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# INTEGRATION OF COGNITIVE AND PERSONAL COMPONENTS IN THE STRUCTURE OF RESEARCH ACTIVITIES OF MODERN SCHOOLCHILDREN

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**Abstract**

The article examines the dynamics of the formation of students' research competence in the system of specialised education. In the course of the work, a definitive correction and clarification of the essential characteristics of the concept of 'research competence' was carried out. The author has identified and substantiated a set of psychological and pedagogical conditions that ensure the maximum effectiveness of the system for developing this personal skill in the context of specialised general education schools.

**Keywords**

specialised education, personality, pedagogy, competence, education.

**Introduction**: The integration of specialised education within the paradigm of personality-oriented education has been demonstrated to facilitate the optimal realisation of students' interests and abilities through the establishment of individual educational trajectories. In this system, research activities are assigned a key role, serving as a tool for developing independent learning skills and creative mastery of modern scientific achievements.

**Methods**: As posited by A. S. Obukhov, the concept of student research is predicated on the notion of a dynamic interplay between subjects, with the objective of identifying solutions to problematic tasks. In the course of such collaborative endeavours, cultural values are transmitted and the student's worldview is formed. Concomitantly, it is imperative to draw a distinction between 'scientific research' and 'educational research' activities. As A. V. Leontovich observes, the distinctive nature of research conducted within an educational environment is characterised by its educational emphasis. In contradistinction to the pursuit of objective new knowledge within the domain of academic science, educational research is primarily concerned with the personal development of the

individual. The primary emphasis is thus shifted from the final product to the cultivation of universal research competencies in students, the development of analytical thinking, and the activation of a subjective position in the process of acquiring subjectively new knowledge.

In contemporary pedagogical practice, the organisation of educational and research activities is frequently constrained to the cultivation of fundamental competencies and aptitudes, often neglecting personal and significant aspects, as well as the preparation of students for effective functioning outside the school environment. The present contradiction determines the relevance of applying a competency-based approach in the context of specialised education. The modernisation of education necessitates the reproduction of cultural potential and the preparation of individuals for activity within the context of rapidly evolving technologies.

In scientific and pedagogical discourse, the distinction between the definitions of 'competence' and 'competency' remains a matter of debate. In the field of psychology, the concept of competency is understood as a comprehensive life experience influenced by an individual's intellectual and personal attributes. This perspective is articulated by I. A. Zimnyaya, who conceptualises competency as a multifaceted construct shaped by both intellectual and personal qualities of the subject. In turn, A. V. Khutorskoy interprets competence as an exogenous social requirement for student training, while competency is a measure of the mastery of this competence, including a value-semantic attitude towards the object of activity.

Supporting the idea of differentiating these concepts, S. G. Vorovshchikov proposes to distinguish them along the axes of 'potential — actual' and 'given — mastered.' Within this paradigm, competence is understood to denote a normatively established domain encompassing tasks and functional roles. Meanwhile, competency is interpreted as the experience of successfully implementing these functions in practical activities.

The expanding scope of educational and research endeavours within the framework of specialised education underscores the necessity for conceptual elucidation and the delineation of the term 'research competence'. Despite the fact that this phenomenon has been the subject of sustained scientific interest, there is still no consensus in pedagogical theory and practice regarding its essential characteristics and mechanisms of development.

**Results and Discussion**: In the context of our research, research competence is conceptualised as an integral component of personal education, signifying the subject's capacity and readiness to proactively seek solutions to challenging tasks and to innovatively transform reality. This competence is predicated on the synergy

of personally significant knowledge, cognitive skills and value orientations, which are actualised in the process of research practice.

The effective functioning of the model for developing research competence in the context of specialisation is ensured by the implementation of a system of principles, the key ones being: self-activity, accessibility, naturalness, meaning-centredness, experimentalism and cultural appropriateness.

The process of cultivating research competence in students in specialised classes becomes effective when a set of psychological and pedagogical conditions are met:

- The concept of humanisation in education is predicated on the recognition of the primacy of the student's subjective experience, the assurance of their psychological and physical well-being, and the actualisation of their potential for personal freedom. This condition is conducive to the transition to subject-subject interaction, in which the roles of teacher and student are equal participants in a constructive dialogue.
- The objective of this study is to design an educational environment that is developmental in nature and focused on student autonomy in choosing areas of study. This approach entails conscious goal setting, assuming responsibility for the final outcome, acknowledging individual cognitive interests, and implementing an assessment system that is pertinent to the intended educational outcomes.
- This paper proposes a phased approach to competence development, including the sequential transformation of internal personality structures. The approach commences with the initiation of internal motivation and progresses to the implementation of operational and executive actions. This is followed by a reflective assessment and correction of achievements.

The model of the research competence development system in the context of education specialisation that has been designed for the purposes of this research integrates the following functional components: motivational and goal-oriented, content-related, procedural and technological, and criteria-based and assessment-related.

The content component of the model determines the set of didactic units that ensure the development of research competence of students in the specialised education system. The establishment of this competence within the framework of the natural science profile is achieved through the integration of basic and additional education: in the process of teaching basic profile disciplines, specialised elective courses, as well as within the framework of extracurricular activities.

A pivotal component of the curriculum's constant element is the author's elective course, entitled 'Fundamentals of Research Activity'. The primary objective

of this course is to facilitate the mastery of the theoretical foundations and applied tools necessary for the implementation of a full research cycle. The methodological design of the course is predicated on the use of activity-based technologies, incorporating a variety of forms of interaction, including overview lectures, interactive classes, scientific and practical seminars, and laboratory workshops.

The procedural and technological component of the model is represented by a set of interrelated elements, namely: an algorithm for the step-by-step development of research competence, a complex of variable methods and forms of training, and a system of scientific and methodological support. In the context of professionally oriented training, a positive dynamic is observed in the quantitative and qualitative indicators of the mastery of structural units of competence. The scope of research activities is expanding, and individual competences are being integrated into the holistic formation of the personality.

The effectiveness of the formation of research competence in secondary school is determined by the effectiveness of the propaedeutic stage at the levels of primary and basic general education, where the basis for educational and research activities is laid. In the course of experimental work, a series of technologies designed to enhance the cognitive capabilities of the researcher were evaluated.

The following aspects require further investigation:

- the application of research methods and educational experiments

Research-type assignments of an individual nature.

• Discussion and presentation platforms (e.g. scientific societies, conferences)

The following forms are intended to be utilised in a practical manner: expeditions, internships and project activities.

The implementation of this component is contingent upon the provision of scientific and methodological support, with the objective of enhancing the research and organisational level of the teaching staff.

The final stage of the system design process entailed the establishment of the criteria and assessment block, a pivotal element that enabled the systematic organisation of data pertaining to the dynamics of students' personal development. The implementation of a comprehensive set of diagnostic techniques ensured multifaceted monitoring of the process, encompassing the assessment of operational skills and the analysis of the motivational and semantic domains. The data obtained during the experiment provide substantial evidence for the high effectiveness of the developed model, as indicated by a significant change in the quantitative and qualitative indicators of research competence.

**Conclusion**: Within a comprehensive socio-pedagogical framework, specialised education functions as the cornerstone of personal and professional self-

determination. It is posited that students who have attained proficiency in the methodology of scientific research and have internalised the system of research values can be considered to have become a strategic resource for society. Consequently, the cultivation of research aptitude within educational institutions serves as an efficacious instrument for ensuring the perpetuation of cultural heritage and the acceleration of scientific and technological advancement, thereby validating the attainment of contemporary educational objectives.

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