

The collaborative management of the ongoing professional growth of physical education instructors, grounded in the principles of the pedagogical quantorium

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Abstract

Objective of the study was to create and theoretically support a model for the col-laborative management of the ongoing professional development of physical education instructors, utilizing a pedagogical quantorium as a foundation.

Methods and structure of the study. The research involved interviews with 25 heads of pedagogical quantories, 568 high school students and their parents, and 82 physical education teachers. This allowed us to evaluate the factors that influence professional choice, the acquisition of teaching skills, and the continuous professional development of teachers. Additionally, it provided insights into the effectiveness of the pedagogical quantorium in the field under investigation.

A new model of pedagogical quantum management was created – a model of collaborative management that involves the direct participation (inclusion, engagement) of all stakeholders in the management process. This model aims to foster the necessary development of physical education teachers.

Results and conclusions. Based on the examination of the operations of pedagogical quantories, it was observed:

- a) the minimal utilization of the equipment accessible in the laboratory for the consistent advancement of physical education instructors;
- b) the insufficient resources for instructional training that align with the peculiarities of physical education and student development;
- c) the absence of resources and methods for professionally orienting schoolchildren towards pedagogical careers in the realm of physical education;
- d) the lack of interaction with the parents of schoolchildren, applicants, and students.

The proposed model of integrated management can guarantee:

- a) the continuity between all phases of continuous professional development for physical education instructors: selecting a teaching profession (schoolchildren), acquiring professional qualifications (students), and advanced training (practicing in-structors);
- b) enhancing the quality of teacher education, formation, and professional development;
- c) attracting talented older students to teaching activities.

Keywords: *pedagogical quantorium, associated management, physical education teachers.*

Introduction. Increased attention of the state and society to the health and physical development of children determines the need for high-quality selection, professional training and advanced training of physical education teachers, on whose professionalism the health of the nation largely depends. In order to implement the federal project «Teacher of the Future» of the national project «Education», by order of the Govern-

ment of the Russian Federation dated December 31, 2019 No. 3273-r in educational institutions of higher pedagogical education, pedagogical technoparks «Quantorium» have been created and are functioning, which can have various focuses, including pedagogical. It should be noted that pedagogical quantoriums are equipped with high-tech equipment and means for training qualified personnel in the natural sciences and



technological spheres, they contain high potential for training and advanced training of physical education teachers. The effectiveness of pedagogical quantum is determined by the creation of a new, special system of continuous development of specialists, which will unite all stages of education: school – university – institutes (faculties) of advanced training. Such a large-scale project requires a new type of interaction of all participants in the educational process, the construction of new relationships between all interested parties, and as a consequence – the emergence of a new type of management – «connected management», which makes it relevant to develop a model of a new type of management of the required education of physical education teachers in the pedagogical quantum.

Objective of the study was to create and theoretically support a model for the collaborative management of the ongoing professional development of physical education instructors, utilizing a pedagogical quantum as a foundation.

Methods and structure of the study. Before developing the model of coupled management, large-scale surveys were conducted, in which 25 heads of pedagogical quantumiums, 568 high school students and their parents, 82 physical education teachers of general education organizations took part. The forces of influence on professional choice, on motivation for high-quality mastering of educational programs of the university and advanced training depending on the age of students in the pedagogical quantumium were studied.

The model of a new type of management of a pedagogical quantumium – the model of coupled management determines the direct involvement (inclusion, interaction) of all subjects of educational relations in the management of the required development of physical education teachers.

Results of the study and discussion. The survey conducted by the heads of 25 pedagogical quantumiums

(76% of the total number in the Russian Federation) showed that only 8 pedagogical quantumiums (32%) use equipment, teaching and educational tools to conduct practical classes in the preparation of physical education teachers, mainly in age-related anatomy, physiology and health culture, digital education technologies, most of which are in no way related to the main available equipment. At the same time, only 4 pedagogical quantumiums (16%) carried out advanced training for physical education teachers, and for schoolchildren, no pedagogical quantumium provided professional guidance related to the choice of the profession of a future physical education teacher. The survey of high school students, their parents and practicing teachers allowed us to record the existing dynamics of the influence of various factors on the continuous development of physical education teachers (see table).

It is obvious that in the process of maturation and professional growth of physical education teachers, some factors decrease their significance, while others increase. This pattern is the basis for choosing a new type of management as a system-forming principle – the principle of dynamic balance, which reflects the ongoing correction between the forces of influence of the subjects of educational relations.

The study of the few scientific developments in which conjugate management was analyzed (N.V. Kuzmina [1], A.A. Ostapenko [2], D.S. Tkach [4] and E.N. Rozhnova [3]), allowed it to be interpreted as “dynamic redistribution of forces of influence on pre-professional and professional activity of a person between the subjects of educational relations, while maintaining a dynamic balance and alignment of connections between them.” It should be noted that previously no integrated management of continuous development of physical education teachers has been developed, and no such management of pedagogical quantumiums has been developed, which represents the scientific novelty of the research.

Factors influencing the continuous development of physical education teachers (%)

Influencing factors	High school students	Students	Teachers
Parents	25-30	12-17	3-5
Small social groups	20-25	25-30	20-25
Teachers	15-20	18-28	10-15
Regulatory and legal acts	3-5	7-10	20-25
Individual personality traits	20-25	20-25	35-40
Psychologists-career guidance	7-10	3-5	0



It is obvious that the coupled management in the pedagogical quantum is a new type of construction of pedagogical interaction within the framework of the subject-subject paradigm, in which, to varying degrees and in different forms of manifestation, all subjects take on management functions, which allows for an increase

the effectiveness of pre-professional training, professional training and professional activities of physical education teachers, while effectively implementing their professional formation, development and formation, starting with specialized psychological and pedagogical classes and ending with a system of advanced training. Based on the analysis of the relevant literature, a logical and content-based model of the coupled management of continuous education of physical education teachers was developed, including the following blocks:

1) Factors influencing the activities of the pedagogical quantum,

2) The control and controlled subsystems, the interaction of which is carried out through the system-forming principle of dynamic balance,

3) Scientific support for coupled management, consisting of: a) target guidelines (presented in the original matrix structure on two bases: vertically located goals (goals-orders, targets-programs, goals-projects) and horizontally located goals (subjects with different socio-professional roles, different ages and work experience: schoolchildren, students of a pedagogical university, practicing teachers); b) a methodological basis (represented by a synthesis of system-activity, competence and ac-meological approaches) and 3) a system of principles (equal rights in the process of cooperation; psychological safety of subjects of the educational process; planning and continuity of education of teaching staff; transparency, legality and professionalism; mutual respect and trust; mandatory implementation of the agreements reached);

4) Theoretical support, represented by such components as:

– direction of management interaction: vertical (management levels: communicative, functional, project) and horizontal (group values, traditions, norms of behavior and interaction are created)

– spheres of interaction (expert, representative, administrative-organizational, personnel, socio-psychological),

– functions of “associated management”: a) inter-

personal interaction, b) decision-making, c) motivational-target, d) planning-analytical, e) organizational-executive, e) control and evaluation.

5) Technological support, including two components: methodological (means, levels and methods of management) and organizational (stages and conditions of conjugate management);

– means of conjugate management: rational planning, rotation of teaching staff, generalization and dissemination of pedagogical experience, team building;

– levels of conjugate management - individual, group and sociological;

– methods of conjugate management represent the unity of several groups: motivational and stimulating, organizational and administrative, psychological and pedagogical, social (social influence).

– stages of continuous education: a) professionally oriented, b) cognitive and competence-based, c) professionally specializing.

– we see the following pedagogical conditions for continuous education of teaching staff: a) monitoring the results of conjugate management of continuous education of teaching staff; b) increasing the motivation of subjects of educational relations to develop their professional potential; c) coaching consulting on the development and implementation of an individual trajectory for professional growth of teaching staff.

6) The empirical support for the coupled management is represented by the evaluation and results component, consisting of criteria and indicators of the level of continuous development of physical education teachers, diagnostic methods and methods for processing the information received.

At each stage of continuous education of physical education teachers, we recommend including in the educational process: a) modern general development programs in cybersport and phygital sports; b) generative technologies of artificial intelligence [6], technologies of virtual and augmented reality [5] for understanding various sports through the creation of interactive atlases of sports facilities; c) additive technologies; d) training in various sports (football, tennis, boxing, etc.); d) operation of unmanned aerial vehicles.

Conclusions. It is noted that the innovative form of continuous pedagogical education has become the quantorium, designed to ensure the continuity of all stages of the educational system. The regularity of the dynamic change of the forces of influence on the professional development of physical education teach-



ers in accordance with age and professional growth is proven. The model of coupled management of the continuous development of physical education teachers is theoretically substantiated.

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References

1. Kuzmina N.V. Ponyatiye «pedagogicheskoy sistemy» i kriterii yeye otsenki. Metody sistemnogo pedagogicheskogo issledovaniya. N.V. Kuzmina [ed.]. Moscow: Narodnoye obrazovaniye publ., 2002. pp. 7-52.
2. Ostapenko A.A., Mishareva N.Yu., Paskevich N.Ya. et al. Sopryazhen-nyye obrazovatel-nyye sistemy: modeli, struktura, vozmozhnosti. Shkolnyye tekhnologii. 2012. No. 6. pp. 41-59.
3. Rozhnova E.N. Sopryazhennoye upravleniye protsessom formirovaniya gotovnosti spetsialistov srednego zvena k upravlencheskoy deyatel-nosti. PhD diss. abstract. Moscow, 2018. 25 p.
4. Tkach D.S. Sopryazhennaya obrazovatel'naya sistema professionalnogo pedagog-icheskogo obrazovaniya. Vestnik MGIMO-Universiteta. 2013. No. 1 (28). pp. 200-204.
5. Baxter G., Hainey T. (2020), Student perceptions of virtual reality use in higher education. Journal of Applied Research in Higher Education. Vol. 12. No. 3. pp. 413-424.
6. Fui-Hoon Nah F., Zheng R., Cai J., Siau K., Chen L. (2023). Generative AI and ChatGPT: Applications, challenges, and AI-human collaboration. Journal of Information Technology Case and Application Research. No. 25(3). pp. 277-304.