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Disorders of written speech in primary school students

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Abstract

Written speech disorders in students may stem not only from external factors but also from alterations in brain function. The article explores the most prevalent problems in students' written speech, including spelling mistakes, syntactic errors, methodological inaccuracies, and logical flaws. It further emphasizes that such disorders can be associated with neurological changes in the brain, such as challenges with attention, memory, and learning processes. The article addresses the difficulties in fostering students' written communication skills, the methodological strategies employed by teachers, and the significance of educational resources. The prevalence of written speech disorders such as dysgraphia is explored, showing how these issues can significantly hinder students' ability to develop adequate writing skills. The study also delves into the neurological and cognitive factors that contribute to such disorders, noting that deficiencies in brain function related to memory, concentration, and other cognitive processes can directly impact written expression. Moreover, the role of teaching methods and individualized educational approaches is emphasized as critical to addressing and mitigating the impact of these disorders. As the article concludes, it stresses the need for early identification and intervention to support students' academic and emotional well-being, advocating for a collaborative approach involving teachers, clinicians, and parents to address and manage written speech disorders effectively.

Keywords: *Disgraphia, speech, cognitive functions, written speech, brain activity, syntactic, spelling errors, memory, methodological approach, language.*

INTRODUCTION

Written speech is a complex process that requires a lot of time and effort. From a syntactic point of view, written speech is the most complete and perfect speech. Kodirovna (2019) stated that, written speech is defined as the process of written expression of thoughts and as a speech activity associated with visible speech. In addition Vigotsky (1939) stated written speech is speech in the absence of an interlocutor and must be fully expressed and in it syntactic differentiation reaches its maximum.

Due to the complexity of the mechanisms of written speech, various difficulties are observed in its formation. In speech therapy, written speech defects are referred to by the terms dysgraphia (from the Greek *dis* - disorder, *grapho* - I write), agrophy (from the Greek *a* - negation, *no* - I write), dilexia (from the Greek *dis* - disorder, *lego* - I read), and alexia (from the Greek *a* - negation, *no*, *lego* - to read).

Dysgraphia is a specific disorder of written speech, manifested in persistent errors in writing. Chung & Patel (2015) stated that, dysgraphia is a learning disorder in which the individual's writing skills are below the level expected for his or her age and cognitive level. In line with this, Döhla & Heim (2016) stated that dysgraphia is a disorder characterized by difficulties in the acquisition of writing skills, with writing performance below that expected based on children's class level.

It develops due to the underdevelopment of the higher parts of the central nervous system and makes it difficult for children to master

the grammatical features of language. According to M.Y. Ayupa, dysgraphia is observed in more than 50% of primary school students. The prevalence is associated with phonetic-phonemic or general speech underdevelopment in children enrolled in school. Dysgraphia may be isolated or may co-occur with other learning disorders, including dyslexia (Chung & Patel, 2015). The symptoms of dysgraphia may vary across different age groups (Chung et al., 2020). The diagnosis of a specific learning disability, such as dysgraphia, impacts children's academic progress and well-being, and dysgraphia is diagnosed by clinicians based on children's writing products and educational staff's impressions (Rosenblum & Dror, 2016).

Written speech is an important stage of language learning for elementary school students, in the process of which students develop the skills of thinking, expression, and logical understanding. Issues related to the formation of written speech and its disorders, the speech development of students, are important from a scientific and practical point of view. However, in the process of forming written speech in primary school students, some disorders may arise, for example, spelling, grammar, syntactic and logical errors. These situations may also be related to the cognitive and neurological development of students. Disorders in students' written speech are closely related to changes in brain activity, and in this process, problems of concentration, memory, and thinking processes are often reflected. From this point of view, it is necessary to take into account that disorders of written speech are not limited to methodological approaches, but also depend on the neurological and psychological characteristics of students. This is in line with Chung & Patel (2015) who explained that acquired dysgraphia can be seen in patients after brain injury, neurological disease, or degenerative conditions and is caused by disruption of existing brain pathways that interfere with previously intact abilities.

The causes of written speech disorders can be multifaceted. Firstly, the lack of theoretical and practical knowledge necessary for the development of writing and reading skills in primary school students has an impact. Secondly, the methodological approaches of teachers and developments aimed at the development of written speech in the lesson process may not be sufficiently provided. Also important are the issues of individual approaches of teachers, motivation, and the creation of a positive environment for the correct teaching of written speech to students.

In addition, there are physiological causes of written speech disorders. Changes in brain activity in students, such as problems with concentration and memory, affect the formation of written speech. These changes are being studied from a neuropedagogical and psychological perspective. Weak attention or short-term memory problems can lead to difficulties in accurately expressing students in written speech. Also, the level of development of cognitive processes can cause disorders in written speech.

LITERATURE ANALYSIS AND METHODOLOGY

Dysgraphia is a partially specific disorder of the writing process. Writing reflects a complex form of speech activity, a multi-level process. In line with this, Graham (2018) notes that writing is a challenging and complex process that requires extensive instructional time to achieve mastery. Various analyzers are involved in it: speech auditory, speech motor, input, and general motor. In the process of recording, a close connection and interconnection is established between them. The structure of this process depends on the stage of mastering writing skills, the purpose and nature of writing. Writing is closely connected with the process of oral speech and is carried out on the basis of its high level of development. As a disorder of written expression, dysgraphia can impair handwriting, spelling, and higher-level writing organization (Chung & Patel, 2015).

The first studies of reading and writing disorders are associated with the name of the German scientist, Professor Adolf Kussmaul (1822-1902). Based on his continuous observations and research, the scientist

provides detailed information about more than ten speech disorders in his medical treatise on speech disorders published in 1877, and the scientist calls this disorder "word blindness."

The development of the doctrine of anomalies in reading and writing in Russia is inextricably linked with the names of S.S.Mnuhin, R.A.Tkachev, M.E.Khvattsev, R.E.Levina, A.R.Luria, O.A.Tokareva, L.F.Spirova, A.N.Korneva, I.N.Sadovnikova. Throughout the history of the development of the theory of dysgraphia, a comprehensive approach to the problem has emerged through the study of medical (S.S.Mnuxin, R.A.Tkachev, A.N.Kornev), psychophysiological (O.A.Tokareva, et al.), psycholinguistic and psychological-pedagogical (R.E.Levina, R.I.Lalaeva, et al.), linguistic (V.K.Orfinskaya) aspects of this complex speech disorder.

Figure 1
(Speech therapy classification of dysgraphia)

Leading defect	**Khvatsev (1959)**	**Tokareva (1969)**	**Lalaeva (1989)**	**Korneev (1997)**
pronounce sound	graphic speech disorder	-	acoustic-articulation	paralellism
phonemic perception	phonemic	acoustic	phoneme recognition dysgraphia	phonemic
Metallinguistic operations for analyzing sounds and the syllable structure of words and sentences	dysgraphia due to impaired pronunciation rhythm (sound analysis or syllable structure of a word)	-	language analysis and synthesis	language analysis and synthesis
lexico-grammatical structure	-	-	agrammatic	-
visual gnosis	optical	optical	optical	-
motion functions	-	mobile	-	dyspractic

A.R. Luria, in his book "Essays on the Psychophysiology of Writing," distinguishes the following operations of writing.

Writing begins with the awakening of emotions, causes, and tasks. A person knows that they are writing for the purpose of recording their thoughts, storing information for a certain period, delivering it to another person, motivating someone to take action, etc. A person mentally creates a plan for the content of a written statement, a program of thoughts, and a sequence of thoughts. In this case, the initial thought depends on the specific structure of the sentence. In the process of written presentation, the writer must observe the order of writing the sentence and orient themselves according to the written and next words to be written. Every sentence that needs to be written is divided into words, so there is a certain delimitation between the words in the writing.

High, low, and internal pronunciation play a significant role in determining the nature of sounds and their sequence within a word. Many researchers have commented on the role of pronunciation in the writing process. For example, L.K. Nazarova conducted the following experiment with 1st-grade children. In the first stage of the experiment, they are given a familiar text for writing. In the second stage, they are given an unspoken text with difficult content: during the writing process, the children bit their little tongues or opened their mouths. In such cases, they made more mistakes than in ordinary letters.

O.A.Tokareva distinguishes 3 types of dysgraphia: acoustic, optical, motor. In

acoustic dysgraphia, hearing impairment and insufficient development of sound analysis and synthesis are observed. Optical dysgraphia is associated with an unstable visual representation. In this case, the person does not understand certain letters, these letters do not correspond to the sound in pronunciation. Motor dysgraphia is characterized by difficult hand movements during writing, disruption of connections in motor images, combined with sound and visual images of words.

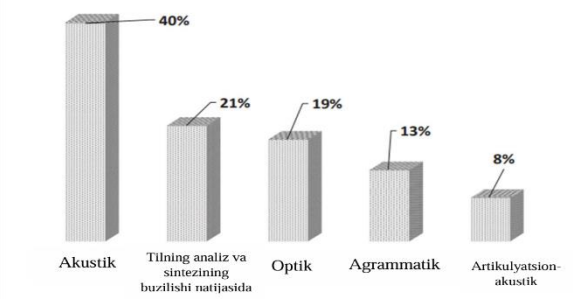
Among the leading scientists and scholars of our country, M.Y.Ayupova, G.B.Shoumarov, R.Shomahmudova, A.Berdieva, O.U.Ablaev, D.S.Kakharova, U.Y.Fayzieva, F.U.Kadyrova studied these issues from a theoretical point of view.

RESULTS AND DISCUSSION

Prevention of reading and writing impairments is carried out during preschool age. This work is especially important for children with speech impairments, children with delayed mental development, children with intellectual disabilities, and children with other anomalies. The main tasks are the formation of spatial vision, attention, memory, analytical-synthetic activity, language analysis, the development of the lexical and grammatical aspects of speech, and the elimination of shortcomings in oral speech.

The results of the conducted research showed that primary school students'
In 57%, dysgraphia was detected. The following diagram shows the prevalence of dysgraphia in the primary grades of secondary school No. 2 of the city of Chirchik (Fig. 2).

Figure 2
(Frequency of dysgraphia in elementary school)



Dysgraphia can negatively affect the reading and writing skills of primary school students. However, with the help of advanced pedagogical approaches and special therapy methods, this problem can be eliminated. The importance of effectively eliminating dysgraphia in the educational process is very great, and this process significantly improves not only the academic results of students, but also their personal and social development.

Eliminating dysgraphia significantly improves students' writing skills. The development of writing skills allows for the consolidation of students' clear understanding and skills in reading and writing. This, in turn, increases students' success in mathematics and other subjects, since the study of written expression is closely related to cognitive processes - memorization, analysis, and logical thinking. eliminating dysgraphia increases students' self-confidence. Difficulties and misunderstandings in writing often lead to low self-esteem and fear of reading and writing in students.

The elimination of dysgraphia also increases the effectiveness of general education. Improving students' writing skills in the educational process creates a solid foundation for their successful learning not only in elementary school but also in subsequent stages. In addition to this, students' mental health and stress levels also improve, as success in writing allows students to feel comfortable and psychologically stable.

Many scientists define dysgraphia as a partial impairment of the writing process, manifested by systematic, frequent specific errors. Dysgraphia is not only a pedagogical, but also a psychological, social, and clinical problem. According to the International Classification of Diseases, medical statistics do not distinguish it as a separate pathology, but are combined under the general name "specific disorders in the formation of necessary skills in school education." Such anomalies, in addition to dysgraphia, include dyslexia, dyspraxia, dyscalculia, and other educational defects. The definition of these disorders as specific is due to the fact that

they are not associated with intellectual disability, but have a specific mechanism. Educational shortcomings have a number of common features. These include the presence of signs of brain dysfunction, imbalance in the development of individual cognitive functions, persistent difficulties in acquiring certain educational and socially significant skills (reading, writing, calculation, speaking, etc.). In the literature on speech therapy, pedagogy, psycholinguistics, and medicine, the term "dysgraphia" is used to denote serious difficulties in mastering writing and written speech activity. Despite the fact that dysgraphia has been thoroughly studied in the field of neurolinguistics, in many respects it is still a speech pathology that can be the object of research. This state of children's written speech began to be studied in depth relatively later - from the end of the 19th century. In some scientific literature, there are cases of equating the concept of dysgraphia with the phenomena of dyslexia and dysorphography. There is also confusion in the approach to the concepts of dysgraphia and agraphia: "Acquired dysgraphia occurs when a certain part of the brain area is disrupted as a result of an event (including brain injury, neurological disease, or degenerative conditions), resulting in the loss of previously acquired skills." In general, dysorphography represents difficulties associated with the formation of spelling skills. That is, the student does not master spelling rules well or, despite having mastered them, lacks the ability to apply them in practice, and writes the words in the sentence with spelling errors. Chung & Patel (2015) dysgraphia can manifest as difficulty writing at any level, including letter illegibility, slow rate of writing, difficulty spelling, and problems of syntax and composition. In dysgraphia, the manifestation of errors in the child's writing is not the result of poor study of spelling rules, these are "specific" errors, the occurrence of which can be explained only from a psycholinguistic point of view. It is also incorrect to apply the concepts of dyslexia and dysgraphia to the same pathology. In the speech therapy dictionary created by Seliverstov, dyslexia is defined as a partial disorder of reading activity manifested in repeated errors of a constant nature, and this interpretation of the term, in our opinion, is also correct. Of course, the existence of intersection points of dysgraphia and dyslexia cannot be denied: these pathologies are rare in their pure form. Often, impaired writing negatively affects the process of reading the text, as well as the perception of the content of the text. In children who make gross grammatical errors in writing, deviations from the established norms are also observed in the learning process.

CONCLUSION

We can conclude that revealing the psychological characteristics of students that cause the manifestation and progressive dynamics of dysgraphia requires continuous observation and theoretical justification. Since the problem of dysgraphia is extremely complex and multifaceted, it is necessary to study it systematically, taking into account the interconnectedness of all areas of the brain and forms of mental activity. Dysgraphia negatively affects a child's written speech activity, which can cause difficulties they may encounter in finding their place in an increasingly complex sociocultural society. The elimination of dysgraphia in primary education has a positive impact on the social, educational, and emotional development of students. Pedagogical measures implemented to combat dysgraphia are important in ensuring students' success in education and readiness for future life.

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