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Developing Pedagogical Mastery in Future Physical Education Teachers on the Basis of Integrated Development

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Abstract: Improving the efficiency of training of specialists with higher education who have a high level of professional qualification and are able to take an active position in their professional activities at the present stage is one of the primary strategic objectives of the educational policy and the main goal of higher physical education institutions. The leading place in the system of training specialists in this area is occupied by pedagogical disciplines, the study of which lays the foundations of pedagogical skills, which determine the professional and pedagogical readiness of graduates for future activities. On the other hand, the postmodernist paradigm of education is a cross-cultural and synchronously oriented phenomenon, an important component of which is world physical culture and sports, which adds relevance to the study. The author's technique for formation of pedagogical skill in future teachers of physical culture on the basis of integrated development is stated in the article.

Keywords: *Cross-culture, postmodernism, educational space, pedagogical conditions, training stages, developmental learning, problem-based learning, business games, pedagogical situations.*

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Introduction

Given that there is no place for "reserved competencies" and time to gain and comprehend pedagogical experience in the context of the contemporary postmodern paradigm model of education, pedagogical mastery should be developed during the educational process. Today, professional training sustains dynamic personality development and enhances general and professional-pedagogical culture, personal and professional qualities of future specialists, which are equal and equivalent in terms of the values of a postcolonial society.

The readiness of future physical education teachers for professional activity is an integral state of the individual, which manifests itself in its qualitative characteristics, namely, orientation, pedagogical mastery, competency and management of professional-pedagogical actions.

Different aspects of pedagogical mastery of the teacher were highlighted in the works of Ziaziun, Kramushchenko, Kryvonos (2008), Maksymchuk & Maksymchuk, Frytsiuk, Matviichuk, et al. (2018), Matviychuk (2014), Stepanchenko, Matviichuk (2012). The problem of professional development of physical education specialists was studied by Maksymchuk, Shestopaliuk (2009). Professional development of such specialists is defined, on the one hand, by the elements of personality (orientation, a system of needs, value orientations, attitudes, readiness for professional activity) and, on the other hand, by knowledge, abilities and skills required to creatively solve relevant pedagogical tasks and, then again, by the labile state of the postmodernist values system, which cultivates learning and generation of knowledge and use of experience.

Based on the structure of pedagogical mastery, one can conclude that today's pedagogical mastery is a single dynamic system of all its components. Their sustainability makes the process of developing personality in future physical education teachers more effective and thus increases the quality and level of pedagogical mastery development. Given that every component has its characteristics, it is necessary to use a specially developed methodology of developing these components during theoretical and practical lessons. Besides, it is important to take into account the interdependence and interconnection between all the components. It rather contributes to developing pedagogical mastery since it makes it possible to simultaneously develop other aspects of teacher training. Such an approach is fully consistent with the synergetic concept, which is a key paradigm system uniting all the sciences of a postneoclassical society.

According to Maksymchuk & Maksymchuk, Frytsiuk, Matviichuk, et al. (2018), Halaidiuk, Maksymchuk, Khurtenko, Zuma, et al. (2018), the process of developing pedagogical mastery should be based on individual and personal qualities of future teachers. Therefore, it is necessary to pay attention to professional diagnostics of students, which makes it possible to identify their spontaneous and synchronous interest in pedagogical activities and other personal education: inclinations, abilities, compliance of personal characteristics with professional requirements.

One of the most rational ways of developing pedagogical mastery in future physical education teachers is to apply some elements of developmental learning (Bondareva, 2005). Taking into account the development of new psychological and personal qualities, they make it possible to ensure the effectiveness of future specialists' professional and individual activities. Thus, they focus not only on the acquisition of knowledge but also on the ways to do it, as well as the patterns and ways of thinking and activity, which is the basis of developing pedagogical knowledge and skills. Such an approach originates due to the key postmodernist understanding of the world, which is changeable, unpredictable and creativity-oriented, rather than stationary. In particular Ornstein & Hunkins (2016) believe that one cannot define a contemporary education in the context of postmodernism since it changes rather rapidly.

Professional training of future physical education teachers incorporates different didactic and educational role-playing games (Neverkovich, 2010), which correspond to the playful essence of postmodernist humanitarian discourse. Indeed, gaming methods make it possible to reduce the period of future specialists' adaptation and purposeful independent acquisition of knowledge and skills in the process of preparing for future pedagogical activities. The methods of active learning can be attributed to the most effective ways of developing skills. Based on professional orientation, they can be used as complex games (business games); simulation games with the realization of individual modes of activity, including the activization of typical skills and abilities or simulation of elements of professional activities (analyzing specific situations); pedagogical games involving the realization of typical professional roles in physical and sports activities.

The process of developing pedagogical mastery implies a model of integrated development of theoretical knowledge, methodological skills and skills and their use in standard situations and practical activities. The obtained data confirm the importance of the activity-based approach to professional training. The process of developing professional mastery in

future physical education teachers should rely on the activity simulating the organized activity of practising teachers. The observations show that psycho-pedagogical ideas become beliefs only when supplemented with teacher placement. Such an activity arises different questions, answers to which they should find in theory, and obliges them not only to study but also reproduce the acquired knowledge in their activities (Karpiuk, 2005). The use of various means and methods of teaching and learning, organizational forms of the educational process following the specifics of the subject and targets, characteristic of the future profession, allows students to solve educational tasks in a qualitative way at all four stages of developing pedagogical skills. The use of modelling (imitation, mimesis) and integrative (synergistic) approaches is one of the key aspects of postneoclassical education. Besides, this applies to humanities, natural sciences and exact sciences (Shimon, 2019).

The efficiency of professional training of future physical education teachers ensures the activation of their independent work: a systemic and regular use of independent work following training stages and individual capabilities of students; educational and methodological support of independent work; the coherence of independent work with educational material; the orientation of students' independent work towards the professional-pedagogical activity of future physical education teachers; the enhancement of the quality of monitoring over independent work of students, their self-control and mutual control (Naumchuk, 2002). Self-regulation is the main manifestation of subjectivity, that is the main characteristic of the postmodern person (both the teacher and the student are equal actors in educational discourse) (Mitchell, S. A., & Walton-Fisette, 2022).

The research of these theoretical generalisations finds that the practice of physical education students' study of pedagogical courses reveals several problems in their practical training due to the following contradictions between:

- the objective needs of society, as well as future teachers' motivation to achieve an appropriate level of pedagogical mastery, and the traditional practice of studying pedagogical courses in universities specialized in physical education;

- modern requirements of the fields of education and physical education and sports to the level of physical education teachers' competency and an insufficient level of pedagogical mastery at the stage of professional training;

- the need to use the latest pedagogical technologies and develop pedagogical mastery following the modern paradigm of education and concepts of teacher education and the current system of educational and methodological support for professional training of physical education teachers in higher education institutions.

The need to resolve these contradictions requires the following steps: 1) to justify the modernization of goals, content, forms and methods of organizing the study of pedagogical courses scientifically; 2) to update methodological support; 3) to introduce effective technologies; 4) to apply developmental methods, as well as the most efficient traditional and innovative forms of professional training for future specialists in physical education and sports. Thus, **the relevance of the research** lies in the objective need for scientific support for the introduction of modern teaching methods and technologies in professional training of physical education teachers; the need for theoretical and methodological justification of enhancing the study of psycho-pedagogical courses to develop pedagogical mastery in future physical education teachers; the requirements for updating the model of developing pedagogical mastery in future physical education teachers while they study pedagogical courses.

The purpose of the research – to improve the quality of professional training of future physical education teachers in universities by developing pedagogical conditions and methods of purposeful formation of pedagogical skills in the contemporary postmodern educational process.

The research sample comprised **236 students** who were divided into five control groups (133 individuals) and five experimental groups (103 individuals). The results of measuring showed: according to the methodology developed by our team, the number of EG students who are at average (42.1%) and high (32.3%) levels of pedagogical knowledge and skills development significantly increased, the level of their activity, creativity and originality increased, too.

In the article the authors proved that the optimal pedagogical conditions for the formation of pedagogical skills in future physical education teachers in the context of contemporary humanitarian and postcolonial education in its ideological essence, we consider: improving the general pedagogical training of students; taking into account the principles of formation and development of pedagogical skills; application of innovative technologies of training in the field of "Physical Education"; organization of the developmental educational environment of the institution of the physical education profile.

The designed scientific and methodological support comprehensively develops students' intellectual potential, facilitates individualization in education, improves control and evaluation of educational achievements, provides new opportunities to activate educational and cognitive activities of future teachers, motivates toward creative professional activities and constant self-improvement, enhances their pedagogical position, encourages to apply innovations in physical education. The results of the study complement personality-centered, multimedia and creative trends in postmodern education.

Literature review

The current global state of the society has led to the fact that education as a leading humanitarian form of social activity and consciousness appeared included and dependent on many factors: social, political, cultural, scientific. It also largely identifies and reflects the trends of civilization development. Physical education occupies an intermediate place between the corporeal and spiritual way of human existence and self-expression. In this section we will consider some multidirectional problems of training a contemporary physical education teacher. The most common framework issue is the policy and external administration. For example, the policy of general technologization of public services in recent years has also affected education. For physical education teachers and school principals, the most innovative and promising is the involvement of portable devices and technologies in the educational process, which should appear in schools in the coming years (Ribeiro, 2018). For a physical education teacher, this means the opportunity to obtain information about the current mental and physical condition of students, a rapid establishment of feedback in class and extracurricular time. But we predict that many teachers will experience psychological barriers, and governments will be forced to seek significant investment. This problem requires a separate study, and we mentioned it in the context of future changes in the educational space. In general, in recent years, many scientists believe that politics and the environment are determinant factors of physical education.

Personal barriers is the main problem of pedagogical innovations in the field of physical education at the lower level. Recent measurements have shown that in developing countries, there is an acute issue among educators: whether to accept or not the integration of innovative technologies into the traditional teaching practices (Alonso, Plaza, Orfali, 2019). For our article, this problem is very close, as we will try to justify feasibility of the model of integrated development of future physical education teachers. Unfortunately,

a research on publications and legal acts over the past 20 years has revealed significant differences: the political issues of physical education are more regulated by time and quantitative parameters, general modeling of the educational process (workload, number of teachers, normative parameters), while problems of training certified physical education teachers and modeling of the contemporary educational environment accounted for only 24% of the studied sources (Burson, Mulhearn, Castelli, van der Mars, 2021). This is a matter of concern and adds another argument in favor of self-governed educational systems and environments.

We will pay special attention to the main aspect of our study - teacher training on the latest models. Because general, universal educational standards are not recognized in the civilized world, alternative, regional models are being developed in different countries. Casey and MacFile point out that most methodological research suggests that physical education teachers focus on a specific single model of self-development and teaching. However, in fact, different or hybrid models are used in educational institutions in physical education (Casey, MacPhail, 2018). We believe that this impresses multimodal and multimodel approaches to education, and hence the possibility of choosing a person with the intention of forming the skills of a physical education teacher.

Contemporary and future physical education teachers faced a dilemma that in the current technologized educational conditions there are few instruments that contribute to meaningful (substantial and value-based) teaching physical education. Empirical studies and their generalization allowed the scientists to formulate 5 principles that promote the significance of physical education as a special form of social personal consciousness and practice: *planning, training, experiences, analysis and reflection on personal meaningful participation* (Chróinín, Fletcher, O'Sullivan, 2018). The existence of such problems suggests that the integrative development of the future teacher of physical education should include traditional, innovative and personally significant intellectual and physical practices.

Another alternative approach to the integrated formation of a physical education teacher is the transformational training in the of physical culture, pedagogy and sports environment. Quennerstedt (2019) put forward this theory and believes that the best formation environment is the maximum physical activity in which various physical, spiritual and pedagogical practices are encouraged as multimodal manifestations of implementation and the existence of one's own self. An inductive analysis of this position allows us to conclude that the physical and the physical-

pedagogical development are a number of permanent attempts and reflections aimed at desirable changes.

Among the noticeable world approaches to the training of physical education teachers there is a service training on the sustainable development model. The experimental studies have proved that such training does not so much contributes to increasing physical conditions, *as it can increase and strengthen knowledge, understanding the sensitivity and ability to compromise* (García-Rico, Martínez-Muñoz, Santos-Pastor, Chiva-Bartoll, 2021). This model, in our opinion, allows us to resist the negative manifestations of globalization and to form prospective concepts of consciousness: sustainable development, resource conservation, natural conformity, etc.

Over the past 3-5 years, a lot of works on the complex or integration principle of physical education teacher formation appeared in the Western Europe. In this region, the term "development of pedagogical skills" is widespread and it means that the students gain not only professional competencies, but also the development based on the principles of continuity, integrity, progressive advance, technological adaptability (Maksymchuk & Maksymchuk, Frytsiuk, Matviichuk, et al., 2018). This method of reforming physical education is most consistent with the principle of the integrated development, which is referred to in our article.

Materials & methods

The formative experiment was conducted at Lviv State University of Physical Culture, Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University, the National University of Ukraine on Physical Education and Sport, Olexander Dovzhenko Hlukhiv National Pedagogical University, Taras Shevchenko National University "Chernihiv Collegium", National Technical University "Kharkiv Polytechnic Institute", Lviv State University of Life Safety, Ternopil National Economic University, Mariupol State University. 236 students took part in theexperiment; they were divided into five control groups (24, 28, 29, 27 and 25 individuals) and five experimental groups (28, 22, 26, 24 and 23 individuals).

Pedagogical conditions for developing pedagogical mastery of future physical education teachers are seen as the measures, which enhance the efficiency of education and development of future physical education teachers, improve quality of all components of their pedagogical mastery through implementing a new paradigm of education, updating the content of education, applying modern educational methods and technologies, creating an innovative educational environment. These conditions are the following: improving general pedagogical training of future physical education teachers;

taking into account the principles of developing pedagogical mastery in future physical education teachers, as well as the leading postmodernist approaches based on the recognition of the postneoclassical dynamic state of education; applying innovative educational technologies to the professional training of future physical education teachers; creating an effective teaching and learning environment in higher education institutions.

The first two conditions are obligatory, yet insufficient to solve the problem under study. The fifth condition integrates the influence provided by all the conditions and ensures a definite and comprehensive solution to the problem. In the context of the contemporary postmodernist paradigm of education, an effective teaching and learning environment is a dialectical unity of scientific, substantive, creative and social components. Here teachers and students can creatively use their pedagogical potential, since such an environment optimizes personal and professional growth and self-determination of future physical education teachers through enhancing their motivation toward research, methodological and professional-pedagogical activities, developing a valuable and notional sphere and specific characteristics of the individual, which are transformed into professionally important qualities. All the above-mentioned qualities and competencies are directly related to cross-cultural educational dialogue. Indeed, personal achievements are the property of the whole, and the whole is in total and instant access. However, physical culture, art and religion serve today as cross-cultural forms of consciousness which creatively connect the material and spiritual dimensions.

Based on the theoretical justification of both content and structure of pedagogical mastery, which is characterized by integrity and dynamism, three groups of differently oriented classes, which complement each other, were identified. The first group is oriented toward students' self-cognition of their capabilities, needs and inclination toward pedagogical activity. The second is characterized by the use of tasks aimed at comprehending pedagogical activity, its patterns and ways of their realization. The third group involves students' realization of their pedagogical potential by using a complex of basic and professional-pedagogical competencies for solving educational objectives. According to postmodernist educational concepts, educational tasks act as an unpredictable and indefinite set. It means that professional-pedagogical competencies are multifunctional programmes of professional consciousness, rather than some decision algorithms.

Therefore, the methodology of training future physical education teachers consists of the following **stages**: Stage 1 – enhancing students' motivation to acquire pedagogical mastery; providing knowledge about the

importance, essence and structure of pedagogical activities in the context of the contemporary postmodernist paradigm of education; revealing the structure of pedagogical skills and tasks due to which these skills are developed; Stage 2 – demonstrating the samples of educational and practical tasks, developing professional skills and explaining mistakes which can be made when performing a task; pointing out to the difficulties which may occur during this process; Stage 3 – students' performing practical tasks under the supervision of the lecturer with further analysis of the results obtained from their solving; discussing their advantages and disadvantages; Stage 4 – students' performing educational and practical tasks in lessons and extracurricular time which require the creative use of knowledge and skills to be able to independently conduct lessons.

The methodology tested for three years is based on the principles of **developmental learning**. It combines problem-based learning and the elements of business games, as well as the reproductive, explanatory and descriptive and research components. Besides, it takes into account the initial uncertainty and the possibility of acquiring students' intention.

Problem-based learning was employed when setting didactic tasks during physical education lessons within the hours allocated to teacher placement. The elements of business games were used in these lessons during artificially created problematic situations to evaluate the ability of students to use the whole complex of their knowledge, abilities and skills and find solutions to non-standard problematic situations. It made it possible to develop in future teachers a rather important component of pedagogical mastery, that is professional-pedagogical competency in a multimodal postmodernist educational space.

At Stage 2, the leading role was played by the lecturer who analyzed the lessons conducted by students when formulating the practical problem and involved them in the methodology of analysis thus developing their analytical and prognostic thinking when demonstrating the means of the argumentative presentation. At the same time, forecasting of pedagogical situations was combined with the development of intuition, feeling and anticipation, which are modern teachers' essential futurologically oriented intentions.

At Stage 3, problem-based learning actively involved students in the processes of conducting lessons and mastering the techniques and skills in conducting them without creative skills. Thus, students took an active part in the process of solving problematic situations under the proposed algorithm, though. Educational business games and pedagogical tasks included

developing gnostic and communicative skills and using the knowledge gained during theoretical lessons.

Stage 4 provided for developing pedagogical mastery in future physical education teachers during educational activities of senior students. The lecturer's role was limited to setting tasks at the stage of training and a relatively passive analysis of problematic pedagogical situations. The leading role belonged to students' self-evaluation.

In conclusion, **the following characteristics of the experimental methodology** for developing pedagogical mastery in future physical education teachers should be singled out: 1) the content of lecture material was supplemented with the information about personal and developmental learning in the context of some undefined pedagogical activity in the postmodernist context. Thus, when presenting the material about learning methods, specific attention was paid to the presentation of the essence of methods aimed at developing cognitive activities in pupils (active learning methods, problem-based learning, developmental learning); 2) the content, methodology and organization of practical lessons differed with traditional ones by the use of the elements of developmental learning aimed at developing pedagogical skills and other components of pedagogical mastery in students under the conditions of a multimodal environment; 3) depending on the goals of educational tasks and practical lessons, one singled out the three complementary groups of lessons with different directions, which determined the development stages of components of pedagogical mastery.

The first group is at students' self-understanding of their capabilities, needs and inclinations for pedagogical activities. The second group is characterized by the use of the tasked aimed at enhancing their understanding of the pedagogical activity, its patterns and ways of realization. The third group provides for students' realization of their pedagogical potential based on the use of pedagogical knowledge when solving pedagogical tasks (Matviichuk, Soloviov, 2014). The division of lessons into such groups made it possible to properly organize the educational process and allowed lecturers to coordinate their actions to solve the current tasks during lessons and the prospects of developing pedagogical mastery. Also, all three groups are interrelated and contribute to developing pedagogical mastery in future teachers.

There were organized mini-discussions to increase students' motivation towards mastering the course on pedagogy. In this case, the triad "debate - discussion – discourse" was considered a universal method of establishing the current pedagogical "truth". The topics included the following: the importance of the problem under study for the teacher in

his/her professional activity; the comparison of learning methods developed in pedagogical theory and used in practice etc.

The orientation of practical tasks was accorded with the groups of lessons. The course in pedagogy included 14 practical lessons with appropriate topics. The tasks of practical classes were characterized by diversity and were selected taking into account the individuality of students, levels of their preparation and development of intellectual processes and abilities to perform a certain activity. Before the performance of practical tasks, the main theoretical principles were specified.

Students were expected to use the knowledge gained during lectures and practical lessons and life (subjective) experience, select the most effective methods and techniques and quickly solve pedagogical tasks and situations. When studying the topic "Personality as the Subject of Education", students were offered to analyze themselves as personalities and their abilities and personal qualities. The topic "Learning Principles" suggested that students realize the obtained knowledge and developmental skills when solving pedagogical tasks. The topic "The Essence of the Pedagogical Process" allows students to familiarize themselves with the patterns of pedagogical activity based on the obtained information. This approach correlates with the following postmodernist concept: in addition to one's interiorized experience, one cannot have other cognitive structures in mind (Farmihani, 2010).

In the course of work, the essence of the task was revealed, and its meaning was justified for further learning and practical activities. The organization of practical lessons included specifying and correcting the concepts discussed during lectures and shaping students' views based on the obtained knowledge. This, in turn, contributed to a better understanding of educational material. The compulsory component in the structure of practical lessons was work on the conceptual apparatus. This task was performed using such activities as terminological exercises (preparing an offer, choosing a correct answer); pedagogical crossword puzzles (compiling and solving); creating the conceptual glossary (based on the lecture material, practical lessons and the study of literary sources); testing intellectual skills; mini-quizzes (for better memorization, formative assessment, discussing the emerging problem). This made it possible to identify weak aspects in the understanding of educational material and correct them in the process of further study.

During practical lessons in the EGs, along with traditional learning methods, there were used the methods, methodical techniques and organizational forms contributing to the development of cognitive skills and

pedagogical mastery in students, taking into account the communicative and cognitive activity-related trends in the contemporary postmodern education: 1. Work in micro-groups. The groups were formed taking into account individual and personal characteristics and the level of students' preparation for a certain activity. It was necessary to activate the work of weaker students and, at the same time, increase the level of preparation of stronger students using peer learning. To develop communicative and innovative skills in students, it was suggested to a) take compromise decisions; b) justify or refute an argument (e.g., the causes of the effectiveness of verbal, visual or practical teaching methods at different stages of teaching a motor action); c) to solve pedagogical situations based on the subjective experience of students and justify their decisions based on theoretical knowledge; d) to describe pedagogical situations under which students are expected to act as learners, teachers or parents, discuss the features of the no-win roles and characterize the possibility of some positive development of situations. The participants of other micro-groups who acted as observers and experts of these situations were expected to suggest their variant of solving pedagogical situations; d) to discuss and analyze students' reports to develop their ability to clearly explain their points of view and ask relevant questions. Topics of articles are presented by Matviichuk, Soloviov (2014). 2. Individual work aimed at solving the given tasks through creating pedagogical situations taking into account individual characteristics of students. Examples of individual independent work are based on creation of pedagogical situations (Matviichuk, Soloviov, 2014). 3. Preparation of reports by several students during each lesson. The topics of reports related to the topic of the lesson involved defending one's stance when answering questions of peers. The reports were mostly prepared by stronger students. When the audience did not ask any questions, the speaker asked the very audience which made it possible to increase students' attention and improve the understanding of the presented material. Topics of articles are presented by Matviichuk, Soloviov (2014). 4. Conduct of practical lessons in the form of discussions during which the lecturer acted as the guide.

All practical tasks were performed and complemented after being checked in a special notebook in the form of answers on the questions. They made it possible to identify the level of students' ability to use knowledge and justify their points of views. It must be noted that students had the opportunity to shape some views and activate cognitive skills during discussions and interviews. To this end, there were used mini-discussions participated by 2-3 students with their reports. They presented the views of different authors and were expected to express their attitude to the raised

issue. Students were allowed to choose the topics of reports taking into account their interests in the pedagogical activity. Some students managed to do this task rather well, which contributed to identifying the level of their preparation for pedagogical activity. Some students were able to clearly and logically explain the viewpoints of different authors, whereas others experienced certain difficulties. This requires a differentiated approach to students with different levels of preparation and attitudes towards these activities and work in practical lessons. Also, it is essential to consider the factor of independent distance-controlled e-learning, which best corresponds to the methods of the relevant postmodernist educational paradigm since it has such advantages as flexibility, accessibility, resourcefulness, open communication (Bock, 2018).

It was vital to develop a complex of individual activities accorded with the proposed groups of lessons. This contributed not only to the development of cognitive skills in students but also a more attentive attitude to the chosen professional and pedagogical activities. The process of performing every activity required students to use the already developed skills and acquire new ones, develop pedagogical skills, enhance the skills required to reveal the main idea, track similarities and differences of different pedagogical categories. These tasks develop the need for a more profound study of the course on pedagogy.

The complex of individual tasks was complemented with practical tasks in practical lessons. To develop a communicative view, there were used interviews and discussions during which students were able to express their points of view and either justify them or refute alternative views. The work in micro-groups made it possible to coordinate the actions of students in groups and activate their activities in practical classes. When mastering the course on pedagogy, students performed six individual tasks, which required that they have some theoretical knowledge and be able to use it when solving pedagogical tasks (Matviichuk, Soloviov, 2014).

Indeed, only the lecturer who possesses pedagogical mastery can develop this quality in students. He/she is also responsible for the professional lives of future teachers under the conditions of postcolonial and ideologically unbiased educational space. Today, the lecturer must feel personal state and problems of future teachers, possess gnostic skills to be able to forecast the effectiveness of the influence and design of the necessary model of teaching and learning. Therefore, the methodology of developing pedagogical mastery is based on the following requirements for the lecturer: 1. The generalized scientific and pedagogical knowledge is reflected in creative practical activities. Based on the knowledge and

experience, the lecturer designs his/her concept of developing creative individuality and self-actualization of future teachers. 2. The lecturer is open to new knowledge and alternative points of views, strives for systematicity and efficiency in practical activities, students scientific knowledge and shapes individual professional conduct. 3. When shaping and developing pedagogical mastery, the lecturer takes into account the personality of each student, his or her self-realization, awareness and self-development. 4. The lecturer comprehends his/her responsibility and can use psycho-pedagogical methods of monitoring the processes of interaction, help and coordination of his/her actions with students. 5. Professional dignity implies mutual respect between the lecturer and students.

One of the lecturer's main tasks consists in the fact that it is necessary to help students to understand and realize the problems in their professional growth with the aim of self-correction, which correlates with the postneoclassical position on the subject-object nature of the learner ("one creates oneself"). The uncompromising empathetic stance of the lecturer motivates most students to develop pedagogical mastery. The practice shows that education aimed at shaping and developing mastery is effective only if an educational institution can offer a positive psychological climate, equal partnership and common developmental activity of lecturers and students.

Results

As indicated by the results of the formative experiment, the designed methodology implemented into the process of studying pedagogical courses effectively improves the quality of education at all stages of developing pedagogical mastery in future physical education teachers. Based on the four-level distribution of students before and after the experiment (Figure 1), quantitative analysis of CG and EG showed that a greater number of EG students are at average (42.1%) and high (32.3%) levels of pedagogical knowledge and skills development compared to CG (34.3% and 18.7% respectively). After the $\chi 2$ criterion was calculated, significant differences between CG and EG after the experiment with probability 0.99 (at $\alpha < 0.01$) were revealed.

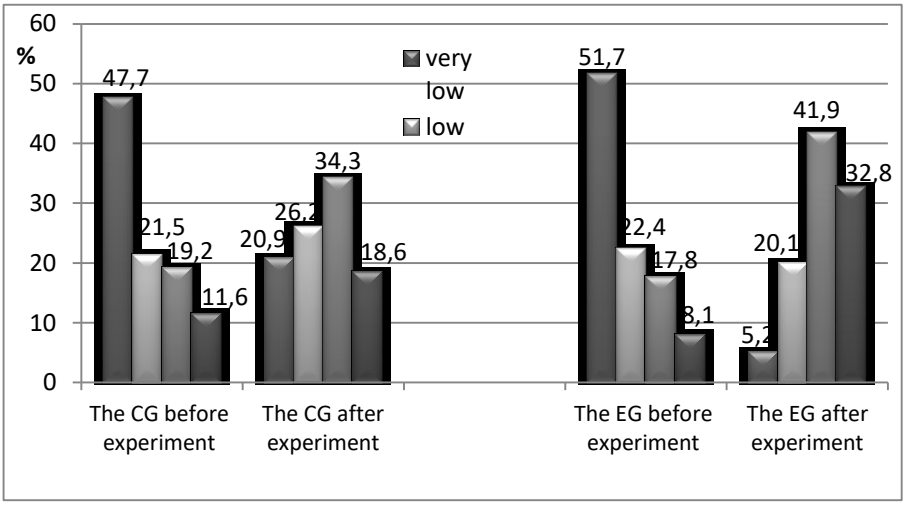


Fig. 1. *The number of CG and EG students according to the levels of pedagogical knowledge and skills before and after the formative experiment*

The qualitative analysis confirmed the increase in the level of knowledge in EG (from 7.7 to 11.1 points) was higher than in CG (from 7.6 to 9.2). In EG, most students (> 50%) manifested creativity and originality while performing educational and practical tasks. At the same time, 20% of students who previously were passive observers became more active.

It was found that the average score on performed educational tasks increased rapidly in EG. Based on teaching placement evaluation, it was indicated that EG students are at a higher level of pedagogical and practical skills than CG students. They can comprehend patterns of the educational process, educational methods and techniques, educational work organization, to evaluate their capabilities and realize them in practical pedagogical activities, revealing more creativity while solving pedagogical tasks. This was facilitated by the use of technologies aimed at developing activity-based component of pedagogical mastery and involving students in practical activities while studying psycho-pedagogical courses.

Analyzing the dynamics of professional-pedagogical skills development during classes on Theory and Methodology of Physical Education (Year 4), it was proved that in EG there is positive dynamics in all groups of skills, however, the highest results are observed in organizational, design and gnostic skills. According to four groups of skills, the results almost coincide with those achieved by teachers with 5 or 10 years of work experience. In CG, a significant increase in the level of professional skills was not observed in any of the indicators, although there are some positive

trends. Based on the t-criterion (t = -4,52, p = 0,01), it was found that the level of EG students' training is statistically and significantly different from that in CG.

Discussion

It is important to note that theoretical analysis, methodological approaches to developing the model for training future physical education teachers and the results from verifying the effectiveness of this model show the compliance of the discourse with the key requirements of the contemporary postmodernist paradigm of education (Ahanchian, 2003). Thus, the authors of the article have achieved the following results which are valid for modern methodological discourse:

- for the first time, the conceptual principles of pedagogical mastery of physical education teachers, its content and components have been defined; the structural and functional model for developing pedagogical mastery in future physical education teachers has been designed and implemented; pedagogical conditions for developing pedagogical mastery in future physical education teachers (improving general pedagogical training of future physical education teachers; taking into account the principles of developing pedagogical mastery in future physical education teachers; applying innovative educational technologies to professional training of future physical education teachers; creating an effective teaching and learning environment in higher education institutions which prepare future physical education teachers) have been justified;

- the concept of "pedagogical mastery" concerning specialists in physical education and sports has been defined; the specifics of developing pedagogical mastery in physical education teachers has been clarified; the stages of development, as well as criteria and components of pedagogical mastery, have been determined; the methods of pedagogical identification of pedagogical mastery in future physical education teachers have been specified and validated;

- methods, forms and tools of general pedagogical training in the context of students' studying psycho-pedagogical courses have been further developed; the principles of shaping and developing pedagogical mastery in future physical education teachers have been further substantiated; the technologies of training physical education students have been justified.

The practical value of the research lies in developing and implementing in the educational process the methodology for integral developing students' pedagogical mastery in the process of their studying

psycho-pedagogical courses in higher education institutions; experimental programmes of such courses as "Fundamentals of Pedagogical Mastery" and "Pedagogy"; the author's textbook on "Fundamentals of Pedagogical Mastery in Physical Education Teachers"; methodical recommendations on the introduction of innovative technologies in professional training of physical education students; the criteria for identifying levels of pedagogical mastery in future physical education teachers. The obtained results can be used to develop relevant educational and methodical support and improve the regulatory framework of universities specialized in physical education. The elaborated educational and methodical materials can be used in teaching pedagogical courses in universities specialized in physical education. Also, they can help to identify the levels of pedagogical mastery at different stages of professional training of physical education students in higher education institutions and contribute to the certification of specialists in physical education and sports.

We obtained experimental results of the integrated development of the future physical education teacher and found a parallel between the Ukrainian notion of "integration" and the English notion of "inclusion". Researchers conducted a thematic analysis of scientific and methodological articles by the key phrase "inclusion of students for quality physical education". Since the early 2000s, the effectiveness and research relevance of the following types of inclusion has become noticeable: a) involvement and participation of students in activities; b) increased motivation; c) participation in the learning process; d) physical activity and fitness (Nesbitt, Fisher & Stodden, 2021). Thus, inclusion is a form of personal integration into the process.

One can implement the strategy for creating personal educational trajectories, independent "cloud-based learning", distance supervised and independent management of personal educational space, using the results of theoretical justification and experimental verification of the analyzed model for acquiring competencies, which takes into account postmodernist educational trends (Altun, 2015; Al-Zoube, Abou El-Seoud, Wyne, 2010; Barhate, Narale, 2015).

Conclusion

Professional training of physical education teachers is effective providing its content is systematic and aims to comprehensively solve relevant tasks of professional development of student personality, development and integration of their pedagogical potential, professional-pedagogical knowledge, skills and practical experience. In the context of

developing pedagogical mastery in future physical education teachers, their lecturers should develop their professional qualities such as scientific outlook, moral consciousness, aesthetic views, emotional and sensory, intellectual and volitional activity, general physical and psychophysiological qualities, pedagogical tact, style and behavioural patterns, acquisition of relevant psychological and pedagogical information, the ability to organize physical and recreational activities, physical education classes, participate in research activities, engage in the creative pedagogical search.

Given that pedagogical mastery is a unified system of all the components, it is important to apply the designed methodology to develop each component, taking into account their interdependence and interconnection during theoretical and practical training. The main educational methods are productive methods, which enhance the comprehensive potential of educational activities and significantly increase motivation in education. Thus, the educational process advances to a qualitatively different level and the development of students' capabilities is actualized. For this purpose, it is imperative to incorporate dialogues, disputes and discussions, joint search, cooperation, collective activities, micro-groups activities into practical activities as well as use methodical techniques and organizational forms that promote the development of students' cognitive skills and pedagogical mastery (independent work, writing reports). The system of interrelated educational and practical tasks that enhance students' autonomy and creativity is considered to be the most effective way to develop pedagogical mastery.

The conducted pedagogical experiment confirmed that the proposed methodology for developing pedagogical mastery in future physical education teachers is deductively expedient and effective. Significant improvements in the quality of physical education in higher education institutions as a result of the integrated development of all the components of pedagogical mastery in future physical education teachers were experimentally verified. Since, according to this methodology, the number of EG students who are at average (42.1%) and high (32.3%) levels of pedagogical knowledge and skills development significantly increased, the level of their activity, creativity and originality increased, too. The designed scientific and methodological support more effectively develops students' intellectual potential, facilitates individualization in education, improves control and evaluation of educational achievements, provides new opportunities to activate educational and cognitive activities of future teachers, motivates toward creative professional activities and constant self-improvement, enhances their pedagogical position, encourages to apply

innovations in physical education. Summarizing the approbation results, it can be stated that the methodology allows educating physical education teachers following the requirements of the information society, developing their pedagogical thinking, ability to make optimal decisions and search for new ideas, conduct research activities.

Thus, the developed model of training physical education teachers, as well as the confirmatory results of the experiment, corresponds to the latest postmodernist trends in specialist training in the field of education.

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