METHODOLOGY OF PROFESSIONAL PEDAGOGY: DETERMINATION OF THE BASIC CONCEPT IN RESEARCH

METODOLOGIA DA PEDAGOGIA PROFISSIONAL: DETERMINAÇÃO DO CONCEITO DE BASE DA INVESTIGAÇÃO

METODOLOGÍA DE LA PEDAGOGÍA PROFESIONAL: DETERMINACIÓN DEL CONCEPTO BÁSICO EN LA INVESTIGACIÓN

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ABSTRACT: The purpose of the article is to show the ways of creating a matrix of determination of the basic concept, types of definitions and rules for their compilation. The work is based on the practice of holding scientific seminars, writing a number of scientific papers using this methodology. Theoretical concepts are implemented in programs for training highly qualified personnel and are tested in experimental work with students. The methodology for determining concepts was developed through scientific and social discussions at extended scientific seminars, national and international scientific and practical conferences and interactive cooperation of scientists from various regions of Russia. The conditions of the Scientific School "Professional Pedagogy and Education of a Sustainable Development Society" made it possible to find universals in the main component of the scientific novelty of each dissertation research. The article is addressed to a wide range of graduate students, adjuncts and doctoral students who want to improve their research.

KEYWORDS: Methodology. Basic concept. Professional pedagogy. Determination.

***RESUMO**: O objetivo do artigo é mostrar as formas de criar uma matriz de determinação do conceito de base, tipos de definições e regras para a sua compilação. O trabalho baseia-se na prática da realização de seminários científicos, escrevendo uma série de artigos científicos utilizando esta metodologia. Os conceitos teóricos são implementados em programas de formação de pessoal altamente qualificado e são testados em trabalhos experimentais com estudantes. A metodologia para determinar os conceitos foi desenvolvida através de discussões científicas e sociais em seminários científicos alargados, conferências científicas e práticas nacionais e internacionais e cooperação interativa de cientistas de várias regiões da Rússia. As condições da Escola Científica "Pedagogia Profissional e Educação de uma Sociedade de Desenvolvimento Sustentável" tornaram possível encontrar universais na componente principal da novidade científica de cada investigação de dissertação. O artigo destina-se a um vasto leque de estudantes de pós-graduação, adjuntos e doutorandos que pretendam melhorar a sua investigação.*

***PALAVRAS-CHAVE**: Metodologia. Conceito básico. Pedagogia profissional. Determinação.*

***RESUMEN**: El propósito del artículo es mostrar las formas de crear una matriz de determinación del concepto básico, tipos de definiciones y reglas para su compilación. El trabajo se basa en la práctica de la celebración de seminarios científicos, la redacción de una serie de artículos científicos utilizando esta metodología. Los conceptos teóricos se aplican en programas de formación de personal altamente cualificado y se ponen a prueba en trabajos experimentales con estudiantes. La metodología para determinar los conceptos se desarrolló mediante debates científicos y sociales en seminarios científicos ampliados, conferencias científicas y prácticas nacionales e internacionales y la cooperación interactiva de científicos de diversas regiones de Rusia. Las condiciones de la Escuela Científica "Pedagogía Profesional y Educación de una Sociedad de Desarrollo Sostenible" hicieron posible encontrar universales en el componente principal de la novedad científica de cada investigación de tesis. El artículo está dirigido a un amplio abanico de estudiantes de posgrado, adjuntos y doctorandos que deseen mejorar sus investigaciones.*

***PALABRAS CLAVE**: Metodología. Concepto básico. Pedagogía profesional. Determinación.*

Introduction

Despite the growing volume of research in the field of education, the methodological foundations for defining and structuring key pedagogical concepts remain insufficiently developed. This lack of conceptual clarity complicates the formulation of research objectives, the design of pedagogical interventions, and the evaluation of educational outcomes. In this context, education is not only an area of application but also a critical domain for the development of scientific knowledge. One of the most pressing tasks in educational science is the precise determination of the basic concepts that underlie professional pedagogy. Various research methods have been applied to study and define such concepts, including associative experiments, classification techniques, subjective scaling, semantic differential analysis, and the creation of artificial constructs. However, these methods are often used in isolation and without a unified methodological framework, which limits their effectiveness in advancing pedagogical theory and practice.

In Russia, since the 90s of the 20th century, it has been noted that concepts do not “appear”, but are “invented”, “created” as their necessity is realized (Vinokur, 1994) and a question for professional pedagogy in the argumentation and justification of scientific creativity.

Being the main point of scientific novelty (Filippov, 2023), the clarification of the basic concept plays the role of determining the meaning of scientific work, goal setting and the essence of the strategy of pedagogical influence, the sequence of transformations and diagnostics of the obtained effect.

The determination of the basic concept, on the one hand, distinguishes it from the general mass of professional pedagogy and is determined by external social and legal factors, on the other hand, it distinguishes internal factors of professional and psychological properties, united in an integrative individual characteristic of the student (Dolinina, 2020; 2023).

Only at first glance can we do without determining the basic concept in pedagogy.

In fact, according to the passport of the scientific specialty 5.8.7 Methodology and technology of professional pedagogy (Russia, 2021), such development is not only desirable, but mandatory, since scientific novelty will remain and remains in a number of cases ephemeral, unable to ensure: the presence of a new theoretical result, the presence of a new practical result, concreteness of presentation.

There will be no sufficient logical connection with the topic, logical connection with the problem and objectives of the study and achievability of the result.

The actually proposed and implemented teaching methods can give a positive effect, however, by what criteria, what indicators and indices should the effectiveness be measured. Consequently, there can be no talk of verification of such a study.

First of all, it is necessary to identify the current concepts of professional pedagogy, possibly comprehending the social and legal reality, professional needs or descriptors of educational standards.

The next step is to identify external conditions, differentiate common and distinctive features, formulate the concept itself and determine the meaning by essential features and the significance by applicability.

A definition can have a conceptual (general theoretical and methodological), target (assume the result of pedagogical influence), qualifying (characterizing features and distinctive features and properties), and, most likely, enumerative (not a large number of elements) meaning. In view of the complexity of the work and the possible synergetic formulation of the concept, two or more definitions can be used in the work.

To create scientific novelty, it is important to understand the main meaning and value of research work.

First of all, it is necessary to define the philosophical and methodological basis: philosophical basis, methodological principles and approaches of professional pedagogy, value-semantic orientations.

We recommend the types of definitions for creating and clarifying the basic definition: conceptual (general theoretical and methodological), target (reflect social and state order, assume the result of pedagogical influence); qualifying (characterizing integrative features and distinctive features and properties in professional training), operational (taking into account the verification conditions for criteria and indicators/indicators and assume the transition of students to a higher level of the desired level).

Qualifying definition as an integrative characteristic of new properties of students in accordance with the topic of the study, primarily based on the idea, constituent elements, criteria, indicators inherent in the ideal. The principle of definition is not the interests of the researcher, but first of all the rules of law described by the Labor Code of the Russian Federation (Russia, 2001) as a combination of the employee's education, his abilities and experience in a specific work activity.

According to Order No. 148n of the Ministry of Labor of Russia (2013), qualification parameters include: authority and responsibility (ability to act independently and make

decisions), nature of skills (complexity of tasks from routine to research), nature of knowledge (level and relevance of specialized education), and basis of qualification (professional experience and additional training) (Russia, 2013).

Operational definition is a description of the characteristics of learners in terms of operations (process) that must be performed to confirm the new quality of education, measuring its duration. The degree of correspondence between the operational definition and the conceptual one is considered the validity (reasonableness) of the operationalization.

In educational research, the formulation of precise and logically sound definitions is fundamental for ensuring methodological rigor and advancing pedagogical theory. Definitions must avoid circular reasoning, where a term is explained through itself, as this undermines conceptual clarity. Equally important is the principle of proportionality: the scope of the definition must correspond to the concept it describes, avoiding overly narrow or excessively broad interpretations. Clarity remains essential—educational terminology should be articulated in accessible, unambiguous language to facilitate understanding among both researchers and practitioners. Figurative expressions, such as metaphors or idioms, should be excluded, as they obscure meaning and hinder academic precision. Furthermore, definitions should be framed affirmatively, stating what a concept is rather than what it is not, thereby supporting more constructive and coherent knowledge formation in the field of education.

Taking into account the rules for drawing up a definition and having chosen the type of definition, it is advisable to design a matrix that takes into account the various aspects of the problem being studied.

The matrix of determination of the semantic meaning of a basic concept is a generalized two-dimensional logical construct of ideas selected in pedagogical science, which serves to organize, transform, optimize, generalize and concretize the processes of professional education that we study, designed to substantiate the idea being developed and diagnose the dynamics of individual achievements (Dolinina, 2020).

Theoretical construction of the matrix organizes the interaction and integration of ideas that are important in the context of the topic.

Methods

Research Approach

The study follows a conceptual and methodological approach aimed at clarifying the basic concept within the field of professional pedagogy. The proposed method involves the construction of a semantic matrix to determine and refine the meaning of the key concept under investigation.

Case study: leadership readiness of military cadets

The methodology was tested in the context of a study on the "Formation of readiness for leadership of cadets of a military university" (Shaporev, 2024). This case was selected due to its relevance to professional training and its potential for integrating diverse theoretical foundations.

Theoretical Foundation

A comprehensive review of interdisciplinary literature was conducted to inform the development of the matrix. Key contributions from psychology, management, and educational leadership were analyzed, including works by Bishop (2006), Chran, Drotter and Noel (2011); Day (2000); Fiedler (1967); Goleman (1995, 2005); Kotter (2012); Lewin, Lippitt and White (1939); Mayer (2005); Person (1928); Stogdill (1948, 1974); Yukl (2001); and Zaleznik (2007). These sources provided a diverse conceptual base for identifying essential components of leadership readiness in the military education context.

Matrix Construction

Based on the review, a theoretical matrix was developed to systematize the semantic structure of the concept "readiness for leadership of military university cadets." The matrix served as a tool for integrating conceptual dimensions such as emotional intelligence, assertiveness, and value-semantic orientation, forming the basis for further clarification and definition of the concept.

Results

The concept of "readiness for leadership of military university cadets" is specified, which is defined as an integral characteristic of the professional and personal qualities of future specialists, reflecting the level of knowledge about leadership, value-semantic orientations, emotional intelligence, assertive behavior, and experience of effective teamwork in performing professional tasks (Shaporev, 2024).

The refined definition reflects both the state's educational objectives and the intended outcomes of pedagogical influence. It characterizes the integrative qualities developed in cadets during military-professional training, linking individual competencies with broader educational standards and societal needs.

If the scientific discussion of the concepts of "readiness" and "leadership" is used to determine the author's view, which is presented in the matrix, then the scientific and educational prerequisites for clarifying the concept included ideas of assertive behavior and development of emotional intelligence, which were not previously used by the authors in this problematic, and became the basis for the subsequent scientific substantiation of the work.

Readiness is understood as an integrative educational outcome that reflects the student's psychological and pedagogical capacity to manage, lead, collaborate, and make decisions in professional contexts. Leadership, in this framework, is viewed as the ability to organize, motivate, and guide others toward the effective completion of tasks. Assertive behavior and emotional intelligence are the key educational targets that support this readiness by enabling students to communicate respectfully, regulate emotions, and maintain constructive interaction in complex learning and working environments (Shaporev, 2024).

A review of the views of a number of researchers on the problem of environmental education was conducted (Chankseliani; Mccowan, 2021; Diemont; Lawrence; Endreny, 2010; Garcia, 2021; Johnson; Činčera, 2019; Pehoiu, 2013; Poptcov; Dolinina; Khamatnurova, 2020) and, using the method of constructing a matrix, a clarification of the conceptual concept of "culture of rational use of natural resources by students" was carried out.

The culture of rational use of natural resources is necessary for the targeted training of specialists in the professional sphere, for the effective use of natural resources, taking into account their protection and preservation for future generations (Dolinina; Mekhonoshin, 2022; Mekhonoshin, 2023).

The fundamental philosophical foundations define the stages of development of understanding of nature, culture and man; environmental philosophy; value-semantic orientations; ideas of a sustainable development society and rationalism.

Environmental awareness and ensuring environmental safety are regulated by international and national legal norms. International standard ISO 14001-2016 “Environmental management systems” (Federal Agency for Technical Regulation and Metrology, 2018) and Federal Law of the Russian Federation No. 7 - FZ of 10.02.2002 “On Environmental Protection” (as amended on 04.08.2023) (State Duma of the federal assembly of the Russian Federation, 2002) and Order of the Government of the Russian Federation of 31.08.2002 No. 1225-r, “Environmental Doctrine of the Russian Federation” (Russia, 2022).

The following concepts are adopted as the basis for the analysis: rational / irrational use of natural resources; environment, environmental impact and responsibility, sustainability and environmental imperative. environmental risk and its prevention.

The concept of “culture of rational use of natural resources by students” is defined as a comprehensive characteristic of the professional and personal qualities of specialists, based on knowledge of environmental law, skills in ensuring safety and preserving nature, environmental value-semantic orientations, readiness to manage in professional activities that provide for an environmental imperative and sustainability (Dolinina; Mekhonoshin, 2022; Mekhonoshin, 2023). Based on a clarified understanding of the concept, the development of methodological foundations and an orderly relationship of all concepts operated in the research concept, including pedagogical technology, pedagogical conditions and diagnostics, was carried out.

We have introduced into the scientific terminology of professional pedagogy a refined definition of the concept of “risk competence of students of a polytechnic university” as an integrative quality of a person, manifested in knowledge in the field of ensuring safety and risk prevention, motivation and reflection, in the values of a safety culture, risk-oriented thinking, in the ability to ensure safety based on the skills and abilities to prevent hazardous industrial situations (Dolinina; Kushnaryova, 2016; Dolinina *et al*., 2018).

The appropriate methods were selected based on the International Standard

Observation methods: Preliminary hazard analysis. Brainstorming, Delphi method, Matrix of consequences and probabilities. Scenario analysis: Event tree analysis (ETA), Cause and effect analysis.

Functional analysis: Hazard analysis and critical control points (HACCP), Bow tie analysis (Dolinina; Kushnaryova, 2016; Dolinina *et al.*, 2018).

The diagnostic activity of the researcher should have a systemically functional structure and dynamics interconnected with the basic concept and definition. In particular, the relationship between the goal-setting definition, the developed basic definition and the identification of indicators of the culture of technosphere safety of students of a polytechnic university.

The concept under study: the culture of technosphere safety of students of polytechnic universities is an integrative quality of the personality of future engineers, manifested in the axiological focus of knowledge in the field of ensuring safety in professional activities based on natural science consciousness, readiness to prevent threats and dangers in production.

Based on the concept and definition, the indicators of diagnostics of the state of individual achievements of students: motivation to ensure safety, knowledge in the field of ensuring technosphere safety; value-semantic orientations of the safety culture; professional activity-based thinking of an ecological orientation; reflexive abilities and reflexivity.

In the future, diagnostics must be developed based on the criteria and indicators of individual achievements of students by levels.

The absence of a concept and definition cannot create opportunities for targeted diagnostics, since each of the criteria and indicators checks and evaluates significant elements of the definition.

Conducting research on the project approach in education, which is becoming not only a tool for implementing educational initiatives, but also a way to create a sustainable development society, a more in-depth study of the risks of educational projects is required.

Scientific and social work, provided with a conceptual apparatus, is dedicated to competently and safely organizing a project for students.

The qualifying definition of “risk management in the educational design of students” is an integrative quality of a person who understands responsibility for the possible risk of a project, who has the logic of reducing possible threats in the process of creating and

implementing a project in the subject and cultural aspect based on value-semantic orientations, risk-oriented thinking and the ability to ensure the achievement of the pragmatic goal of the project (A. E. Prichinin).

In a logical sequence, the criteria for the effectiveness of experimental work are defined by a set of components: value-semantic, procedural-managerial, subject-content, prognostic, cultural-pedagogical and personal self-improvement, in the ability to ensure the acceptability of risk prevention at all stages of the life cycle of an educational project (A.E. Prichinin).

In connection with the increasing man-made danger of the modern world, the priority direction of the state policy of Russia is the focus on the formation of a safe type of personality and the education of a safe lifestyle in the younger generation when studying at a college in construction specialties.

The global task of education is solved through the individualization of the training of future specialists.

The safe type of personality of students of a construction college is a characteristic of the individuality of students who have knowledge in the field of safety in construction, are able to prevent the occurrence of risk and apply measures to protect against unjustified risk, are able to act in a dangerous situation to prevent, reduce the consequences of damage caused, based on professional and activity-based thinking (L. S. Boronenkova).

The assessment of the formation of a safe type of personality of students of a construction college is carried out according to the criteria of social, personal and professional safety.

The levels of individual achievements and manifestations of a safe type of personality are determined: active-pragmatic, value-semantic; subject-functional, professional-activity; passive-familiarization, disinterested (L. S. Boronenkova).

Conclusions

Many studies in the field of education and professional pedagogy remain scientifically ungrounded due to the lack of a clearly defined basic concept. In such cases, validation is often attempted using abstract or narrowly disciplinary criteria, which undermines both the reliability and applicability of research outcomes. This article responds to that gap by offering a structured methodology for determining and operationalizing key pedagogical concepts, making it possible to align educational research with both theoretical frameworks and practical demands.

The findings demonstrate that the use of a semantic matrix enables the clarification of complex educational constructs such as leadership readiness, environmental responsibility, and risk competence. Each of these concepts, when clearly defined and linked to measurable outcomes, strengthens the educational process by guiding curriculum design, instructional strategies, and diagnostics.

The prospects of the research lie in the implementation of the developed methodology aimed at developing scientific logic and structure of disciplinary and interdisciplinary research in professional pedagogy. Successful concepts and definitions contribute to the development of science, while unsuccessful ones delay the development of scientific knowledge.

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