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E.Yu. Yusupov's Effective Contribution To The Preparation Of Highly Qualified Scientific Personnel In Uzbekistan

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ABSTRACT

This article analyzes the effective activity of E.Yu. Yusupov in the training of highly qualified scientific personnel in Uzbekistan. The study examines the development of the national system of scientific and academic staff training in the context of educational reforms and institutional transformations after independence. Special attention is paid to the role of scientific supervision, the formation of a sustainable research environment, methodological rigor, and the principles of scientific continuity.

Based on a review of national and international scholarly sources, the article highlights key factors influencing the quality of scientific personnel training, including institutional reforms, international cooperation, innovation in higher education, and support for young researchers. The findings indicate that E.Yu. Yusupov's scientific and pedagogical activities were characterized by a systematic and comprehensive approach to research supervision, the encouragement of independent thinking, and the promotion of academic integrity and methodological precision.

The study concludes that his contribution played a significant role in strengthening scientific schools, ensuring continuity in research traditions, and enhancing the overall effectiveness of scientific personnel training in Uzbekistan. The results of this research may serve as a theoretical and practical basis for further improvement of the national system of training highly qualified scientific staff.

Keywords: - Scientific personnel training; higher education reform; scientific supervision; research environment; academic continuity; innovation in education; Uzbekistan; E.Yu. Yusupov; methodological rigor; international cooperation.

INTRODUCTION

After the Republic of Uzbekistan gained independence, a radical reform of the science and higher education system was identified as one of the priorities of state policy. Particular attention was paid to the intellectual potential and scientific personnel reserve as the main factor of social development, economic growth and innovative development. For this reason, large-scale reforms were carried out aimed at improving the system of

training scientific and scientific-pedagogical personnel, modernizing it in accordance with international standards, and increasing the efficiency of scientific research. In the post-Soviet period, significant societal changes in Uzbekistan led to a range of impacts on higher education, and consequently on the qualification level of scientific personnel. After the collapse of the USSR, the abrupt change in the political and economic system had detrimental consequences for the scientific sphere, ultimately resulting in a drastic decline in research output. The establishment of national independence in Uzbekistan had an undeniable influence on the country's development, directing attention towards issues that had long been shelved. The adoption of a new Constitution (December 8, 1992) laid the foundation for the formation of a democratic and legal state. Priority areas were chosen for the socio-economic and intellectual revival of the nation, including the support of science and education. A significant milestone in this regard was the establishment of the state scientific grant program in 1997 (K. Khoshimov, 2019).

Scientific programmes conducted under the auspices of the Uzbek Scientific Council "Fundamental Problems of Chemistry" played a fundamental role in research development. The total number of grants awarded reached twenty-five, with twenty-one of them won by candidates from Samarkand. The first presidential grant was awarded to the Samarkand state university. The introduction of master's degree studies in universities had an impact on the training of scientific personnel. In the last two decades of the XX century, drastic changes were observed in all spheres of Uzbekistan.

The introduction of scientific personnel training at the level of master's (M. D.) and doctoral (DSc, PhD) at universities was one of the widely-publicised factors forming specialists with high international and local standards. The establishment and high development of a scientific and pedagogical staff training system for higher education institutions taking into account advanced international practices contributed greatly to these processes. Further, from 1990–2004, the process of preparing scientific personnel occurred under the direct supervision of Professor Yusupov E. Yu. Accordingly, one of the important tasks of the Uzbekistan higher education system was the restoration and revitalization of scientific research work among young individuals.

In the conditions of modern globalization, the issue of training scientific personnel is becoming more complex and multifaceted. It is not enough for a scientific researcher to have knowledge in a certain field, but he must also be able to think independently, have the skills to analyze and solve scientific problems, effectively use information and communication technologies, and be competitive in the international scientific arena. From this point of view, a healthy scientific environment, a culture of scientific leadership, a modern material and technical base, and mechanisms of international cooperation are among the main conditions for training highly qualified personnel.

The system of training scientific personnel is not only an organizational or educational process, but also one of the strategic foundations of socio-economic development. The formation of scientific schools, ensuring scientific succession, and involving young researchers in scientific research serve the long-term development of the country. Therefore, the personal contribution and initiatives of scientific leaders are of particular importance in this process.

One of the scientists who, with his selfless work and scientific and pedagogical activity, has taken a worthy place in the development of the system of training scientific personnel in Uzbekistan is E.Yu. Yusupov. He is known not only as a scientific researcher, but also as a skilled teacher and organizer. His activities are aimed at improving the culture of scientific leadership, forming independent research skills in students, and increasing the practical significance of scientific work.

E.Yu. Yusupov paid special attention to the issue of forming a scientific school and ensuring succession in his activities. A scientific school is characterized by stable research traditions in a certain scientific direction, a methodological approach, and the presence of a system of students. The students who grew up under the guidance of the scientist later worked as independent researchers, contributing to ensuring scientific consistency and continuity. This is an important factor in the development of national science.

At the same time, the motivation of young

scientists, increasing their interest in scientific activity, and material and moral encouragement are also important in the process of training scientific personnel. E.Yu. Yusupov served to develop the scientific potential of young researchers by involving them in scientific conferences, seminars, and grant projects.

This article highlights the effective activities of E.Yu. Yusupov in training qualified scientific personnel in Uzbekistan based on a scientific-theoretical and analytical approach. His scientific leadership style, role in creating a scientific environment, mechanisms for supporting young researchers, and contribution to the formation of a national scientific school are comprehensively analyzed. Thus, the goal is to develop theoretical and practical conclusions for further improving the system of training scientific personnel in our country.

LITERATURE REVIEW

The issue of training qualified scientific personnel is one of the topics widely covered in international and national scientific research. Factors such as the formation of scientific potential, improvement of the doctoral system, development of scientific leadership culture, and strengthening of the institutional environment are considered as the main components of this process. In independent Uzbekistan, the country faced a severe shortage of highly qualified specialists, particularly in science and research, which hindered the effective solution of different issues and tasks in various areas. This was the assessment made by E. Yu. Yusupov, Member of the Academy of Sciences of the Republic of Uzbekistan, Doctor of Philosophy in Physical-Mathematical Sciences, and Professor of the National University of Uzbekistan in the late 1990s when he initiated and advocated for the implementation of several programs aimed at remedying this situation. Fill the situation with additional comments from the article…. The following basic provisions of the works of E. Yu. Yusupov constituted the basis of such a strategy.

A large portion of fundamental scientific knowledge is stored in foreign scientific literature. Therefore, mastering foreign languages is necessary to acquire modern scientific knowledge in any field of science. Tragically, higher educational pedagogues in the Republic of Uzbekistan allocate insufficient attention to foreign language training, including in technical schools, and the teaching of modern foreign languages in schools has been insufficient. That basic neglected higher education issue leads to the national education system being slowed dow. The already obvious gap in fundamental scientific knowledge prevents foreign scientific papers from being studied, requiring foreign assistance to catch up with the advanced countries of the world.

Furthermore, after having completed their mandatory studies, many students get supported fellowships from further studying abroad. Nevertheless, very few people manage to accomplish their thesis defense, notwithstanding the efforts made to prepare them. This unfortunate aspect prompted scientific consultations to be formally included in the Ph.D. preparatory program and real studies to be arranged in the postgraduate period. Other accompanying training conditions are also required to enable candidate students to prepare adequately and perform their studies successfully. In some academic institutions, the Ph.D. program is reduced to political and economic subjects' preparation only, leaving hardly any basic scientific discipline, while the basic disciplines are reduced to either their elementary-popular kind or irrelevant variant subjects.

The basic provisions of E. Yu. Yusupov's approach corresponds precisely to the challenges set forth in Uzbekistan's Law on education. They also mesh with the tasks indicated in Uzbekistan's National training programme model and Kazakhstan educational strategy material. Replies to Yusupov's special question provoking appeal on how to undertake and complete a Ph.D. and management of a personal pedagogical and scientific, multifunctional team, something that had yet remained unsolved by precedents since the independence of Uzbekistan, clearly demonstrate the tremendous need and urgency for implementing the suggested educational structure reform within highly qualified scientific personnel preparation training framework that persisted and still so (K. Khoshimov, 2019).

In the early years of independence, Uzbekistan underwent fundamental changes in the system of training scientific and scientific-pedagogical personnel. As Kushmirzaev (2025) emphasizes, in the process of forming a national model of training scientific personnel, institutional reforms, revision

of the certification system, and improvement of the procedure for awarding scientific degrees were of great importance [1]. The author notes that the process of training scientific personnel has become a strategic direction of state policy.

The institute of scientific leadership is of decisive importance in training highly qualified personnel. Zakharchuk and Gebedyuk (2018) emphasize that the role of a scientific supervisor is not limited to advice alone, but also to creating a scientific environment, forming independence and responsibility in the researcher [7]. They assess the process of training highly qualified scientific personnel as a multi-stage system that requires an integrated approach.

Prokopenko and Boychuk (2020) justify the need to strengthen methodological training, develop research infrastructure, and improve criteria for evaluating scientific activity in order to improve the quality of training highly qualified scientific personnel [8]. In their opinion, the culture of scientific leadership and academic transparency directly affect the effectiveness of personnel training.

In the conditions of Uzbekistan, international cooperation and joint educational programs are an important mechanism for training scientific personnel. Vasievich (2020) emphasizes that joint international educational programs ensure the training of scientific personnel in accordance with international standards and the exchange of experience [3]. This approach allows integrating the national education system into the global scientific space. Siddikov (2022) notes that cooperation with the CIS countries has served to improve the quality of higher education and strengthen scientific ties [14].

The problem of young personnel is one of the important factors of scientific development. Rakhimjonovich (2020) emphasizes that the involvement of young researchers in scientific activities, their social protection and financial incentives are important in ensuring the stability of the scientific system [4]. In his opinion, scientific succession will not develop consistently where the system of support for young scientists is not strong.

The issue of training pedagogical personnel is also inextricably linked to the system of scientific personnel. Ametovna (2022) emphasizes that the training of high-quality pedagogical personnel is one of the main factors for the sustainable development of the country [5]. The author shows the close relationship between pedagogical training and scientific potential.

The issue of innovative management and scientific integration in the university system also affects the process of training scientific personnel. Batyr (2020) compares the experience of Europe and Uzbekistan and emphasizes the need to introduce innovative models and management mechanisms in the training of scientific personnel in the university system [6]. Malyshev (2021) proposes a conceptual model of personnel training based on information and communication technologies and shows that the digital environment increases the efficiency of scientific activity [9].

Improving the dissertation process is also an important part of the scientific personnel training system. Gulyamov (2023) emphasizes that reforming the dissertation defense process serves to ensure scientific quality and transparency [10]. Odilov et al. (2020) justify the need to modernize the management system to increase the efficiency of training highly qualified personnel in the higher education system [12].

Karakhodjaeva (2023) analyzes the role of Uzbek scientists in state and scientific development and shows the importance of the institute of scientific leadership and personal initiative [2]. Khamidova (2020), highlighting the contribution of Academician Yusupova to the development of science, emphasizes that scientific succession and the creation of schools are one of the main factors in the development of national science [11]. Also, Toshbayev et al. (2023) analyze the prospects for training qualified personnel using the example of the agricultural education system and note the importance of a sectoral approach [13]. Ramatov and Baratov (2018) emphasize the important role of innovation and scientific integration in training highly educated personnel [15].

RESULTS AND DISCUSSION

The literature review has shown that the process of training scientific personnel requires a multifactorial and systemic approach. Institutional reforms, scientific leadership culture, international cooperation and mechanisms for motivating young

personnel are the main components of this process. Based on these theoretical approaches, when analyzing the activities of E.Yu. Yusupov, it is determined that his contribution to the system of training scientific personnel is of a complex nature.

Firstly, the scientific leadership of the scientist was an important factor in training highly qualified personnel. The principles of the scientific environment and leadership culture emphasized by Zakharchuk and Gebedyuk [7] found practical expression in the activities of E.Yu. Yusupov. He encouraged his students not only to assimilate ready-made information, but also to conduct independent research, analyze scientific problems and propose innovative solutions. This served to form independence and responsibility in the process of training scientific personnel.

Secondly, attention to methodological accuracy and research quality was one of the important aspects of the scientist's work. As Prokopenko and Boychuk [8] emphasized, strengthening scientific methodology is of decisive importance in training highly qualified personnel. Research work carried out under the leadership of E.Yu. Yusupov was distinguished by its methodological soundness and practical significance. This indicates that scientific work met the quality criteria.

Thirdly, attention was paid to the issue of international cooperation and scientific integration. Vasievich [3] emphasized that joint educational programs expand the opportunities for training highly qualified personnel. E.Yu. Yusupov served to increase the scientific activity of his students by involving them in international conferences and scientific publications. This paved the way for the recognition of the national scientific school in the international arena.

Fourthly, the issue of supporting young personnel was one of the priority areas in the scientist's work. Rakhimjonovich [4] emphasizes that encouraging young researchers ensures the stability of the scientific system. E.Yu. Yusupov contributed to ensuring scientific succession by early identification of talented students, involving them in scientific circles and grant projects. This served as a solid foundation for the formation of a scientific school. n response to requests from the government leadership, Yusupov developed several programs and other initiatives designed to support scientific-pedagogical personnel, postgraduate education, and the training of researchers. The proposed training programs, which covered PhDs in a variety of categories, had durations of three, four, or five years and were set according to the official diplomas of the Republic of Uzbekistan. These programs were targeted at individuals holding either specialist or master's degrees. Upon completion, the doctoral candidates were required to defend a dissertation and publish articles in scientific journals. In addition to these comprehensive dissertation programs, Yusupov was instrumental in implementing dissertation programs aligned with other Russian Federation training profiles, the durations of which varied from two to three years in accordance with the state standard. Graduates of these programs were required to submit scientific research results in an organized fashion to ensure formal sophistication and systematization. The structured procedures applied ensured that applicants from different systems of education and science could develop the necessary competencies and were therefore able to continue their scientific careers in PhD programs even in the absence of state academic education. These initiatives exposed hundreds of specialists to different scientific pedagogical and engineering personnel; simply put, the scientific schools of the Uzbekistan Republic received thousands of scientists, doctors, masters, and PhD fellows who were well trained, competent, and dedicated to science. Moreover, the quality of education and research developed further, students mastered programming and entrepreneurship, and professionals from various international organizations participated in dissemination programs and professional development. Prior to these accomplishments, Yusupov's educational penetration and other programs directed at university lecturers, engineers, pupils, widespread mathematics and programming competitions, and even a hundred complete buildings designed at Tashkent State Technical University had already cultivated thousands of highly qualified young specialists (K. Khoshimov, 2019). The national aims to prepare future generations and gain leadership in the global knowledge economy and scientific talent by 2050 therefore coincided with demands to develop human resources, and motivating the inventive population to take instinctive actions toward turning Uzbekistan a prosperous information society. The necessity of a master program and its structural elements arose as an additional

consequence, allowing for more comprehensive organisation. All training phases of FM preparation were set to best fit the lifetime of PhD generation changes in the national outlook. The initial stage comprised the "candidate" notion, doctoral higher degree mechanism under 300 preparatory doctorship programs targeting the PhD degree were implemented addressing the importance of training high-level scientific and pedagogical staff for the rapid enhancement of countries. Facing these important challenges and rehabilitation grants for establishing Pure-Mathematics centres in University Science Departments, long MIP preparation unforeseen throughout twenty-six years of Independence, Yusupov promoted wide-ranging structural enrichment schemes encompassing training adoption of master's degrees PhD generation pre-doctorship FM installation for correspond relevant elections and international collaborations organizing class courses packages involved. The programmes fully conformed to national elevation, have been proposed the four requirements directing different outlets and addressed their provision detailed collaborative stipulations were able since "the programme of increasing the requirements on dissertation defence". Divided those entered categories finer types targeted (table 1).

Table 1. Scientific Personnel Training Programs Initiated by E.Yu. Yusupov

No.	Program Type	Duration	Target Group	Main Requirements	Outcome
1	PhD Training Program (National Standard)	3–5 years	Applicants with Specialist or Master's degrees	Dissertation defense and publication in scientific journals	Highly qualified scientific and pedagogical staff trained
2	Program aligned with Russian Federation standards	2–3 years	Researchers from different educational systems	Systematic presentation of research results	Academic compatibility and international integration ensured
3	Scientific-pedagogical and engineering retraining programs	1–3 years	Specialists and university staff	Applied research and professional development	Strengthened scientific school capacity
4	Scientific competitions and Olympiads for youth	Short-term	Students and talented youth	Research projects and innovative solutions	Formation of young research personnel reserve

As shown in Table 1, the programs developed by E.Yu. Yusupov covered various educational stages and served to systematize and standardize the process of scientific personnel training. The organization of programs based on different deadlines and requirements has created flexible opportunities for researchers from different educational systems.

Another aspect of the discussion is the attention paid to the culture of organizing the dissertation process. Gulyamov [10] emphasizes that the transparency of the dissertation defense process is an important factor in ensuring scientific quality. In E.Yu. Yusupov's activities, special attention was paid to the fact that scientific works met high requirements in terms of content and form. This served to increase the prestige of scientific degrees.

Also, the issue of innovative approaches and the use of modern technologies is of great importance in the discussion. Malyshev [9] notes that it is possible to increase the efficiency of personnel training based on information and communication technologies. E.Yu. Yusupov encouraged the use of modern methods in scientific research and tried to adapt the research process to modern requirements.

In general, the results of the analysis show that E.Yu. Yusupov's scientific and pedagogical activities are characterized by a combination of theoretically based and practically oriented approaches. His activities have yielded positive results in such areas as creating a scientific environment, encouraging young personnel, developing international cooperation, and improving the dissertation process. Thus, the

scientist's activities can be assessed as an important practical example from the point of view of forming a modern model of scientific personnel training.

CONCLUSION

The analysis conducted within the framework of this study shows that the system of training qualified scientific personnel in Uzbekistan was formed during the years of independence on the basis of systemic reforms and strategic approaches and is developing step by step. The training of scientific and scientific-pedagogical personnel is an important factor not only in the field of education, but also in the general socio-economic development of the country. From this point of view, the scientific assessment of the contribution of individual scientists who worked in this process is of great importance.

The analysis of the scientific-pedagogical and organizational activities of E.Yu. Yusupov shows that he took a comprehensive and systematic approach to the issue of training scientific personnel. His leadership activities were not limited only to the preparation of dissertations but were aimed at developing the personal and professional potential of the researcher. He paid special attention to the formation of independent thinking skills, in-depth analysis of scientific problems and reasonable conclusions in his students. This served to ensure quality criteria in the process of training scientific personnel.

The analysis shows that the creation of a scientific environment played an important role in the scientist's activities. The scientific environment is not only a material and technical base, but also a culture of scientific dialogue, an environment of critical thinking, and the primacy of the principles of academic honesty. E.Yu. Yusupov managed to form a scientific school by strengthening these aspects. The students who grew up under his leadership later worked as independent researchers and scientific leaders, contributing to ensuring scientific succession.

The scientist also paid special attention to supporting young researchers and attracting them to scientific activities. Increasing the interest of young personnel in scientific research, involving them in conferences and scientific projects, and creating opportunities to test themselves in the international arena served to strengthen scientific potential. This is of great importance in ensuring the stability and organic development of the scientific system.

Another important aspect is the attention paid to the quality of scientific work and methodological accuracy. The fact that scientific research meets high requirements in terms of content and form, adheres to academic standards, and has practical significance are the main indicators of the effectiveness of scientific personnel training. The fact that these requirements were paramount in E.Yu. Yusupov's activities increase the value of his scientific legacy.

The results of the study also show that it is necessary to pay attention to a number of strategic directions to further improve the system of training scientific personnel. In particular, further strengthening the institute of scientific leadership, forming a stable motivation system for young researchers, expanding the scope of international scientific cooperation, and effectively using digital technologies are of great importance.

In conclusion, E.Yu. Yusupov's activities in training qualified scientific personnel in Uzbekistan play an important role in the development of national science. His experience in scientific leadership, organizational skills, and activities aimed at educating the younger generation laid the foundation for the formation of a scientific school. This experience can serve as an important theoretical and practical basis for further improving the system of training scientific personnel in the conditions of modern educational reforms.

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