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### **Neural network technologies as a means to form defectology students' digital competencies**

**Abstract.** The relevance of the study is due to the intensive digital transformation of education and the need to prepare future defectologists for the use of innovative tools in correctional and pedagogical work. This article aims to reveal the concept of «digital competencies of a teacher», consider its various interpretations proposed by domestic and foreign researchers, investigate the role of digital competencies and neural network technologies in the professional training of defectologists, as well as analyze the potential of neural network technologies as a means to form digital competencies among defectology students, allowing them not only to consume, but also to professionally create educational content for children with disabilities.

Based on the theoretical analysis, the authors clarified the concept of digital competencies, including technical, methodological, psychological, pedagogical and legal components. The empirical part of the study is a pedagogical experiment in which students, as part of the discipline, developed teaching aids for children with disabilities using the DeepSeek and GigaChat neural network platforms. To evaluate the created products, a system of criteria was applied, including such indicators as compliance with the topic, logic, originality, audience orientation, practical usefulness, etc. Comparative analyses of student self-reported scores and faculty peer reviews using statistical methods (Mann-Whitney test) revealed statistically significant discrepancies across six of the eight criteria.

The results showed that students successfully master the technical aspects of content generation, but demonstrate an underdeveloped professional and methodological thinking. Their assessments focus on the formal and superficial characteristics of the manual, while experts assess the depth, correctional and developmental potential and pedagogical feasibility of the materials. This shows a didactic gap between instrument ownership and the ability to critically design a quality didactic product.

Based on the study, the authors conclude that the formation of digital competencies of future defectologists should go beyond training in the functionality of neural networks. Targeted methodological work is needed under the guidance of an expert teacher, aimed at developing professional reflection, critical assessment and design of materials that fully take into account the special educational needs of children with disabilities. The integration of neural network technologies into the educational process is a promising step to improve the quality of training highly qualified personnel in inclusive education.

**Key words:** professional training of teachers; digital competencies; electronic resources; methodological support; educational content; neural network technologies; defectological education; defectology students; inclusive education; children with disabilities.

Yugova O. V.

### **Resource approach to psychological and pedagogical support for the family of a child with developmental disabilities**

**Abstract.** The article presents the author's resource-based approach to organizing assistance to families raising an early-age child with developmental disorders. The results of studying the resource capabilities of families of such children are presented, in which a total of 466 families took part in two stages. Significant characteristics of the family system related to its resource state are highlighted. As a result of the study, each family was assigned to one of three clusters: a resource-rich family, a relatively resource-rich family, and a low-resource family. It is emphasized that an important factor in choosing the optimal family support strategy and ensuring its effectiveness is the identification, accounting for, and activation of a variety of internal resources within the family system (internal resources), as well as the search for, attraction, and use of external non-family resources (human resources, information and communication technologies, etc.). The article proposes a typology of resources for families with children with developmental disorders, including pedagogical, psychological, social, psychological and pedagogical, socio-pedagogical, and socio-psychological resources. It is assumed that when building an interdisciplinary assistance system, various support specialists distribute their areas of influence on different resource zones. Varied strategies of support are presented depending on the needs (requests) and opportunities (resources) of parents: patronage, accompanying, advisory. The possibilities of using information and communication technologies in the process of interaction of participants in the educational space are described. Various forms and formats of work are outlined. The results of the ascertaining stage of the study and the dynamics of those indicators of family resources, on which we had an impact in the process of implementing psychological and pedagogical support, are presented.

**Key words:** family resources; children with developmental disorders; early intervention; consulting; psychological and pedagogical family support; questionnaire; interdisciplinary support.

Gavrilova V. V.

### **Historical and philosophical analysis of inclusive education in a general educational organization and in higher school**

**Abstract.** The article examines the practical aspect in implementing inclusive education in comprehensive school and technical university using the example of a railway institute. Based on the method of included observation, the compliance of regulatory requirements for creating inclusive environment with the real conditions for implementing the educational process in educational organizations is analyzed. The author pays special attention to the historical and philosophical prerequisites for the formation of inclusion, the evolution in organization of the educational process: from segregation to the integration of children with disabilities into the educational process at all levels of the education system. The paper analyzes the key problems identified during the observation study: the dissonance between the declared conditions and the practice of creating these conditions in comprehensive school and technical university, the high occupancy rate of classes, the shortage of professional training of teachers and the specifics of sectoral higher education, where a student with disabilities can study, but will not be able to develop professionally due to strict requirements for the profession, and absence of a positive conclusion about admission to work for medical reasons. The study also relies on the interview method, which clarifies the features of interaction of teachers with students with disabilities (HIA), building productive communication with parents and the administrative team of the educational organization on creating inclusive educational environment. Based on the data obtained during the study and analysis of scientific literature, the author proposes ways for developing flexible educational trajectories, improving infrastructure and the formation of an inclusive culture of all participants in the educational process, necessary for the balanced development of inclusive education in Russia.

**Key words:** inclusive education; comprehensive school; higher education; educational environment; limited health opportunities (HIA); pedagogical practice; individualization.

Shelkunova T. V., Perevoznikov N. V.

### **Formation of counting activities in older preschoolers with speech impairments**

**Abstract.** The relevance of the study is due to the increasing number of children with disabilities, in particular with severe speech impairments, and the increased requirements for their preparation for school. Traditionally, the focus of correctional care for children with speech impairments is focused on the development of speech function, but speech underdevelopment is associated with deficits in other cognitive processes, including the formation of logical and mathematical representations. One of the key problems is the risk of dyscalculia. The purpose of the study was to identify the speech prerequisites for mastering counting activities in older preschoolers with speech impairments and to develop a system of corrective and speech therapy work for their development. The results of the entrance diagnosis revealed significant difficulties in most children. Knowledge about the number and account was unstable, there were errors in the name and correlation of numbers, difficulties in the grammatical design of statements with numerals. At the same time, a pronounced shortage of speech prerequisites was found: poverty and undifferentiation of the dictionary, a low level of word formation and inflection skills, unformed phonemic analysis, difficulties in understanding space-time relations, expressed in the incorrect use of prepositions. The data obtained confirmed the hypothesis of a direct dependence of success in counting activities on the level of development of speech means.

At the formative stage, a system of didactic games and exercises integrated into the correction and speech therapy process was developed and tested. The key principle was the simultaneous solution of speech therapy and mathematical problems within the framework of a single game activity. The control experiment showed positive dynamics in the experimental group compared to the control. Children have significantly increased the volume of active vocabulary, improved the skills of using synonyms, antonyms and prepositions, understanding complex speech constructions. The qualitative growth of speech prerequisites directly influenced the success in mastering the score.

The findings of the study indicate that difficulties in mastering the score in children with speech impairments are systemic in nature and are closely associated with general speech underdevelopment.

**Key words:** numeracy skills; preschoolers with disabilities; speech disorders; didactic games; cognitive development; preparation for school; correctional and developmental work; prevention of dyscalculia.

Bukhtiyarova O. V., Volkova V. A.

### **Using the potential of educational and play activities in development of coherent speech in preschoolers with general underdevelopment of speech**

**Abstract.** The article is devoted to a comprehensive analysis and justification of the methodology for the development of connected speech in older preschool children with general underdevelopment of speech (GUS),

using the potential of educational play. The problem of forming a coherent statement in this category of children is key in the system of special and inclusive preschool education, since the insufficient development of this function impedes the full knowledge of the world, successful socialization and preparation for school education. The paper examines the theoretical foundations of educational and play activities as the leading type of activity of a preschooler and its unique potential in overcoming speech deficits with a general underdevelopment of speech. The article focuses on the fact that play, unlike formal exercises, creates a natural, motivating environment for spontaneous speech interaction. The article analyzes in detail the specific features of the connected speech of children with GUS (programming and presentation sequence violations, lexical and grammatical poverty, difficulties in building monological and dialogical forms). The author's system of correctional and pedagogical work is presented, based on the phased complication of tasks in the framework of plot-role-playing games, dramatization games and didactic games with a speech accent. A special place in the study is given to practical recommendations to select game situations that contribute to the formation of plot reconstruction skills, the compilation of descriptive and narrative stories. It has been shown that the systematic use of educational play as a means of learning provides a prolonged positive effect, not only compensating for speech disorders, but also stimulating the development of cognitive activity and communication competence of children.

**Key words:** general underdevelopment of speech (GUS); senior preschool age; connected speech; play activities; correctional techniques; speech disorders; formation; communication activity; potential.

**Kamnev A. N.**

### **Neuropsychological approach to prevent and correct special children's academic failure**

**Abstract.** The article is devoted to the neuropsychological approach to the prevention and correction of school failure in children with special educational needs (SEN), including psychosomatic diseases, scoliosis of II-III degrees and visual impairment (-3... -6 diopters), implemented in the conditions of summer health camps in Anapa. Key neurocognitive factors are considered – attention stability, working memory, executive functions of thinking, visuospatial skills and methods of their diagnosis based on the analysis of higher mental functions (according to the methods of A. R. Luria, Gordon tests, neuropsychological profile).

Particular attention is paid to the role of teachers in implementing individual correctional and developmental programs: from primary diagnostics (questionnaires, neurocognitive tests) and the selection of neuropsychology techniques (synchronization of the cerebral hemispheres using the Massut method, rhythm therapy to activate neuroplasticity, sensory integration) to monitoring progress (dynamic development maps) and integration of the approach into an inclusive school environment. Empirical basis is a comparative study ( $n = 120$  children 8–12 years old) in the camps «Discovery» (biological bias) and «Fairway» (aqua program). The results showed an improvement in somatic health in the experimental group, which showed an improvement in attention by 32–38 %, memory by 28–35 %, vision by 12–15 %, posture by 14–18 %, a decrease in anxiety by 29–35 % ( $p < 0.001$  compared with the control group by 12–18 %).

The key conclusion: the natural conditions of summer recreation (Anapa marine climate, water activities, sensory stimulation) increase the effectiveness of the neuropsychological approach by 12–15 % due to increased neuroplasticity and natural motivation, which confirms the feasibility of integrating such programs into health camps for maximum inclusion and success of special children.

**Key words:** neuropsychology; school failure; SEN; scoliosis; visual impairment; summer camps; neuropsychology; neuroplasticity.

**Vacheyan L. A.**

### **Inclusive creative community as a factor of socio-cultural rehabilitation of persons with disabilities**

**Abstract.** The article examines the evolution of the concept of psycho-socio-cultural rehabilitation of persons with disabilities (PWD) within the context of contemporary normative-legal and scientific approaches, while delineating its key objectives: harmonizing the psychological, social, and cultural development of the individual. Particular emphasis is placed on the significance of independent creativity by individuals with disabilities as an effective tool for socio-cultural rehabilitation, fostering social identity formation, enhanced self-efficacy, and integration into the cultural environment.

Drawing on a sociological survey ( $n=145$  respondents; methodology: standardized Likert-scale questionnaire with 25 items and open-ended questions; Cronbach's  $\alpha$  reliability=0.87), the study analyzes subjective perceptions of the role of inclusive creative groups in rehabilitating individuals with visual impairments and down syndrome. Participants included members of the People's theater-studio «Komedianty» (blind and visually impaired performers), the Russian Song Ensemble «Makov Tsvet» (Center for creative rehabilitation of persons with disabilities, Yaroslavl region), the Russian song choir «Rodnik» at the Sudostroitel palace of culture in Yaroslavl, as well as Yaroslavl regional public organization of persons with disabilities «Litsom k miru» and its dance ensemble «Varenka» for people with down syndrome – both PWD ( $n=92$ ) and their non-disabled peers ( $n=53$ ). Comparative analysis revealed statistically significant differences (Student's t-test,  $p<0.01$ ): visually impaired participants rated the groups' role in developing communication skills and emotional resilience higher ( $M=4.8\pm0.4$ ) than non-disabled peers ( $M=4.2\pm0.5$ ); those with

Down syndrome emphasized motor coordination and social adaptation ( $M=4.7\pm0.4$  vs.  $M=4.1\pm0.6$ ). The overall inclusion effect was confirmed ( $\eta^2=0.23$ ). The findings hold practical value for developing regional inclusive rehabilitation programs in Yaroslavl Oblast.

**Key words:** socio-cultural rehabilitation; inclusive creative groups; visual impairments; Down syndrome; creative self-realization; comparative analysis.