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POSTGRADUATE EDUCATION OF SECONDARY EDUCATION INSTITUTIONS MANAGERS: RESULTS OF THE STUDY ON TECHNOLOGICAL CULTURE DEVELOPMENT

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ПІСЛЯДИПЛОМНА ОСВІТА КЕРІВНИКІВ ЗАКЛАДІВ ЗАГАЛЬНОЇ СЕРЕДНЬОЇ ОСВІТИ: РЕЗУЛЬТАТИ ДОСЛІДЖЕННЯ РОЗВИТКУ ТЕХНОЛОГІЧНОЇ КУЛЬТУРИ

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The article presents the results of an experimental study of the pedagogical conditions (orientation of the content of advanced training on modern requirements of the technological culture development, personality-oriented focus of the educational process, implementation of complexity, integration and innovation of training, use of active and interactive teaching methods) of the technological culture development of secondary education institutions managers in the system of postgraduate education. Technological culture is considered as an integrative quality of personality which provides a specific way of using modern technology formed by combination of technification of the management process, values of the modern information world, professionally significant personal qualities and motives of activity. It is proved that the phenomenon of technological culture is genetically related to motives, values, self-identity, and also includes a set of knowledge and skills to identify technological needs in the process of obtaining information, its evaluation and effective use. Thus, technological culture encompasses technological competence, as well as values and motives of an individual aimed at adaptation to changes caused by the rapid pace of development of information society and digital technologies. The structure of technological culture, i.e. motivational, social, strictly professional components, has been justified; four levels of its development: intuitive, basic, sufficient, and creative have been characterized. The course and results of the pedagogical experiment to verify scientifically grounded pedagogical conditions have been described and analyzed: in the experimental group, the number of participants with the intuitive level decreased by 6%, with the basic level - by 9%, with the sufficient level – increased by 8%, and with the creative level – by 7%; the number of managers who have reached the creative level increased in the experimental group to 24.19%. The results proved the effectiveness of the proposed and experimentally tested pedagogical conditions of the technological culture development.

Key words: technological culture, pedagogical conditions, system of postgraduate education, managers of secondary education institutions.

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У статі представлені результати експериментального дослідження педагогічних умов (орієнтація змісту підвищення кваліфікації на сучасні вимоги щодо розвитку рівнів технологічної культури, особистісно орієнтована спрямованість освітнього процесу, реалізація комплексності, інтегративності та інноваційності навчання, використання активних та інтерактивних методів навчання) розвитку технологічної культури керівників закладів загальної середньої освіти у системі післядипломної освіти. Технологічна культура розглядається як інтегративна властивість особистості, яка забезпечує специфічний спосіб використання сучасних технологій, сформований шляхом сполучення технологізації управлінського процесу, цінностей сучасного інформаційного світу, професійно значущих особистісних якостей і мотивів діяльності. Доведено, що феномен технологічної культури генетично пов'язаний з мотивами, цінностями, самооцінкою особистості, а також включає набір знань і вмінь, які дозволяють ідентифікувати технологічні потреби в процесі отримання інформації, її оцінювання та ефективного використання. Таким чином, технологічна культура охоплює технологічну компетентність, а також цінності та мотиви особистості, спрямовані на адаптацію до змін, спричинених швидкими темпами розвитку інформаційного суспільства та цифрових технологій. Обґрунтовано структуру технологічної культури: мотиваційний, соціальний, власне професійний компоненти, схарактеризовано чотири рівні її розвитку: інтуїтивний, базовий, достатній, творчий. Розкрито хід і проаналізовано результати педагогічного експерименту з перевірки науково обґрунтованих педагогічних умов: в експериментальній групі кількість учасників з інтуїтивним рівнем зменшилась на 6%, з базовим – на 9%, з достатнім – збільшилась на 8%, а з творчим – на 7%; кількість керівників, що досягли творчого рівня, зріс в експериментальній групі до 24,19%. Результати переконливо довели дієвість запропонованих та експериментально перевірених педагогічних умов розвитку технологічної культури.

Ключові слова: технологічна культура, педагогічні умови, система післядипломної освіти, керівники закладів загальної середньої освіти.

Problem description. Modern postgraduate education is intended to distribute professional tools that allow teachers and managers of secondary education institutions to effectively organize the educational process. Modern creative methods of teaching of adults in the process of formal education are adapted to the growing requirements of the postgraduate audience. Training programs are designed to ensure the implementation of modern national legislation in the field of education, allowing graduates to more effectively and confidently move within the educational space during the lifetime, to use the competence obtained. One of such professionally and vitally important personal growths should be, in our opinion, technological culture of managers of secondary education institutions.

Analysis of main studies and publications in which the solution of this problem has been initiated. Analysis of the scientific literature on the problems of technological culture has given us the opportunity to generalize the results of

available studies. Foreign and domestic researchers in the development of technological culture in general and in managers of secondary education institutions, in particular, outline such directions of scientific and methodical searches: 1) selection of the most effective ways of acquiring information and technological culture (R. Hurevych, A. Kolomiiets, D. Kolomiiets (Гуревич, Коломієць, Коломієць, 2001, 276-281; Коломієць, 2007, 15-23)); 2) scientific justification of the main categories of information and technological culture to the extent which is necessary to the teacher and manager (A. Kolomiiets, D. Kolomiiets (Коломієць, Коломієць, 2011, 87-93)); 3) identification of the latest trends in the development of technological culture of mnagers of educational institutions (N. Ostroverkhova et al. (Островерхова, 2012)); 4) search for and study of sources of information about new possibilities of using technology in management (N. Vasylenko et al. (Василенко, 2017, 135-145)); 5) formulation of rules of safe handling of data (the problem of information security in management) (R. Hurevych, M. Kademiia et al. (Гуревич, Кадемія, 2006)); 6) development of ways of using IT-tools as a means to identify problems and ways of their resolution (V. Boichuk (Бойчук, 2016), M. Kademiia (Кадемія, 2013), N. Laptieva (Лаптєва, 2015)); 7) development of the motives for the acquisition of technological culture and beliefs in the feasibility of using hardware and software in the context of solving management problems in managers of educational institutions (V. Symonenko et al. (Симоненко, 2001)); 8) organization of the activities of administrative management of secondary education institutions (schools), in particular with the use of hardware and software (N. Blahun (Благун, 2015)); 9) development of critical thinking as an instrumental value of organization of the effective management activities in education managers (L. Kyienko-Romaniuk (Києнко-Романюк, 2017)). This enabled us to justify and experimentally verify the pedagogical conditions of technological culture development in managers of secondary education institutions within the system of professional training and, consequently, to obtain a positive dynamics of the investigated culture development.

The purpose of our article is to present the results of an experimental study of the pedagogical conditions of technological culture development of managers of secondary education institutions as the set of ways of technification of the management process, values of the modern information world, interpersonal relations, and motivation in the system of postgraduate education.

Summary of the basic material. Formation of technological culture is an important part of the course of professional training of managers of secondary education institutions.

First of all, in the use of new technologies by the managers and in their management decision making, attention should be paid to the system of values of the target audience. In this respect, the most important are: motivation, dignity and responsibility. Technological culture of managers of educational institutions, among other things, is expressed in their personal motivation, system of values.

Technological culture of managers of secondary education institutions is considered as an integrative quality of personality which provides a specific way of using modern technology formed by combination of technification of the management process, values of the modern information world, professionally significant personal qualities and motives of activity. Technological culture is expressed in the complex of: 1) professional technological knowledge / skills; 2) critical thinking; 3) behavioral models of managers of secondary education institutions, which are based on certain value orientations and developed, accumulated during an organized formal training.

Thus, technological culture encompasses technological competence, as well as values and motives aimed at adaptation to changes caused by the rapid pace of development of information society and digital technologies.

The phenomenon of technological culture is genetically related to motives, values, self-identity, and also includes a set of knowledge and skills to identify technological needs in the process of obtaining information, its evaluation and effective use. It is known that effective managers are those who effectively use the information, know how to find it, how to learn, and those who are ready for continuous self-education.

Since technological culture involves computer, technical, digital literacy (or competency) and focuses on information retrieval, analysis and evaluation, an important personal and professional quality of a modern manager of the educational institution must be the critical thinking ability as an important tool for work with information. The critical thinking in managers contributes to the determination of usefulness and importance of technological procedures in each situation and in management in general, justification and appropriate assessment of the decisions made, both from an ethical point of view and from the standpoint of compliance with the criteria of SMART (Specific, Measurable,

Achievable, Relevant, Time bound). These positions are fundamental methodological basis of post-graduate education of school managers.

To our strong opinion, the pedagogical conditions of technological culture development of managers in the system of postgraduate education defines a personality-oriented approach as a modern educational paradigm. Such conditions include: 1) orientation of the contents of advanced training on modern requirements to development of technological culture; 2) personality-oriented focus of the educational process; 3) implementation of complexity, integration and innovation of education; 4) use of active and interactive teaching methods. We have conducted studies on the development of technological culture in the target audience, mainly in the aspect of formation of the value attitude as the basis of motivation to use hardware and software in the management process, as well as to expand the knowledge and acquire the skills of use of IT-tools and systems for effective management of a secondary education institution.

In a pedagogical experiment, we checked a designed and substantiated model of the technological culture development of managers of secondary education institutions in the system of postgraduate education [10]. The model is created based on the reflection of the identity of essential characteristics and the internal structure of technological and management activities. In his respect, the identity of the subjective (willingness of managers of secondary education institutions to technological activities and their level of technological competence), objective (technological activities of managers of secondary education institutions) and substantive (the result of technological activities for school management) components of management activities determines the component structure of the technological culture of the educational institution manager. Thus, the subjective component determines the essence of the motivational component of professional technological culture and its implementation in the management activities; the objective component, as the process of building and performing technological management activities, determines the essence of the social component; the substantive component is indicative of the achieved level of technological culture as a result of educational and self-educational activity of managers of secondary education institutions within the system of postgraduate education, in particular its own professional component.

Ascertaining assessment allowed identifying the initial level of technological culture development of the target group and, on this basis, to form

peer experimental and control groups. Entrance and exit surveys were conducted during the pedagogical experiment. The results of the survey show that there are certain features of technological culture development of managers of secondary education institutions within the system of postgraduate education. Such features include: objective factors (consistent continuous training of managers of secondary education institutions within the system of postgraduate education; changes in the regulatory base of professional training of pedagogical and managerial personnel of secondary education institutions; difficulty in financing the participation of managers of secondary education institutions in academic projects outside of the scheduled advanced training course since the organization of the innovative training of managers is not a priority for the development of education in the region); subjective factors (low level of network communication between the system of continuous education and managers of educational institutions, lack of knowledge and skills in the areas of advanced technologies and continuous training; lack of information about the mechanisms of development of technological culture; psychological resistance associated with the need for personal changes; distrust of the latest technology in school management).

The study showed that the intuitive, basic, sufficient and creative levels can be conventionally distinguished in the development of technological culture of managers of secondary education institutions. The study results indicate that, in the first years of management activities alone, managers of secondary education institutions start the work with mastering the technological culture with the aim of creating a competitive educational institution (intuitive and basic levels). The development of technological culture of managers of secondary education institutions is manifested in the preservation of axiological motives and the growth of activity motives (sufficient level), later on – mastering the latest technologies on the background of the dominance of axiological motives (creative level). The results of the experiment showed that this development is influenced by mechanisms (development of the technological culture of managers of secondary education institutions, setting of training tasks, feedback, reflection, reinforcement) and pedagogical conditions justified and created by us in the educational process of postgraduate education.

At the beginning of the experiment, the levels of development of technological culture of managers of secondary education institutions in the control and experimental groups slightly varied: the technological culture of 31% of managers in the experimental group and 31% of managers in the control

group was at a basic level of development. 39% of managers of the experimental group and 39% in the control group were at the sufficient level of development. 17% of managers in the experimental and 16% of managers in the control group had a creative level of the technological culture development.

During the ascertaining stage of the experiment, heterogeneity of the existing level of technological culture development of managers of secondary education institutions was revealed, the least developed characteristics were identified by cognitive, operational, axiological criteria. The results of the ascertaining measurement allowed us to predict further experimental work and to implement a model of technological culture development of managers of secondary education institutions in the post-graduate education.

For experimental verification of pedagogical conditions which, as we have suggested, enhance the level of technological culture development of managers, we made changes to the structure and content of the classes. These changes were regulated by a designed educational and professional program which ensured a continuous, systematic training and the integrity of the system of postgraduate education. Participants in the control and experimental groups were trained in the dual-mode form of a specially organized training and continued training and self-education in the intercourse period. Work with the target (experimental) group during the training courses began with the organization of the educational environment (removal of the protective psychological barriers, establishing emotional contact, development of a positive self-image, awareness of own learning goals, etc.). Building the content and structure of the training in specially organized conditions of continuous training in the system of postgraduate education included the personal orientation of the educational process. Training of managers within the system of postgraduate education with the aim of developing technological culture had the following components: scientific-theoretical, which ensured the implementation of the overall concept of the technological culture development of managers; search methodology, which ensured the integrity of the process of advanced training of managers; theoretical and methodological, which ensured a professional component of implementation of the content of advanced training within the system of postgraduate education. These components reflect a complex effect on the target group and are combined with each other in teaching and thematic plans and educational-professional programs of training courses. We have included the following topics to the search methodological component of the training process (scientific-theoretical module – 10% of the training hours):

“Theoretical and methodological foundations of the technological culture of managers of secondary education institutions”, “Legal basics of the educational process management”.

Theoretical-methodological component of the training course for the technological culture development of managers of secondary education institutions (80% of the training hours) is comprised of a methodological and practical module which includes the following courses: “Modern methods of technological culture development of managers of secondary education institutions”, “Professional-personal self-identity of managers in the new Ukrainian school settings”, “Management and technology innovation”, “Surveillance studies of technological culture development of managers of secondary education institutions”. The principles of comprehensiveness, integration and innovation in the process of advanced training of managers of secondary education institutions were implemented through introduction in educational process of the integrated special course “Development of technological culture of managers of secondary education institutions” in the process of which the students acquired the skills of creating a specific dedicated environment by means of ICT, implementation of the portfolio technologies, became participants of the round table “Technological approach in the management, training and education in the new Ukrainian school settings”. Creative workshops “Technological culture as a manager's quality”, “Features of the technological culture of managers of secondary education institutions”, “Method of projects in training managers for the implementation of technological approach in management” provided an opportunity for managers of secondary education institutions to gain new practical skills.

Organizational analysis module (10% of the training hours) integrates a search methodology and theoretical-methodological components of the educational process and includes baseline assessment, determination of deficiency of personal technological culture of managers, selection of the personal direction of its development in accordance with the assessment result. Orientation of the course content within the advanced training in the system of postgraduate education on the development of technological culture in the context of new technologies and requirements of the new Ukrainian school enabled the participants to choose additional courses from the variable part that best fit their needs and to assess the dynamics of development of their own technological culture at the end of training. Scientific-practical conference on the issues of technological culture in the management and protection of

individual and group research projects helped to identify the levels of development of the structural components of technological culture (motives, knowledge, skills and values) in practice.

Personality-focused direction of training provided clarification and correction of curriculum content through the introduction of the business game "Technological space of management of a secondary education institution". In the course of the game, the managers acquired the experience of self-identity in problem situations, individual and group awareness of professional and personal "growth points". The business game also envisaged the development of indicative topics of training the managers of each specific group, as well as building individual educational trajectory taking into account the needs, interests and professional and personal "growth points".

At the control stage of the pedagogical experiment, experimental data of the technological culture development of managers of secondary education institutions in postgraduate education were analyzed. During the assessment, the total indicators, which allowed determining the levels of development of technological culture after the experiment, were obtained (tab.1). Generalization of assessment results of the levels of development of technological culture components of students – participants of the experimental and control groups at the final stage of research allowed to present the dynamics of the technological culture development of managers of secondary education institutions at the ascertaining and control stages of the pedagogical experiment (Table. 1).

Table 1

Dynamics of the technological culture development of managers of secondary education institutions based on the results of experimental verification of pedagogical conditions

Group	Level							
	intuitive		basic		sufficient		creative	
	Number	%	Number	%	Number	%	Number	%
EG – start of the experiment	41	13	98	31	124	39	54	17
EG – end of the experiment	22	7	70	22	149	47	76	24
CG - start of the experiment	42	14	94	31	118	39	49	16
CG – end of the experiment	37	12	94	31	121	40	51	17

As we can see, in the experimental group, the number of participants with the intuitive level decreased by 6%, with the basic level – by 9%, with the

sufficient level increased by 8% and with the creative level – by 7%; in the control group, the following changes occurred: the number of participants with the intuitive level of technological culture development decreased by 2%, with the basic level – did not change, with the sufficient and creative level – increased by 1%. The number of managers whose level of technological culture has grown substantially, that is, those who have reached the creative level of the technological culture development, in the experimental group was 24.19%, in the control group – 17%.

Conclusions and prospects for further research in further direction. The analysis of results of the experimental study suggests that the pedagogical conditions (orientation of the content of advanced training on modern requirements of development of technological culture, personality-oriented focus of the educational process, implementation of complexity, integration and innovation of training, use of active and interactive teaching methods) are valid factors for improvement of the technological culture development of managers of secondary education institutions within the system of postgraduate education. The results showed the feasibility of further implementation of sound and experimentally tested pedagogical conditions in the educational process of the system of postgraduate education of managerial staff of educational institutions.

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