities, both within the country and abroad. As a result, each educational institution seeks to produce high-level specialists with relevant competencies in a particular field of activity, which in turn sets new requirements for improving the learning process.

The main factors that determine the quality of the university graduates' preparation are the quality of educational programs, the qualification of the teaching staff, also the organization, provision and technology of the educational process itself. Currently, the connection with the transition to a multi-level credit system of education, the development of international relations and the support of the education and science sector by the state, the quality of educational programs has improved; the level of qualified teachers is growing every year. In many higher educational institutions, information and methodological and technical support of disciplines goes along with the trends of the development of modern society.

**Keywords:** innovative methods, active and interactive teaching methods, electrotechnical cycle.

### INTRODUCTION

According to the development of science and technology, many new specialties have recently been discovered, experimental curricula and model curricula have been

It is also possible to tell the following: 1) we consider the use of up-to-date electronic learning resources along with the complex of interactive methods of training to be a most demanding factor in geological education; 2) distance education and remote training without the required delivering of tutorials and conducting a training and field practice are considered to be not very effective in gaining basic geological education; 3) a suite of interactive and distance learning technologies enables one to improve his education level the rough out his life, to raise his performance, consequently, to go on improving his professional effectiveness during his entire career.

### REFERENCES

- [1.] Ducrotty Jean-Paul, Shastri Sumil, Williams Peter Coastal sciences and management: the need for networking in higher education/ Ocean & Coastal Management, vol. 43 pp 427-444, 2000.
- [2.] Innovative approaches to the developing of the Federal State Educational Standard and approximate main educational programs for the direction of preparation of higher education "Geology". Under the editorship of V.A. Bogosslovsky. - Moscow state university, Russia, 208 pages. 2007.
- [3.] Bershad, A. M., Glotova T. V., I. G. Krevsky Modern University: educational and information technology in a multilevel system of higher education./ Collection of scientific articles of the XIX joint conference "Internet and modern society" IMS-2016, St. Petersburg, June 22-24, Russia, pp 143-160, 2016.
- [4.] Borisov A. S., Nurieva E. M., Khasanov R. R. Geological education in Russia and Bologna process: the changing aspects of the information educational environment / scientific notes of Kazan state University. Series of Humanitarian Sciences Russia, vol. 151/ book.5. Part 1, pp 282-286, 2009.
- [5.] Fersman A. E. Entertaining Geochemistry: chemistry of the Earth. Moscow: Publishing house of the USSR Academy of Sciences, Russia, 399 p., 1959.
- [6.] Borisov A. S., Latypov R. H., Nurieva E. M. Information technology in geological education: distance learning in Moodle environment/ Scientific notes of Kazan state University. Series of Humanitarian Sciences Russia, vol. 152/ book.5, pp 225-230, 2010.
- [7.] Shroder John F. Jr., Bishop Michael P., Olsenholler Jeffrey, Craiger J. Philip Geomorphology and the World Wide Web, Geomorphology, ELSEVIER, vol.47 pp 343-363, 2002.
- [8.] Jana Dlouhá, Simon Burandt Design and evaluation of learning processes in an international sustainability oriented study programme. In search of a new educational quality and assessment method / Journal of Cleaner Production ELSEVIER, vol. 106, 1 November 2015, pp 247-258, 2015.
- [9.] Johnson Donald R., Ruzek Martin, Mike Kalb Earth System Science and the Internet. / Computers & Geosciences, ELSEVIER, vol. 26 pp 669-676, 2000.
- [10.] Stephen D Hurst Use of "virtual" field trips in teaching introductory geology Computers & Geosciences, ELSEVIER, Vol. 24 Issue 7, pp 653-658, 1998.
- [11.] Trofimov V. T., Pushcharovsky D. Yu., Bogoslovsky V. A. About new trends in the development of geological education in classic Russia universities./ Mineral resources of Russia. Economics and management, Russia, № 2, pp 46-51, 2010.

developed, for which effective methods and technologies for teaching disciplines of various directions have not yet been developed. To solve this problem, the educational process should be based on the use of innovative methods and technologies that increase the effectiveness of students' knowledge acquisition. There are many different active and interactive forms of organization and methods of teaching disciplines [1], however, when choosing the important point is their adaptation for each specialty.

#### ACTIVE AND INTERACTIVE TEACHING METHODS USED IN ELECTRICAL ENGINEERING CLASSES

Each discipline, and especially the subjects of the electro technical cycle, have their own characteristics and require certain characteristic methods and organizational forms of instruction. To subjects of an electro technical cycle it is possible to carry subjects "Electrical engineering", "the Theory of electric chains", "Bases of electrotechnics and electronics".

Each of the above items based on theoretical and experimental knowledge. Theoretical level of cognition (lecture and practical exercises) should be dominated by methods that include the following actions, such as theoretical presentation and generalization of the main material, a qualitative analysis of non-standard problems, the modeling of the situation, a thought experiment and the hypothesis about the possible results of the process and etc.

Experimental cognition (laboratory class) carried out by visual observation of the processes occurring during the demonstration, or, by obtaining specific skills and skills in the direct reproduction of experience or by virtual simulation of the process using special software.

Due to the fact that the credit system of education introduced in the Kazakhstani education system is aimed at the active activity of students, we aimed to organize classes in such way that each student would like to qualitatively assimilate the material presented, was psychologically active, tried and worked from beginning to the end of the whole class. To do this, we needed to use active and interactive teaching methods. The difference between active learning and interactive is that, in the first case, the student acts as a subject of learning activity; enters into a dialogue with the teacher; actively participates in the cognitive process; performing creative; searching and problem tasks; in the second case, the student interacts with other students of the group, share information, jointly solve problems, simulate situations. When choosing the methods of teaching, our goal was to develop in the educational process the students' creative abilities and skills of productive communication, the ability to articulate, articulate and argue their thoughts, and find the best ways to solve a real problem.

From the rich educational and methodological material covering the use of modern innovative methods and technologies by the teacher in the conduct of studies, taking into account the fact that the disciplines of the electro technical cycle have a certain specificity and the active activity of students is quite extensive, in addition to the generally accepted methods, when organizing the educational process, it was expedient use the following active and interactive forms of training: for lecture - *lecture-visualization*, *brainstorming*, *problem situation and colloquium - dictation*, for practical exercises - "brainstorming", "case-method" and colloquium-test, calculation and graphic work, for

laboratory classes - *modeling*, *creative task and colloquium - oral survey*. On additional lessons for independent work of students with teachers, we use the *project method*.

Due to the fact that each student perceives the information received in his own way, and the main effective form of submitting information on the discipline that stimulates interest in science, convincing in the theoretical and practical significance of the studied subject in lectures, we tried to organize classes in such a way that students -visuals, students-are audial, students-kinesthetic and students-disasters could effectively gain knowledge.

Practically all lecture classes of disciplines of the electrotechnical cycle are conducted according to the technique of "Lectures-visualization". On such lectures, oral material is accompanied by a display of various drawings, structural and logical diagrams, supporting abstracts, diagrams and other materials presented in the form of educational presentations in the Microsoft Power Point editor. In addition, on the blackboard, if necessary, the teacher can in more detail draw up a formula describing the electromagnetic state of the process. This technique is very effective, as it clearly highlights the main points of the topic.

When conducting lecture classes, we use the method of "brainstorming" practically at each beginning of the new section. This method, aimed at generating ideas to solve the problem, based on the process of joint resolution of problematic problems posed during the organized discussion. A task can contain a professionally significant or interdisciplinary question. At the same time, all the ideas and proposals expressed by the group's participants should be fixed on the board (or a large sheet of paper) so that then they can be analyzed and generalized. The spirit of competition activates the thinking activity of one idea engenders other ideas. The spirit of competition activates the thinking activity of the students. Let us consider an example offered by us at the lessons of electrical engineering in the university to students studying in the specialty "Electrical Engineering". To conduct a brainstorm 5 minutes allocated. When considering the properties of a magnetic field, students can be asked a task: what is a magnetic field? Within one minute students on the blackboard write down the answers. Responses of students: a force field acting on moving electric charges and on bodies; magnetic component of the electromagnetic field; the interaction of two magnets, etc.

At the end of the "assault" all the proposed ideas (solutions) are analyzed, in which the whole group participates. The correct answer collected from the options offered by students: a magnetic field - a force field acting on moving electric charges and on bodies possessing a magnetic moment, regardless of the state of their motion.

The following method is Case study. The case method in relation to other technologies can be presented as a complex system into which other, less complicated methods of cognition are integrated. It includes: *modeling*, *system analysis*, *problem method*, *thought experiment*, *description methods*, *classifications*, *discussions*, *game methods*, etc. Its essence lies in the fact that students are offered to comprehend the real life situation, the description of which reflects not only some practical problem, but also updates a certain set of knowledge that must be learned when solving this problem. However, the problem itself does not have unique solutions. In the case-method, a problem formed and solutions solved based on a package of materials (case) with a varied description of the situation from various sources: scientific, special literature, popular science journals such as Science and Life, the media, etc. In the case Contains ambiguous information on a



particular problem. Such a case is both an assignment and a source of information for understanding the options for effective action [2].

Laboratory work, which is an integral part of the educational process in electrical engineering, organized, as a rule, according to instructions (most often found in the text of guidelines). In such instructions, trainees given precise instructions on the actions with the instruments presented, on the necessity of carrying out certain measurements, etc.; the share of students with such an organization of laboratory work is only a fixation of the result or a conclusion about the results of the activity. Such laboratory work is certainly useful and necessary, especially at the initial stage of electrical engineering training. However, the goals and objectives of teaching in modern pedagogy require familiarization, learning to independent, creative search. Therefore, many teachers organize research laboratory works, in instructions to which only the purpose of the work is determined, and the study stages (work plan) the trainees must develop themselves (and sometimes even determine and select the instruments and devices necessary for their work). It is particularly advisable to organize research laboratory work during the electrotechnical practice.

The main condition for the organization of research assignments of any type is the passage by trainees of all or most stages of the research process (taking into account the requirements for the feasibility and availability of the proposed tasks). A holistic solution of them will ensure that the research method performs its functions (Figure 1) [3].

Obviously, the whole group of productive methods of teaching (problematic exposition, heuristic and research) called upon to promote the assimilation of the knowledge and skills of students at the level of their creative application.

Modern requirements to the quality of professional training of specialists in the system of secondary and higher education, the problem of the deficit of the study time allocated by the state standard for the study of electro technical disciplines, stipulate the introduction of new teaching methods based on computer technologies in the educational process.



Figure 1. Stages of the research process

At present, computer technologies are widely used in the educational process in the setting up of virtual laboratory work on courses in electrical engineering and electronics. At the same time, mostly electronic circuit simulation programs are used, such as Electronics Workbench, Multisim, Laboratory Virtual Instrument Engineering Workbench, etc., having a user-friendly interface, an extensive library of components and easy to use.

Expanding the possibilities of traditional teaching methods, circuit simulation programs for analog, digital and analog-digital circuits allow during the laboratory to compile an equivalent circuit, change the denominations of its elements with performance verification, show on the monitor real oscillograms of signals at any point of the circuit. There appears the possibility of demonstrating simulated circuit errors and their influence on certain parameters of the electrical circuit (Figure 2).

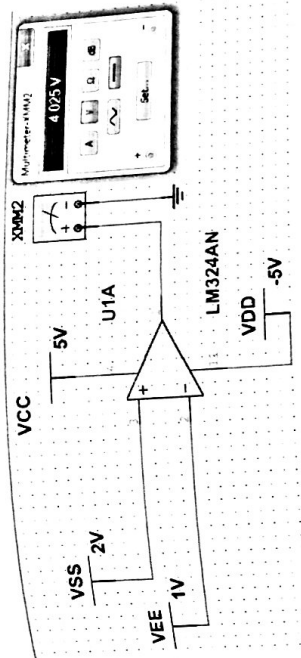


Figure 2. The operational amplifier circuit in a Multisim computer environment

Independent work is one of the important and widely discussed problems in the teaching methodology and considered the highest form of educational activity. A. Disterweg pointed out the importance of independence in the acquisition of knowledge: "Development and education cannot be given or communicated to any person. Anyone, who wishes to join them must achieve this by his own activity, with his own strength, with his own tension."

Independent work, first of all, completes the tasks of all other types of academic work. No knowledge that has not been the object of its own activity cannot be considered a true possession of man. In addition to practical importance, independent work has great educational significance: it forms independence not only as a set of certain skills and skills, but also as a character trait, that plays an essential role in the structure of the personality as a specialist of the highest qualification.

For successful performance of laboratory work, students must first prepare themselves for independent work assignments, referring to appropriate teaching and methodological aids. The laboratory work in each educational institution has its own peculiarities depending on the instruments and equipment used; therefore, it is necessary to have methodical guidelines corresponding to these works.

The project activity of students among modern pedagogical technologies, from our point of view, is the most adequate to the goals of education - the formation of key competencies. The method of projects can be considered as one of the personally oriented developmental technologies, which is based on the idea of developing the cognitive skills of students, creative initiative, the ability to think independently, find and solve problems, navigate the information space, the ability to predict and evaluate the results of one's own activity. The method of projects always focused on the independent activity of students - individual, pair, group, which students perform for a certain period. This method is applicable in the presence of a significant problem (practical, scientific, creative, and vital), for which a research search is necessary (ES Polat). A graduate of an educational institution in modern conditions to adapt to changing life situations, including in professional activities, must have a breadth of knowledge, the ability to integrate and apply them to explain the phenomena surrounding it. All this confirms the necessity to use *practical* projects in the project activity.

Learned practical experience can be used to solve problems arising in everyday life, at home, at work. Practically oriented tasks increase the effectiveness of the educational process by increasing the motivation to develop this area of knowledge, which manifests itself only in conditions that are personally important for students. Thus, students of technical universities in the study of electrical engineering can be offered the following project topics: "Three-phase circuits", "Operational amplifiers", "Transformers", "Structure of electrical machines."

Unlike educational and research activities, the main result of which is the achievement of truth, the work on the project is aimed at a comprehensive and systematic study of the problem and involves obtaining a practical result - an educational product. The product can be a video, an album, a poster, an article in a newspaper, an instruction, a theatrical performance, a game (sports, business), a website, etc. The project activity involves the preparation of reports, abstracts, research and other creative activities. In the process of implementing the project, students use not only educational, but also educational-methodical, scientific, reference literature. The role of the trainer is to monitor, advise and guide the process of analyzing the results, if necessary.

In the course of the project, the learner is involved in an active cognitive creative process; At the same time, both the consolidation of existing knowledge on the subject and the acquisition of new knowledge take place. In addition, supra-subject competencies are formed: research (search), communicative, organizational-managerial, reflexive, skills and skills of working in a team, etc.

The most common type of teaching methods in practical exercises used in the teaching of electrical disciplines is the implementation of **calculation and graphic work (CGW)**. The solution of such problems considered an integral part of the process of teaching to any subject of the electrical engineering cycle, since, CGW allow the application of theoretical knowledge in practice, is an indicator of their awareness and strength in students

In the diagram of Fig. 2 for  $R_1 = 720 \text{ Ohm}$ ,  $R_2 = 800 \text{ Ohm}$ ,  $R_3 = 1200 \text{ Ohm}$  and the input voltage  $u_m = 73 \sin(\omega t + \pi/4)$  Define the active values of the currents in the waves and record the expressions of their instantaneous values. To create a vector diagram of the currents and voltages for the time change  $t = 0$ . Determine also the total amount of power consumed in the chain.

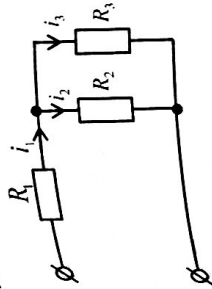


Figure 2

Figure 3. Example of the task for performing the CGW

An explanatory note in which the students show often accompanies a report on the execution of computational and graphic works: the rationale for the chosen method, the compilation of the algorithm, and the interpretation of the solution of the problem; selection of diagrams and graphical characteristics, evaluation of accuracy and reliability of decisions.

## CONCLUSION

Based on the foregoing, it can be concluded that it is advisable for the teacher to combine different methods and forms of organization of the educational process in order to achieve the greatest effect from their use.

The considered interactive methods can be applied when teaching different disciplines in professional educational institutions, both secondary and primary, and higher professional education for the formation of key competencies. In addition, in its conceptual basis - in the design of innovative pedagogical technologies that ensure the training of highly qualified professionals.

Theoretical and experimental studies carried out by the authors made it possible to show the key didactic and psychological-pedagogical features of the methods of teaching electrotechnical cycle, to determine the ways to optimize the educational process and improve the quality of vocational training of graduates of universities.

## REFERENCES

- [1] E. Polat & M. Bukharkina & M. Moiseyeva & A. Petrov. New pedagogical and information technologies in the system of education, Russia, M.: Publishing center "Akademiya", 2004, pp 12-35.
- [2] N. E. Erganova & M. G. Shalunova. Practice on the methodology of vocational training, Tutorial, Ekaterinburg: Publishing house Ros. state. prof.-ped. Un-ta, 2005, pp 6.
- [3] B. T. Abykanova & A. Saryeva & D. Sadirbekova & A. Marhabaeva. Application of methods of interactive training in the educational environment of higher educational

## INTERACTIVE TEACHING IN THE EDUCATIONAL ENVIRONMENT OF A UNIVERSITY

Guimira Tashkejeva<sup>1</sup>

Kenzhekhan Medenbaeva<sup>2</sup>

Fatima Assilbayeva<sup>3</sup>

Guinara Shokobaeva<sup>4</sup>

Nadira Mukhamejan<sup>5</sup>

<sup>1</sup>Al-Farabi Kazakh National University, Republic of Kazakhstan

<sup>2</sup>Kazakh State Women's Pedagogical University, Republic of Kazakhstan

<sup>3</sup>Kazakh State Women's Pedagogical University, Republic of Kazakhstan

<sup>4</sup>Al-Farabi Kazakh National University, Republic of Kazakhstan

<sup>5</sup>Kazakh-German University, Republic of Kazakhstan

### ABSTRACT

Modern education is a special type of mastering knowledge, a purposefully designed process of cognition based on the use of innovative technologies. In the traditionally instrumented pedagogical process it is possible to really organize interactive training only for the trained part of the students.

The use of interactive methods and forms of instruction greatly activates the creative activity of students, contributes to the development of a whole complex of qualities of the creative personality: mental activity; quick learning; aspirations to obtain new knowledge necessary for the performance of specific practical work; independence in choosing and solving problems; responsibility; the ability to see the general, the main thing in different and different in similar phenomena, etc.; they promote the development of their cognitive needs and interests in creative activity and, on the whole, contribute to the improvement of the quality of the pedagogical process. This is reflected in the increase in the performance of students and in a number of indicators of their personal growth.

**Keywords:** interactive training, interactive educational methods, educational environment, university, intensification of creative activity

### INTRODUCTION

Modern education is a special type of mastering knowledge, a purposefully designed process of cognition based on the use of innovative technologies. In the traditionally instrumented pedagogical process it is possible to really organize interactive training only for the trained part of the students.

Interactivity is a specially organized cognitive activity, which has an expressed social orientation. Those methods of teaching that organize the process of social interaction, on the basis of which the participants will have a certain 'new' knowledge born directly



# SGEM WORLD SCIENCE

EARTH & GEOSCIENCES  
[www.sgem.org](http://www.sgem.org)  
[www.sgemviennagreen.org](http://www.sgemviennagreen.org)

SOCIAL SCIENCES & ARTS  
[www.sgemsocial.org](http://www.sgemsocial.org)  
[www.sgemvienna.org](http://www.sgemvienna.org)  
[www.sgemflorence.org](http://www.sgemflorence.org)