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**METHOD OF EXPERIMENTAL ASSESSING OF THE MODEL OF THE SYSTEM
OF THE INNOVATIVE CULTURE DEVELOPMENT OF FUTURE MANAGER OF
GENERAL SECONDARY EDUCATIONAL INSTITUTION**

Abstract: the article is devoted to the description of individual parts of the experimental work, the general purpose of which was to determine the effectiveness of implementation of the developed structural and functional model of the system of the innovative culture development of the future manager of general secondary educational institution in the master training process. Defining the pedagogical experiment was the task of checking the effectiveness of pedagogical conditions for the implementation of the specified structural and functional model, the ability to ensure the integrity of the process of development of the phenomenon under study.

Key words: methodology, experimental work, innovative culture, development, future manager, general secondary educational institution, master training.

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**МЕТОДИКА ЕКСПЕРИМЕНТАЛЬНОЇ ПЕРЕВІРКИ МОДЕЛІ СИСТЕМИ
РОЗВИТКУ ІННОВАЦІЙНОЇ КУЛЬТУРИ МАЙБУТНЬОГО КЕРІВНИКА
ЗАКЛАДУ ЗАГАЛЬНОЇ СЕРЕДНЬОЇ ОСВІТИ**

Анотація: стаття присвячена опису окремих частин експериментальної роботи, загальна мета якої передбачала визначення ефективності реалізації розробленої структурно-функціональної моделі системи розвитку інноваційної культури майбутнього керівника установи загальної середньої освіти в процесі магістерської підготовки. Визначальним у педагогічному експерименті стала задача по перевірці ефективності педагогічних умов реалізації зазначеної структурно-функціональної моделі, можливостей забезпечення цілісності процесу розвитку досліджуваного феномена.

Ключові слова: методика, експериментальна робота, інноваційна культура, розвиток, майбутній керівник, заклад загальної середньої освіти, магістерська підготовка.

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МЕТОДИКА ЕКСПЕРИМЕНТАЛЬНОЙ ПРОВЕРКИ МОДЕЛИ СИСТЕМЫ РАЗВИТИЯ ИННОВАЦИОННОЙ КУЛЬТУРЫ БУДУЩЕГО РУКОВОДИТЕЛЯ УЧРЕЖДЕНИЯ ОБЩЕГО СРЕДНЕГО ОБРАЗОВАНИЯ

Аннотация. Статья посвящена описанию отдельных частей экспериментальной работы, общая цель которой предусматривала определение эффективности реализации разработанной структурно-функциональной модели системы развития инновационной культуры будущего руководителя учреждения общего среднего образования в процессе магистерской подготовки. Определяющим в педагогическом эксперименте стала задача по проверке эффективности педагогических условий реализации указанной структурно-функциональной модели, возможностей обеспечения целостности процесса развития исследуемого феномена.

Ключевые слова: методика, экспериментальная работа, инновационная культура, развитие, будущий руководитель, заведение общего среднего образования, магистерская подготовка.

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Розширена анотація для ознайомлення з цією темою:

“Методика експериментальної перевірки моделі системи розвитку інноваційної культури майбутнього керівника закладу загальної середньої освіти”

Постановка проблеми в загальному вигляді та її зв'язок із важливими науковими чи практичними завданнями. Сучасний стан економічного, соціального та культурного життя суспільства вимагає певних змін у освіті, зокрема її структурного та змістовного оновлення. Автоматизація та раціоналізація різних видів діяльності, глобалізаційні процеси в культурі підвищують роль майбутнього керівника закладу загальної середньої освіти. Водночас розвиток інноваційної культури майбутнього керівника закладу загальної середньої освіти в процесі магістерської підготовки потребує вдосконалення, що зумовлює необхідність підготовки нового покоління керівників закладу загальної середньої освіти. Необхідно розробити, модернізувати та вдосконалити систему навчання менеджерів для задоволення потреб національних та іноземних роботодавців, нових європейських освітніх вимог та стандартів.

Аналіз останніх досліджень і публікацій, у яких започатковано розв'язання цієї проблеми і на які спирається автор. Проблему методики розвитку культури управління менеджерами на різних рівнях управління досліджували Л. Наточий, А. Теплухін, В. Пилипчук, Д. Ригалін, Ю. Нікорак, Б. Заремський та ін. Нині для покращення якості української вищої освіти та підготовки фахівців багато вітчизняних учених інтенсивно вивчають зарубіжний досвід надання сучасних освітніх послуг (О. Альперн, С. Козут, В. Луговий, Ю. Рашкевич, Й. Таланова та інші). Тому проблеми методики проведення дослідно-експериментальної роботи щодо перевірки ефективності структурно-функціональної моделі системи розвитку інноваційної культури майбутнього керівника закладу загальної середньої освіти у процесі магістерської підготовки вимагають особливої уваги.

Формулювання цілей статті (постановка завдання). Тому за мету дос-

лідження було обрано схарактеризувати методичку проведення дослідно-експериментальної роботи щодо перевірки ефективності структурно-функціональної моделі системи розвитку інноваційної культури керівника закладу загальної середньої освіти у процесі магістерської підготовки.

Виклад основного матеріалу дослідження з повним обґрунтуванням отриманих наукових результатів. Дослідження розвитку інноваційної культури майбутніх керівників закладу загальної середньої освіти у процесі їхньої магістерської підготовки складалося з чотирьох етапів та тривало в період із 2016 р. до 2019 р.

Перший етап – присвячено вивченню філософської, педагогічної, психологічної та літератури з проблеми менеджменту в галузі середньої освіти та педагогічної інноватики; визначенню понятійного апарату, об'єкта, предмета, мети, гіпотези та завдань дослідження.

На другому етапі – визначено природу, особливості, складові інноваційної культури майбутніх керівників закладу загальної середньої освіти, педагогічні умови її розвитку під час магістерської підготовки, що уможливило побудову системи цього процесу та унаочнення у вигляді структурно-функціональної моделі; критерії, показники та рівні розвитку даного феномену; відібрано, розроблено й апробовано методичку та методи визначення й оцінювання рівня розвитку інноваційної культури майбутніх керівників закладу загальної середньої освіти у процесі їхньої магістерської підготовки; проведено констатувальний

педагогічний експеримент, здійснено аналіз отриманих даних.

Третій етап – було впроваджено структурно-функціональну модель системи розвитку інноваційної культури майбутніх керівників закладу загальної середньої освіти у процесі їхньої магістерської підготовки (формувальний етап педагогічного експерименту).

На четвертому етапі – здійснено перевірку ефективності впровадження даної моделі; статистичну обробку отриманих експериментальних даних (контрольний етап педагогічного експерименту); сформульовано висновки; розроблено рекомендації щодо створення системи розвитку інноваційної культури слухачів магістерської програми “Менеджмент освіти”.

Упровадження розробленої моделі зумовило виконання таких обов'язкових дій: фіксацію даних про перебіг формувального експерименту, що характеризують зміни об'єктів під впливом системи експериментальних умов; виявлення динаміки змін процесів, об'єктів чи явищ під час проведення експерименту; оцінку поточних витрат наявних і потенційних особистісних, інтелектуальних, матеріальних, технічних та інших ресурсів.

Висновки з даного дослідження та перспективи подальших розвідок у даному напрямку. Визначальним у педагогічному експерименті стало завдання щодо перевірки ефективності педагогічних умов реалізації означеної структурно-функціональної моделі, можливостей забезпечення цілісності процесу розвитку інноваційної культури майбутніх керівників закладу загальної середньої освіти у процесі магістерської підготовки.

Problem setting. The current state of economic, social and cultural life of society requires certain changes in education, in particular, its structural and substantive updating. Automation and rationalization of

different activities, globalization processes in culture increase the role of the future manager of general secondary educational institution. At the same time, the innovative culture development of the future manager of

general secondary educational institution in the master training process needs improvement, which necessitates the preparation of a new generation of the future manager of general secondary educational institution. Managers training system needs to be developed, modernized and improved for meeting domestic and foreign employers' demands, new European educational requirements and standards.

The innovative culture development is discussed in such international documents as the Frascati Guide, the Oslo Guide, the Green Paper on Innovation in Europe, the First Innovation Action Plan in Europe, the Charter of Innovative Culture, and a number of Roman Club reports, etc. Among the state documents that emphasize the importance of innovation, in particular, are "Strategy for the development of innovative activity for the period up to 2030", Laws of Ukraine "On Innovation Activity", "On Scientific and Scientific-Technical Activity", "On the Priorities of Innovation Activity in Ukraine", etc.

Recent research and publications analysis. The problem of research methodics of management culture development of managers on different levels of management were researched by L. Natochyi, A. Teplukhin, V. Pylypchuk, D. Rygalin, Y. Nikorak, B. Zaremskyi and others. Nowadays for improving quality of Ukrainian higher education and specialist training many domestic scientists intensively study foreign experience in providing modern educational services (O. Alpern, S. Kohut, V. Luhovyi, Y. Rashkevych, J. Talanova and others). The highlighting of the general basis of pedagogical research questions were under special review of domestic scientists S. Honcharenko [2] and Ye. Khrykov [3].

Therefore, the issue of methodology of experimental work on the innovative culture development of future manager of general secondary educational institution in the master training process becomes especially relevant.

Paper objective. Characterizing the methodology of conducting experimental work on checking the effectiveness of the structural-functional model of the system of the innovative culture development of the future manager of general secondary educational institution in the master training process.

Paper main body. Theoretical substantiation of the structural-functional model of the system of development of innovative culture of future heads of institution of secondary education, the definition of pedagogical conditions for its effective implementation in the practice of Master's training became a prerequisite for the choice of strategy and methodology for the organization of experimental research.

The purpose of the experimental work was to determine the effectiveness of the application of the theoretically substantiated structural and functional model of the system of the innovative culture development of the future manager of general secondary educational institution to improve the quality of their master's training. The use of theoretical methods of analysis, synthesis, generalization, formalization, modeling made it possible to identify the following components of the structural and functional model of the innovative culture development of the future manager of general secondary educational institution in the master training process: theoretical and methodological unit (methodological foundations, principles, goals, tasks); structural and technological (content, stages, forms, methods, technologies of the innovative culture development of the future manager); control and evaluation (diagnostics of the level of the innovative culture development (criteria, indicators) and making necessary adjustments in the process and the result obtained).

It was important to check the pedagogical conditions of its implementation and the possibilities of systematizing the process of the innovative culture development in higher education. It was assumed that the content would accumulate

meaningful content, approaches, forms, methods of training of the future managers of general secondary educational institution in the master training process at certain stages.

In accordance with the conceptual and theoretical principles, object, subject of the research, the purpose of the experimental work was determined, for which a number of tasks were set and the methods of their solution were chosen.

Let's characterize tasks of experimental work and methods of their solution. Tasks for identification and clarification of the main provisions of the research methodology; definition of criteria, indicators that reflect the essential characteristics of innovative culture of the future manager of general secondary educational institution were done by method of expert assessments.

Observation, focused interview, questionnaire were used for the real condition search of the organization of the master training process of the future manager of general secondary educational institution on the innovative culture development.

Pedagogical experiment was used for checking the effectiveness of the developed model of the system of the innovative culture development of the future manager of general secondary educational institution and pedagogical conditions for its practical implementation in the practice of Master's training.

Such tasks as systematic and purposeful creation in the master training process of the system of the innovative culture development of the future manager of general secondary educational institution on the basis of the developed roadmap and generalization of the practice of the innovative culture development of the future manager of general secondary educational institution in order to increase the effectiveness of their master training and to facilitate the dissemination of experience in other higher educational establishments were solved by introduction control works:

testing, questionnaire "Managerial competence of a manager", express diagnostics of social values of the manager's personality, leadership assessment, assessment of the motivation of professional activity, diagnostic technique "Personal Readiness for Change", diagnostic technique "Your creative potential", metaprofessional identity assessment, expert evaluation of creative and research activities, study of results of management practice, comparison, collation, generalization of the results of ascertaining and forming experiments.

Methods of mathematical statistics were used for verification of the obtained results.

Research on the innovative culture development of the future manager of general secondary educational institution in the master training process consisted of four stages and lasted from 2016 to 2019.

The first stage was devoted to the study of philosophical, pedagogical, psychological literature and sources on management problems in the field of secondary education and pedagogical innovation; definition of the conceptual apparatus, theme, object, purpose, hypothesis and tasks of study.

In the second stage, the nature, features, components of innovative culture of the future manager of general secondary educational institution, the pedagogical conditions of its development in the master training process were determined, that enabled system building of this process and identifying it in the form of a structural-functional model; the values, indicators and levels of the phenomenon development; methods and techniques for determining and evaluating the level of the innovative culture development of the future manager of general secondary educational institution in the master training process were selected, distributed and applied; ascertaining pedagogical experiment was conducted, analysis of received data was carried out.

In the third stage the structural-functional model of the system of the

innovative culture development of the future manager of general secondary educational institution in the master training process was introduced (the forming stage of the pedagogical experiment).

In the fourth stage, the effectiveness of the implementation of this model was checked; statistical processing of the received experimental data (control stage of the pedagogical experiment) was accomplished; conclusions were formulated; recommendations for creating a system of the innovative culture development of the future manager of general secondary educational institution in the master training process was developed.

The pedagogical experiment is based on the comparison of the results of the study in the experimental and control groups, which are manifested in the changes that have occurred during the experiment, according to determined criteria. It is established through input and output diagnostics (questioning, testing, etc.).

In the presented pedagogical experiment, the students of Sumy State Pedagogical University named after A. S. Makarenko (19 people), Sumy Regional Institute of Postgraduate Teacher Education (13 people), Vinnytsia State Pedagogical University named after Mykhailo Kotsyubynsky (15 people), State Higher Educational Institution "Donbass State Pedagogical University" (47 people), Kharkiv National Pedagogical University named after G. S. Skovoroda (30 people), Khmelnytsky Humanities and Pedagogical Academy (18 people), Berdyansk State Pedagogical University (61 people). There were 203 participants of Master's program involved: 108 students formed the control group (CG) – students of State Higher Educational Institution "Donbass State Pedagogical University" and Berdyansk State Pedagogical University, 95 students formed the experimental group (EG); also 94 teachers took part.

The small size of the sample set of the experimental study is due to the licensed volume of training and the term of the study

in the Master's program, allowed to track the dynamics of academic achievement and professional growth of each individual undergraduate, therefore, to record the individual progress of each future manager, to identify the nature and factors of his/her self-development, comparing them with the results of the previous diagnostics and, if necessary, adjust the educational activities of the students of Master's program "Management of education".

The size of the sample set (the quantity of undergraduates of the experimental and the control groups) ensured the representation of the obtained data.

The composition of the control and experimental groups are determined by the next sample, when the study units were the objects that represent the groups (in our case, the academic ones) [1, p.106].

The first stage of the research lasted during 2016 and ended with the definition of conceptual and categorical research apparatus, conceptual and theoretical foundations of the phenomenon of the innovative culture development of the future manager of general secondary educational institution and a set of factors that ensured the creation of its development system of the future manager of general secondary educational institution in the master training process.

The second stage of the study enabled the building of a model of the system of the innovative culture development of the future manager of general secondary educational institution, the effectiveness of which was tested in the master training process. In 2016-2017, a pilot study was conducted to determine the reliability of the innovative culture development of the future manager of general secondary educational institution in the master training process and to acquire the characteristics of the system of the investigated process, which included checking the reliability of basic research methods and procedures, the scheme of its organization, of optimal options for the activity of relevant structural units of higher educational institutions in providing a system of the innovative culture

development of the Master's program graduates and university managers' training, instructors of Master programs for the innovative culture development of the future manager – students' of Master programs.

During the pilot study, the methodology of state diagnostics of the formation of the innovative culture of the future manager of general secondary educational institution was tested. The methodical purpose of such test was clarifying how well the respondents understood the content of the questions; optimization of the questionnaire structure; identifying the need for changes to its content or construction, etc. It was also determined to what extent the chosen methods of collecting and measuring the respondents' characteristics fit for purpose and what were the possibilities for interpreting such data.

At the pilot stage, the stability of the collected and processed data, their derivatives, the construction of indices, multidimensional scales, etc., were also verified, as well as the micromodel of the real composition under study, taking into account the representativeness by the significant structural characteristics of the object of the study and conditions of its functioning. Moreover, the recommendations of scientific and pedagogical workers of higher education institutions who participated in the experiment and the future managers of general secondary educational institution were taken into account.

During the ascertaining experiment, the appropriate level of the innovative culture development of the future manager of general secondary educational institution was revealed by:

- individual and group focused interviews with students of the Master's program, managers of general secondary educational institution, scientific-pedagogical workers (SPW), heads of the departments, deans and their deputies;
- diagnostics ("Diagnostics of the formation state of innovative culture of the future manager of general secondary educational institution", express diagnostics of social

values of the future manager's personality, "Your creative potential", motivation of professional activity, level of reflexivity of the manager), evaluation ("Assessment of leadership", manager's creative and research skills, "Personal readiness for changes", social and personal orientation of identification of the future manager with the profession, and its characteristics, level of the valueological culture of the manager), questionnaire ("Management competency of the manager", manager's attitude to innovative processes), testing (test managerial situations of innovative orientation), control work with the students of Master's program, poll (management practical training results and satisfaction with Master's program training);

- mathematical processing of results was performed. The reliability factor for all the questionnaires, diagnostic methods had a value from 0.85 to 0.91 (at $p < 0.01$), that proves their high reliability (pilot study results to find out the validity and reliability of the questionnaires).

The third stage of the study (2017-2018) involved conducting a forming experiment in which a scientifically grounded structural and functional model of the system of the innovative culture development was introduced directly into the master training process of general secondary educational institution. Much attention was paid to the creation of appropriate pedagogical conditions, which provided the process of the innovative culture development of the future manager of general secondary educational institution in the master training process systematically and purposefully.

The implementation of the developed model led to the following mandatory actions:

- data fixation on the course of the forming experiment, that characterizes the changes of objects under the influence of the system of experimental conditions;
- detecting the dynamics of changes in processes, objects, or phenomena during the experiment;

• an estimate of the running costs of existing and potential personal, intellectual, material, technical and other resources.

Technological support for the system of the innovative culture development of the future manager of general secondary educational institution was carried out on the basis of drawing up and implementation of the roadmap.

The fourth stage of the experimental work (control stage of the pedagogical experiment), which took place during (2018-2019) was devoted to the determining of the effectiveness of implementation of the structural-functional model of the system of the innovative culture development of the future manager of general secondary educational institution in the master training process by providing the mathematical processing of data. Static processing of the reliability of the obtained results of the model implementation was carried out by the criterion, which evaluates the reliability of the differences between the percentages of these samples.

Testing the hypothesis of the study with the help of the criterion χ^2 allowed to calculate the value of statistics of criterion T by the following formula:

$$T = \frac{1}{n_1 \cdot n_2} \sum_{i=1}^c \frac{(n_1 O_{2i} - n_2 O_{1i})^2}{O_{1i} + O_{2i}}$$

where n_1 and n_2 are the volumes of two samples from two compositions;

$O_{1i(i=1,2...C)}$ - the quantity of objects of the first sample;

$O_{2i(i=1,2...C)}$ - the quantity of objects of the second sample;

C is the quantity of results of the investigated properties [4].

The results of the experiment were compared with the study purpose, objectives and hypothesis. Reflection and analytical processing of the experimental data made enabled formulating conclusions and develop methodological recommendations for creating a system of the innovative culture development of the future manager of

general secondary educational institution in the master training process.

Conclusions of the research.

Summarizing the above mentioned, we have concluded that the choice of methods of the theoretical and empirical research depends on the peculiarities of the subject, the purpose and objectives of the study, the real conditions and possibilities of the research. A set of general scientific and empirical research methods was used for the comprehension of the subject of the research and fulfillment of the tasks. It was found out that the experiment is the main empirical method of pedagogical research. Besides, two groups, experimental and control, were completed for the experiment. Comparing the manifestation of changes in the innovative culture development of the future manager of general secondary educational institution in the master training process will determine the results of experimental work. However, the program of experimental work on the innovative culture development of the future manager of general secondary educational institution in the master training process is designed in such a way that it reflects the logic of solving the problem under study.

The method of conducting experimental work on checking the effectiveness of the structural-functional model of the system of innovative culture development of the manager of the general secondary educational institution in the master training process.

This study does not exhaust all the aspects of the innovative culture development of the future manager of general secondary educational institution in the master training process. The prospects for further study of the problem raised are developing a criterion assessment of the state of the innovative culture development of the future manager of general secondary educational institution in the master training process. It is important to identify the relevant criteria, indicators and levels that characterize the effectiveness of the developed structural and functional model of the development of the phenomenon under study.

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