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SPEECH DEVELOPMENT OF PRESCHOOLERS WITH ASD BY MEANS OF DIDACTIC MAPS

Annotation. *The relevance of this article is due to the interests of the scientific and practical community to the problem of speech development in pre-school children with autistic spectrum disorder (ASD) using various methods, tools and techniques. The article is aimed at uncovering and visually showing the results of experimental work by means of methods of didactic maps (pictogram) to develop speech of pre-school children with ASD. The authors tested the program of speech development by means of didactic maps (pictogram) with children of pre-school age with ASD. The study was based on a theoretical analysis that included historical, comparative and systemic analysis; the experimental part of the research was defined by three (observation, formative and controlling) stages of experiment with the application of empirical methods (observation, questionnaires, testing). The results of the research work showed that preschool children with ASD had issues in the sphere of communication with others, which affected oral communication. This article is intended for researchers in the field of science and practising professionals both psychologists and defectologists engaged in speech development problems of pre-school children with ASD.*

Keywords: *autism spectrum disorder, speech development, communication, pictograms, preschool age, children with ASD.*

Introduction

In modern society, there is an increasing interest in the topic of corrective pedagogical assistance for children with autism spectrum disorders (hereinafter – ASD) and their families. On the one hand, this is due to the increase in the number of children with this type of dysontogenesis, which is defined by many leading Kazakhstani and Western specialists. On the other hand, the issue becomes significant as a result of changes in the educational system, which open up opportunities for children in this category to study in the system of inclusion, developed normative legal acts, adapted educational programs for children with ASD in accordance with the new requirements of SSHE RK 2016.

Today, according to official data of ICD-11 (International Classification of Diseases,

adopted in 2009), the ASD refers to a condition characterized by a constant deficit in the ability to initiate and maintain mutual social interaction and social communication, as well as a number of limited, repetitive and inflexible behavior and interests [1]. In this case, great attention is paid to the systematization and categorization of the violation to the presence of intellectual impairments and functional language knowledge. Children with ASD show a persistent lack of social communication and interaction in different contexts. The children with ASD speech affect the inability to establish social contacts with both adults and peers, which in turn has a negative impact on the overall children's development. In this connection, the problem of developing the speech of children with ASD is relevant both in terms of theoretical and practical study.

Materials and methods

ASD (autism spectrum disorder) is a developmental disorder caused by differences in the brain. Scientists still do not know why most people with ASD have these differences. However, some people with ASD have some differences, such as a genetic disorder. The races have several causes, but most of most of them are still unknown.

As N.G. Manelis points out, ASD is a disorder of neuro-mental development that includes language disorders, communication skills and social interactions combined with limited and repetitive behavior, interests or activities [2]. Early childhood signs of ASD are common, with boys four to five times more likely to be diagnosed with ASD than girls. Each person with ASD is unique and will have different symptoms, deficits and abilities.

According to O.S. Nikolskaya, children with ASD often have nothing to distinguish them from other children, but they can speak, communicate, act and learn differently from other people. The learning, thinking and problem-solving abilities of children with ASD can range from complete learning disabilities to giftedness [3, 4].

There are developmental features of preschool children with ASD:

- does not respond to the name until the age of 1 year old;
- avoids eye contact;
- prefers to play alone;
- does not share interests with other children;
- cooperates only to achieve a necessary goal;
- does not have emotional or inappropriate facial expressions;
- does not understand the boundaries of private space;
- avoids or resists physical contact (tactile feeling) [5].

Children with autism spectrum disorders are often limited, inflexible and even intrusive in their behavior, activities and interests. According to O.I. Rybalko, symptoms may include [6]:

- repetitive body movements (hand-swinging, swinging, rotating); constant moving;
- obsessive attachment to unusual objects (elastic bands, keys, switches);
- fascination with a narrow topic of interest, sometimes using numbers or symbols (identical toys – cubes, balls or dominos, etc.);
- a strong need for uniformity, order, and routines (for example, queuing toys, following a strict schedule); frustrated by changes in their routine or environment.
- clumsy, atypical posture or strange movements;
- fascinated by the rotation of objects, moving parts or parts of toys (for example, rotation of the wheels of a race car instead of playing with the whole car);
- hyper- or hyporeactive to sensory information (for example, does not respond well to certain sounds or textures, apparent indifference to temperature or pain);
- has problems with understanding other people's feelings or talking about their own feelings.

Many children with ASD find it very difficult to learn to share with each other. It is much more than pre-school children with normal development. This is the main reason why peers do not want to communicate with preschoolers with ASD.

Let us consider the patterns of speech development in pre-school children with autism spectrum disorders. Every person with ASD has different communication skills. Some children can speak well. Others cannot speak at all or very little. Following I.A. Koneva, about 40% of children with ASD, do not talk at all. About 25 to 30 percent of children with ASD pronounce words between the ages of 12 and 18 months and then lose them. Others may speak, but only in later childhood [7].

The study of N.V. Bushueva show the regularities of speech development of preschool children with RAS and presented in the following way [8]:

- First words appear at the age of 1 year and 5 months old.
- By the age of two, the child's dictionary comprises 10–15 words.
- By three a kid begins to pronounce first meaningful sentences and phrases. The dictionary is 40–50 words.
- By the age of four the dictionary expands to 150 words. As a rule, there are agrammatisms, phonemic disorders. A child doesn't always understand the language.
- By the age of five there is a full understanding of the addressed speech. The dictionary is 250–300 words. A child speaks «reluctantly», only when necessary.
- By the age of six or seven, the dictionary of the preschooler consists of 1000 words. He can make several interconnected proposed. Monological and dialogical speech is not developed, phonemic hearing and phonemic perception are not formed, which leads to disturbed sound wear.

It should be noted that there were general patterns of speech development of preschoolers with ASD. Children with ASD develop differently, so there are children who by the age of seven speak well but avoid communicative contact; there are children who shut themselves out and it is difficult to determine their level of speech development.

According to E.N. Soldatenkova, children with ASD experience a delay in mastering expressive speech, which may hinder early differential diagnosis. E.N. Soldatenkova notes that preschoolers with ASD have difficulties to derive adjectives from nouns. There are multiple agrammatisms. A child may misuse prepositions, make mistakes in reconciling adjectives and numerals with nouns. Undifferentiated pronunciation of sounds is a characteristic feature and substitutions may be unstable [9]. Defects in pronunciation can be expressed in distortion, replacement or mixing of sounds. Pronunciation of words with complex syllabic structure becomes more stable. A child can repeat three- and four-syllable words after the adult, but distorts them in the speech stream. Along with phonetic-phonemic deficiencies, these children have also been found to have some speech disorders. Thus, with a rather diverse subject dictionary there are no words denoting some animals and birds (penguin, ostrich), plants (cactus, vine), people of different professions (photographer, telephonist, librarian), body parts (chin, eyelids, foot). The answers mix generic and species concepts (crow, goose – bird, trees – fir trees, forest – birch). The character of lexical errors is manifested in the replacement of words close to the situation (uncle paints the fence with a comb – instead of «uncle paints the fence with a brush; cat rolls the yarn – instead of «ball»), in the mixing of signs (high fence – long; brave boy – fast; old – adult grandfather).

M.M. Panasenkova studied communication skills of preschoolers with ASD. She noted that the lack of speech development of preschoolers with ASD affects their communicative contacts with their peers. Examples of communication problems related to ASDs are as follows [10]:

- a general speech defect or delayed speech development;
- repetition of words or phrases over and over again (echolalia);
- switching 1st person names to 2nd person names (e.g. pronounces «you» instead of «I»);
- answers questions unrelatedly;
- does not indicate or answer instructions;
- applies few or no movements (e.g. does not say goodbye);
- speaks evenly, in a robotic voice or tries to “sing” the words;
- does not appear in play (e.g., does not pretend to «feed a doll»);
- does not understand humor, sarcasm and ridicule.

S.V. Andreeva also points out that in the speech of children with RAS there are separate violations of the syllabic structure of words and sound fullness. Elision is

predominant, mainly in the reduction of sounds, and only in isolated cases – skipping syllables. Paraphasia is also noted, more often – permutations of sounds, less frequent syllables; a small percentage – perseveration and addition of syllables and sounds [11]. Lack of clarity, expressiveness, somewhat sluggish articulation and fuzzy diction leave the impression of general blurred speech.

Children with ASD can face difficulties to use and understand gestures, body language or tone of voice, to perceive words spoken with different inflection. For example, children with ASD can not understand what it means to wave goodbye. Facial expressions, movements and gestures may not match what they say. Children with ASD can smile by saying something sad. Some children with fairly good language skills speak like young adults without catching the “children’s language” typical of other children.

The use of pictograms in the development of speech of children of older preschool age with ASD was organized and experimental work was carried out on the basis of corrective children center «Step Forward» (Pavlodar).

Sample: 3 older pre-school children with ASD.

Let us describe the sample:

1. Marina Ye. – 5 years 6 months old. Diagnosis: ASD.

Marina can pronounce certain words, but refuses to verbalize them, which makes it much more difficult for her to communicate with both her parents and her peers.

2. Azamat R. – 6 years 2 months old. Diagnosis: ASD.

Azamat in certain periods can speak individual words. Pronounces separate simple sentences. However, if he is included into group of peers, he refuses to talk, uses only gestures.

3. Farida K. – 6 years 5 months old. Diagnosis: ASD.

Farida does not want to talk, although she can speak. In artificially created conditions, she can pronounce words and even separate sentences.

The experimental work was structured according to the following stages:

1. Constitutive stage. At this stage, diagnostic methods to determine the level of children’s coherent speech were selected and applied in a group of senior pre-schoolers with ASD. Diagnostic methods were presented to senior preschoolers with ASD in the process of individual work.

2. Formative stage. At this stage of individual corrective work with preschoolers with ASD individual classes were held using a set of selected pictograms.

3. Control stage. Diagnostic methods of the qualifying phase were applied again. The results were compared using quantitative and qualitative analysis to determine the effectiveness of the use of pictograms in the development of coherent speech of older pre-school children with ASD.

Research methods

1. N.V. Gabrish's methodology "Connected speech".

Purpose: to determine the level of development of coherent speech in children of senior pre-school age with ASD.

The elder preschooler is offered plot pictures (series) – at the affirmation stage on the topic "Autumn", at the control stage on the topic "Spring".

Mission: Tell me what you see in the pictures?

Invent a story.

The following components were assessed:

1. At the text level:

2 points – the senior preschooler made a test on the plot picture.

1 point – the text is composed, except for minor errors.

0 points – no text.

2. At the supply level:

2 points – structurally correct sentences made by senior preschoolers.

1 point – structurally mostly correct sentences made by senior preschoolers, except for minor mistakes.

0 points – the sentences are incorrect and do not correspond to the plot of pictures.

3. At the level of word phrases and words:

2 points – word phrases and words correspond to the communicative task.

1 point – word phrases and words basically correspond to the communicative task, except for two or three minor errors.

0 points – word phrases and words do not correspond to the communicative task.

The criteria for determining the level of development of coherent speech are as follows:

High score – 5-6 points.

The average is 3-4.

Low level – 0-2 points.

2. Y. Belopolova's methodology "Telephone Conversation".

The aim is to determine the level of development of a dialogue speech among children of older pre-school age with ASD.

Instruction. Preschoolers were offered the game "Telephone Conversations". In the implementation of the game process, preschoolers with ASD were monitored on the following parameters:

1. Ability to ask questions.

2. Ability to answer questions.

3. Culture of dialogue.

The rating was given for each parameter separately as follows:

2 points is for a child's dialogical speech without abnormalities.

1 point – the dialogue speech of a preschooler has insignificant deviations from the norm.

0 points – dialogical speech is not developed.

The criteria for determining the level of development of a dialogue speech in older pre-school children are as follows:

high level – 5-6 points;

average level – 3-4 points;

low score – 0-2 points.

A.V. Chulkova's methodology "Formation of communication among preschoolers".

The purpose is to determine the state of communication development among preschoolers.

Instruction: Direct communication between the experimenter and the preschooler is organized, during which the teacher conducts observation on the following parameters:

- child's initiative in communication;
- sensitivity to initiative influences of an adult;
- ability to develop a communicative situation;
- means of communication;
- speech.

The rating was given for each parameter separately as follows:

2 points is for a child's dialogical speech without abnormalities.

1 point – the dialogue speech of a preschooler has insignificant deviations from the norm.

0 points – dialogical speech is not developed.

The criteria for determining the level of development of dialogue in early pre-school children are as follows:

– high level is 9-10 points;

– average level is 4-8 points;

– low level is 0-3 points.

Thus, there is a presentation of the procedure and methodology of experimental work to determine the effectiveness of the pictograms use in speech development of children of senior pre-school age with ASD.

Results of the study

Here there is a description of the results of the observation stage. The results of the N.V. Gabrish's method "Connected speech" are given in Figure 1.

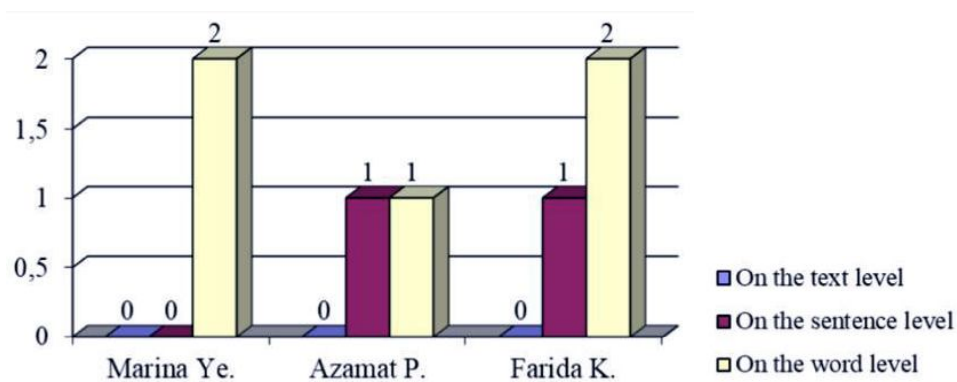


Figure 1. Results according to N.V. Gabrish’s “Connected Speech” at the observation stage (in points)

As can be seen from the data presented in Figure 1, Marina Ye. failed at both the text or the sentence level. She was not able to make even separate sentences that would correspond to the set communicative task. Marina E. was able to make 5 words and name 10 words that corresponded to the plot depicted in the pictures. At the same time, from these words and phrases she could not make sentences. Azamat R. completed 2 word phrases and named 5 words on the plot of the picture. Also with the help of the teacher, he managed to compose one simple sentence from the phrase. Farida K. made 1 phrase, named 6 words. Then with the help of the teacher it was possible to make one simple sentence.

The results of “Telephone Conversation” by Y. Belopolova are given in Figure 2.

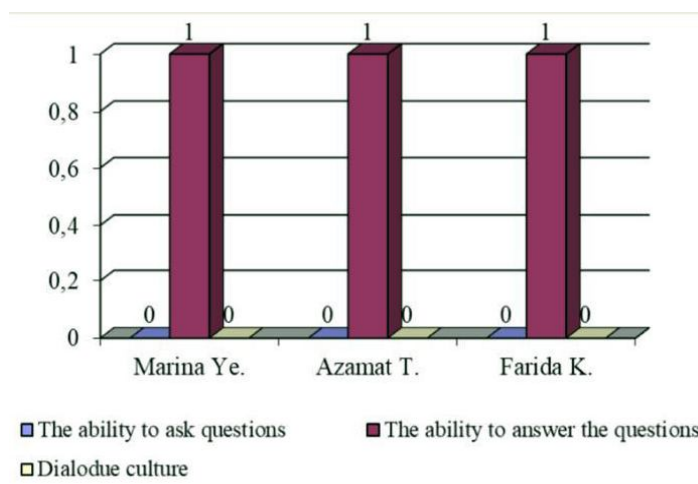


Figure 2. Results of Y. Belopolova’s “Telephone Conversation” at the observation stage

According to Figure 2, all 3 senior preschoolers with ASD do not know how to ask questions (0 points), while Marina Ye. answered 1 question, Farida K. and Azamat R. answered 2 out of 5 teacher's questions. Also, in the process of diagnostics senior preschoolers with ASD showed no ability to «talk» on the imaginary phone, so on the parameter «Culture of dialogue» they were given 0 points.

The results of the method «Formation of communication among preschoolers» by A.V. Chulkova are given in Figure 3.

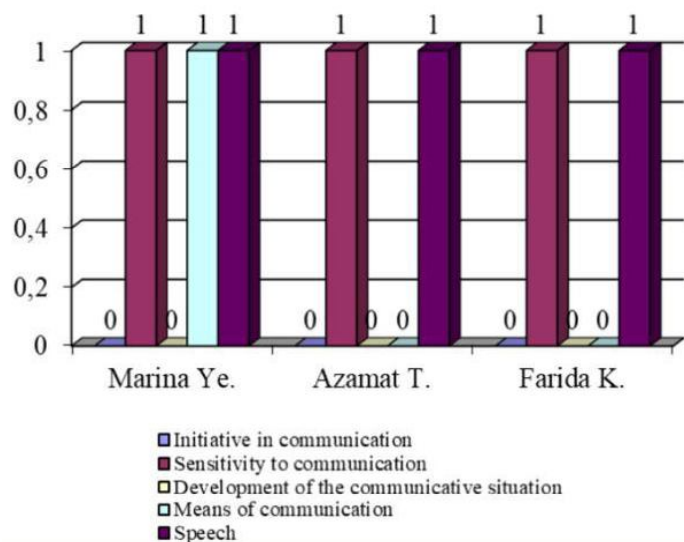


Figure 3. Results of A.V. Chulkova's method «Formation of communication among preschoolers» at the observation stage, in points

During the diagnosis, Marina Ye. received 3 points. Marina Ye. used such means of communication as gestures. This helped her improve her understanding of the teacher. Also Marina Ye. used separate words, which generally allowed the teacher to understand what the child wanted to say. Azamat R. and Farida K. used separate words in the diagnostic process, they did not use other means of communication.

Thus, analysis of the results of the observation stage of experimental work showed that senior preschoolers with ASD have developed a coherent speech only at a low level, according to N.V. Gabrish' method «Connected speech», (3 senior preschoolers with ASD – 100%). The level of formation of dialogical speech measured by Y. Belopolova's method «Telephone Conversation» is at a low level (3 senior preschoolers with ASD – 100%), the level of development of communication is at a low level. The latter was based on the method «Formation of communication among preschoolers» by A. Chulkova (3 senior pre-schoolers with ASD – 100%). Therefore, special development work is needed

to develop the speech of senior pre-schoolers with ASD. This work with older pre-school children with RAS will take place in the formative stage, where pictograms will be used in individual work on speech development.

Formative stage of the experiment on the use of pictograms.

Purpose: development of communication.

Objectives:

Educational:

- to develop the prerequisites for joint activity;
- to form the ability to imitate movements and sounds.

Correctional:

- to form the ability to eye contact during communication;
- to develop the child’s communicative manifestations as attempts to contact others (use of simple gestures, etc.);
- to develop sustainability and focus.

It is worth paying attention to the alternating performance of certain actions (to put the blocks in a box in turn – “I put the first one, the second is yours”, to hit the drum, passing the sticks). In such circumstances, it is necessary to comment actions with the words: “my turn, your turn” and apply the pictogram. Below we will give a few examples of pictograms that have been used to work with ASD children. More detailed contents of the forming experiment we will present in our subsequent works.



Pictogram “I – You”



Pictogram “Yes”



Pictogram “No”



Pictogram “Let’s Play”



Pictogram
“Drawing attention to yourself”



Pictogram
«Time to have dinner»

It will take a lot of repetition before the child understands the link between speech construction and the situation. Gradually it is worth postponing events and pronounce the instructions a little earlier so that the child learns to predict what will happen after a certain phrase. Over time, we have to reduce the number of gestures and other paralinguistic clues that accompany speech, until we notice how the child by his actions will let know that he understands only speech.

After the formative stage of the pilot work we carried out a controlling stage. Below there is a description of the results of the controlling stage. The results of the “Connected Speech” method by N.V. Gabrish are given in Figure 4.

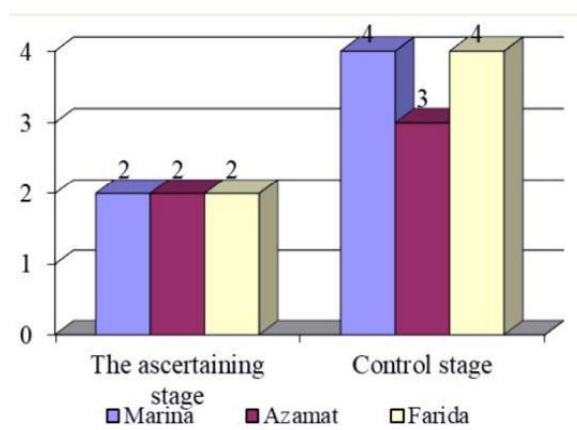


Figure 4. Results by “Connected Speech” N.V. Gabrish at the controlling stage, in points (total score)

As can be seen from the data presented in Figure 4, the performance of senior preschoolers has improved according to the methodology. At the text level, all three senior preschoolers had simple sentences. So, Marina N. and Azamat R. connected three simple sentences coherently, Farida K. has linked two sentences. At the observation stage senior preschoolers with ASD could not do this even with the help of a teacher.

The results of “Telephone Conversation” by Y. Blonde at the controlling stage are given in Figure 5.

At the controlling stage, all subjects in the process of diagnosis asked two simple questions. The questions were the same, but the form of the question was correct. Preschoolers do not yet possess the skills of writing questions – complete, detailed and on various topics, but it is already noticeable that they have learned to make elementary question sentences. According to the parameter “Culture of dialogue” senior preschoolers with ASD were also given 1 point each. Children showed considerable interest in speech activities and tried their best. This was also not observed at the observation stage.

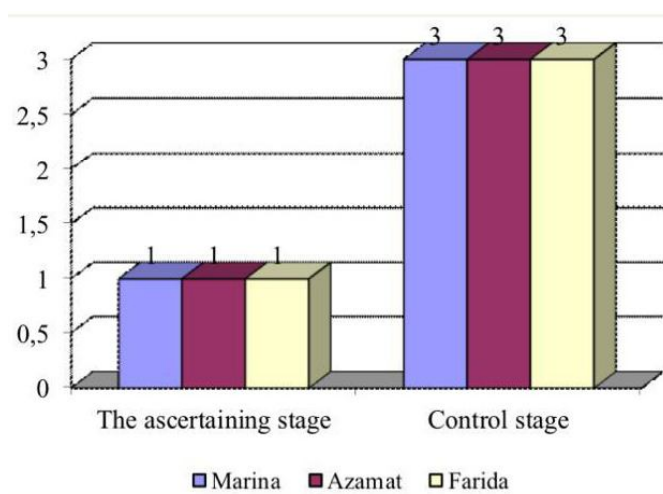


Figure 5. Results by “Telephone Conversation” by Y. Belopolova at the controlling stage, in points (total score)

The results of the method “Formation of communication among preschoolers” by A.V. Chulkova are given in Figure 6.

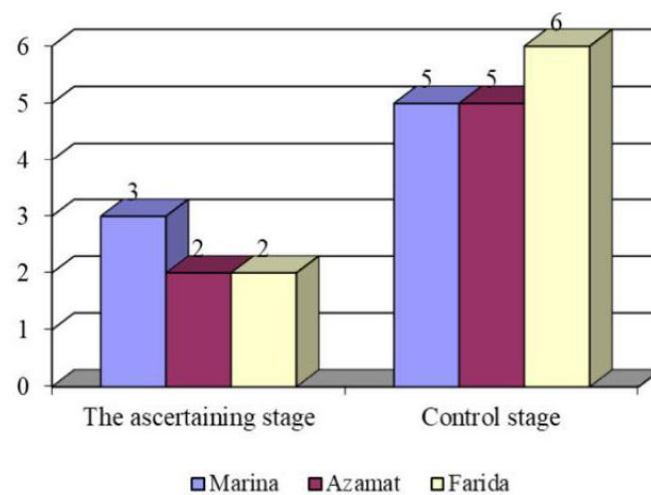


Figure 6. Results by the method “Formation of communication among preschoolers” A.V. Chulkova at the controlling stage, in points

Farida K. at the control stage showed a higher result of all children, gaining 6 points. Marina Ye. and Azamat R. have 5 points, which also corresponds to the average level.

If at the observation stage none of the subjects showed initiative for communication and communicative interaction, then at the controlling stage the children themselves wanted the teacher to interact with them: or play, or offer any games, or simply talk. However, emotionally speaking initiative is still poor. Senior preschoolers with ASD do not know how to express their emotions.

Result

1. Analysis of the observation stage results of experimental work shows that senior preschoolers with ASD have a coherent speech by N.V. Gabrish's method "Connected speech" developed only at a low level (3 senior preschoolers with ASD – 100%). The level of formation of dialogical speech by Y. Belopolova method "Telephone Conversation" is at a low level (3 senior preschoolers with ASD – 100%), the level of development of communication is by A. Chulkova method "Formation of communication at preschoolers" is at a low level (3 senior pre-schoolers with RAS – 100%).

2. In the formative stage of experimental work on speech development in older pre-school children with ASD, a set of pictograms was used in individual classes. The work was carried out in accordance with the following stages: learning the use of communication pictograms, the stage of learning to pronounce separate words and phrases, the stage of working out the skill to combine words, the stage to develop a coherent speech. Pictograms were used for each of the stages.

3. At the controlling stage, by N.V. Gabrish's method "Coherent speech" senior preschoolers with ASD possess connected speech at the middle level (3 senior preschoolers with ASD – 100%), the level of a dialogical speech formation by Y. Belopolova method "Conversation on the phone" is at the middle level (3 senior preschoolers with RAS – 100%), the level of development of communication by A.V. Chulkova's method "Formation of communication among preschoolers" is at the middle level (3 senior preschoolers with ASD – 100%). There is a positive trend in all the components of speech examined.

Thus, the results of experimental work lead to the conclusion that pictograms are an effective means of developing the speech of children of senior pre-school age with ASD, which serves as a confirmation of the hypothesis.

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**Дидактикалық кескіндер құралдарымен АСБ бар
мектеп жасына дейінгі балалардың сөйлеуін дамыту**

Аннотация. Бұл мақаланың өзектілігі әртүрлі әдістер, құралдар мен технологияларды қолдана отырып, аутистикалық спектрі (АСБ) бұзылған мектеп жасына дейінгі балаларда сөйлеуді

дамыту проблемасына ғылыми және тәжірибелік қоғамдастықтың қызығушылығының артуына байланысты. Мақаланың мақсаты – АСБ бар мектеп жасына дейінгі балалардың сөйлеуін дамыту үшін дидактикалық кескіндер (пиктограмма) әдістерімен тәжірибелік-эксперименттік жұмыстың нәтижелерін теориялық тұрғыдан ашып көрсету. Авторлар АСБ бар мектеп жасына дейінгі балалармен дидактикалық кескіндер (пиктограмма) арқылы сөйлеуді дамыту бағдарламасын сынақтан өткізді. Бұл зерттеу тарихи, салыстырмалы және жүйелік талдауды қамтитын теориялық талдау негізінде жүргізілді; зерттеудің тәжірибелік-эксперименттік бөлігі эмпирикалық әдістерді (бақылау, сауалнама, тестілеу) қолдана отырып, эксперименттің үш (анықтаушы, қалыптастырушы және бақылау) кезеңдерімен анықталды. Зерттеу жұмысының нәтижесінде АСБ бар мектеп жасына дейінгі балалар ортамен қарым-қатынасында өзгерістер болғанын көрсетті, бұл тек балама қарым-қатынасқа ғана емес, сонымен қатар сөйлеу қарым-қатынасына да әсер етті. Бұл мақала ғылым саласындағы зерттеушілерге және АСБ бар мектеп жасына дейінгі балаларда сөйлеуді дамыту мәселелерімен айналысатын психологтарға да, дефектологтарға да арналған.

Кілтті сөздер: аутизм спектрінің бұзылуы, тіл дамыту, коммуникация, пиктограммалар, мектепке дейінгі жас, АСБ бар балалар.

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Развитие речи дошкольников с РАС средствами дидактических карт

Аннотация. Актуальность данной статьи обусловлена увеличением интереса научного и практикующего сообщества к проблеме развития речи у детей дошкольного возраста с расстройством аутистического спектра (РАС) с применением различных методов, средств и технологий. Цель статьи: теоретически раскрыть и наглядно показать результаты опытно-экспериментальной работы с методами дидактических карт (пиктограммы) для развития речи детей дошкольного возраста с РАС. Авторами апробирована программа развития речи по средствам дидактических карт (пиктограммы) с детьми дошкольного возраста с РАС. Данное исследование проводилось на основе теоретического анализа, которое включало в себя исторический, сопоставительный и системный анализ; опытно-экспериментальная часть исследования определялась тремя (констатирующий, формирующий и контрольный) этапами эксперимента с применением эмпирических методов (наблюдение, анкетирование, тестирование). Результат исследовательской работы показал, что у детей дошкольного возраста с РАС произошли изменения в сфере коммуникации с окружающими, которое повлияло не только на общение, но и на речевые функции. Данная статья предназначена для исследователей в области науки и практикующих специалистов как психологов, так и дефектологов, занимающихся проблемами развития речи у детей дошкольного возраста с РАС.

Ключевые слова: расстройство аутистического спектра, развитие речи, альтернативная коммуникация, пиктограммы, дошкольный возраст, дети с РАС.