# TECHNIQUES FOR THE CORRECTION OF LANGUAGE DISORDERS AMONG CHILDREN WITH PSYCHO-PHYSICAL DEVELOPMENT PECULIARITIES

[a]LARYSA ZHURAVLOVA, [b]NATALIIA LESHCHII, [c]ANNA ZAMSHA, [d]OLHA BABIAK, [e]YEVHENIIA LYNDINA, [f]OKSANA VOROSHCHUK

*[a]Bohdan Khmelnytsky Melitopol State Pedagogical University, Melitopol, Ukraine, [b]South Ukrainian National Pedagogical University named after K.D. Ushinsky, Odesa, Ukraine, [c,d]National Academy of Educational Sciences of Ukraine, Kyiv, Ukraine, [e]Berdyansk State Pedagogical University, Berdyansk, Ukraine, Vasyl Stefanyk Precarpathian National University, Ivano-Frankivsk, Ukraine*
*email: [a]zhuravlova_larysa@mdpu.org.ua, [b]lleschiy@ukr.net, [c]zamsha_anna@ukr.net, [d]olga-babjak@ukr.net, [e]evgeniyalyndina.bgpu@gmail.com, [f]oksanavorochshuk@gmail.com*

Abstract: The relevance of the research suggests the need to find out professional ways to help children with features of psychophysical development in the correction of speech. The purpose of this research is to investigate the grounds for the correction of speech development disorders of children with features of psychophysical development and to provide methodological recommendations on the ways of their correction. The practical significance of the study was the presentation of the links between the grounds for elimination and the ways of correction of speech disorders of children with psychophysical developmental peculiarities.

Keywords: Correction of Disorders, Complexity of Communication, Methods of Speech Disorders Correction, Psychophysical Development, Speech Development.

## 1 Introduction

The education industry is now developing a broad paradigm of inclusive work as different social and biological bases become determinant in the birth of children with special educational needs. The problems of inclusion of such children may be different, but according to the world educational-scientific community, the greatest attention should be paid to the communicative abilities of such children.

The development of children with psychophysical features is rather slow compared to normal children. Children with special needs have their own developmental strengths and weaknesses, which affects their social interaction. The first manifestation of this interaction is the communicative ability to respond to external stimuli. On this basis, children with special needs may need more time to develop speech. Teachers who deal with such students need to clearly distinguish the grounds for speech correction in accordance with the medical and educational conclusion.

Therefore, on this basis we understand the importance and need to clarify professional ways of helping children with special needs to correct speech in order to ensure the provision of quality educational services.

## 2 Literature Review

The communication with people is one of the first and main obstacles for children with autism; it is a basic need in them to be vigilant about belonging speech education. Moreover, effective language instruction is important for the proper development of special children's language skills, inadequate comprehension, inadequate classroom environments, lack of awareness, and insufficient language training have created a great challenge for teachers when teaching language to children with special needs. The research has also shown that special instruction, a well-designed classroom, regular speech therapy, and changing attitudes minimize challenges and make language instruction more effective (Yesmin et al., 2020; Shrawankar, 2021; Stewart, 2010; Syabryuk, 2018). Padurean (2014) believes that teachers can teach and remediate the speech of children with special needs at the same time as other children, although they are sometimes reluctant to teach children with special educational needs in general education.

Reading comprehension with a focus on the cognitive skills and processes that are involved in text comprehension are especially useful for children with intellectual disabilities (Randi et al., 2010). Chen's (2021) research combines knowledge of linguistics, a study of the innate embodied interactions of autistic individuals, and a mixed-methodology approach to the problem. Clinically, autism is characterized by difficulties in social communication and frequent, intense production of rhythmic motor movement (stimulation). The dominance of spoken language in everyday social interaction can exclude these children from active social participants.

When understanding children with special needs or children outside, it is necessary to understand the types of disabilities (children with special needs) and the consequences that occur for them, including in the communication dimension (Hande et al., 2020). Maxmudjonovna (2020) describes in detail the specifics of speech correction of children with intellectual disabilities. In addition, special attention is paid to the organization of remedial education of children with intellectual disabilities in cooperation with special preschool institutions and families of children with intellectual disabilities. Kozhushko et al. (2018) confirm the connection between cortical mechanisms of speech disorders and other mental processes caused by perinatal CNS disorders.

Digital support technologies for children on the autism spectrum often offer predetermined content for modeling, communicating, and learning. However, children may not relate to the content, and it may not align with their own interests and motivations. Wilson et al. (2018) explore the use of MyWord, an interest-based, child-driven technology, as a research probe. This audio-visual dictionary app supports a child to create their own personalized catalog of favorite words, images, and audio over time. Vocabulary creation including personal choice processes, representation of own interests and interests, and dynamic activities and play. The use of personal and contextually relevant words enhances interaction and self-expression. Yarychev (2020) examines the specifics of remedial and developmental work on the formation of communicative skills in children with intellectual disabilities (Kyunghwa, 2021). Children with intellectual disabilities are characterized by a lack of need to establish relationships with other people. Important verbal methods of teaching in lessons, storytelling, conversation, explanation, work with printed texts. They are all directly relevant to the speech development of students with intellectual disabilities. Stengel (2008) studied the links between speech and schizophrenic disorders.

According to Ager et al. (2021), spouses where a person abuses alcohol have children with an increased propensity for psychophysiological disorders accompanied by speech delay. Thus, the issue of correction of speech development disorders in children with features of psychophysical development inevitably entailed educational-medical and linguistic research. The aim of the study was to investigate the grounds for the correction of speech development disorders in children with psychophysical development and provide guidelines for ways to correct them.

## 3 Materials and research methods

The methodological background is based on sociological and statistical methods. The first group of methods, among which the sociological survey was selected, and the second group, among which the ranking method was selected, allowed to reveal the components of the method of correction of speech development disorders of children with psychophysical developmental peculiarities by type: with hearing impairments (deaf, deaf-blind, with reduced hearing) with visual impairments (blind, blinded, with reduced vision) with intellectual disorders (mentally retarded, with mental retardation); with speech disorders; with musculoskeletal disorders; with a complex structure of disorders

(mentally retarded blind or deaf; deaf-blind and others); with emotional-volitional disorders and children with autism.

The study was conducted among 180 educators (Ukraine) (random sampling from sending emails to registered users of professional inclusive platforms) using Google-forms platform, who work with education applicants with various speech development disorders that require pedagogical correction. Respondents, based on their own experience, answered various types of questions in order to establish the grounds for the correction of speech disorders and effective techniques tested in pedagogical activities.

**5 Results**

The first question asked to reveal the grounds for the correction of speech development of children with hearing impairments (deaf, deaf-blind, hearing-impaired). The main among a number of proposed respondents chose: imperfect hearing function (56%), poor assimilation of word meaning (78%); insufficient vocabulary (90%); poor understanding of speech (100%); lack of phonemic ideas (39%); underdevelopment of the grammar side of speech development (49%); lack of syntactic links of words (45%); specific improper rhythmic-intonation formulation of speech (98%). The results are presented in Fig. 1.

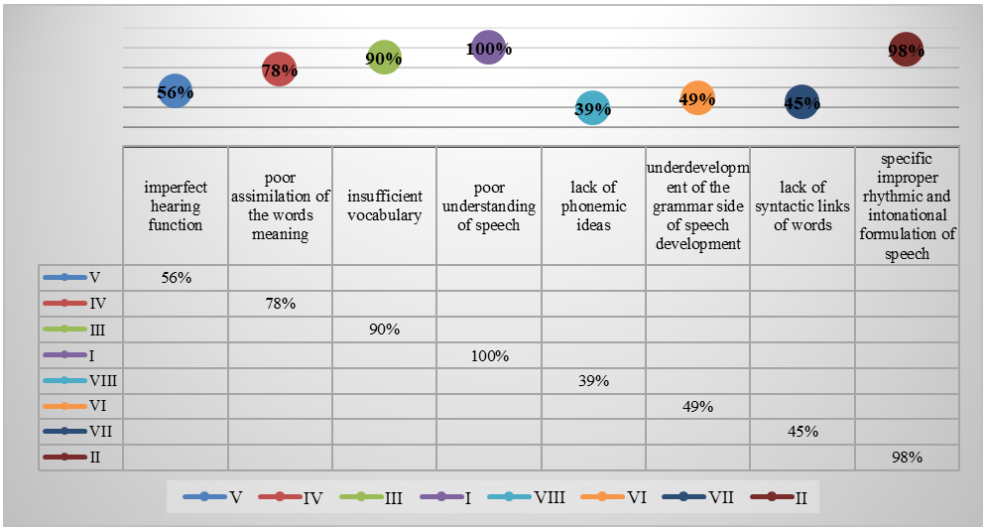


*Figure 1 – The reasons for correcting speech development disorders for children with hearing disorder*

The second question suggested revealing the grounds for correction of speech development disorders of children with visual impairments (blind, blinded, with reduced vision). Among the main grounds were highlighted: inability to independently construct monological statements due to lack of visual pattern (100%); inability to express thoughts and feelings meaningfully, stylistically accurately and intonationally expressively (52%); inability to retell what they read or heard (48%); underdevelopment of the planning function of speech (69%); underdevelopment of speech formation (89%); weakened compensatory meaning of broadcasting (100%); delayed processes of forming and analyzing observation (100%); dysgraphia, dyslexia (100%). The results are presented in Fig. 2.

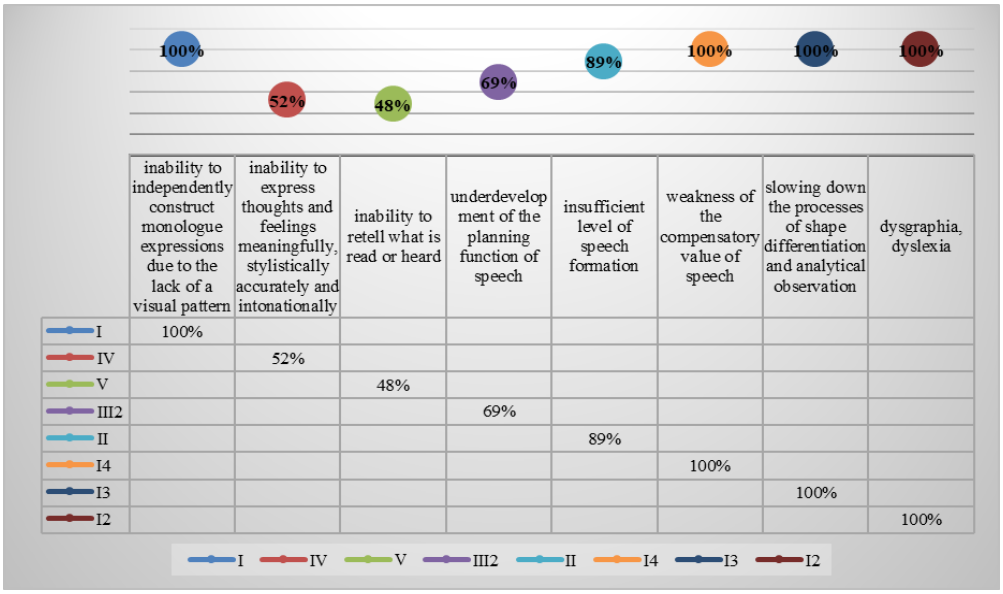


*Figure 2 – The reasons for correcting speech development disorders for children with visual disorders*

The third question asked to reveal the grounds for correction of speech development disorders of children with intellectual disabilities (mentally retarded, with mental retardation). Among the main grounds were violation of vocalization (87%); violations of the tempo and fluency of speech (59%); violations of sound production (36%); violation of intonation (17%).

The fourth question asked to reveal the grounds for correction of speech disorders in children with pure speech disorders. Among the most typical diagnoses identified were aphasia (77%), dysarthria (81%), rhinolalia (42%), and stuttering (98%).

The next question suggested revealing the grounds for correction of speech development disorders of children with musculoskeletal disorders. Among the main grounds were characterized by insufficiency of integrative activity of the speech-motor analyzer (58%); poor development of understanding of addressed speech (79%); activation of own speech activity (95%); formation of all forms of nonverbal communication (99%).

The sixth question suggested revealing the grounds for correction of speech development disorders of children with a complex structure of disorders (mentally retarded blind or deaf; deaf-blind, etc.). Among the main grounds were identified difficulties in speech communication (89%), social infantilism (54%), unformed social and domestic competence (38%), disorders of emotional development (41%), behavior disorders (39%), unclear ideas about the behavior system (46%), general mental development disorders, screaming, breakdowns (98%). The results are presented in Fig. 3.

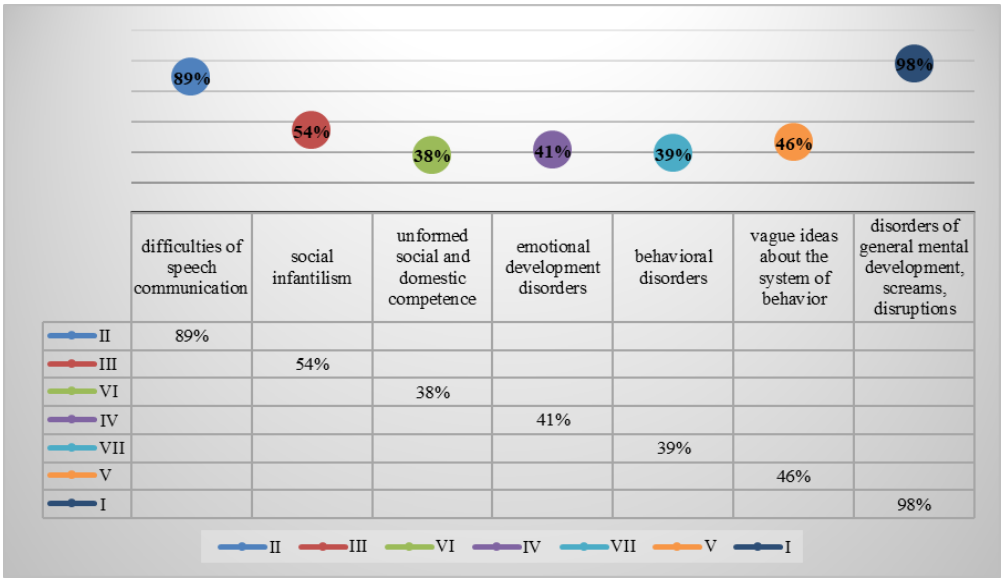


*Figure 3 – The reasons for correcting speech development disorders for children with a complex structure of disorders*
MSS – maximum segment size

The seventh question suggested revealing the grounds for correcting speech development disorders in children with emotional-volitional disorders and children with autism. Among the main grounds were difficulty in forming skills to recognize the emotions of others and their own (93%); difficulty in expressing their experiences and feelings (97%); and difficulty in expressing praise and accepting it (43%).

The condition of the last question (conclusion for the recommendation) concerned the comparison of the grounds for correction and world methods of correction of disorders of speech development, which teachers use in their work. The results were distributed as follows (scale translation used). Eight out of ten respondents believe that for children with hearing impairments it is necessary to use object recognition in visual instruction. Six out of ten educators are convinced that for children with visual impairments, fairy-tale therapy can be used to correct speech. Seven out of ten participants recommend Co-Design Beyond Words techniques for working with children with intellectual disabilities. All educators tend to believe that correcting pure speech impairments will be successful with the use of speech digital therapy, fairy-tale therapy. Half of the respondents suggest the use of insect therapy, specialized automatic toys to work with movement disorders. 1/3 of educators address the complex structure of impairments with the help of 4-D model of images. Listeners with emotional-volitional disturbances and children with autism, according to nine out of ten respondents, should participate in automatic remediation sessions. The results are shown in Fig. 4.

## 6 Discussion

In the study, respondents indicated that Co-Design Beyond Words (CDBW) is an effective method in working with children with autism spectrum disorders. Chen (2021) as an approach that combines existing Co-Design methods with child-centered and interest-based speech therapy methods also points it out. Researchers emphasize the rich details that can be conveyed in the moment, recognizing instances such as joint attention, turn and imitation. There is a co-created playful prototype, TangiBall, that uses three iterative phases of CDBW; the foundation phase (preparing for interaction), the interaction phase (designing and reflecting in the moment), and the display phase (reflecting on the action). In this way, children experience elements of interaction, micro instances of design in which they can communicate meanings beyond words, for their actions, interactions, and focuses of attention. These moments of interaction provide insight into design, shape the direction of design, and manifest unique strengths, interests, and abilities.

In global speech correction practice, Terbeh & Zrigui (2018) also suggest the use of sound automatic corrections as a game to help children understand incorrectly adopted phonemes for speech correction. Therefore, the authors Krasovskaya & Spiridonchenko (2020) believe that the use of fairy tale material in speech correction classes for children with general underdevelopment significantly increases the level of development of cohesion of the statement of preschool children and forms the idea of the basic principles of construction of the statement. Ukrainian inclusive teachers noted the validity of these assertions in their responses.

Kristanto et al.'s (2019) novel and little-studied attempt (2019) to develop a program to help educate children with mental disabilities through object recognition in visual learning. The app would have built-in features such as voicing the name of an object would help children with mental disorders know and remember how it is pronounced. Almost all smart-technology families, according to respondents, can afford such apps now. The effectiveness of such programs is confirmed not only by Ukrainian teachers, but also by parents of children with SEN (special educational needs), see Fig. 4.

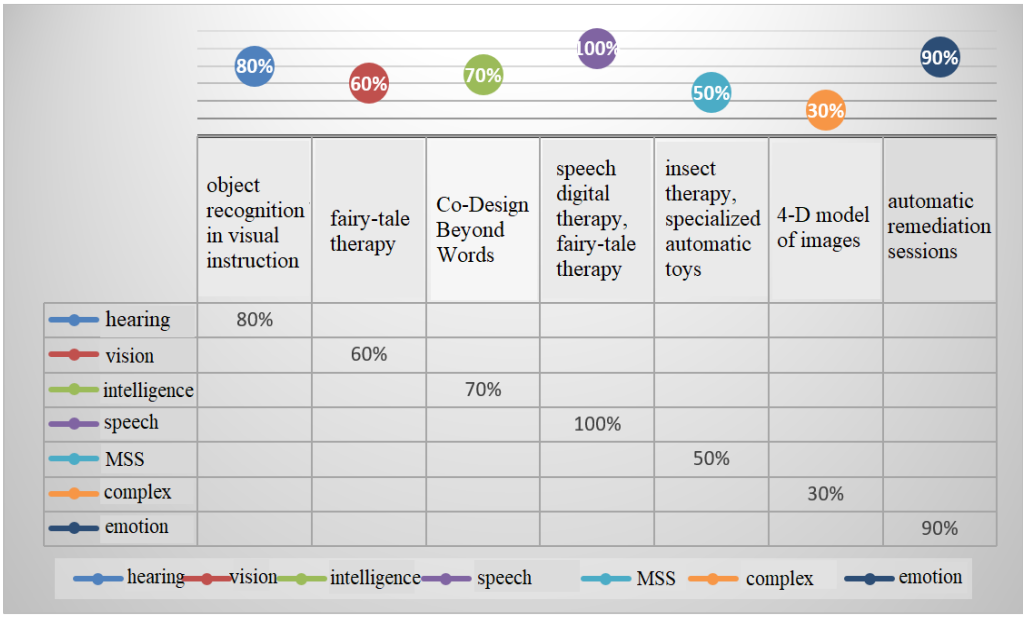


*Figure 4 – Techniques for speech disorders correcting*

According to our respondents, quite successful, but little researched is the involvement of insect therapy, considered by Young-Soon et al. (2016). Children who participated in this program demonstrated significant improvement in their emotional health and began to use insect names in their speech to explain certain processes.

Some researchers make attempts to analyze the effectiveness of the traditional procedure of diagnosing the speech development of elementary school children with autism spectrum disorder using the content of speech diagnosis, the timing of its implementation, diagnostic techniques (Seroshtanova et al., 2021). According to Ahsin et al. (2019), speech therapy is an alternative to overcoming the problem of speech disorders. One educational innovation that can be implemented is the creation of speech therapy tools for children with special needs (digital cards, alphabet cards, body part cards, daily activity cards, place sequence cards, daily activity order sequences, and puppets). These techniques are now widely used by educators in Ukraine. Azhari et al, 2020 propose to implement speech correction using a 4-D model consisting of four phases; defining, designing, developing and disseminating the methodology and the results of its implementation. Ukrainian educators are becoming familiar with such programs in online access, so they are also applying them in their work.

An absolute novelty for the respondents is the proposal of Salgado et al, (2020) recommending the introduction of a special toy that can produce sound and visual sensations (reaction, memory game and multi-player game) in the speech correction methodology. It is also an important tool for therapists, as all play plays are tracked and recorded in a database to be filtered and presented using statistical methodologies.

**7 Conclusion**

Based on the conducted sociological survey, we understand that in order to correct speech development disorders in children with different psychophysical features, it is necessary to adhere to a comprehensive, systematic method of assistance. Thus, the study offers an analysis of the summary result and presents the recommended ways of correcting speech development disorders in children with different psychophysical features (see Table 1).

Table 1: Ways to correct speech development disorders for children with psychophysical development peculiarities

| Violation | Recommended ways of interaction | Recommended ways to fix it |
|---|---|---|
| With hearing disabilities (deaf, deaf-blind, hearing deficiency). | Visual, tactile | object recognition in visual training |
| With visual impairments (blind, blinded, visually impaired) | Tactile, kinesthetic | fairy-tale therapy |
| With intellectual disabilities (mentally retarded, with mental retardation) | Visual, tactile, mechanical | Co-Design Beyond Words |
| With speech disorders | Audial | speech digital therapy, fairy-tale therapy |
| With disorders of the musculoskeletal system; | Visual, tactile, mechanical, audial | insect therapy, specialized automatic toys |
| With a complex structure of disorders | Comprehensive (selective) | 4-D model images |

| | | |
|---|---|---|
| (the mentally retarded who are blind or deaf; the deaf-blind, etc.) | | |
| With emotional-volitional disorders and children with autism. | According to medical recommendations | automatic corrections |

So, on the basis of the research carried out, it can be argued that a set of interrelated ways of helping children to correct speech based on various psychophysical features is a comprehensive implementation of the child's right to inclusive education.

An important direction for further scientific research will be an attempt to detail the systematic features of work with each individual disability.

The practical value of the study was to present the links between the grounds for elimination and methods of correction of speech disorders of children with psychophysical developmental peculiarities.

**Literature:**


1. Ager, R., Adams, K., & Yoshioka, M. (2021). *Mental Disorders and Distress in Marriages with a Problem Drinking Husban.* Treatment Quarterly, 39. https://doi.org/10.1080/07347324.2021.1872460
2. Ahsin, M., Ristiyani, R., & Lusianti, D. (2019). *Making speech therapy aids for children with special needs.* Proceeding of the 2nd International Conference Education Culture and Technology, ICONECT, 1, 1-5. https://doi.org/10.4108/eai.20-8-2019.2288162
3. Azhari, B., Yacoeb, M., & Irfan, A. (2020). *Learning for children with special needs of dyscalculia.* Jurnal Ilmiah Peuradeun, 8, 475-496. https://doi.org/10.26811/peuradeun.v8i3.550
4. Chen, R. (2021). *Embodied design for non-speaking Autistic children.* The emergence of rhythmical joint action, 648-651. https://doi.org/10.1145/3459990.3463396
5. Hande, M., Burcu, F., & Mertz, H. (2020). *Children with special needs in school activities.* Journal Educational Verkenning, 1, 8-12. https://doi.org/10.48173/jev.v1i2.53
6. Katragadda, N., Teja, V., & Mahendra, T. (2021). *Oral health status of special children in tribal population of Southern India.* International Journal of Research and Review, 8, 226-231. https://doi.org/10.52403/ijrr.20210627
7. Kozhushko, N. & Evdokimov, S. & Matveev, Yu. (2018). *Neurophysiological Markers of Abnormal Development in Children with Mental Disorders.* Human Physiology, 44, 202-207. https://doi.org/10.1134/S0362119718020111
8. Krasovskaya, E. & Spiridonchenko, I. (2020). *Fairy tale as a means of speech correction in children with OHP.* Scientific development trends and education. https://doi.org/10.18411/lj-02-2020-152
9. Kristanto, A. Wibawa, S., Saputra, F., Namyu, U., Haessel, B., Kristiadi, D., Anwar, N., Spits, W. (2019). *Visual learning as Object Recognition to Recognize Image for Mental Disorder Children,* IEEE International Conference on Engineering, Technology and Education (TALE), 1-6. https://doi.org/10.1109/TALE48000.2019.9226028
10. Martens, M. Rinnert, G., & Andersen, C. (2018). *Child-centered design: developing an inclusive letter writing app.* Frontiers in Psychology, 9, 1-3. https://doi.org/10.3389/fpsyg.2018.02277
11. Maxmudjonovna, M. (2020). *Characteristics of speech correction of children with intellectual insufficiency.* ACADEMICIA: An International Multidisciplinary Research Journal, 10, 291-293. https://doi.org/10.5958/2249-7137.2020.01335.X
12. Padurean, A. (2014). Teaching English language to children with special educational needs. TEM Journal, 3. https://www.researchgate.net/publication/301682674_Teaching_English_Language_to_Children_with_Special_Educational_Needs
13. Randi, J., Newman, T., & Grigorenko, E. (2010). *Teaching children with autism to read for meaning: challenges and possibilities.* Journal of autism and developmental disorders, 40, 890-902. https://doi.org/10.1007/s10803-010-0938-6
14. Salgado, J., Soares, F., & Carvalho, V. (2020). *Didactic toy for children with special needs.* technology, innovation, entrepreneurship and education, 73-79. https://doi.org/10.1007/978-3-030-40180-1_8
15. Seroshtanova, D., Sargsyan, R., & Mozhnaya, E. (2021). *Problems of speech diagnostics in children with autism spectrum disorder.* The world of academia: Culture, Education, 15-20. https://doi.org/10.18522/2658-6983-2021-1-15-20
16. Shrawankar, U. (2021). *Special children behaviour pattern and their teaching strategies.* International Journal of Knowledge and Systems Science, 12, 38-51. https://doi.org/10.4018/IJKSS.2021040103
17. Stengel, E. (2008). *Speech Disorders and Mental Disorders.* Ciba Foundation Symposium - Disorders of Language, 285 – 298. https://doi.org/10.1002/9780470715321.ch16
18. Stewart, M.S.L.. (2010). *Language Development in children with special needs.* International Encyclopedia of Education, 745-751. https://doi.org/10.1016/B978-0-08-044894-7.01127-1
19. Syabryuk, N. (2018). *The psychological and physiological features of children with mental disorders.* Science and education: new time, 139-142. https://doi.org/10.12737/article_5bc59a573f02e6.79946543
20. Terbeh, N., & Zrigui, M. (2018). *A Robust algorithm for pathological-speech correction.* Computational Linguistics, 341-351. https://doi.org/10.1007/978-981-10-8438-6_27
21. Wilson, C., Brereton, M., Ploderer, B., & Sitbon, L. (2019). *Co-Design beyond words: 'moments of interaction' with minimally-verbal children on the autism spectrum.* CHI '19: Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems, 1-15. https://doi.org/10.1145/3290605.3300251
22. Wilson, C., Brereton, M., Ploderer, B. & Sitbon, L. (2018). *MyWord: enhancing engagement, interaction and self-expression with minimally-verbal children on the autism spectrum through a personal audio-visual dictionary.* the 17th ACM Conference, 106-118. https://doi.org/10.1145/3202185.3202755
23. Yarychev, M. (2020). *Methods of pedagogical work with «special» children.* Socio-economic and humanitarian sciences: a collection of selected articles based on the materials of the International Scientific Conference, 34-36. https://doi.org/10.37539 / SEH290.2020.77.32.010
24. Yesmin, Q., Ullah, S., & Khan, M. (2020). *Teaching language to the special children: challenges and possibilities.* EPRA International Journal of Multidisciplinary Research (IJMR), 406-410. https://doi.org/10.36713/epra4479
25. Young-Soon, J. et al. (2016). *Effects of an insect-mediated mental healthcare program for mentally disordered children.* Entomological Research, 46, https://doi.org/10.1111/1748-5967.12149


**Primary Paper Section:** A

**Secondary Paper Section:** FG