THE SYSTEM OF FORMATION OF EDUCATIONAL ENVIRONMENT FOR THE PROFESSIONAL TRAINING OF FUTURE EDUCATION MANAGERS (IN UKRAINIAN CONTEXT)

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Abstract: Recent studies have considered the practical aspect of professional and pedagogical competence formation of students of pedagogical specialties as future managers of the educational environment. Aim of the research is to develop theoretical foundation, methodology and experimentation framework contributinng to the formation of psychological and pedagogical conditions for shaping professional competence of managers in educational system.

Keywords: future education managers; professional competence; formation of professional competence; pedagogical experiment; professional training environment.

1 Introduction

In today's world, management and leadership in education necessitate a deep comprehension of both possibilities and difficulties. Educational organizations must adapt to the rapid changes they confront in order to be effective and relevant. In particular, technology is essential to this process since it provides creative ways to enhance abilities and workflow.

Modern requirements for both teacher and education manager training in the context of the modernization of teacher education are determined in the context of a competency-based approach and are revealed through the unity of the general cultural, professional, and socio-moral development of the student's personality [21; 22].

Experts note that the competence of a teacher and education manager is a complex characteristic of a person; it includes not only cognitive (knowledge) and operational-technological (skills, experience, practice), but also its motivational, ethical, social, and behavioral components. The guideline for the professional and personal development of future education managers is a complex of professional and personal qualities that characterize a modern education manager: a pronounced humanistic position, intelligence, spiritual culture; high professionalism, pedagogical creativity, the need for constant self-education and readiness for it. The personal and professional potential of a manager in education system is revealed in conditions of spiritual and moral self-enrichment, creative self-realization and self-affirmation in life and profession.

In this context, it should be mentioned that within the competency-based approach, two basic concepts are distinguished: competence and competency, while the first of them includes a set of interrelated personality qualities specified in relation to a certain range of objects and processes, while the second correlates with a person's possession of the corresponding competence, including his personal attitude towards it and subject of activity. The competency-based approach to education is focused on the internal change in the value, need, motivational structures of the individual, his interests, attitudes, positions, personal meanings in mastering knowledge, skills, and methods of activity. By updating personal meanings and values of education, the competency-based approach, ensuring priority in the student's mind of personal goals and meanings, simultaneously brings social values and social meanings of mastering the system of competencies to a higher level.

Within the landscape of BANI world, in order to provide that graduates are in demand and successful as specialists, it is necessary to develop new competencies among university students. This does not mean that one needs to focus only on professional knowledge and skills. The ability to adapt to changing conditions of reality becomes vitally important for students and graduates.

In the post-pandemic period, the volatile, uncertain, complex, and ambiguous (VUCA) world is quickly giving way to a brittle, anxious, nonlinear, and incomprehensible (BANI) reality. The world of BANI is becoming increasingly more chaotic, with unpredictable and utterly unforeseen obstacles. Even though this is a relatively new concept, it is evident that there are strategies that may be applied to deal with the BANI environment. These strategies include data literacy, media literacy, critical thinking, resilience and slack, vigilance, mindfulness and empathy, adaptation and flexibility, high level of emotional intelligence, and so on.

Moreover, today, it is widely believed that the formation of soft skills is one of the main tasks of the educational process in universities when training specialists of any profile, since soft skills are no less important than professional knowledge and competencies. Namely, soft skills give graduates a competitive advantage. For future education manager, soft skills are especially important and should include both skills of working with colleagues and stakeholders, and with students and their parents, which complicates the overall landscape of soft skills and competence as such.

Tureckiova [15] back in 2015 proposed a conceptual scheme of educational management structure, which still remains relevant today (see Figure 1).
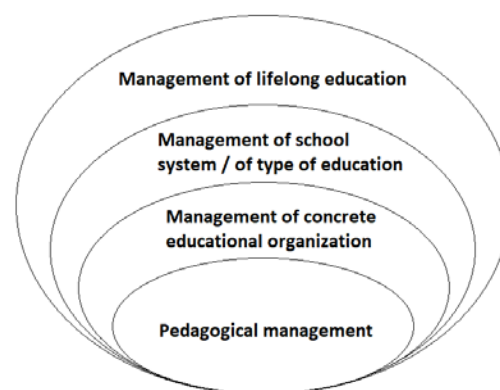

Figure 1. Structure of Educational Management [15]

Educational leaders apply theory to practical initiatives and circumstances in a relational, evidence-based manner in order to solve problems they face in their professional activities. Several reasons why educational leadership is essential, are as follows:

1.   Overcoming Challenges: In order to overcome issues that educational institutions face, like tight finances, high student-teacher ratios, student poverty, and poor student

health, educational leaders are essential. They take a solutions-based strategy that promotes creativity and diversity and results in development and progress.

2. Innovation and Adaptation: Educational leadership encourages creativity in teaching approaches and assists establishments in adjusting to new conditions, such as the quick switch to remote learning that schools had to make in the wake of the COVID-19 pandemic.

3. Better Educational Programming: Curriculum standards, funding, and school-wide regulations are all ways that educational leaders work to improve their programs. In order to promote good transformation, they also focus on team development and restructuring initiatives.

4. Inspiring a Positive Work Culture: Collaborative work, inclusivity, and a clear future vision are all encouraged by effective educational management and leadership. Students gain from a more fulfilling educational experience when staff members and teachers work in a supportive setting.

5. Policy Development and Advocacy: Educational managers frequently work on reform and policy problems, promoting improved local, state, and federal educational systems.

At every level of education, from university academic deans to directors of preschool programs, there are roles in educational management. They require specialized education and specific attention to skills formation effectiveness.

Educational leadership is crucial to improving the educational system by guiding and influencing educators, fostering innovation, and creating positive change to enhance student learning experiences. Educational managers and leaders contribute to shaping the future of educational institutions and communities by promoting inclusivity, innovation, and positive work culture in pursuit of the common goal of providing quality education to all students.

The development of educational policies that will contribute to significant social improvement remains a primary area of concern in most democratic societies. Educational institutions, as cornerstones of enhancement, innovation, and social justice, must now confront the challenges of twenty-first-century education, striking a fair balance between quality and progress. One of the vital tasks for 'life science' universities is to transform into institutions that foster internal changes, drive social transformations, and prepare learners for active participation in increasingly diverse, complex, and dynamic conditions. Indeed, modern education managers must act as agents of change, civic leaders, and promoters of sociocultural development, serving as guides, particularly in achieving the UN Sustainable Development Goals.

Unlimited technical growth, which is increasingly accelerating, the one which in the 20th century was called scientific and technical revolution, has turned into permanent technical transformations, which social and cultural shifts in society and spiritual development of the individual cannot keep up with. In such conditions, it is no longer individuals or society that determine the content and direction of scientific-technical development, but rather the logic of technical progress and technological rationality that begin to dictate society and individuals the goals, values, and norms of social organization.

A modern education manager in Ukraine must be able to work in conditions of dynamic transformations of the socio-cultural space, respond to constant changes in the regulatory framework regulated by the Law of Ukraine "On Education,", "On Higher Education", the National Strategy for the Development of Education in Ukraine for 2022-2032, the Strategy for the Development of Innovation Activities for the period up to 2030, the Resolution of the Cabinet of Ministers of Ukraine "On Approval of the National Qualifications Framework", the National Doctrine of Education Development, and the Order of the Ministry of Education and Science of Ukraine "On Approval of the Higher Education Standard in the Specialty 073 "Management' for the Second (Master's) Level of Higher Education" [3; 4; 5; 6; 10].

Therefore, the creation of a modern educational environment in a life sciences university should aim to teach learners to develop their professional competence, to be able to envision and work towards the future. It is essential to be able to respond to the challenges and threats of today, to cultivate scenario thinking – considering multiple future scenarios simultaneously, characterized by instability, uncertainty, complexity, and ambiguity. In such circumstances, one should find strength within oneself, seek reserves, and respond non-aggressively. Thus, developing resilience, self-motivation, determination, stress tolerance, and the ability to react promptly to events and threats, adapting to current situations is crucial [10; 12; 13; 16].

One of the most crucial resources for ensuring the effectiveness of educational reforms in the country is the issues with professional training for education managers in the higher education system.

An educational manager today must be able to work in a team, study global issues, and devise a strategy for each of them, examine the main threats and risks, and plan how to work if they occur. It is important to convey this to the team and colleagues, as we all must be prepared to work in a chaotic environment. All this must be taken into account in the formation of the professional competence of the future education manager [14; 19 20].

Education managers today have a special mission – to give more than they take. This is particularly relevant from a managerial perspective, because today, self-development is a pressing issue – it is about accelerating dynamic changes.

Therefore, creating an educational environment for the professional training of future education managers regarding the formation of professional competence is currently a relevant issue.

2 Materials and Methods

To solve the set research tasks, the following research methods were used: analysis of philosophical, psychological, pedagogical, and methodological literature on the topic of research, as well as regulatory documents, comparison and generalization of the content of concepts and categories; pedagogical observation, questioning, testing, ascertaining and formative pedagogical experiments, qualitative and quantitative analysis of the data obtained; modeling of the processes under study; methods of statistical data processing.

3 Results and Discussion

The experimental verification of the research hypothesis involved the use of pedagogical experimentation as a scientific method of investigation. The purpose of the experiment was to test the validity of the proposed hypothesis, establish the legitimacy, effectiveness, and efficiency of the developed scientific-methodical system for the formation of professional competence of future education managers in conditions of perturbation, and objectively assess the theoretical conclusions regarding its development.

In the pedagogical experiment conducted at the National University of Life and Environmental Sciences of Ukraine in natural conditions (without disrupting the logic and flow of the educational process), future education managers, school principals, their deputies, and practicing teachers participated, totaling 128 respondents. The simultaneous verification of the legitimacy, effectiveness, and efficiency of the system for developing the professional competence of future education managers in the experimental group during classes contributed to the improvement of their preparation for managerial activities [19].

The experimental work involved a combination of methods: *observation* – purposeful, systematic perception, and recording of psychological-pedagogical manifestations of behavior and activities of learners, aimed at a comprehensive study of the

master's personality in various aspects and relationships; determination of the level of formation of professional competence, dynamics of personal-professional growth. *Interviews* with learners – individual and group ones, based on obtaining data on the nature of learners' motives, their professional-value orientations, individual-personal peculiarities, inclinations, qualities, etc.; *surveys* (using such questionnaires as "Your awareness in the field of professional competence of an educational institution manager", "Your attitude towards problems of managing an educational institution on the basis of pedagogical interaction", "Your attitude towards the development of professional competence of future educational institution manager", "Self-management techniques"). The task of the survey was to identify learners' personal attitudes towards the formation of professional competence; determination of motives for its formation; clarification of the formation of cognitive interest in professional competence in conditions of perturbation. *Psychological-pedagogical diagnostics and self-diagnostics* were used – tests "Conflict Depth Assessment" and "Self-Assessment of Conflict". The tasks of diagnostics were the assessment of the nature of the conflict situation and self-assessment of conflict. *The method of expert assessments* was aimed at determining and specifying the basic provisions of the research methodology, determination of criteria, indicators reflecting the essential characteristics of the professional competence of future education managers. *Testing* implied the use of didactic tests aimed at determining the level of formation of professional competence (its completeness). The pedagogical experiment was aimed to test the system for forming the professional competence of future education managers. Pearson's mathematical statistics methods were used to verify the reliability of the obtained results.

The pedagogical experiment proceeded in stages, including the exploratory, formative, and control stages.

During the exploratory stage, a diagnostic assessment of the initial level of formation of professional competence of future education managers was conducted based on defined criteria and indicators.

Given that the professional competence of future education managers is determined not only by their knowledge, skills, abilities, but also by their values orientations, motives of activity, we were particularly interested in the motives that drive future education managers to contemplate the specifics of managerial activities.

The spectrum of learners' motives was identified using statements that included motives for managerial activities, which needed to be ranked in order of personal significance. Based on the survey and ranking, the following data were obtained:

- Desire to be a competent education manager – 35.15%;
- Interest in educational management – 27.34%;
- Desire to acquire knowledge necessary for educational institution management – 23.43%;
- Desire to acquire practical methods necessary for quality management of educational services – 19.53%;
- Desire to create a positive psychological climate in the team – 21.85%;
- Desire to conduct managerial activities based on leadership – 16.40%;
- Development of own abilities and skills in the context of professional competence – 14.84%.

Among the respondents, a relatively small number of learners (less than 9.3%) chose motives such as the desire to complete their studies, pass exams successfully, etc.

The data obtained regarding the motives of learners were used by us to determine the directions of specific work with future education managers.

Conducting surveys through questionnaires allowed us to conclude that 61.7% of learners did not have a clear understanding of the essence of the professional competence of an educational institution manager, and they predominantly considered the management process in the educational institution as the manager's sphere of activity. Only 35.2% of learners associated professional competence with the managerial activities of the manager, considering them as the subject of management. Nearly half of the learners had insufficiently developed skills in managing the educational process and their own activities, and fragmented knowledge of professional management of an educational institution.

To determine the ways of forming the professional competence of future education managers, we conducted a survey of teachers (23 individuals) and second-cycle (master's level) higher education students (69 individuals). Among the most significant components for enhancing the effectiveness of the educational process, respondents identified the following:

- Enrichment of educational components of the specialized training cycle with economic content (43.5% of teachers and 55.1% of students).
- Presence of systematic, consistent, and sequential approach in the professional training of future education managers (73.9% of teachers and 46.4% of students).
- Consideration of continuity of educational components at all stages of learning (60.9% of teachers and 36.2% of students).
- Introduction of integrated specialized courses with applied character (56.5% of teachers and 65.2% of students).

During the formative experiment, an experimental verification of scientifically grounded pedagogical conditions for forming the professional competence of future education managers was conducted.

The control stage of the formative experiment involved analyzing and evaluating the obtained results, and if necessary, adjusting the content of educational disciplines or formation technologies.

Two groups were involved in the formative experiment: the experimental group (EG) consisting of 68 individuals and the control group (CG) consisting of 71 individuals.

The aim of the formative experiment was to test the hypothesis put forward, as well as the effectiveness and efficiency of the system for forming the professional competence of future education managers, and the objectivity of theoretical conclusions.

The formative experiment was conducted based on the requirements for pedagogical research outlined in the works of S. Honcharenko, P. Dmytrenko, M. Sadovyi, and others.

Methods for diagnosing the formation of components of professional competence were selected taking into account that a comprehensive methodology for its assessment has not yet been developed in the theory and methodology of vocational education. Therefore, we used commonly accepted methodologies (L. Karamushka, O. Bondarchuk, T. Grubi, K. Jung? M. Snyder, and others), which allowed us to identify systemic features of the structural components of professional competence and their indicators in the respondents.

Thus, one of the main tasks and outcomes of the professional training of future educational managers should be their understanding that the effectiveness of future managerial activities depends not only on the knowledge and skills acquired at the university but also on the formation of professional competence.

The specificity of the professional competence of future educational managers is reflected in the content of its structural components. We present the structure of professional competence of future educational managers in the form of the following interconnected components: value-motivational, cognitive, procedural, and personal-reflective. Each of these components is characterized by specific content that corresponds

to the peculiarities of the managerial activities of future educational managers.

The value-motivational component involves a professional-pedagogical orientation towards understanding the values of management in the activities of an educational institution's leader.

The cognitive component comprises a system of psycho-pedagogical knowledge of learners (analysis of the organizational activities of the educational institution, quality management in education).

The procedural component constitutes a set of professional skills, the main groups of which include: cognitive skills; organizational skills; scenario thinking (systematic and critical thinking; envisioning and solving creative developmental events); entrepreneurship (initiative and ingenuity).

The personal-reflective component is characterized by the development of the ability to manage, the ability to make choices and managerial decisions; forecasting the results of the management process, selecting methods, techniques, and forms of self-management, the ability to self-analyze.

All components represent and characterize approaches to managerial activity, namely: the ability to exert a positive influence on the educational institution's staff, individuals, and groups, directing their efforts towards achieving the strategic goals of the educational institution; the ability to quickly react to changes and foster flexibility and adaptability in all participants of the educational process, the ability to use modern forms and methods of communication, collaboration, and interaction, including the use of digital technologies, the ability to represent the interests of the educational institution, and so on [11].

The formation of professional competence involved the following stages: preparatory, motivational-orientated, substantive-procedural, and evaluative-corrective stages [19].

Analysis of the results of the conducted experiment confirmed the success of work on forming the professional competence of future educational managers.

The reliability of the obtained experimental data is confirmed by methods of mathematical statistics (using the parametric Pearson's chi-squared test): result: **$X^2emp=0.508$**

The critical value of X^2 at V=2

V	P	
	0.05	0.01
2	5.991	9.21

Differences between the two distributions are considered significant. If X^2emp reaches or exceeds $X^2_{0.005}$, it is even more significant if X^2emp reaches or exceeds $X^2_{0.01}$.

Response: X^2emp is less than the critical value, indicating that the discrepancy between the distributions is not statistically significant (null hypothesis H_0) [9].

As we can see, according to the Pearson criterion, at the beginning of the experimental work, the interest in education management in the experimental (EG) and control (CG) groups of future education managers is the same.

Thus, during the pedagogical experiment, the results of the formation of professional competence in future educational managers are presented. According to the value-cognitive criterion (based on survey results), the formation of a stable cognitive interest in professional competence in the EG is (20.47%), while in the CG it is 4.22%; the formation of situational cognitive interest in professional competence in the EG is -4.29%, while in the CG it is 5.60%; the absence of cognitive interest in the EG is -16.18%, and in the CG it is -9.82%; the value motivation in acquiring professional

competence, activity, and creativity in the process of self-development in the EG is 14.80%, while in the CG it is -2.80%; the perception of the importance of acquiring professional competence, but in the context of a specific situation, usually associated with external stimuli in the EG is -11.80%, in the CG - 18.30%; the lack of awareness of the significance and role of professional competence, but in conditions of activity of personal orientation towards its formation in the EG is -3, in the CG - -15.50%.

According to the cognitive criterion (based on the performance of didactic tests): the completeness of psychological and pedagogical knowledge – the quantity of programmatic knowledge about the features of forming professional competence in the EG is 4.40%, while in the CG it is 4.20%; the creative nature of assimilation (the presence of conscious and systematic professional knowledge, free and creative interpretation, deep expertise in the field of entrepreneurship and innovation, ability to discover unknown aspects of objects, a sense of problem, originality of conclusions) in the EG is 10.30%, in the CG it is 1.45%; the reconstructive nature of knowledge assimilation in the EG is 4.41%, in the CG -4.23%; the reproductive nature of knowledge assimilation (assimilation of a certain part of elementary knowledge about educational management without their creative reinterpretation and transfer to practical use, limited professional outlook, lack of knowledge about methods of cognition and methods of activity, reproduction of ready-made knowledge) in the EG is -14.71%, in the CG it is 2.78%.

According to the activity criterion, the formation of professional skills was assessed (based on the results of solving pedagogical situations and diagnostic tests):

- Cognitive skills (generating ideas; demonstrating internal confidence in implementing own ideas; thinking globally; presenting own reflexive ideas; identifying and solving problems) in the EG is 13.28%, while in the CG it is absent;
- Organizational skills (clearly defining goals in managing the educational activities of the educational institution and setting and performing tasks; organizing the activities of the educational institution; optimally allocating own time, own efforts, and resources) in the EG is 20.50%, in the CG it is 12.60%;
- Scenario thinking (systemic and critical thinking; envisioning and solving the creative development of events) in the EG is 25%, in the CG it is 1.40%;
- Entrepreneurship (initiative and resourcefulness) in the EG is 22.10%, in the CG it is 15.50%;
- Reflective skills (analysis, self-analysis, evaluation, self-assessment, reflection, self-reflection, and correction of the results of own actions and deeds for further self-realization in managerial activities) in the EG is 29.40%, in the CG 11.90%.

According to the personal-professional criterion – the development of personal-professional qualities (based on self-assessment and peer assessment, as well as the creation of pedagogical situations), namely:

- Resilience (overcoming stress and difficult periods constructively; restoring own strength, mastering oneself in cases of moral, psychological strain) in the EG is 30.90%, in the CG it is 11.30%;
- Social activity (multifaceted interaction with the external (social) environment, assuming specific social roles) in the EG is 19.10%, in the CG it is 1.40%;
- Intuitive thinking in the EG is 22.10%, in the CG it is 4.30%;
- Health-promoting thinking (directing thinking towards overcoming negative emotional states or mental healing) in the EG is 14.18%, in the CG it is 1.40%;
- Pedagogical, social, and networking partnerships in the EG are 29.41%, in the CG it is 5.6%.

Therefore, the analysis of the results obtained from the conducted pedagogical experiment confirmed the successful formation of the professional competence of future educational managers. The obtained results provide grounds to consider that the goal of the pedagogical experiment has been achieved, and the organization of the educational environment has positively influenced the formation of the value-motivational, cognitive, activity, and personal-professional structural components of the professional competence of future educational managers.

The reliability of the obtained experimental data is confirmed by methods of mathematical statistics (using the Pearson parametric criterion).

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