

Наукові публікації дослідників СумДПУ у Web of Science I квартал 2023 року

- Diadchenko, H., Tamozhska, I., **Rud, O.**, Rudnytska, Z., Kulishenko, L., Kumeiko, T. Formation of Communicative Competence of Foreign Students in Post-Industrial Society: Electronic Tutoring and Mentoring (2023). *Brain-Broad Research in Artificial Intelligence and Neuroscience*, 14 (1), pp. 207–219. doi: 10.18662/brain/14.1/414

The theme of the article highlights the main aspects on the formation of communicative competencies. The aim of the article tutoring and mentoring using innovative technologies, the achievements of the information and post-industrial society. Theoretical bases for defining the concept of communicative competence, post-industrial society, electronic tutoring, and mentoring are substantiated. The urgency of the problem lies in the presentation of new psychological and pedagogical approaches, it also lies in the formation of competence in a post-industrial society such as the use of electronic learning tools to increase efficiency, the use of information and communication technologies to develop the competence of students and teachers, and organization of learning based on organizational approach. Methods of analysis and synthesis, research method, and method of content analysis were used to determine the peculiarities of the formation of communicative competence in foreign students in the conditions of electronic tutoring and mentoring. In the course of the study, it was proved that the implementation of theoretically sound conditions of electronic tutoring and mentoring will contribute to the formation of communicative competence among foreign students.

- Gurska, O., **Sakhnenko, A.**, Besspalova, O., Dorofieiev, A., Halytska-Didukh, T. Pedagogical Role of Assessment at the Current Stage of Stimulating the Educational Process (2023). *Eduweb-Revista De Tecnologia De Informacion Y Comunicacion En Educacion*, 17 (1), pp. 141–156. doi: 10.46502/issn.1856-7576/2023.17.01.14

The article analyzes the problem of stimulating students, having determined the essence of the rating system and, having analyzed educational success with the help of a rating system for monitoring and evaluating knowledge, it can be said with confidence that today the rating system for monitoring and evaluating knowledge provides a systematic, maximally stimulated work, as students as well as teachers. This is confirmed by the fact that the introduction of a rating system into the educational process creates the following benefits in learning: the stressful situation in the control process is reduced for both students and teachers; learning becomes student -centered; the rating system excludes any humiliation of the student's personality, allows him to evaluate his own abilities and capabilities, i.e. encourages him to conscientious work during the entire period of study.

- Hedzyk, A., Pohoda, O., **Herman, V.**, **Sydorenko, O.**, **Klochko, O.** Prospects for the Development of Distance Education in Ukraine: Methodological Aspect (2023). *Eduweb-Revista De Tecnologia De Informacion Y Comunicacion En Educacion*, 17 (1), pp. 62–75. doi: 10.46502/issn.1856-7576/2023.17.01.7

The article develops the theoretical and methodological foundations of distance learning in the system of continuous education and its characteristic features (flexibility, modularity, parallelism, long-range action, asynchrony, mass character, economic efficiency, the changed role of the teacher, the new role and activity of the student, specialized control of the learning process, the use of modern teaching aids, sociality, internationality); the differences between distance learning and the traditional full-time

form are established (in the distance learning system, the student is the customer of knowledge; the information and educational environment of distance learning is much wider, but less than traditional full-time education, regulates the behavior of participants in the pedagogical process and disciplines students to a greater extent); the specifics of the personal interaction of participants in the distance learning process and the management of distance learning processes (human studies, psychophysical, socio-psychological aspects predominate in it) are revealed; carrying out educational work in the conditions of remote beththal puts forward the axiological approach in the first place; resolved a set of issues related to the introduction of a distance learning system into real pedagogical practice (its social, worldview, value, methodological, legal, financial, economic, organizational, didactic, technological, psychological, applied and educational aspects); organizational forms of distance learning are defined (traditional (correspondence); with fragmentary use of information and communication technologies; electronic; combined).

- 🔗 **Kalynychenko, I.**, Gulich, M., Petrenko, O., Liubarska, L., Latina, H. Awareness of the Threat to the Health of Behavioral Risk Factors for Noncommunicable Diseases By Future Teachers (2023). *World of Medicine and Biology*, 83 (1), pp. 77–81. doi: 10.26724/2079-8334-2023-1-83-77-81

Recently, worsening of youth's health, taking into account the vulnerability of growing and developing organism to the influence of risk factors for chronic noncommunicable diseases has been of a significant concern. The purpose of research was to determine students' awareness of behavioral risk factors for the most threatening pathology of today and the role of a healthy lifestyle as a basis for preventing development of noncommunicable diseases. In order to achieve this goal 216 students of Sumy State Pedagogical University named after A. S. Makarenko were interviewed. A specially designed questionnaire was used. A high level of students' knowledge and awareness of the main factors for noncommunicable diseases development was established. However, 16.3 % of students do not realize the importance of rational nutrition, 24.2 % - the optimal level of physical activity, 26.9 % - the danger of drinking alcoholic beverages; 42.8 % of youth regularly drink alcoholic, low-alcoholic beverages and beer, 26.5 % of students are unaware of the dangers of smoking. 11.6 % of surveyed have excess body weight, with 25.5 % of overweight among boys and 7.7 % - among girls. The priority of ways of obtaining information on risk factors of chronic noncommunicable diseases by youth was established.

- 🔗 Khrypko, S., Yang, Q., Zabolotniuk, V., Zabolotniuk, I., Stoliarchuk, O., Tadeush, O., Lobanchuk, O., **Pasko, K.** Scientist and Teacher-Two Facets of Being a Lecturer of High School in a Postmodern World (2023). *WISDOM*, 25 (1), pp. 129–144. doi: 10.24234/wisdom.v25i1.981

The article is devoted to the problem of the dualistic unity of the values of being a teacher who is both a research scientist and an educator. The specifics of the professional combination of scientific research and practice of live teaching are considered. The paper comprehends the extraordinary phenomenon of education in the context of the scientific and ideological paradigm of understanding, which is a professional basis for both teaching and research activities. Education is represented as a person's spiritual face, which is formed under the influence of moral and spiritual values, which is the property of its cultural circle. The examples of stereotyped education are proposed, which leads to the idea that an indicator of human educated-ness is undoubtedly the worldview and methodological layer of acquired philosophical knowledge, which embodies the spiritual world. The reality and illusory nature of the fact of the "research point" in the activity of the scientist are reflected and the reflection of the determinants of the problem of "different personalities of scientists" is offered. The issue of

teaching authors is singled out as a discourse of style, manners, creativity, content, interpretations, etc.

- 8 Krainiuk, O., **Buts, Y.**, Ponomarenko, R., Asotskyi, V., Barbashyn, V., Kalynovskyi, A. Geocological Analysis of Threats of Using Phosphogypsum in Construction of Roads (2023). *Journal of Geology Geography and Geoecology*, 32 (1), pp. 79–88. doi: 10.15421/112309

The problem of recycling and storage of phosphogypsum is relevant for many countries of the world, as it is associated with environmental problems such as pollution of water bodies, soil and atmosphere. This study analyzes the possibility of using phosphogypsum for the construction of roads. The objective was a geocological analysis of the danger of phosphogypsum stockpiles and a study of the possibility of using phosphogypsum in road construction to solve the problem of its accumulation in the environment. The chemical composition of phosphogypsum samples of the Sumyhimprom and Rivneazot companies was studied using the method of X-ray diffractometry. The content of heavy metals (HM) was analyzed using atomic absorption spectroscopy. An extremely high level of chromium was determined, accounting for more than 20-33 Maximum Concentration Values (MCV). The content of cuprum in the phosphogypsum samples of Rivneazot was 2 MCVs. The contents of other heavy metals did not exceed the MCVs, the synergistic effect should be taken into account. Migration of heavy metals is one of the main problems associated with phosphogypsum stockpiles. The increased acidity of phosphogypsum promotes the formation of soluble HM compounds. Depending on the solubility of toxicants, they accumulate in the ecosystem or migrate, dissolve, and enter plants. The traditional methods of storing phosphogypsum, both from an environmental and economic points of view, are less acceptable than the methods of its recycling and reuse in various sectors of the national economy. The paper theoretically substantiates that the reuse of accumulated phosphogypsum and the implementation of new technological solutions in road construction would reduce the level of technogenic loading that phosphogypsum imposes on the environment. Based on the analysis of the content of heavy metals and the development of concentration logarithmic diagrams, mobile forms of metals were studied and the harmful effect of metals leaching from phosphogypsum was considered. We determined the positions of toxic substances in the engineering road construction - environment. We recommended dividing hydroxides and hydroxocomplexes of heavy and toxic metals into three groups according to their solubility, having the ability to migrate in acidic, neutral and alkaline environments, respectively. Strict regulations are needed to protect soil cover in areas with acidic soils. We grouped soils on which it is not recommended to use engineered road structures with phosphogypsum due to increased migration of HMs into the ecosystem: sandy; soils rich in humus components, acidic soils (sod-podzolic) or in case of existing probability of an increase in soil acidity (unorganized ingress of industrial waste, acid rain, etc.); acidic soils salinized with chlorides; soils containing ammonia; soils containing sulfates.

- Prokopenko, O.**, Kurbatova, T., Khalilova, M., Zerkal, A., Prause, G., Binda, J., Berdiyrov, T., Klapkiv, Y., Sanetra-Polgrabi, S., Komarnitskyi, I. Impact of Investments and R&D Costs in Renewable Energy Technologies on Companies' Profitability Indicators: Assessment and Forecast (2023). *ENERGIES*, 16 (3). doi: 10.3390/en16031021

Renewable energy technologies play a crucial role in solving global energy and environmental issues, and the pace of the energy transition directly depends on improving their efficiency. Presently, the development and implementation of renewable energy systems are ensured mainly through state funding, the possibilities of which are limited. The potential of attracting private investments depends directly on their impact on companies' profitability indicators, and the uncertainty regarding the return on investments is one of the main barriers affecting investors' decision-making. Based on a vector autoregressive model for analysing the stationary time series, the paper explores the impact of

long-term investments and research and development costs in renewable energy technologies on the financial performance of ten of the largest companies operating in this field. The study's results showed that investments and spending on research and development positively affect such companies' profitability indicators as earnings before interest, taxes, depreciation and amortisation, earnings before interest and tax, net income, and return on investment. The obtained results can be used to substantiate the economic effectiveness of investments in developing and improving renewable energy technologies when forming the companies' financial policies to support them.

- 🔗 **Rozhi, I., Moskalenko, M.,** Moskvichova, O., Babenko, L., Nosachenko, V., Hariunova, Y. **Tourism Local Lore in the Modern System of Education (2022).** *Revista Romaneasca Pentru Educatie Multidimensionala*, 15 (1), pp. 159–175. doi: 10.18662/rrem/15.1/691

This article covers the main approaches to implementing tourism local lore in the course of education. The problem is relevant due to the demand for competent specialists who are capable to form contemporary children's competence in the course of education. Therefore, the theoretical-methodological analysis of the researchers of the problem identified, who became the rationale for the main results of the research to be determined, is provided in this paper. It is also ascertained that it is necessary to form a structured part of the professional competence of a rising geography teacher - local lore competence. There is some dependence of the level of qualification of rising teachers on an accurately planned process of formation of not only knowledge, skills and capabilities, but also personal traits of students formed at a higher educational institution. The concepts of native land, local lore and tourism, their correlation, conduction forms, functions are studied in the researches of scholars and according to the results of this theoretical research. In addition, the local lore principle is set as competency-based learning. The method of analysis, scientific, descriptive and research methods are used for studying tourism local lore in the contemporary system of education. Analysing the role of tourism local lore proves the demand for searching and gaining knowledge about a native land, optimising the study of major subjects, forming an individual cognitive experience of students-geographers. Such conclusions are the results of this research.


- Semenets-Urlova, I.,** Rodchenko, L., Chernenko, I., Druz, O., Rudenko, M., Shevchuk, R. **Post-Traumatic Stress Disorder in Military Personnel and Their Rehabilitation (2023).** *Ad Alta-Journal of Interdisciplinary Research*, 13 (1), pp. 82–87.

The article aims to submit the problem of the formation and characteristics of the manifestation of post-traumatic stress disorder in military personnel. A theoretical investigation of psychological aspects and mechanisms of the formation of post-traumatic stress disorder in military personnel who have experienced difficult situations of experienced activity is presented. It empirically reveals the features of the manifestation of post-traumatic stress disorder in military personnel in current conditions of military service. The significance of the psychological support program for military personnel with post-traumatic stress disorder, who have encountered extreme situations of professional activity aimed at working through traumatic ventures and activating the psychological resources of the individual, is shown. Intense conditions of professional activity negatively impact the mental health of service members, leading to the expansion of various mental disorders: post-traumatic stress disorders, psychosomatic and neurotic disorders, and addictive behavior. A high level of emotional disturbances characterizes military personnel participating in hostilities. Such violations are called psychoneurosis or combat fatigue. These emotional disturbances can manifest in acute fear, depressive states, and hysterical reactions.

- 🔗 **Serdiuk, V.,** Pavlenko, I., Bolshanina, S., Sklabinskyi, V., Wlodarczak, S., Krupinska, A., Matuszak, M., Bielecki, Z, Ochowiak, M.

Kinetic Features of Cd and Zn Cathodic Formations in the Membrane Electrolysis Process (2023). *FLUIDS*, 8 (2). doi: 10.3390/fluids8020074

Chromate and dichromate solutions used for the activation and passivation of cadmium and zinc galvanic coatings of metal products are widely used due to their ability to form corrosion-protective films. Therefore, in this article, we examined the kinetic features of the cathodic deposition of Cd and Zn during membrane electrolysis. As a result of comprehensive experimental and theoretical studies, the features of Cd and Zn cathodic depositions were analyzed under different hydrodynamic conditions in a submembrane zone of an anolyte. Experimental physicochemical methods such as the experimental analysis of solutions, analytical modeling, and a statistical analysis were used during the research. A regression dependence for evaluating a reaction rate constant was assessed based on the least-square approximation of the proposed model. As a result, the peculiarities of the cathodic formations for Cd and Zn during the membrane electrolysis process were analyzed. The effect of mechanical mixing with different values of the Reynolds number on the deposition of Cd and Zn on a cathode was evaluated. A change in Cd²⁺ and Zn²⁺ ion concentrations was also considered during the research. Overall, the obtained results increased the Cd deposition rate by 2.2 times using an active hydrodynamic environment with the anolyte.

 Tarasenkova, N., Akulenko, I., Hnezdilova, K., **Chashechnikova, O.**, Kirman, V., Serdiuk, Z., Kolomiets, O., Zaporozhets, A. Efficient Questioning in Teaching Mathematics: Teachers' Attitudes and Practices (2023). *Revista Romaneasca Pentru Educatie Multidimensionala*, 15 (1), pp. 216–246. doi: 10.18662/rrem/15.1/694

The paper is an exposure to the latest practices of questioning in teaching and learning math (TLM) on the basis of psychological-semiotic approach. Emphasis is placed on the degree of semantic support of the expected answer when formulating educational questions. The paper explored: whether teachers are able to distinguish between types of questions and to use them in sync with didactic purpose; what types of questions teachers consider to be the most effective; what factors influence this process. To achieve these goals, survey-based research was conducted among 173 high school mathematics teachers across Ukraine. The research proved that, in their majority, teachers are able to correctly distinguish among the types of the questions offered. According to the teachers, questions with full semantic support for the answer are less useful in TLM. The study showed teachers' lack of ability to identify the goals of the questions. There has been revealed a gap between the teachers' attitude to the expedience of using questions with several possible answers and the practice of their implementation in TLM. The study yielded 35 variables characterizing the current status of the problem. They were optimized to 13 factors. It was stated that questioning should comply with the content of educational material, and the questions formulated with the use of topical vocabulary known to the students are viewed as most cost-effective. The research revealed the significant impact of the number of questions that teachers or students ask. The factor of primary importance appears to be that of time.