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IMPROVEMENT OF PEDAGOGICAL TECHNOLOGY FOR DEVELOPING SCIENTIFIC AND RESEARCH COMPETENCE IN PHYSICAL EDUCATION AND SPORTS SPECIALISTS

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ABOUT ARTICLE

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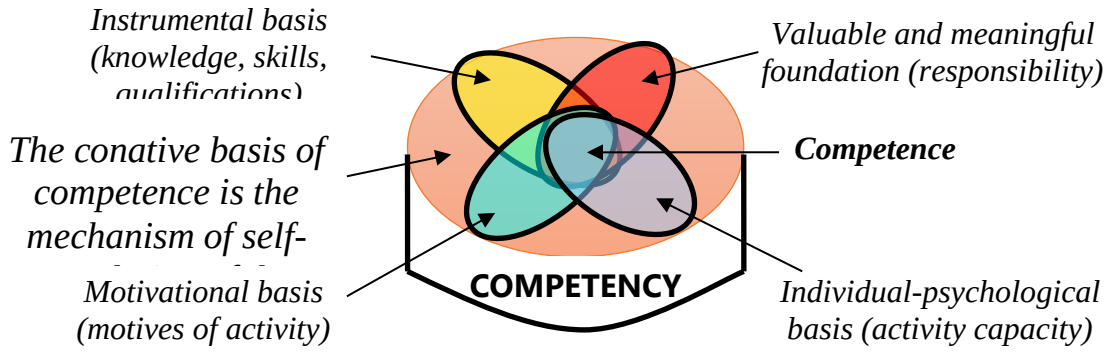
Abstract: As science and technology are rapidly developing in modern society, the formation of scientific and research competence of specialists is becoming increasingly important. In this regard, it is important to analyze the content and structural structure of scientific research competence and develop the foundations for its development.

Introduction. In recent years , the sports sector in Uzbekistan has been developing rapidly. At the same time, the demand for training creatively thinking specialists to solve emerging requirements and problems is increasing day by day. This requires the development of scientific and research competence in specialists in each field. The Resolution of the President of the Republic of Uzbekistan No. PQ-414 dated November 3, 2022 “On measures to further improve the system of training personnel and scientific research in the field of physical education and sports” led to the improvement of the system of conducting scientific research in the field [1].

Literature review and methodology. Physical education and sports specialists are “physical persons who regularly engage in their chosen sport or sports, constantly improve their sports skills and participate in sports events” [2]. One of the urgent issues facing the field is to analyze the processes of developing the scientific and research competence of these specialists, identify existing problems and develop and implement new modern pedagogical technologies as solutions. Currently, “large-scale work is being carried out aimed at improving the quality of training qualified personnel with comprehensive knowledge in the field of physical education and sports in accordance with international standards, the rapid development of science in sports, and further improving the processes of training highly qualified competitive trainers-teachers, specialists and scientific workers” [3]. After all, on the basis of science-based education, future specialists can be educated as fully mature, professional professionals.

The development of modern sports technologies, sports analysis and planning of training processes based on an individual approach create the need to improve the scientific and research competence of sports specialists. Therefore, the development of the skills of sports professionals to conduct scientific research, develop and implement new innovative methods is one of the main directions of the educational process.

Competence is expressed in the readiness to perform activities in specific problem situations. Competence represents the ability of a specialist to direct his human potential to perform professional activities. Competence refers to the characteristics of the integrated qualities of a person, that is, the readiness of a graduate of a higher educational institution to carry out activities in certain areas (competences) [4].



is knowledge, skills , and abilities. The motivational basis of competence is one of its most important factors. Motive is the driving force for action, the impetus for activity , and the desire for it. An important factor in competent activity is the orientation of the individual, that is, the value-spiritual basis of competence . This means a positive active attitude to common human values . The basis of individual-psychological competence is the characteristics that determine the success and speed of a person's mastery of the activity. The conative basis of competence is represented by the mechanisms of self-management of the individual.

Competence can also be described as the intensity and manifestation of a person's professional experience in the competence of a particular activity. The professional and personal characteristics that determine the scientific competence of specialists in any field, that is, their ability to perform the functions of scientific activity, include informational, analytical, forecasting, planning, constructive, managerial, communicative, personal and reflective functions.

Analysis of the existing scientific and methodological literature has shown that there is no single, generally accepted definition of the concept of “scientific research competence”. However, scientists have given several explanations for this. O.Y. Yefricheva explains scientific research competence as “the ability to analyze and evaluate scientific material” [5]. N.G. Alekseev defines it as “the ability to reflect the process and results of creative thinking, inherent in research and design activities” [6]. A.V. Utorsky sees research competence as “a complex of knowledge, ideas, action programs, value systems and attitudes”.

The scientific research competence of physical education and sports specialists is a set of knowledge, skills, and abilities necessary for the effective implementation of scientific activities in the field, which is associated with identifying a problem and proposing a solution, applying scientific methods, evaluating results, and developing new methodologies.

Today, pedagogical technologies are expanding the possibilities of influencing the educational process and increasing its effectiveness.

Pedagogical technology is a systematic aspect of the methods and tools used by educators to achieve specific goals in the educational process. These technologies are used to improve the quality and effectiveness of education, adapt educational content to requirements, and regulate student attention.

Pedagogical technologies are used at every stage of education and help to adapt to innovative changes in the field of education.

Improving pedagogical technology is the process of updating, developing and optimizing pedagogical technologies in order to increase the efficiency of the educational process, improve the process of acquiring knowledge and introduce innovative methods. Improving pedagogical technology is important for ensuring that education meets the requirements of the times, developing new and effective methods of its use, and improving the quality and results of education.

The main elements of pedagogical technology:

1	Goals and objectives:	Specific goals of the educational process and tasks set to achieve them.
2	Methods and tools:	Pedagogical methods, techniques, and tools used to achieve these goals.
3	Organization of the educational process:	Specific methods of delivering knowledge, including group, individual, and online learning.
4	Analysis and evaluation:	Assessing the effectiveness of the educational process, analyzing the results.

has a positive impact on the effectiveness of education, the quality of students' knowledge and their participation in the educational process. The main areas of improving pedagogical technology are:

1. Introduction of innovative methods: New teaching methods, integration of interactive and information technologies into education. For example: online learning, multimedia, virtual reality tools.

2. Student-centered learning: Organizing learning in accordance with the individual characteristics, interests , and needs of students. To do this, use new pedagogical methods, approaches , and the possibilities of differentiated learning.

3. Widespread introduction of technological tools: Use of modern pedagogical tools, namely e-books, mobile applications, educational programs.

4. Modernization of educational content: Adapting the content and forms of education to the requirements of the times. To this end, updating the level of knowledge, experience , and applications.

5. Monitoring and evaluating the educational process: Developing analysis and evaluation of educational outcomes.

6. Improving the skills of teachers: Improving the knowledge of teachers in pedagogical technologies and innovative methods. For this, organize seminars, trainings, and online courses.

Discussion and results.

To develop research activities in the field of sports education, modern laboratories, scientific conferences, grant projects and academic mobility programs are being introduced. Of course, this serves to increase the research competence of sports specialists. However, one of the necessary conditions for the development of the country is to preserve and strengthen the health of all segments of the population and increase the level of physical fitness. In implementing this task, physical education and sports specialists are given a leading role, and their effective activity depends on ensuring the development of the younger generation, the harmony of the physical, mental, spiritual and social needs of the individual. If the professional competence of a physical education and sports specialist allows him to effectively solve professional tasks, then research competence is its component. Therefore, the development of research competence requires a transition from educational activities to research activities, and then to professional and practical activities. This begins with ensuring a comprehensive connection with pedagogical technologies in the development of research competence.

The scientific research competence of physical education and sports specialists consists of the following knowledge, skills and abilities :

1. Conducting scientific research : Choosing a research topic, identifying scientific questions, conducting experiments , and analyzing the results.

2. Literature review and analysis : Studying existing studies, articles, books, and other resources in scientific fields and creating new knowledge based on the existing knowledge base.

3. Knowledge of research methods : Understanding the methodologies (experimental, statistical, qualitative and quantitative analyses) required for scientific research and applying them in practice.

4. Data Analysis : Accurately analyze and draw conclusions from data obtained. Use statistical tools, scientific programs , and methodologies.

5. Presentation of scientific results : Presenting the obtained scientific results to the public in lectures, scientific articles, conferences , and other forms.

6. Innovation and creation of new approaches : Developing new ideas and innovative approaches through scientific research.

The scientific and research competence of a physical education and sports specialist can be interpreted as the formation of the ability to conduct scientific research in the field, think critically, analyze research results, and develop innovative approaches . This competence includes theoretical knowledge, practical research skills, and methodological approaches .

a physical education and sports specialist is formed directly in the process of carrying out research activities. There are main functions and components of research competence:

No.	**Scientific research competence: functions**	
Functions		**Description**
1	Analytical function	It helps to analyze data and understand it better.
2	Orientation function	It helps in setting the direction of the research and identifying the topic.
3	Predictive function	It allows you to predict future changes and trends.
4	Information function	It ensures the collection, storage and dissemination of information necessary for the research process.
5	Modeling (model creation) function	In practice, it allows you to analyze events and processes by creating models.
Research competence: components		
Components		Basic knowledge of scientific research activities (methodology, scientific principles, terminology).
1	Theoretical-competent component	
2	Methodological component	Choosing research methods, formulating scientific approaches, and organizing experiments.
3	Analytical component	Drawing conclusions through processing scientific results, statistical analysis, and critical thinking.
4	Technological component	Data processing using digital technologies and programs.
5	Practical-experience component	Applying the results of scientific research to sports practice, conducting experiments and trials.
6	Communicative component	Presenting scientific materials, collaborating with the international and national scientific community, writing articles and reports.
7	Innovative component	Developing new scientific methods and technologies, conducting innovative research in the field of sports.

Structure of pedagogical technology for developing research competence in physical education and sports specialists :

Purpose		Developing research competence in physical education and sports specialists	
Tasks		- explanation of fundamental and applied scientific research; - teach the use of empirical research methods; - develop competencies in analyzing sports processes and processing data; - to develop skills in publishing and presenting scientific research results.	
Stages:			
Stage I	Preparatory stage (Formation of theoretical knowledge):	***Methods:*** - lectures and seminar sessions; - interactive teaching methods; - STEAM and interdisciplinary approaches.	***Result:*** - knowledge of scientific research concepts; - understanding the methods of conducting scientific research in the field of sports.
Stage II	Research Practice (Experimental Activities)	***Methods:*** - observation and analysis of sports processes; - use of experimental methods; - use of digital technologies and artificial intelligence tools; - gamification .	***Result:*** - acquire the skills to conduct independent research; - making decisions based on scientific evidence.
Stage III	Analysis of results and integration into scientific work	***Methods:*** - statistical and analytical methods; - writing scientific articles; - making presentations at scientific conferences.	***Result:*** - analyze and present research results to the scientific community; - application of research results in sports practice.
Innovative approaches			
1	Digital platforms	- Analysis of scientific sources through Scopus, Web of Science, ResearchGate.	
2	Virtual reality technologies	- biokinematic analysis of athletes' movements .	
3	Artificial intelligence	- modeling and forecasting athlete results.	
Evaluation			
Performance criteria		- quality of scientific work; - results of empirical research; - number of scientific articles and presentations at conferences; - the number of innovative solutions ready for use in sports practice.	

Conclusion. The developed scientific research competence of physical education and sports specialists leads to the improvement of their skills in independent thinking, developing new ideas in their field, implementing creative approaches, and finding innovative solutions. Also, independent thinking and creative approaches direct specialists to self-development, the use of new pedagogical methods, and success in scientific research.

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