

2. Гуревич, Р. С., 2009. Теорія і практика навчання у професійно-технічних закладах: монографія, Вінниця: ТОВ «Планер», 410 с.
3. Коломієць, А. М., Фальштинська, Ю. В., 2015. Використання Інтернет-сайтів на заняттях з іноземної мови, *Наука і освіта: науково-практичний журнал Південноукраїнського національного педагогічного ун-ту імені К. Д. Ушинського. Серія: Педагогіка, № 9*, с. 102-107.
4. Пехота, О. М., Кіктенко, А. З., Любарська, О. М., 2002. *Освітні технології: навч.-метод. посібн.; за заг. ред. О. М. Пехоти*, Київ: А.С.К., 255 с.
5. Сисоєва, С. О. 2004. Освіта дорослих: технологічний аспект. *Неперервна професія освіта: теорія і практика. Науково - методичний журнал, № 3*, с. 184–187.
6. Тимошук, Н.М., Дакалюк, О.О., Гарник, А.А. 2010. Інформаційні технології в навчанні іноземних мов студентів-аграріїв, *Вісник Національного технічного університету України „Київський політехнічний інститут”*, № 1, Київ, с. 192-195.
7. Monderna, E., Voinarovska, N., 2019. Promoting Personal Motivation within Professional Education, *Journal of Educational and Social Research, № 9 (2)*, p. 1-7.
8. Bondar, N., Havryliuk, N., Osaulchyk, O., Dovhan, L., 2020. Implementation of E-learning as an Integral Part of the Educational Process. Society, *Integration. Education: Proceedings of the International Scientific Conference, Volume IV*, p. 449-459.

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FORMATION OF CONTINUOUS EDUCATION SYSTEM ON THE BASIS OF SUSTAINABLE DEVELOPMENT: PROJECT ACTIVITY EXPERIENCE

Abstract. The research work analyzes the functional orientation of sustainable development strategy studies. It suggests basic didactic and pedagogical conditions for innovativeness of the educational process and develops a set of subject-specific competencies. The study outlines the system architectonics for organizing the

educational and research work in professional training of students. It develops research methods and methodology for professional training of specialists including recommendations of scientific-methodological, organizational-pedagogical and organizational-managerial nature. The main idea of the research lies in the development and implementation of theoretical-methodological foundations for shaping the system of continuous education based on the concept of sustainable development, with consideration of interests of the Ukrainian society evolving within the framework of sustainable development; restructuring of the postgraduate education system and, in particular, realizing potential pedagogical opportunities that determine selection of the most effective forms of training in the postgraduate education system. The practical value of the research lies in the fact that the obtained and presented results enable further integrated and sectoral development of various aspects in theory of education and create a methodological basis for building effective models of quality assurance in higher education. This research deepens the traditional views of scientific works on the problems of modernizing professional teacher training in the conditions of cross-border integration of social and cultural forms of education. Introduction of the system to form scientific-methodological competence in postgraduate pedagogical education; the results we have obtained, presented, and proven contribute to the implementation of individualized educational and scientific programs of teachers' professional training; the results can be of practical use for a wide range of postgraduate education specialties in formation and development of legal competence in higher education administrators; the informational student-oriented portable environment of psycho-pedagogical training can be used in further research on development of higher education for future vocational school teachers, in determining regularities of its work, ways and directions to improve and enhance the effectiveness of their psycho-pedagogical training, as well as for adult education, for writing term papers and qualifying papers, textbooks, monographs, dissertations; these materials can be used in the higher education institutions of various types that are engaged in training environmental protection specialists in environmental monitoring, as well as in postgraduate education to ensure implementation of the government's environmental policy. Introduction of the system to form scientific-methodological competence in postgraduate pedagogical education; these materials can be used in the higher education institutions of various types that are engaged in training environmental protection specialists in environmental monitoring, as well as in postgraduate education to ensure implementation of the government's environmental policy.

Keywords: continuous education; students; competencies; project support; sustainable development.

1. INTRODUCTION

Problem. The problem of this research lies in the development of theoretical and methodological foundations to form the educational-research space for specialists in the postgraduate education system, with the usage of the sustainable development paradigm. Formation of content for educational environment is founded on the paradigm of sustainable development, based on the coordination of its three components and their implementation into specific activities, which will represent the best achievements of the XXI century in the field of education, science and innovation. Development of conceptually strategic provisions

of the academic and research plans and programmes of postgraduate training, retraining and advanced training and specialists' internship was based on the concept of sustainable development, ensuring presence of all its components (economic, social, environmental, institutional and their synergetic unity) in the gradual process of specialist training to obtain a postgraduate educational level or degree. The project implementation was substantiated on the theoretical and methodological basis of the changes in postgraduate education, which contributed to subsequent developments in introduction of the sustainable development concept into the education system of Ukraine and provided for encouragement of the transition to sustainable development of society both at the level of regional systems and at the state level.

The purpose and main objectives of the research are to develop the theoretical and methodological foundations to form a postgraduate education system based on the concept of sustainable development and the necessity to strike a balance between meeting the current needs of humanity and protecting interests of future generations, including their need for a safe and healthy environment. The *tasks* of research are as follows: to study the experience of scientific schools and legal regulation practices in organizing postgraduate training in the context of education for sustainable development, to formulate proposals and recommendations of organizational and methodological nature; to provide a theoretical basis for a system of postgraduate education in the context of sustainable development; to analyze theoretically the problems of forming teachers' readiness for implementation of the sustainable development concept; to examine the level of development for the problem of shaping teachers' professional competence within the framework of education for sustainable development; to develop, substantiate and implement scientific-methodological system of shaping teachers' professional competence within the framework of postgraduate education for sustainable development; to develop methodological recommendations: provision of natural cycle subjects with consideration of the main principles of sustainable development for teachers in educational institutions; introduction of a system to shape faculty members' professional competences within the framework of education for sustainable development; to develop scientific and methodological support for teaching materials used in faculty members' postgraduate training in order to introduce the main provisions of the UNECE Strategy for sustainable development into the learning process in educational institutions; to prepare scientific and methodological support, namely, the monographs "Management of Postgraduate Education Systems for Sustainable Development," "Strategy of Postgraduate Education for Sustainable Development," "Multimodal Foundations of Postgraduate Education for Sustainable Development"; to develop and validate the methodology to organize postgraduate education for sustainable development; to organize an international scientific methodological workshop on the issues of introducing the concept of sustainable development in postgraduate education; to prepare a collective monograph.

The *object of research* is theoretical and methodological foundations for formation of a postgraduate education system. The *subject of research* is the content, forms, methods of specialist training within the postgraduate education system in the context of sustainability paradigm.

The research was performed in accordance with the thematic plan of National Pedagogical Dragomanov University for 2012 – 2019 and reflects the University's research achievements within the framework of the research topic "Theory and Technology of Training in Vocational Education" (Disciplinary Training Outcomes 0115U000552, for 2015 – 2017), in education, science and innovation theory, "Theoretical and Methodological Foundations of Forming a System of Postgraduate Education Based on the Principles of Sustainable Development" (Disciplinary Training Outcomes 0117U004914, for 2016 – 2019).

Analysis of recent research works and publications. Aspects of philosophical views on the quality of education and research, and ways for its modernization and management are revealed in the works by V. Andrushchenko, V. Bondar, B. Hershunskyi, V. Kremen, S. Pazynich, O. Ponomariov, T. Sokhniayeva, R. Barrow and others. *Educational and political fundamentals* have been investigated by I. Ivanyuk, A. Yaroshenko, T. Brackston, D. Goldblatt, D. Held, P. Lodge, A. Mc. Grew, J. Perraton and others. *Futuristic approaches* to development of higher education have been studied by H. Newby, F. Newman, R. Peters, A. Toffler, H. Ewby, A. Combs and others. Management of higher education systems and its social and psychological aspects are explored by A. Babichev, G. Gorban, L. Karamushka and others. *Management principles for institutions of higher education* have been substantiated by V. Bekh, G. Yelnikova, S. Natroshvili, N. Protasova, Ye. Khrikov and others. *Global approaches to quality management* have been formed by R. Brand, W. Deming, P. Drucker, E. Loffler and M. Vintar and others [1].

For studies on *continuous education and career enhancement*, the works by L. Danylenko, G. Yelnikova, A. Kuzminskiy, L. Lukyanova, V. Maslova, N. Nychkalo, V. Oliynyk, L. Pukhovska, V. Putsovo, L. Sigayeva, T. Sushchenko, T. Shamova are of academic interest; on *education for sustainable development* – the works by V. Bogoliubova, O. Pometun, N. Ridei, N. Semeniuk, O. Shevchenko; on *peculiar features of the newest sciences: educology, education studies and education metrics* – the works by N. Kuzmenko, V. Lugoviy, V. Ognevyuk, K. Pakhotin, A. Prokaza, S. Sysoeva, A. Furman. It is important to analyze the concept of “*teachers’ professional competence*,” which has been explored by B. Andrievskiy, O. Dubaseniuk, L. Karpova, V. Lozova, V. Oliynik, A. Otych, V. Strelnikov, O. Shapran; the *methodological* component has been characterized as an element of research and methodological competence by K. Avramenko, I. Akulenko, O. Bigych, A. Voyevoda, A. Voloshchuk, V. Haluziak, N. Gluzman, O. Zhygailo, N. Kuzmina, O. Malykhin, O. Matyash, N. Nikula, Yu. Prysiashniuk, V. Reydalo, S. Skvortsova, N. Tarasenkova, Ya. Tsymbalyuk, S. Shevchuk; the research component has been highlighted as an element of the research and methodological competence by A. Bilash, G. Biletska, O. Grinyuk, L. Neporozhnia, O. Tsilmak [2].

Such founding scientists as T. Hobbes, V. Glushkov, O. Bogdanov, I. Blauberg, V. Kartashov, O. Kont, S. Kuzmin, Yu. Mrakov, R. Mertol, M. Mesarovych, T. Parsons, L. Petrushenko, V. Sadovskiy, M. Setrov, G. Spencer, V. Spitsnedal, J. Takahara, V. Tyukhtin, U. Churchman, A. Uyomov, Ye. Yudin interpret the *systemic methodology of administration* as a complex of administration methodology components, which are transformed in accordance with the system for shaping professional competencies in postgraduate training, as a set of principles, approaches and methods, as well as types and means of systemic administrative activity. A. Babichev, G. Horban, L. Karamushka, S. Tolochko, N. Bordiug, I. Deinega, O. Kondur and others explored administrative management of higher education systems in postgraduate training and its socio-psychological status. V. Bekh and S. Natroshvili analyzed the *principles of administrative management* in higher education. Problems in formation of legal awareness, political and legal culture (including that of students), management of legal protection for intellectual activities, legal education (including during postgraduate education) and education of future specialists have been addressed in research works by A. Alekseyev, O. Atoyana, P. Baranov, I. Galushchak, A. Ivliev, O. Isayenko, M. Kozyubra, A. Krydanovskiy, Lun Fen, Yu. Oborotov, A. Ovchinnikov, V. Oksamitniy, M. Orzykh, P. Rabinovych, T. Solovyova, S. Trekhinina and others [3].

The scientific and theoretical basis to determine the conceptual foundations of this study are the philosophical, methodological, pedagogical and psychological provisions set forth in the following works: in the field of *vocational education*, in particular basic vocational education – by S. Artiukh, P. Atutov, S. Batyshev, A. Belyaeva, Ye. Zeyer, V. Lednirov, N. Nychkalo; historical aspects – by A. Veselov, I. Likarchuk, S. Onopchenko; project pedagogics – by V. Bezrukova; informatization of education – by R. Gurevych, N. Tverezovska, S. Khomenko, S. Yashanov and others; business education – by O. Romanovskiy; cultural education – by O. Shevnyuk; *in the field of psychology* – by I. Bulakh, L. Vygotskiy, P. Halperin, V. Davydov, A. Derkach, L. Dolynska, E. Kazayeva, E. Klimov, A. Leontiev, V. Rybalko, S. Rubinstein, N. Talizina, C. Jung, I. Yakimanska and others; on issues in implementation of *interdisciplinary relations* – by I. Zvierieva, B. Komisarov, V. Maksymova, O. Savchenko, M. Fedorova; on the *system of forming specialist competencies* – by Ya. Bolyubash, V. Bocharov, K. Levkivskiy, V. Kostygina, N. Tymoshenko, O. Semenog; on *adult education and its management* – V. Maslova, I. Tytarenko, S. Goncharenko, S. Werner, P. Cherednichenko, S. Sagan; on issues of training *future specialists in ecology* – by G. Bilyavskiy, T. Sayenko, S. Stepanenko, O. Yaroshenko, Yu. Skyba, G. Biletska and in other pedagogical researches [4].

Ways to improve the quality of teaching and learning in foreign institutions of higher education have been covered by M. Makalis, Ag. Bladh, V. Berger, Ch. Bode, Ja. Muehlfeit, T. Petrin, A. Schiesaro, L. Tsoukalis. Research works on the problem of an administrator's readiness for work, especially in the socio-cultural field have been written by O. Anufrieva, T. Burlayenko, L. Danylenko, G. Dmytrenko, O. Dubinina, M. Kyrychenko, V. Kirsanov, V. Oliynyk, M. Klochko, N. Kochubey, V. Lokshyn, M. Morozova, N. Svitaylo, O. Starovoyt, A. Shcherbyna, O. Shcherbyna. Research works on the theory of e-learning, globalization and informatization, and the use of ICT in educational activities have been carried out by domestic scientists such as V. Bykov, A. Gurzhiy, L. Kartashova, O. Semenikhina, O. Spirin, O. Stryzhak and others. Such scientists as V. Baydenko, T. Burlayenko, O. Brusientseva, T. Gaivoronska, M. Mirovska, O. Murashko, I. Kolesnykova, V. Kunitsyna, M. Lukyanova, A. Markova, O. Ovcharuk, Ye. Rogov, V. Sayuk, O. Savchenko, M. Stepko, Ye. Tabakova, O. Topuzov worked on the issues of forming professional competence of future specialists. Environmental competence has been studied as a component of a future manager's professional competence by foreign scientists such as A. Allcock, B. Jones, S. Lane, and J. Grant, G. Smith, D. Williams, F. Paul. The need to improve the specialists' managerial competence is confirmed in research works by G. Bilyanin, V. Medved, V. Zhygir, V. Maslov, I. Saukh. Problems of forming teachers' digital competence in the conditions of modernized education have been covered in the works by V. Gorlenko, O. Kulynych, L. Lyakhotska, O. Nezhynska [5].

2. AIM AND TASKS

Implementation of the project objectives required using the following methods: retrospective analysis and systematization of philosophical, sociological, cultural, psychological and pedagogical literature, government documents on implementation of the sustainable development concept in Ukraine at the regional level; generalization of scientific literature on environmental, economic and social issues; induction, deduction. Other research methods included as follows:

- theoretical: system-axiological, structural-comparative, structural-logical synthesis, comparison of ideas, concepts, theories of sustainable development paradigm; modeling implementation of sustainable development strategy principles in education for the comparative analysis of the global and domestic experience in forming competence, and for the qualitative study of textual and graphical information in

- formalized governmental and departmental documents for the purposes of interpretation and forecasting; axiological-acmeological analysis, theoretical systematization to characterize the system-building role of scientific schools in forming teachers' scientific and methodological competence; structural-logical analysis and systematization to characterize the peculiarities in professional training of the new generation of teachers; classification, systematization, modeling; analysis and chronological, retrospective, comparative, simultaneous synthesis to compare dominant and special scientific views on the problem of the research; determining of conceptual and categorial research apparatus and systematization of scientific knowledge for discovering the theoretical and methodological foundations and for conceptualizing the strategic lines in psychological and pedagogical training of future vocational teachers; pedagogical modeling; logic synthesis; axiomatization, formalization (distinguishing architectonic organizational forms of educational process and forms of education), hypothetical-deductive (formulation of a general
- hypothesis on the basis of partial hypotheses: basic and zero hypothesis); formalization of the educational process for training of future managers of socio-cultural activity, hypothetical axiomatization, simulation of the system for professional training of managers of socio-cultural activity in conditions of informational-educational environment;
 - empirical: testing, questionnaires and surveys for participants of the educational and research process; monitoring the process of forming the teachers' scientific and methodological competence in the predefined organizational-methodological and organizational-pedagogical conditions; evaluating effectiveness of the system for shaping teachers' scientific and methodological competence; conducting a pedagogical experiment for verification of the system for shaping teachers' competence in postgraduate pedagogical education; multi-criteria selection of alternative options for improvement of the educational and research process; observation, description, measurement (educational), determination of peculiarities in training of the future vocational school teachers, characterizing systems for organization of their professional education; modeling of a system for training of future vocational school teachers, simulation of an informational student-oriented portable educational environment; questionnaire, interview, survey, observational research methods; tests for diagnosing the dynamics of special psychological and pedagogical professional competence in the future teachers of vocational schools; experiment (pedagogical, psychological, social); monitoring description of pedagogical methods and experiment, collective and individual, disciplinary and interdisciplinary expert assessments, both fundamental and specific;
 - general scientific methods: generalization and systematization of data obtained from modern scientific research and knowledge to form the content for training future teachers, modeling of organizational systems and subsystems for their professional training), formal-logical method of analyzing normative-legal documentation, characterizing conditions and forecasting development trends and assessing effectiveness of the system for training future teachers and educators according to the data on training relevance, and assessment feedback from employers and stakeholders;
 - specific scientific methods of psychological and pedagogical studies: a laboratory experiment (determining psychological type and mental condition of a student or group) and formalization while axiomatizing research hypotheses, modeling (simulated, computer-based); geographical method to determine professional crosses

by administrative-territorial division of the country, which enables us to identify the needs of vocational education and subjects of employment among future teachers; disciplinary (methods, means, forms of education for a specific discipline related to the field of science and knowledge); interdisciplinary (choice of integrated ways to combine different modeling levels of subsystem components, to create a well-connected synergy of training systems);

- The method of “focus groups” is a questioning and interviewing method to assess the quality of learning, critical attitude to the structural synectics of experimental studies, the integration of the “tree of objectives” and the field of activity for the object of administration – general methodological conceptualization of the goals of training programs and algorithmization of employment projects in the modern management practice of the socio-cultural field;
- mathematical, statistical and simulation modeling are the types of modeling to develop and form the system for evaluation of professional competence of environmental protection specialists by indicators; processing, qualitative and quantitative analysis of experimental data to synthesize and formulate the conclusions based on the study results.

4. CONCLUSIONS AND PROSPECTS FOR FURTHER RESEARCH

The main hypotheses of the research are based on the assumption that the development and implementation of theoretical-methodological foundations of the postgraduate education system based on the principles of sustainable development is effective if: 1) a model of educational environment for training of specialists in the system of postgraduate education based on the concept of sustainable development is designed; 2) project, multimedia and Internet technologies to introduce this model are developed and implemented; 3) the basic subjects of educational interaction are the specialists undergoing advanced training or retraining in the postgraduate education system at the Faculty of Management of Education and Science, National Pedagogical Dragomanov University, which ensures self-identity.

The integrity of the project study hypothesis is presented and implemented in a partial hypothetical assumption that:

- forming teachers’ scientific and methodological competence in postgraduate pedagogical education contributes to the integrity of the educational-research process; the fulfilment of the social request for the quality of teacher training and development, continuous employment; modernization of educational and research systems and their relevance. The hypothetical idea of the research becomes possible in postgraduate training of faculty members for institutions of higher education in educational and scientific process of forming their scientific-methodological competence to ensure their professional development in the field of pedagogical education;
- the effectiveness of training the new generation of teaching staff is ensured through the introduction of the system for professional training of education quality experts at higher education institutions;
- modernization of psychological-pedagogical training of future vocational school teachers will be effective providing that the corresponding system model is developed and implemented, which involves: 1) the introduction of transparency, participation and diversification of psychological and pedagogical training at higher education institutions; 2) intensification of psycho-pedagogical training of future vocational school teachers through the introduction of the student-oriented portable information

environment (MOODLE <http://www.moodle.npu.edu.EN/>); 3) the use of interdisciplinary connections to demonstrate the trends for integration of science and practice that will improve the quality of psycho-pedagogical training of future vocational school teachers at higher education institutions; 4) diversification of the content of psychological and pedagogical training of future specialists that will contribute to the formation of professional, mobile, creative, and innovative personality;

- cross-border changes in training environmental protection specialists for environmental monitoring in postgraduate education, development of teaching methodology for special disciplines and development of the modern research methodology (both educational and environmental) and assessment of relevance of
- the educational process have a positive effect on the quality of forming professional competence and intellectual development of adults;
- professional training of future socio-cultural activity managers becomes effective when it is based on proven theoretical and methodological foundations, revealing the structure of socio-information competence of future socio-cultural activity managers which is formed in the conditions of informational-educational environment, the concept, the system for professional training of specialists and appropriate organizational and methodological support.

The *novelty and importance* of the research results are reflected both in the conceptual substantiation of theoretical and methodological foundations of specialist training in the system of postgraduate education in the context of implementing the concept of sustainable development, and in the development of structural and logical model of holistic and andragogical cycle of postgraduate education promoting transition of the society to sustainable development.

Scientific novelty of the obtained results is that ***for the first time***:

The following have been *formulated and substantiated*: theoretical and methodological foundations of forming teachers' competence; the concept of forming teachers' scientific and methodological competence; theoretically substantiated framework containing cognitive and technological-operating components and forming a system of functional-philosophical, general scientific, and particular scientific competence (pedagogical, psychological, mathematical, natural, environmental, historical, political, social, sociological, linguistic-communicative, discursive, instrumental, analytical, technical, technological), cognitive, creative, futuristic, scientific-technical, project, prognostic and simulation, monitoring, audit, system management, evaluative, scientific-methodological competence, both collective and individual; theoretical and methodological foundations of psychological and pedagogical training of future vocational school teachers; the concept of psycho-pedagogical training of future vocational school teachers as a target component of the designed system, and the applied approaches of transparency, participation and diversification of the educational process; the proposed renewal of the content and structure of psycho-pedagogical training of future vocational school teachers consisting of invariant, variable, professional, and result-based components; theoretical and methodological foundations, the concept and system of training environmental protection specialists for environmental monitoring in postgraduate education; the content, forms, methods and means of training environmental protection specialists for environmental monitoring in higher and postgraduate education; theoretical and practical foundations and the concept of professional training of future socio-cultural activity managers in the conditions of informational-educational environment;

The system of forming scientific and methodological competence of teachers in postgraduate pedagogical education has been *developed and experimentally tested*, such system reflecting the complex unity of organizational, structural, scientific-methodological, systematic and logical, organizational, methodological, substantive and methodological, research and practical activities that contribute to effective implementation of the potential contained in educational and research system of a higher education institution; structural and functional model of forming and developing professional competence in environmental protection and environmental monitoring specialists; structural and functional model of forming professional and practical managerial competence of future education quality specialists in higher education institutions; the effectiveness of a model for development of legal competence in administrators of higher education within the system of postgraduate education, within which strategic-administrative content of administrative management interacts functionally; pedagogical conditions for development of legal competence in administrators of higher education institutions; model of a psycho-pedagogical training system for future vocational school teachers, which is designed as an interrelated and interdependent set of subsystems: axiological-target, content-functional, professional and shaping, methodological, procedural and monitoring, relevant, which are connected together with external and internal links; simulation model of informational student-oriented portable environment for psycho-pedagogical training of future vocational school teachers; the system of professional training of socio-cultural activity managers able to carry out managerial and research activities, project research work, organizational, planning, consultative and advisory activities, technological and regulatory activities, expert assessment and audit, psycho-pedagogical and educational activities at various management levels within in the informational and educational environment; an intellectual product – the electronic environment (web prototype) of educational institutions: mobiSchool, the socio-informational service; content and methodological support for professional training in implemented in the form of electronic (digital) teaching materials, and methodological recommendations regarding the design of electronic educational resources for future administrators;

Interpretation has been *presented, formulated and refined* for the following terms: “formation of teachers’ scientific and methodological competence in postgraduate pedagogical education” and “synergy of teachers’ scientific-methodological competence”; “scientific and methodological competence of teachers”, “professional pedagogical competence of teachers”, “integrated competence of pedagogical and research-pedagogical staff for postgraduate pedagogical education”, “formation of teachers’ scientific and methodological competence in postgraduate pedagogical education”; “psychological and pedagogical training of future vocational school teachers”, “special psychological and pedagogical professional competence” and “professional crosses by administrative-territorial appointment”; “professional training of future education quality specialists in higher education institutions” and “professional activity of a quality management specialist in education and science”; “future vocational school teachers” and “psychological-pedagogical competence”; “management through quality”, “principles and models of quality assurance”, “quality policy” and “management planning and effectiveness of quality assurance”; definitions of the following terms have been revealed: “training environmental protection specialists for environmental monitoring in postgraduate education” and “professional competence of environmental protection specialists for environmental monitoring”; “continuous environmental education”, “postgraduate education”, “training”, “internship”, “retraining”, “self-education” for environmental protection specialists; “professional training of future socio-cultural activity managers in the conditions of informational-educational environment” and “socio-informational competence of future socio-cultural activity managers”;

content-based characteristics of such common terms as “social culture”, “hospitality industry”, “hospitality”, “modernization”, “digitalization”, “informational educational environment”, “Universal educational space “Accent,” “electronic resource”; the concept of scientific thesaurus for development of legal in higher education administrators within the postgraduate education system (“development of the legal competence in higher education administrators within the system of postgraduate education”, “professionalization of administrators in higher education”, “administrator professionalism in higher education”, “administrative position”, “administrative elite”, “professionalism of management”, “governance”, “organizational structure of management”, “organizational architecture of management”, “administrative management in higher education”, “administrative power” and “administrative enforcement”); the following items have been *created*: a diagnostic metric to assess the level of teachers’ scientific and methodological competence, which contains the following elements: a set of methodologies, defined criteria (propaedeutic, eclectic, ergonomic, axiological, cognitive-reflective, creative), indicators (evaluation of system qualities, abilities, skills, willingness, competence) and levels (average, sufficient, high, creative); diagnostic tools to assess levels of professional competence of environmental protection specialists in environmental monitoring by indicators and with consideration of such factors as complexity/development and professional demand/ergonomics and career development in professional activities on the basis of criterion-level scale for future specialists; the following items have been *specified and distinguished*: priority principles of control for quality management in professional training of future specialists in education quality at higher education institutions: humanitarization, social determination, humanization, scientific fundamentals, informational and technical support, strategic forecasting and development of education, science and innovation systems, efficiency, feedback, consistency, continuity, gradation and prospectiveness, democracy and centralism, motivating and uniting staff, legal priority, financial-economic rationality, optimization of resourcing and institutional activity in the field of quality management, methodological foundations for identification and diagnostics of the teachers’ motivation to form research and methodological competence; establishment of the dynamics in formation of such competence in future and working teachers; organization of expert systems to assess efficiency of the developed, substantiated and verified educational system; organization of functional management for the system of forming the research-methodological competence in postgraduate training of faculty members in higher education institutions to ensure their professional development in the field of education; grading the psycho-pedagogical training of future vocational school teachers at higher education institutions; content and architecture, with the scientific-methodological and informational-analytical support for the informational student-oriented portable environment of psychological and pedagogical training; the following elements have been standardized and *improved*: content, forms, methods and means of forming scientific-methodological competence by classification criteria of professional teachers in postgraduate pedagogical education (tutors, coaches, facilitators, advisers, instructors, mentors); diagnostic tools for monitoring the educational process of vocational school teachers’ training in different stages of experiment; professional crosses by administrative-territorial appointment; the following elements have been developed and experimentally tested: a system of professional training of future specialists in education quality at higher education institutions; technical regulations for organizing monitoring of quality management in higher education institutions, and the structural-logical algorithm for substantiation, formation and provision of the methodology for organizing management of educational systems; the algorithm for logging and surveying in accordance with the following factors: competence assessment for a student, graduate student, PhD student as evaluation of their readiness for professional activity in quality management of educational systems; expert vision on satisfaction of the social request from employers, and expert opinion regarding

effectiveness of the methodology suggested for organizing management of education quality in higher education institutions; the algorithm for logging and surveying assessment of competence for undergraduate and graduate students as evaluation of their readiness for professional managerial activity in the field of culture, education and science; expert evaluation of the effectiveness offered by the methodology for organizing professional training of future socio-cultural activity managers in the conditions of informational-educational environment, as well as the mathematical apparatus for processing of pedagogical experiment data; the content, forms and methods for development of legal competence in administrators of higher education within the postgraduate education system.

The system for professional training of future specialists in education quality at higher education institutions has been developed and experimentally tested, the system being meant to develop a new generation of teaching staff capable of carrying out responsibly and efficiently the management, research, project, organizational, planning, technological, regulatory, consultative, advisory, expert and audit, psycho-pedagogical and quality assurance activities on the different levels of education quality management systems.

The developed structural-functional model of forming professional management and quality assurance competence in future specialists for education quality at higher education institutions at various stages of the educational process reflects the synergy of the target, substantive, theoretical and methodological, organizational and methodological, practical and result-based blocks. The effectiveness of the developed pedagogical system of forming teachers' scientific and methodological competence is statistically confirmed with a probability of 0.95 according to the Pearson criterion and Laplace criterion and is characterized as high. Results of the expert examination had the highest score of 91 points, by the system of forming scientific-methodological competence and structural-logical model at all levels of teachers' scientific and methodological competence development have been assessed with positive dynamics in validity.

The system of forming teachers' scientific and methodological competence in the structural and semantic subsystem components within the postgraduate pedagogical education has been developed, based on methodological fundamental, philosophical, general and specific scientific principles of cognition and system analysis; based on competence-based, constructive, systemic-activity, problem-situational, program-oriented, axiological, cultural, and innovative approaches, and is a structural-logical combination of subsystems: organizational, target, organizational, gradual and formational, methodological and organizational, scientific-cognitive, developmental, result-based and relevance assessment, the results of which provide the acquisition of scientific and methodological competence on the principles of synergetics.

The developed system of forming scientific and methodological competence of teachers in postgraduate pedagogical education is detailed with the structural-logical model, which is designed for structural and organizational representation of the work of continuous professional postgraduate training, visualization of the organizational structure of the system (in its subsystems: organizational, target, substantive-methodological, organizational-methodological, organizational-pedagogical, research, practical, diagnostic and result-based). The system of forming teachers' scientific and methodological competence in postgraduate pedagogical education and the detailed visualized structural and logical model of the system of forming teachers' scientific-methodological competence formation have been experimentally proven to ensure their professional development in education.

The efficiency of the developed pedagogical system of forming teachers' scientific and methodological competence is statistically confirmed with a probability of 0.95 according to the Pearson criterion and Laplace criterion and is characterized as high. Results of the expert examination had the highest score of 91 points, by the system of forming scientific

methodological competence and structural-logical model at all levels of teachers' scientific and methodological competence development have been assessed with positive dynamics in validity.

Effectiveness of the educational system is due to the growing indices of competence in the experimental groups by conceptual-methodological principles of formation, development and modernization of teachers' scientific and methodological competence, methodologies of teaching, research, evaluation, quality of teacher training in postgraduate education for sustainable development.

An experimental verification has been implemented (based on the stages of pedagogical experiment – analytical-motivational, functional and ascertaining, forming and controlling) to prove effectiveness of the developed model of psycho-pedagogical training system for future vocational school teachers, the results of which indicate that there is a positive dynamics in the development of high and sufficient levels of special psychological and pedagogical professional competence of future vocational school teachers in the experimental groups. It is determined that the formation stage of the study reveals some positive changes in the level of special psychological and pedagogical professional competence of future vocational school teachers in the experimental groups, the figures for which had almost no difference from the respondents in the control group at the beginning of the experiment. The average percentage of deviation in positive growth by all the criteria has increased at the high (+1,81 %) and sufficient (+1,91 %) levels, and in the negative dynamics they were reduced on average (-2,38 %) and insufficient (-0,33 %) levels.

During the control stage of the pedagogical experiment it has been established that the developed system of psychological and pedagogical training of future vocational school teachers is verified using the χ^2 – Pearson criterion. It is revealed that for $\alpha=0,05$ all observed values of the Pearson criterion exceeds the critical value. With the reliability of $p=0,95$ it can be argued that future vocational school teachers in the experimental group showed positive dynamics in the development level of special psychological and pedagogical professional competence by all the criteria. In case of reliability level increasing to $\alpha=0,01$ we can obtain the confirmation of the conclusions about improvement of the special psychological and pedagogical professional competence level of students in the experimental group at the motivational, incentive-based and heuristically diagnostic criteria. Results of the study provide the grounds to substantiate proposals regarding the prospects for psycho-pedagogical training of future vocational school teachers in higher educational establishments.

We have developed and substantiated the model of forming professional competence of the environmental protection specialists in environmental monitoring at the educational degrees of bachelor, master and educational service applicants in the postgraduate education system, which comprises the full interaction of the target, conceptual, meaningful, operational, activity-based, controlling and regulatory, result-based and diagnostic components. The system of professional training of environmental protection specialists was experimentally tested by the dynamic change of individual components of students' professional competence in the control and experimental groups by relevant criteria and by dynamics of their success. The representativeness of the study results and effectiveness in implementation of the author's continuous training system and model of forming professional competence of future environmental protection specialists into the process of education have been proven for environmental monitoring specialists ($\chi_{\text{емп}}^2 = 16.0$) and professionals ($\chi_{\text{емп}}^2 = 9.5$). We have statistically proved effectiveness of the system of professional training for environmental protection specialists by theoretical-methodological – $\chi_{\text{емп}}^2 = 16.7$, by analytical and practical – $\chi_{\text{емп}}^2 = 27.7$, by personal-professional – $\chi_{\text{емп}}^2 = 24,9$ components of competence in environmental monitoring. Expert evaluation has confirmed effectiveness of implementation of training system, which is reflected in the integral score of 0.87.

We have developed and methodologically substantiated the system for assessment of professional competence of environmental protection specialists in environmental monitoring by indices in the models for applicants of postgraduate education. The complexity coefficients for formation/development and professional demand/ergonomics and career development of professional competence in the field of environmental monitoring in professional activities have been calculated in accordance with the levels of the National Qualification framework.

Experimental verification of the developed model of the professional training system for future socio-cultural activity managers in the conditions of informational-educational environment is organized in the following stages: motivational (diagnostic), ascertaining, forming and monitoring, control and systemic analysis involving expert review.

It has been established that the forming and monitoring stage shows a positive change of formation levels of knowledge, abilities, skills and competencies for the students of the experimental group, while at the beginning of the experiment their figures were the same as those for the students of the control group. The deviation percentage in the positive process dynamics by all criteria have grown at the high level by average 6.29 %, at the adequate level by 1.91 %, and at the sufficient level in the negative dynamics by 1.62 %.

At the control and systemic stage of the pedagogical experiment, we have confirmed accuracy of effectiveness for the developed system of professional training for future managers of socio-cultural activities in conditions of an informational-educational environment verified by Pearson criterion. It has been found that for $\alpha=0.05$ all the observed parameters exceed the critical value of reliability $p=0.95$, which confirms the validity of the scientific results for socio-informational competence by all criteria and in general. Bringing the level up to $\alpha=0.01$ and with reliability of $p=0.99$ we have received confirmation of the conclusions regarding improvement in the socio-informational competence in the experimental group students by motivational (managerial and teaching), cognitive (communicative), acmeological and creative criteria. The study results enabled us to substantiate the proposals regarding prospects of professional training of future managers of socio-cultural activities in higher education institutions.

4. CONCLUSIONS AND PROSPECTS FOR FURTHER RESEARCH

The practical value of results lies in substantiation of the relevant capacities of the education and science systems. The study extends the already known visions of the achievements and challenges of globalization and institutionalization in education and management, their role in social and national development and in socio-pedagogical cognition.

Introduction of the system to form scientific-methodological competence in postgraduate pedagogical education; the results we have obtained, presented, and proven contribute to the implementation of individualized educational and scientific programs of teachers' professional training for the target purposes, prospective enrichment of teaching methodology and create methodological modus to build modern models of job description for teachers in postgraduate pedagogical education. The obtained results can be used to develop educational programs for training specialists for management of educational spaces, to organize the educational process and perform expert evaluation of training relevance for all categories of stakeholders; the results can be of practical use for a wide range of postgraduate education specialties in formation and development of legal competence in higher education administrators; the informational student-oriented portable environment of psycho-pedagogical training can be used in further research on development of higher education for

future vocational school teachers, in determining regularities of its work, ways and directions to improve and enhance the effectiveness of their psycho-pedagogical training, as well as for adult education, for writing term papers and qualifying papers, textbooks, monographs, dissertations; these materials can be used in the higher education institutions of various types that are engaged in training environmental protection specialists in environmental monitoring, as well as in postgraduate education to ensure implementation of the government's environmental policy.

We have introduced and constructed the basis of the information platform to ensure the educational process in higher education institutions within the system of professional training for future socio-cultural activity managers in the conditions of informational-educational environment: the author's intellectual product which ensures the operation of the electronic environment "mobiSchool", created on the basis of the e-learning platform "ACCENT" (<http://accent.com>); a dynamic, open and professionally oriented electronic office (EO) to ensure organization and support for training future socio-cultural activity managers has been developed (<http://vladyslava.liubarets.ues.by/index.php/ua/>); the content of the informational-educational environment has been formed – electronic educational resources, which are intended to be used by all participants of the educational process.

The value of the obtained results for training specialists in the education system, including specialists of highest qualification, has been proven.

The *value and practical importance of research findings for training specialists in the education system, including specialists of highest qualification*, lies in the suggested model of the holistic andragogic cycle of promoting development of the postgraduate education for the sustainable development of society by implementing the methodological materials based on the experience of implementing the sustainable development concept in the world and in Ukraine.

The following scientific and methodological developments (which have not been used by teaching staff in their main pedagogical activities yet) have been embedded in the process of adult education:

- the method for diagnosing specialists' readiness to implement the principles of sustainable development;
- the method for implementation of the sustainable development concept in the updated system of postgraduate education;
- innovative technologies of specialist training in the postgraduate education system within the context of implementing the concept of sustainable development;
- the open informational and multimedia platform "Sustainable Development in Education" that provides access to the developed materials (the bank of practical materials) for specialists regardless of their residence, status and financial situation.

5. REFERENCES (TRANSLATED AND TRANSLITERATED)

1. Bordyug, N., 2018. *Theory, methods of teaching and research on environmental monitoring in the system of postgraduate education*, 378 p.
2. Kondur, O., 2018. Quality management of educational systems in the context of globalization: theory, methods of organization, practice, 488 p.
3. Liubarets, V., 2018. *Professional training of future managers of socio-cultural activities for the hospitality industry: theoretical justifications*, 382 p.
4. Ridei, N., Sergienko, V. (editor), 2017. *Systems of postgraduate education and science, methods of organization of professional training, paradigm of sustainability*, 641 p.

5. Ridei, N.(editor), 2018. *Methodology of system management, methodology of expert evaluation, cross-border modernization of educational systems*, 672 p.
6. Tytova, N., 2018. *Theoretical and methodological foundations for psychological and pedagogical training of future vocational teachers*, 354 p.
7. Tolochko, S., 2019. *The concept and methods of formation of scientific and methodological competence of teachers in the system of postgraduate pedagogical education*, 376 p.
8. Katsero, O., Kuzmenko, Y., Tytynnik, S., Kolisnyk, O., Krivorotenko O., 2019. Company innovative development based on the strategic management concept. *Academy of Strategic Management Journal*, 18, Special Issue 1, Available at: <<https://www.abacademies.org/articles/company-innovative-development-based-on-the-strategic-management-concept-8914.html>>.
9. Ridei, N., Pavlenko, D., Plakhotnik, O., Gorokhova, T., Popova, A., 2019. Concept of forming the company innovation strategy. *Academy of strategic management journal*, 18, Special Issue 1. Available at: <<https://www.abacademies.org/articles/concept-of-forming-the-company-innovation-strategy-8920.html>>.

ФОРМУВАННЯ СИСТЕМИ НЕПЕРВНОЇ ОСВІТИ НА ЗАСАДАХ СТАЛОГО РОЗВИТКУ : ДОСВІД ПРОЕКТНОЇ ДІЯЛЬНОСТІ

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Анотація. Проаналізовано функціональну направленість вивчення стратегії сталого розвитку. Запропоновано основи дидактичних і педагогічних умов інноваційності освітнього процесу. Розроблено комплекс предметних компетентностей. Окреслено архітектоніку системи до організації освітньо-

наукового процесу підготовки. Розроблено методики та методологію дослідження та професійної підготовки фахівців з рекомендаціями науково-методичного, організаційно-педагогічного та організаційно-управлінського характеру. Основна ідея дослідження – полягає в розробці та реалізації теоретико-методичних основ формування системи освіти впродовж життя на засадах концепції сталого розвитку з урахуванням: інтересів українського суспільства, що розвивається в контексті сталого розвитку; перебудови системи освіти та післядипломної, зокрема; потенціальних педагогічних можливостей, що визначають вибір ефективних форм навчання в системі післядипломної освіти. Практичне значення дослідження полягає в тому, що отримані й викладені результати уможливають подальшу комплексну та галузеву розробку різноманітних аспектів педагогічної теорії і створюють методологічний базис для побудови ефективних моделей забезпечення якості вищої освіти. Здійснене дослідження поглиблює традиційне бачення наукових доробків щодо проблем процесів модернізації професійної підготовки викладача в умовах транскордонної інтеграції соціокультурних освітніх форм. матеріали можуть бути використані в освітньому процесі ЗВО різного профілю, у яких здійснюється підготовка фахівців природоохоронної галузі з екологічного моніторингу, а також у післядипломній освіті для забезпечення реалізації екологічної політики держави. Результати можуть бути використані при розробці освітніх програм з підготовки фахівців, професіоналів з управління освітнього простору, при організації освітнього процесу та експертному оцінюванні релевантності підготовки всіх категорій зацікавлених сторін; практично корисними для широкого спектра спеціальностей післядипломної освіти для формування та розвитку правової компетентності адміністраторів вищої школи; інформаційне студентоцентроване портативне середовище психолого-педагогічної підготовки може бути використано у подальших наукових розвідках з питань розвитку вищої освіти майбутніх педагогів професійного навчання, матеріали можуть бути використані в освітньому процесі ЗВО різного профілю, у яких здійснюється підготовка фахівців природоохоронної галузі з екологічного моніторингу, а також у післядипломній освіті для забезпечення реалізації екологічної політики держави.

Ключові слова: неперервна освіта; здобувачі освіти; компетентності; проектне забезпечення; сталий розвиток.

СПИСОК ВИКОРИСТАНИХ ДЖЕРЕЛ

1. Бордюг, Н., 2018. *Теорія, методика навчання і наукового дослідництва з моніторингу довкілля у системі післядипломної освіти*, Київ: Вид-во НПУ ім. М.П. Драгоманова, 378 с.
2. Кондур, О., 2018. *Управління якістю освітніх систем в умовах глобалізації: теорія, методика організації, практика*, Івано-Франківськ: НАІР, 488 с.
3. Любарець, В., 2018. *Професійна підготовка майбутніх менеджерів соціокультурної діяльності для індустрії гостинності: теоретичні обґрунтування*, Суми: П.Ф «Видавництво “Університетська книга”», 382 с.
4. Рідей, Н., Сергієнко, В. (ред.), 2017. *Мультимодусні засади післядипломної освіти для сталого розвитку*, Київ: Вид-во НПУ імені М.П. Драгоманова, 641 с.
5. Рідей, Н. (ред.), 2018. *Управління системами післядипломної освіти для сталого розвитку*, Київ: Вид-во НПУ імені М.П. Драгоманова, 672 с.

6. Титова, Н., 2018. *Теоретико-методичні основи психолого-педагогічної підготовки майбутніх педагогів професійного навчання*, Київ: Вид-во НПУ ім. М.П. Драгоманова, 354 с.
7. Толочко, С., 2019. *Концепція та методика формування науково-методичної компетентності викладачів у системі післядипломної педагогічної освіти*, Київ: Вид-во НПУ імені М. П. Драгоманова, 376 с.
8. Katsero, O., Kuzmenko, Y., Tytynnik, S., Kolisnyk, O., Krivorotenko, O., 2019. Company innovative development based on the strategic management concept. *Academy of Strategic Management Journal*, 18, Special Issue 1.
9. Ridei, N., Pavlenko, D., Plakhotnik, O., Gorokhova, T., Popova, A., 2019. Concept of forming the company innovation strategy. *Academy of strategic management journal*, 18, Special Issue 1. Доступно : <<https://www.abacademies.org/articles/concept-of-forming-the-company-innovation-strategy-8920.html>>.