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ABSTRACT

The article reveals the essence of a future teacher’s scientific-research culture on the basis of polyparadigmatic approach. It enabled to outline the features of functioning and development of this personal phenomenon in a multidimensional socio-cultural scientific and educational environment cohesively and systematically basing it on multidisciplinary strategies. It is concluded that the formation of a future teacher’s scientific-research culture will ensure rapid reaction to the conditions and requirements of pedagogical science, the high level of “metaknowledge” and “metaskills”, the achievement of which takes place in the process of mastering various scientific methods, the rapid adaptation under the conditions of frequent changes in scientific paradigms, finding fundamentally new ways of solving scientific problems. This can be achieved owing to mastering professional personal qualities (theoretical thinking, scientific style of thinking, methodological consciousness, self-awareness) and technological mechanism of scientific-research activity on the integrative basis.

Keywords: science, higher education, a future teacher’s scientific research culture, a technological mechanism of scientific research activity, scientific and pedagogical research, theoretical thinking, scientific style of thinking, general scientific and humanistic values.

PROBLEM TOPICALITY

Given the priority development of university education, which most closely meets the new needs of post-industrial civilization, its main tasks include: strengthening the links between education, science and culture, creating conditions for a student’s full socialization through immersion into a specially designed scientific and educational environment, the formation of a highly-educated in both professional and cultural spheres and harmoniously developed educational specialist of the 21st century.

The processes taking place in the national pedagogical science, to a large extent, correlate with the general global trends. Scientific-research activity as an inherent mechanism of scientific-research culture begins to be considered not only and not so much as a system of reproduction of socially meaningful knowledge, but, above all, as an independent social and professional value, symbolizing one’s involvement in the social elite. That is why the university segment of science should be considered, on the one hand, as an independent element of the scientific space, and on the other hand, to be the nucleus of pedagogical staff preparation.

Thus, the need for radical changes in science and education at the global level correlates with the leading directions of the development of the national educational space in order to achieve the effectiveness and competitiveness of professional education, the creation of an integrated through-system for attracting future teachers to different vectors of scientific inquiry, along with solving a range of problems dealing with higher education fundamentalization and universalization, which needs understanding the phenomenon of a future teacher’s culture as a personal creation under the conditions of the renewed higher pedagogical education.

A significant contribution to the development of the theory and methodology of the formation of scientific-research culture as a phenomenon in higher pedagogical schools was made by national (S. Honcharenko, M. Kniazian, A. Mykytiuk, V. Tusheva, etc.) and foreign scientists (W. Humboldt, F. Valter, V. Kesler, Z. Kyl, V. Knokhel, M. Olten, Ya. Olberts, E. Sharte, V. Yan, etc.), the works by V. Zagvyazinsky, V. Kraevsky, N. Kuzmina, A. Novikov V. Polonsky, G. Shchedrovitsky have methodological significance, too.

The **purpose of the article** is to consider different definitions of the concept “a future teacher’s scientific-research culture”, to reveal the essential characteristics of this phenomenon in the context of modern socio-cultural and educational priorities, to fill it with culture creating and culture corresponding content.

MAIN MATERIAL PRESENTATION

While studying the essence of a future teacher's scientific-research culture, we turn to the polyparadigmatic approach as the result of a multilinear and interdisciplinary analysis, which provides comprehensive consideration of socio-cultural and educational-pedagogical processes and phenomena, and is realized as the unity of the whole range of paradigms which interact and compensate each other when creating a conceptual space. Such methodological pluralism (A. Maidanov) as the presence of quantitative diversity of cognitive means in solving the identified problem will ensure the quality of the conducted research process.

Based on the philosophical approach, we consider it necessary to refer to the concept of "science", which lays the methodological basis of the phenomenon under study. Thus, the philosophical understanding [5; 7] of basic definitions of the concept of "science" allows us to focus on such provisions as:

- a) science is a cognitive, scientific-research activity that does not exist outside the social forms of its organization, embodied in a culture of a particular type; the result and purpose of such activity is scientific knowledge, characterized by systemic organization, explanatory and predictive capacity;
- b) science is the scientific knowledge that is viewed as a state of consciousness and a condition for scientific thinking that directs the scientific inquiry, filling it with new information. Being the purpose and result of scientific-research activity, scientific knowledge is a necessary component of this activity, it is a theoretical prism through which a scientific problem is considered.
- c) science is an innovative activity, oriented not only at the scientific knowledge theoretical systematization and generalization, but also at the search and building of new (objective or subjective) knowledge. It finds itself in generalization of the new ideas, new technologies, ways and means of solving scientific and pedagogical problems and tasks;
- d) science acts as a culture, because knowledge created by people of a particular culture is created and developed on the appropriate cultural basis; science has its own cultural value and is therefore considered a cultural phenomenon.

The point of view of N. Zlobin and V. Kelle [3] becomes important for us. They think that science, being one of the systemic factors of culture, leads to an individual's "cultural" predicament of lifestyle, changes of values, motives of behavior and self-consciousness. It does not only become a social institute of knowledge cultivation. It becomes a "way of life". In this respect, science complements culture and serves as culture itself.

We turn to the activity-based approach in determining the technological mechanism of a future teacher's scientific-research culture, revealing the relationship and correlation of such categories as "technology" and "culture". Thus, on the one hand, the values and achievements of culture are acquired and created in the process of activity, which confirms the fact of their inseparable connection. On the other hand, culture as a personal phenomenon manifests itself in the corresponding activity, where the characteristics of technological interaction are considered as the ones which have a notable value in the process of activity structures reproduction. This enables us to focus on distinguishing the immanent mechanism of the activity, certain ways of its implementation and expansion that is technology. Such understanding of the issue creates a perspective in the study of the scientific research culture within the two systems and their interaction and interconnection - activity (its technology) and culture as the manifestation of a researcher's personal qualities (thinking processes, personal newly-formed mental structures).

Considering culture as a mechanism (technology) of activity makes it possible to interpret culture in its essential existence, without being limited by descriptively phenomenological findings (V. Mezhuiev, E. Markarian and others). In the broad theoretical sense, the category "technology" helps to understand the essence of culture. The technological character of culture, viewing it in the format of activity structures, leads to the study of culture as a set of techniques, procedures, and norms that characterize the level and orientation of the activity, taken in all its dimensions and relationships. From these perspectives, culture acts as the way of regulating, preserving, reproducing and developing the activity and the whole person's life, both social and individual.

Therefore, the activity-based conception makes it possible to study the technological mechanism of scientific-research culture as reflecting the ways (methods, techniques, procedures, algorithms, standards, schemes, norms, logic of the research) of obtaining scientific knowledge in the process of carrying out relevant activities that give future teachers clear instructions for the organization of the research process and performing the research actions in a certain sequence, which in their totality (system) create the technology of scientific-research activity, which corresponds to the certain culture and "scientific mentality". In this aspect, the development of scientific-research culture can be interpreted as the evolution of the technological invariant of the research activity, the forms of detection of which is dictated by the cognitive (scientific) style of the era, which determines the method of scientific knowledge production at the level of methodology, particularly pedagogical methodology.

The idea of integrity and systematicity must be at the core of the technological mechanism of scientific-research activity. The main features of the idea are its internal orderliness, coherence and interaction of all its components, the relationship between the researcher's actions, which leads to the improvement of the whole research system.

Let us put forward our own definition of the concept of “scientific-pedagogical research”: it is the process and result of new knowledge acquisition and production, which is ensured on the integrative basis with the whole range of scientific methods of cognition and aimed at solving theoretical and practical problems in order to increase education efficiency, as well as enrich a modern teacher’s personal and social experience.

We emphasize that integrative and interdisciplinary character are the main characteristics of new thinking and methodology of modern scientific and pedagogical research, which is manifested in problem formulation, approaches to its solution, development of theories, development of conceptual models, etc. This characteristic of scientific knowledge corresponds to the innovative nature of civilization and science development, their constant movement, formation, renewal, and characterizes the modern form of fundamental character of science and education.

Being based on a systematic approach that aims to study the unity of process characteristics and performance parameters of the activity as a system, to establish general systemic properties, it seems promising to consider research activities in the format of the project, the technological mechanism of which is implemented in a certain time sequence in phases and stages. We offer to distinguish between the completeness of the cycle of activity (project, the system of scientific knowledge is projected) in such phases as [9]:

- the design phase (defining the purpose), the result of which is a created model of the system (scientific research project) and the plan for its implementation;
- the technological phase (fulfilling the purpose), the result of which is the system implementation;
- the reflexive phase, the result of which is presented in the form of evaluating the system being implemented.

The first phase - designing the research - is carried out in accordance with the general scheme for all kinds of researches. The scheme includes: conception - identifying contradictions - formulating a problem - formulating the purpose of the research - determining the object and the subject of the research - building a hypothesis - determining the objectives of the research – determining the methods of the research - identifying the logical structure of the research (planning the scientific inquiry) – creating the model of the research.

The logic of the second, technological phase of the research can be constructed only in the most general form, since it is determined by the content of a particular study, which is unique in its essence.

The stage of results presentation includes approbation of the results, literary layout of work.

The third phase – a reflexive phase - involves evaluation and self-evaluation of the results by the researcher. Singling out a reflexive phase is rather conditional as comparison, correlation, analysis of the research results, their clarification and correction that is manifested in self-control, critical evaluation of the research results and the spread of their practical application is a permanent process.

On the other hand, the technological mechanism of scientific research activity is found at different levels of the hierarchy: strategic, tactical, and operational. Thus, at the strategic level, there is understanding, theoretical justification for further practice-oriented development of the research; on the tactical level anticipation is developed, that allows us to anticipate the results of a researcher’s actions, design, program the activity. By mastering the technology at the operational level, a researcher masters those actions and operations, without which the scientific research activity cannot be carried out, in particular, exploring, reflexive and investigatory actions. This hierarchy allows us to approach the understanding of the essence of scientific research technology, to understand the stages and mechanisms of this process development on the part of the subject of the activity [9].

Therefore, following the logic of our considerations, the technological mechanism of a future teacher’s scientific research culture is constructed as a system, owing to successive actions, both horizontally (the phases of scientific research: design, technological and reflexive phases) and vertically (the levels of scientific research: strategic, tactical, and operational).

For a future teacher, it is possible to master the technology of scientific research activity on conditions of applying the mechanisms of scientific creativity at the level of theoretical substantiation of a scientific problem, using different combinations of scientific research methods, and pedagogical creativity as design and development of author’s educational and pedagogical technologies, organizational and methodical conditions of their application and implementation into the pedagogical practice. Such a creative core is manifested in the developed conception of the research, to which all researcher’s actions and reflections are subordinated.

The creation of the conception of scientific research should be based on an interdisciplinary, complex analysis of the problem field, which provides comprehensive consideration of the subject of the research and is implemented as a unity of the whole spectrum of theories and paradigms. In this context, the unity of research paradigms is understood as the “unity of diversity” (M. Rickert), and “complexity” is realized as an attribute and principle of scientific cognition, which testifies: the more complex organization an object has, the more diverse knowledge and techniques are required to study it.

Such integrative essence of content characteristics of research strategies is manifested in the deep penetration into the essence of socio-cultural pedagogical phenomena, processes, the search for common patterns of their functioning on the basis of integrative theories and conceptions, as well as in the widespread use of universal methods and means of scientific research in their unity.

In the conceptual field of **personality-oriented approach**, a future teacher's scientific research culture is determined by the unity of his methodological consciousness, scientific thinking and research activities, which stipulate the development and enrichment of the subject-personal dominant, the formation of his professional credo. The scientific research culture is considered as a combination of personal qualities that contribute to the search for one's own individual concept in solving scientific and pedagogical problems, the formation of one's own pedagogical philosophy, which is represented in "self-concept" and determines the individual style of scientific and pedagogical activity. In this context, scientific research culture is manifested as a teacher's intellectual potential, focused on cognitive activity, a system of research abilities that determine a future specialist's thinking activity.

To reveal the peculiarities of a teacher's evaluative-analytical personal qualities, we turn to the methodological position of S. Rubinstein [8] regarding the unity of the processes of consciousness and activity (actions), the natural consequence of which is distinguishing the regulatory function of self-consciousness. According to this provision, consciousness (self-consciousness) as a regulation mechanism acts simultaneously as a component of the activity and its product. As any regulatory impact is determined by both external and internal criteria, the identification of their specific character becomes the basis for determining the types of regulation of activity, in particular, scientific research activity. The first, subject-matter regulation, is related to ensuring the adequacy of operational characteristics of the scientific research activity with the characteristics of its subject (object) and the peculiarities of the subject activity in general. The second form of activity regulation is its content regulation - the correlation of purposes and means of scientific research with the subject's motives, needs, values and attitudes. These two forms of activity regulation correlate with the two fundamental characteristics of the activity: its objective side and meaningfulness. In the system of a researcher's internal regulation, which is formed alongside with the activity itself, the subjective and sense-bearing subsystems are put together.

The importance of a system-forming factor for determining the personal characteristics of the phenomenon of a future teacher's scientific research culture belongs to his theoretical thinking as an appropriate application of analytical and synthetic, generalizing actions in the educational and pedagogical process; readiness for the scientific analysis of pedagogical reality, considering the socio-cultural context; the application of a research approach to solving scientific problems in pedagogical theory and practice.

One of the features of modern scientific thinking is methodology (V. Kraievskiy), which is characterized by a conscious attitude to the means and prerequisites of an activity for scientific knowledge formation and improvement, therefore, in the structure of a researcher's consciousness, the methodological coordinate is leading. This makes it possible to consider consciousness as acquiring new features and existing as a special form - methodological consciousness - that integrates both characteristics of scientific pedagogical knowledge - its conceptual character and normative character.

The scientific style of thinking is closely related to theoretical thinking. However, this connection does not mean their identity, the scientific style of thinking in relation to theoretical thinking acts as its feature and is applied to denote norms and a system of principles, which are used by researchers in their approach to the research and its results. The peculiarities of scientific style of thinking are its conceptual character, ability to prove, argumentative character, systematicity, logical character, reflexivity, problemat�icity, predictability, non-standard character [4; 5].

The scientific style of thinking implements constructive tasks by means of performing the following functions [7]:

- the critical function or the function of evaluating theoretical ideas (hypotheses) and methods of obtaining, testing and building knowledge;
- the selective function - the function of choosing theories (hypotheses), methods and categorical apparatus;
- the verbal function - registration of factual and theoretical knowledge in the concrete-historical language of science;
- the predictive function - identifying possible ideas, trends of scientific research, new methods.

For a future teacher, the scientific style of thinking is formed to the extent in which it is the product of his scientific and cognitive activity, and largely determines the active character of this activity, the orientation of the research, goal-setting and goal realization. The presence of the reproductive and creative elements in the scientific research activity determines the invariant (static) and variable (dynamic) characteristics of the style of thinking, related to the characteristics of a researcher's personality, cognitive situation, and features of thinking style. That is why, style is both a combination of patterns and a real process of creative activity, in which the individuality of style and its uniqueness are manifested. However, the manifestation of the individual logic of the thinking process, the subjectivity of style, and the way of thinking cannot be free from a certain methodological orientation. The determination of scientific creativity by the principles and methods of the research manifests itself, which does not contradict the manifestation of a researcher's individuality, since such characteristics of a person as the depth of one's thinking, the originality of the approach to solving scientific and educational problems and others are involved into the process of research.

Thus, we can assert that a future teacher's thinking activity is conditioned by both external (sociocultural, educational and pedagogical) and internal (methodological awareness, scientific style of thinking) factors. For a teacher, the scientific style of thinking determines the strategy of scientific-cognitive and research inquiry, serves as a means of orientation in the flow of scientific information, a way of attitude to scientific and pedagogical reality, forms the ideal of scientific method and scientific theory, develops ideas about the subject and object of scientific knowledge acquisition, determines the level of "metaknowledge" and "metaskills", the achievement of which takes place in the process of mastering various scientific methods, which causes rapid adaptation under the conditions of frequent change of scientific paradigms, different pedagogical technologies, finding fundamentally new ways of solving scientific problems.

From the standpoint of the **axiological approach**, the formed future teacher's culture does not only involve an individual's mastery and realization of values, but also their creation, in this way providing understanding and imparting values and senses to scientific and cognitive activity, serving as a means and condition for the formation of value orientations of a researcher's personality, value orientations to increasing one's own researcher's experience, understanding science and scientific systemic and dialectical thinking as an acquisition necessary for professional and personal life. The axiological dominance in the structure of scientific research culture plays the role of value coordinates, it defines and determines the specific functional conditions of all its structural components. The axiological approach allows us to identify and analyze those values and norms which regulate and direct a researcher's inquiry. In this context, along with the scientific and methodological values, human and socio-pedagogical values become of special importance. Their integration into the scientific and cognitive process determines the vector of the research.

As O. Ohurtsov and V. Stopin point out, the main channel through which the interaction between science and culture take place is the ideals of scientific knowledge. They provide transition of norms and regulations into the broad cultural context, with the help of which the results of scientific research become culturally meaningful, and the research activity itself integrates into cultural and sense-bearing unity. This process is twofold: on the one hand, the ideals of scientificity, characteristic of the scientific community, acquire a broader culturally-meaningful sense, turn into values and norms of the system of education and culture, and on the other hand, having become as such, having become the values of culture at a certain stage of its development, the ideals of scientificity have a methodological and regulatory impact on the research programmes formation, on the choice and interpretation of cognitive material, the Gnostic and cognitive process itself.

We can single out the two sides of the axiological position of the subject of knowledge: the "input" of scientific creativity (the conditions for knowledge production) and the "output" of knowledge (the holistic system of conceptual knowledge). A researcher's value orientations influence and condition his values, which include the values of individual scientists and general scientific values; they manifest themselves both at the level of the actual practice of preferences, and in the form of formulated conclusions, statements, provisions, etc. Determining the strategy and tactics of the research, a researcher's value orientations and attitudes affect the ways of interpretation and justification of knowledge structures and conclusions.

With regard to cognitive, including methodological provisions that take place in scientific research activities, their formation depends on the socialization and scientification of a researcher's personality. The motivational significance of these provisions is that it is through them that the knowledge acquires personal content and becomes the internal principle of research activity. The mechanism of methodological settings makes it possible to carry out extrapolation of methodological experience to a broader subject area, which makes them an important means of a researcher's orientation. That is why such settings are motivational, as they determine the direction and succession of scientific research activity, make it meaningful, and corresponding in a varying degree to the whole dispositional structure of an individual.

However, they are not only achievements, "alienated in the form of knowledge" (M.O. Rozov), but also the process of striving for them that are important in the process of cognition as the desire to know the truth, the ability for such cognition becomes a high value. It is important to understand that the value of cognition is not only manifested in the formed outlook, and world comprehension, but also in the worldview, which is expressed in placing all the elements of knowledge in a definite order among themselves.

The study of scientific research culture as a phenomenon of human culture leads us to the problem of higher humanistic values. We emphasize that modern science is increasingly in need for the analysis of not only its ideological principles but also of a humanistic orientation. We should consider not only social and cultural and philosophical functions of science, but also the correlation of scientific knowledge directly to a person as to the subject and object of science. And this inevitably leads to considering the value aspects of scientific knowledge from the standpoint of its human dimension, principles that act in the form of its peculiar regulations. At the present stage of scientific development the process of induction of new conceptual ideas, regulations and attitudes is increasingly subordinated to humanistic, personality oriented ideals and values, and it stimulates new thinking in the scientific research, "when human values become higher than purely researcher's ones" (I. Frolov). It is the axiological principles of scientific research, defining axiological goals and tasks that become of particular importance in the future teacher-researcher's activity.

CONCLUSIONS

Thus, on the basis of the polyparadigm approach as an integrative unity of interacting scientific-methodological approaches, conceptions and theories, as well as phenomenological analysis, the essence of a future teacher's scientific research culture is revealed. It allows to outline the peculiarities of functioning and development of this personal phenomenon in a multidimensional scientific and educational space holistically, systematically, and being based inter-disciplinary strategies.

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